DOE/EIS-0573
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DRAFT
Plutonium Pit Production
Programmatic Environmental Impact Statement

SUMMARY

U.S. DEPARTMENT OF ENERGY

NNSA[SM]
National Nuclear Security Administration

COVER SHEET

RESPONSIBLE FEDERAL AGENCY: U.S. Department of Energy (DOE)/National Nuclear Security Administration (NNSA)

TITLE: Draft Plutonium Pit Production Programmatic Environmental Impact Statement (DOE/EIS-0573) (Pit Production PEIS or PEIS)

LOCATION: Los Alamos, New Mexico and Aiken, South Carolina

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This document is available for viewing and downloading on the DOE NEPA website (https://www.energy.gov/nepa/doeeis-0573-plutonium-pit-production-multiple-locations).

Abstract: NNSA's Proposed Action is to produce plutonium pits at required quantities to meet national security requirements (50 U.S.C. § 2538a). This PEIS presents potential environmental impacts associated with pit production at single or multiple sites. For analytical purposes, this PEIS evaluates potential impacts of continuous pit production over the next 50 years. The Proposed Action also includes activities across the Nuclear Security Enterprise related to transportation and waste management associated with the pit production mission.

This PEIS has been prepared to satisfy the Settlement Agreement and is compliant with section 102(2)(C) of NEPA and DOE's NEPA Implementing Procedures. **This Draft PEIS is approximately 240 pages.**

Public Involvement: NNSA published a Notice of Intent on May 9, 2025 (90 FR 19706), announcing preparation of the Pit Production PEIS and a scoping period that ended on July 14, 2025. NNSA conducted online public scoping meetings on May 27 and 28, 2025, and accepted comments via the meetings, email, and postal mail. All comments received were systematically reviewed, organized into comment issue categories, and considered in developing the PEIS. A summary of scoping comments and NNSA's consideration of those comments is provided in Appendix B. Pursuant to the Settlement Agreement, the Draft PEIS is subject to a 90-day public comment period beginning with publication of a Notice of Availability from the U.S. Environmental Protection Agency. NNSA will hold five in-person public hearings with at least 15 days' advance notice provided through DOE NEPA webpage, local newspapers, established email distribution lists, and direct outreach to tribes and pueblos near potentially affected sites. NNSA will consider all comments received in preparing the Final PEIS, will append or otherwise publish all substantive comments or summaries thereof if comment volume is exceptionally large, will include all Draft PEIS comment documents in the Administrative Record, and intends to issue a Record of Decision concurrently with the Final PEIS in accordance with DOE NEPA implementing procedures (DOE 2025a).

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ABBREVIATIONS AND ACRONYMS

BMP	best management practice
CFR	Code of Federal Regulations
DoD	U.S. Department of Defense
DOE	U.S. Department of Energy
DOW	Department of War
EIS	environmental impact statement
EPCU	Electric Power Capacity Upgrade
GHG	greenhouse gas
HEU	highly enriched uranium
HMP	Threatened and Endangered Species Habitat Management Plan
KCNSC	Kansas City National Security Campus
LANL	Los Alamos National Laboratory
LCF	latent cancer fatality
LLW	low-level radioactive waste
MEI	maximally exposed individual
MFFF	Mixed-Oxide Fuel Fabrication Facility
MGY	million gallons per year
MLLW	mixed low-level radioactive waste
MT	metric ton
NEPA	National Environmental Policy Act
NNSA	National Nuclear Security Administration
NNSS	Nevada Nuclear Security Sites
NSE	Nuclear Security Enterprise
Pantex	Pantex Plant
PEIS	programmatic EIS
PF-4	Plutonium Facility building 4
ppy	pits per year
PuEq	plutonium-239 equivalent
RLUOB	Radiological Laboratory/Utility/Office Building
ROD	Record of Decision
ROI	region of influence
SA	supplement analysis
SNL	Sandia National Laboratories
SPEIS	Supplemental Programmatic EIS
SRPPF	Savannah River Plutonium processing Facility
SRS	Savannah River Site
SSM	Stockpile Stewardship and Management
SWEIS	site-wide environmental impact statement
TA	technical area
TRU	transuranic (waste)
TSD	treatment, storage, and disposal
U.S.C.	United States Code
USFWS	U.S. Fish and Wildlife Service
WIPP	Waste Isolation Pilot Plant

S SUMMARY

S.1 Introduction and Purpose and Need for Agency Action

This summary presents information from *Plutonium Pit Production Programmatic Environmental Impact Statement* (DOE/EIS-0573) (Pit Production PEIS or PEIS). The information includes the purpose and need for agency action (Section S.1.2), a description of the Proposed Action and alternatives considered (Section S.2), the environmental resource areas evaluated (Section S.3.1), and a comparison of the potential consequences, by resource area, for each alternative (Section S.3.2).

S.1.1 Introduction

The National Nuclear Security Administration (NNSA), a semi-autonomous agency within the United States (U.S.) Department of Energy (DOE), is responsible for meeting the national security requirements established by the President and Congress to maintain and enhance the safety, reliability, and performance of the U.S. nuclear weapons stockpile, including the ability to design, produce, and test (per Title 50 *United States Code* [U.S.C.] § 2538a et seq.). Plutonium pits are critical components of every nuclear weapon; nearly all current stockpile pits were produced from 1978 to 1989 (DoD 2018). The Nation's capability to produce plutonium pits is limited and does not meet federal requirements.

Pit

A pit is the central core of a nuclear weapon, principally containing plutonium and/or enriched uranium.

Since 2014, 50 U.S.C. § 2538a has mandated that NNSA shall manufacture not less than 80 war-reserve plutonium pits per year (ppy) by 2030. This number is driven by the stockpile's size, the need to replace existing pits as they age, and the requirement for the U.S. to have a flexible and resilient manufacturing capability with the capacity to produce a variety of pits to meet current and planned military stockpile requirements and ensure the safety, security, and effectiveness of the Nation's nuclear stockpile.

The missions of the NNSA include: (1) enhancing U.S. national security through the military application of nuclear energy; (2) maintaining and enhancing the safety, reliability, and performance of the U.S. nuclear weapons stockpile, including the ability to design, produce, and test, as necessary, in order to meet national security requirements; (3) providing the U.S. Navy with safe, militarily effective nuclear propulsion plants and to ensure the safe and reliable operation of those plants; (4) promoting international nuclear safety and nonproliferation; (5) reducing global danger from weapons of mass destruction; and (6) supporting U.S. leadership in science and technology (see the *National Nuclear Security Administration Act* [50 U.S.C. § 2401 et seq.]). Production of plutonium pits for the Nation's nuclear stockpile supports NNSA's mission. Pit production, which is an important element of NNSA's Stockpile Stewardship and Management (SSM) Program, is accomplished through the Nuclear Security Enterprise (NSE).

Pit Production

Pit production is a term used to describe a complex process that involves three main areas: (1) material receipt, unpacking, and storage; (2) feed preparation; and (3) new pit manufacturing. Pit production can also include various forms of pit reuse—from minor modifications to assembled configurations, to disassembly and intact recovery of components for use in a newly manufactured pit.

NNSA has prepared the PEIS in accordance with the *National Environmental Policy Act* (42 U.S.C. §§ 4321–4336(e), as amended; NEPA) and DOE's NEPA Implementing Procedures issued on June 30, 2025, to analyze the potential programmatic environmental impacts of the reasonable alternatives for meeting the purpose and need described in Section S.1.2. This PEIS also satisfies a condition of the Settlement Agreement (USDC 2025) entered into on January 16, 2025, in the matter of *Savannah River Watch et al. v. United States Department of Energy* (see Chapter 1, Section 1.6 of the PEIS) (see Section S.1.5 for information about the Settlement Agreement).

S.1.2 Purpose and Need for Agency Action

U.S. national security policy requires the maintenance of a safe, secure, and reliable nuclear weapons stockpile and the core competencies necessary to design, manufacture, and sustain nuclear weapons; consistent with 50 U.S.C. § 2538a and U.S. Department of Defense (DoD)[1] requirements, NNSA must establish workforce and infrastructure capabilities to produce no fewer than 80 plutonium pits per year as soon as practicable, eliminate single-point failures, and provide flexible production capacity. The PEIS ensures NEPA compliance for plutonium pit production in support of these requirements, as outlined in the SSM Plan, and evaluates the programmatic environmental impacts of meeting congressionally mandated near-term pit production rates through single-site and multi-site alternatives, including associated activities at other NNSA sites and related waste management and transportation actions, as well as long-term capacity alternatives to address potential future national security requirements. The alternatives evaluated are described in Section S.2. NNSA's existing pit manufacturing capability is insufficient to meet current production requirements, necessitating the establishment of additional pit production capability and capacity both to satisfy the congressional mandate and to mitigate risks associated with plutonium aging. Chapter 1, Section 1.2 of the PEIS provides additional information about pit aging, pit lifetimes, and enhanced safety features implemented in newly manufactured pits.

S.1.3 National Security Requirements and Recommendations

Decisions concerning whether the U.S. should possess nuclear weapons and the type and number of those weapons are made by Congress and the President. Since 2014, Congress and the President have set explicit requirements for pit production levels. The scope of this PEIS includes an analysis of those limited aspects of implementing national policy where NNSA has discretion. However, to aid in public understanding, there are several principal national security policy overlays and related treaties that are potentially relevant to the Proposed Action of the Pit Production PEIS, such as the Nuclear Posture Review, the Nuclear Weapons Stockpile Memorandum and the corresponding Nuclear Weapons Stockpile Plan, the Nuclear Non-Proliferation Treaty, and the Comprehensive Test Ban Treaty. These are discussed individually in Chapter 1, Section 1.3 of the PEIS.

[1] On September 5, 2025, Executive Order 14347, "Restoring the United States Department of War," ordered that the Department of Defense may be referred to as the Department of War and the Secretary of Defense may be referred to as the Secretary of War. As such, this PEIS refers to the Department Defense when referring to documents prepared prior to September 5, 2025, and when applicable regulations refer to Department of Defense. The PEIS refers to Department of War (DOW) when referring to future actions or responsibilities.

S.1.4 NNSA's Mission through the Nuclear Security Enterprise

The SSM Plan defines the NSE as the physical infrastructure, technology, and workforce at the national security laboratories, the nuclear weapons production sites, and the Nevada National Security Sites (NNSS) that sustain the research, development, production, and dismantlement capabilities needed to support the nuclear weapons stockpile (NNSA 2024a). A graphical depiction of the locations that support the NSE is presented in Figure S.1-1.[2] Chapter 1, Section 1.4 of the PEIS provides a description of each element of the NSE, its capabilities related to the stockpile, and the interfaces with the pit production process or facilities. The facilities and infrastructure at the Savannah River Site (SRS) and Los Alamos National Laboratory (LANL) are suitable for and capable of near-term implementation of pit production. Although operations at the Kansas City National Security Complex (KCNSC), Lawrence Livermore National Laboratory, NNSS, Pantex Plant (Pantex), Sandia National Laboratories, and Y-12 National Security Complex (Y-12) are essential to the success of the NSE, these sites are not directly involved in pit production activities. Furthermore, they do not influence the determination of national security and legal requirements related to pit production, nor do they affect decisions whether production occurs at a single site or multiple sites. Consequently, this PEIS does not consider alternatives for these activities at these sites.

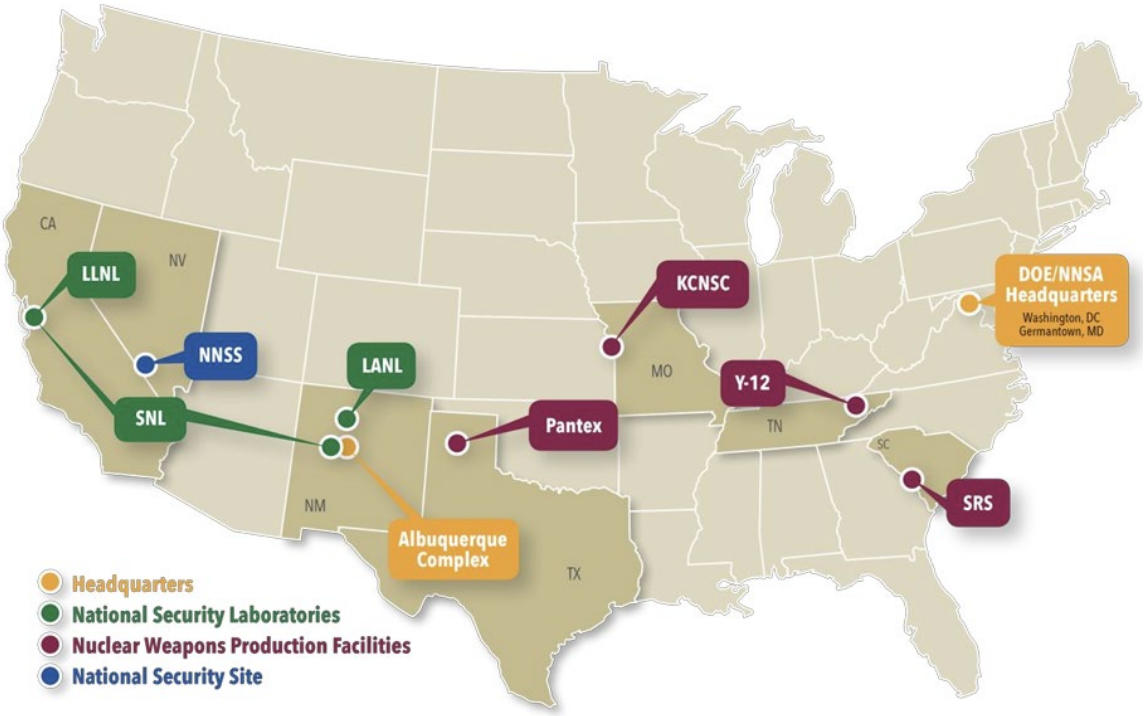

Figure S.1-1 NNSA's Nuclear Security Enterprise

[2] Figure S.1.4-1 identifies LANL as a National Security Laboratory, which is consistent with 50 U.S.C. § 2501, even though the Laboratory also has a production role (e.g., detonators, plutonium pits).

S.1.5 Scope of this Programmatic EIS

NEPA ensures that federal decision-makers consider the environmental impacts of major federal actions before decisions are made and actions taken. This Pit Production PEIS has been prepared in accordance with section 102(2)(C) of NEPA and the Settlement Agreement in *Savannah River Watch et al. v. United States Department of Energy* (DOE 2025b) and complies with DOE's NEPA Implementing Procedures (DOE 2025a).

DOE/NNSA has evaluated alternatives for pit production in several NEPA documents over the past 30 years. During the mid-1990s, DOE prepared the **SSM PEIS (DOE 1996)**, which evaluated alternatives for maintaining the safety and reliability of the nuclear weapons stockpile and preserving competencies in nuclear weapons in the post-Cold War era. The SSM PEIS analyzed a production level of 80 ppy at both LANL and SRS and associated impacts across the NSE.

In 1999, DOE prepared the **1999 LANL Site-Wide EIS (SWEIS; DOE 1999)**, which considered the environmental impacts of ongoing and proposed activities at LANL. With respect to pit production, the 1999 LANL SWEIS analyzed a production level of 80 ppy.

In 2008, NNSA prepared the **Complex Transformation Supplemental PEIS (SPEIS; NNSA 2008a)**, which is a supplement to the SSM PEIS. The SPEIS evaluated, among other things, constructing a new pit production facility ("Greenfield") to produce 125 to 200 ppy at one of five site alternatives: NNSS, LANL, Pantex, SRS, and Y-12. At SRS, the SPEIS also evaluated a pit production facility that would use the Mixed-Oxide Fuel Fabrication Facility (MFFF) and Pit Disassembly and Conversion Facility infrastructure (NNSA 2008a).

Also in 2008, NNSA prepared the **2008 LANL SWEIS (NNSA 2008b)**, which evaluated alternatives for the continued operation of the Laboratory and production of 80 ppy.

In 2019, NNSA prepared the **2019 SPEIS Supplement Analysis (SA) (NNSA 2019)**, which analyzed NNSA's dual-site pit production approach at a programmatic level. Based on the 2019 SPEIS SA, NNSA determined that the proposed approach for pit production did not constitute a substantial change from actions analyzed previously and there were no significant new circumstances or information relevant to environmental concerns. As identified in that SA, NNSA committed to preparing two site-specific documents: (1) the site-specific SRS Pit Production EIS for the proposal to repurpose the MFFF at SRS to produce a minimum of 50 ppy and to develop the ability to implement a short-term surge capacity to meet the requirements of producing pits at a rate of no fewer than 80 ppy beginning during 2030, and (2) a site-specific SA for the proposal to produce a minimum of 30 ppy at LANL and to develop the ability to implement a short-term surge capacity to meet mission needs if necessary.

In 2020, NNSA published the **2020 SRS Pit Production EIS (NNSA 2020a)**, which evaluated the potential environmental impacts of repurposing the MFFF to produce between 50 and 125 ppy at SRS. NNSA published the Record of Decision (ROD) (85 FR 70601, November 5, 2020) to announce its decision to move forward with the SRS Pit Production EIS Proposed Action.

Also in 2020, NNSA published an amended ROD on the 2008 LANL SWEIS (85 FR 54544, September 2, 2020) to announce its decision to implement elements of the 2008 LANL SWEIS Expanded Operations Alternative needed to produce a minimum of 30 ppy and to implement surge efforts to exceed 30 ppy to meet national policy. This amended ROD was based

on analysis in the ***Final Supplement Analysis of the 2008 Site-Wide Environmental Impact Statement for the Continued Operations of Los Alamos National Laboratory*** **(2020 LANL SWEIS SA; NNSA 2020b).**

Most recently, NNSA published the **2026 LANL SWEIS (NNSA 2026a)**, which evaluated the production of between 30 and 80 ppy at LANL and the implementation of a number of specific projects related to infrastructure necessary for this level of pit production. Such infrastructure includes nonradiological and radiological support facilities. Examples of nonradiological facilities include office buildings, security facilities, cafeterias, and parking structures. Examples of radiological facilities include construction of a transuranic (TRU) liquid waste treatment facility and an estimated 240,000 square feet of TRU waste staging areas. In the ROD based on the 2026 LANL SWEIS, NNSA decided to implement the Expanded Operations Alternative (NNSA 2026b).

Following publication of the 2020 SRS Pit Production EIS ROD, NNSA was sued by environmental groups alleging, among other things, that NNSA should prepare a PEIS for the dual-site approach. In early 2025, the plaintiffs and DOE entered into a Settlement Agreement, which subsequently was filed by the Court on January 16, 2025 (USDC 2025).

The Settlement Agreement has specific requirements for the NEPA process that are in addition to those requirements in DOE's NEPA Implementing Procedures (10 *Code of Federal Regulations* [CFR] Part 1021; DOE 2025a). These include:

- Prepare this Pit Production PEIS and any subsequent ROD within 2.5 years of the signed Settlement Agreement (by July 2027).
- Allow 45 days of scoping after the last scoping meeting (the last scoping meeting for this PEIS was held on May 28, 2025; thus, the scoping period ended on July 14, 2025).
- Provide for a longer comment period on the Draft PEIS than that previously required by 10 CFR 1021.313 (90 days).
- Hold five public hearings in specific locations (Aiken, South Carolina; Kansas City, Missouri; Santa Fe, New Mexico; Livermore, California; and the District of Columbia) and any other location(s) that NNSA deems relevant to the PEIS.

Additionally, until a new ROD is issued, NNSA has agreed not to:

- Introduce or process any nuclear material in the Main Process Building of the Savannah River Plutonium Processing Facility (SRPPF) at SRS;
- Install any classified equipment in the Main Process Building of the SRPPF; and
- Begin field construction of certain waste storage/inspection stations or the waste characterization laboratory at SRS.

S.1.6 Public and Tribal Involvement

The NEPA process for this PEIS includes two opportunities during which NNSA specifically requests public involvement: (1) the scoping process and (2) the public comment period for the Draft PEIS. The scoping process began on May 9, 2025, by NNSA publishing a Notice of Intent to prepare this Pit Production PEIS (90 FR 19706). The PEIS scoping period ended on July 14, 2025.

Because the Proposed Action has the potential to affect multiple states and regions across the southern U.S., NNSA held online public scoping meetings on May 27 and 28, 2025 to reach a broader audience when discussing the PEIS and receiving comments on the potential scope. In addition to the online scoping meetings, NNSA provided other methods (i.e., email or postal mail) for submitting comments on the PEIS scope. Congressional and intergovernmental notifications were sent to inform key stakeholders and tribal nations of the public scoping period. NNSA sent notifications to the GovDelivery mailing list and published the notice in an Environmental Bulletin at SRS. In accordance with DOE Order 144.1A, NNSA sent tribal consultation letters to potentially affected tribes and hosted a tribal-only scoping meeting, which was attended by representatives from 12 tribes or pueblos.

NNSA considered all comments received during the scoping process for this PEIS, including comments received after the close of the comment period. Comments were systematically reviewed by NNSA. The summary of the comments, including an indication of how NNSA considered the comments, along with a more detailed discussion of the public scoping process, is provided in Appendix B of the PEIS.

Pursuant to the Settlement Agreement, the Draft PEIS is subject to public review and a 90-day comment period, which will begin with the U.S. Environmental Protection Agency publication of the Notice of Availability for the Draft PEIS in the *Federal Register*. During the public comment period, NNSA will hold five, in-person, public hearings (as stipulated in the Settlement Agreement), which will be announced at least 15 days in advance on the DOE NEPA web page for this PEIS (https://www.energy.gov/nepa/doeeis-0573-plutonium-pit-production-multiple-locations), in local newspapers, in notices sent to established email distribution lists, and direct outreach to tribes and pueblos near potentially affected sites. NNSA will consider all comments received during the public comment period in preparing the Final PEIS. In accordance with DOE's NEPA Implementing Procedures, NNSA intends to issue a ROD concurrently with the Final PEIS (DOE 2025a).

S.2 Proposed Action and Alternatives

This section provides a description of the Proposed Action, an overview of plutonium pit production, and descriptions of the three programmatic alternatives: (1) No-Action Alternative; (2) Multi-Site Alternative; and (3) Single-Site Alternative. The section also discusses alternatives considered but dismissed from detailed analyses and identifies NNSA's Preferred Alternative.

S.2.1 Proposed Action

NNSA's Proposed Action is to produce plutonium pits at required quantities to meet national security requirements (50 U.S.C. § 2538a). The PEIS presents potential environmental impacts associated with a range of reasonable alternatives for achieving the necessary pit production capabilities and operations at a programmatic level. For analytical purposes, this PEIS evaluates potential impacts of continuous pit production over the next 50 years—through approximately 2075. Production of pits includes the activities needed to fabricate new pits, modify the internal features of existing pits, and certify new pits or requalify existing pits. The Proposed Action also includes activities across the NSE related to transportation and waste management associated with the pit production mission.

S.2.2 Plutonium Pit Production

NNSA has described the pit production process in previous NEPA documents (see Section S.1.5). The following provides a summary of the typical pit production process.

Figure S.2-1 depicts a simplified illustration of the plutonium pit production process. As shown on that figure, and described below, plutonium pit production involves the following major processes: (1) material receipt and storage; (2) pit disassembly; (3) plutonium purification; (4) melting and casting; (5) machining; (6) assembly; (7) quality assurance; and (8) inspection and transport. Production alternatives incorporate reuse where needed within the broader national security mission, with reuse utilizing a subset of the process descriptions below.

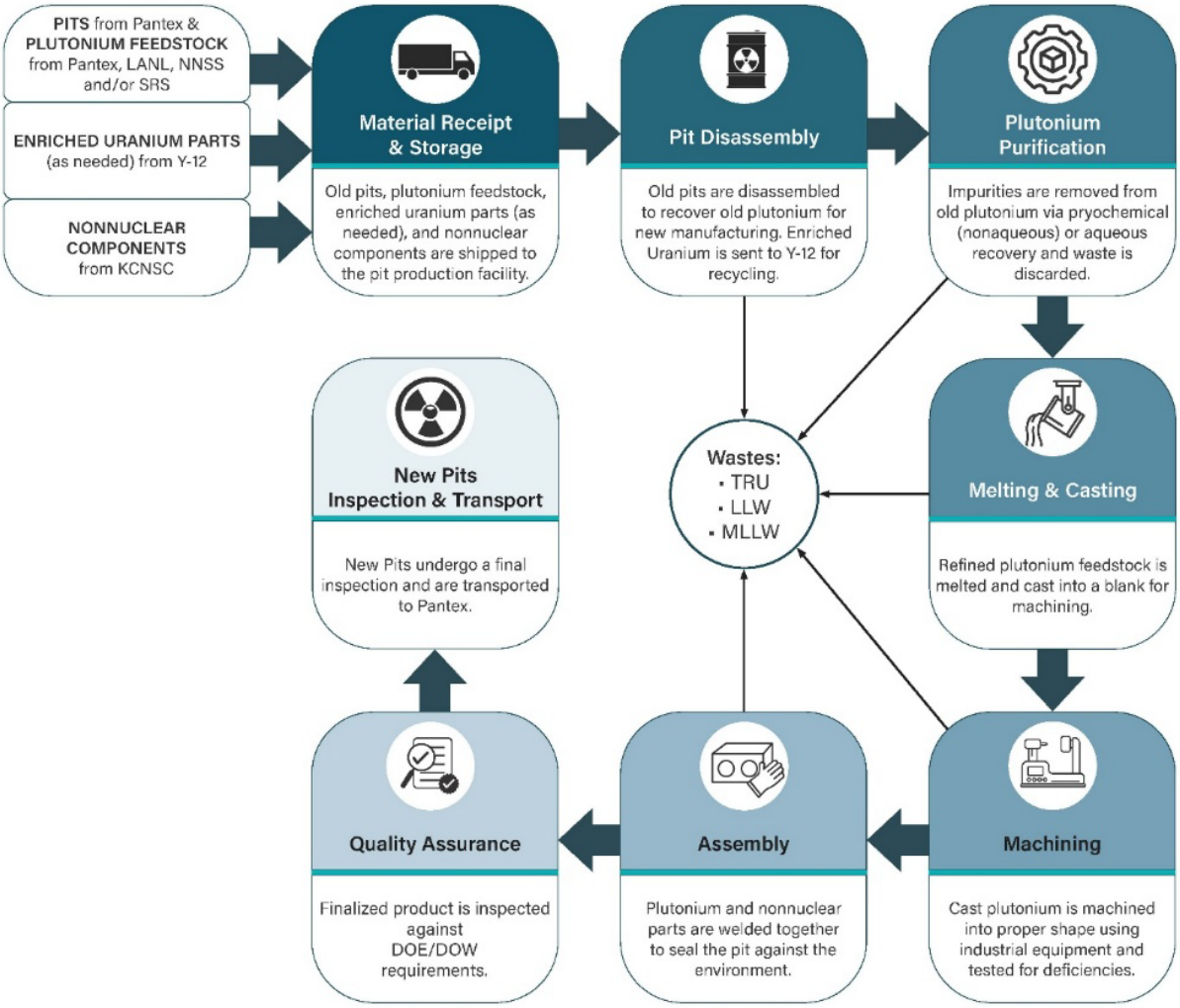

Figure S.2-1 Simplified Plutonium Pit Production Process

Material Receipt and Storage. Existing pits and plutonium feedstock will be delivered from Pantex, near Amarillo, Texas, in DOE/U.S. Department of Transportation-approved shipping containers via NNSA's safe, secure transport system. The bulk of the feedstock material will be in the form of pits from retired weapons, although some plutonium from other locations, such as

LANL, Pantex, NNSS, and SRS, also could be used. The shipping containers will be securely unloaded from the truck, unpacked at the pit production facility, and placed into temporary storage in vaults or safes until needed in the pit production process.

Pit Disassembly. Once pits arrive at their destination, pits and/or plutonium will be transferred to a feed preparation area for further processing. Activities involving pits will be conducted in interconnected gloveboxes/enclosures. Enclosures remain completely sealed and operate independently, except during material transfer operations. The ventilation system includes high-efficiency particulate air filters and is designed to maintain confinement. Both intake and exhaust air are filtered, and exhaust gases are monitored for radioactivity. At the SRPPF at SRS, a sand filter will be used for exhausts to the environment.

Plutonium recovery requires mechanical disassembly. For pits whose components do not separate easily, thermal or chemical means could also be used. As necessary, highly enriched uranium (HEU) parts are disassembled from the pit assemblies and sent to Y-12 in Oak Ridge, Tennessee for recycling. All other disassembled components that could not be reused are decontaminated to the maximum extent possible and then disposed of as radioactive waste.

Beryllium may be a component in both pit disassembly and assembly operations. The disassembly operations would only generate larger, non-respirable turnings and pieces of metal, and all work will be performed in enclosures, limiting airborne particles. The solid beryllium residue will be disposed of as radioactive waste.

Plutonium Purification. Pit-derived plutonium is not suitable for new manufacturing—it contains plutonium radioactive decay products (uranium, americium-241, and neptunium-237) and other undesirable characteristics. Therefore, the plutonium will be purified using pyrochemical (nonaqueous) recovery techniques, which generate plutonium-bearing residues that must be either recovered using aqueous techniques or disposed of as TRU waste.[3] The proposed purification techniques are well known and have been used successfully at DOE sites for many years.

Nonaqueous plutonium metal purification operations could include a combination of the following primary processes: (1) direct oxide reduction, which generally uses calcium metal to reduce plutonium oxide to plutonium metal; (2) molten salt extraction, which uses chloride salts to remove americium-241 from the plutonium; and (3) electrorefining, which uses chloride salts to remove other key impurities from the plutonium metal.

In aqueous recovery, plutonium-bearing residues are recovered using techniques in which acid supports the dissolution of feed material. Use of the aqueous process to recover plutonium reduces the overall quantities of TRU waste needing disposal at the Waste Isolation Pilot Plant (WIPP) facility. Pit production could continue without aqueous recovery; however, TRU waste disposal volume would increase.[4] The solid waste generated throughout the feed preparation and

[3] Because TRU waste and mixed TRU waste (containing hazardous materials) are managed and disposed of similarly, the PEIS does not differentiate between TRU and mixed TRU waste. Both are referred to as TRU waste.

[4] The PEIS assumes that aqueous recovery would be used at both LANL and SRS, as that is the baseline normal operating process. Based on historical data at LANL, when the aqueous recovery line was not available (e.g., for maintenance), the projected volume of TRU waste

purification process consists of TRU waste, low-level radioactive waste (LLW),[5] and uncontaminated waste (e.g., waste that can be assayed and certified for disposal as commercial waste).

Melting and Casting, Machining, And Assembly. The plutonium metal resulting from the purification process (or plutonium metal from other sources) will be transferred to the manufacturing area, where it will be melted and cast in a foundry operation. These castings will then be machined to proper dimensions, combined with other non-plutonium parts, which could include beryllium and HEU components, and assembled into pits. Analytical chemistry capabilities in the pit production facility will be utilized to test plutonium-bearing samples from all aspects of the pit production process to ensure that they are within specified limits.

Quality Assurance and Inspection. Analytical chemistry requires rigorous quality controls, including National Institute of Standards and Technology traceability for key analytes. Materials characterization operations analyze plutonium metal and pit-derived samples for physical properties, validate results from key manufacturing steps, and support process troubleshooting. A materials certification laboratory performs analyses to ensure that commercial materials used in process operations meet specifications and do not adversely affect product performance or quality. New pits will be inspected and prepared for storage and eventual shipment.

Transportation Associated with Pit Production. Plutonium pit production requires transportation activities. Plutonium pit assemblies, which are used as material feedstock, are shipped primarily from Pantex to the pit production facility. Enriched uranium parts are disassembled from the pit assemblies, converted to oxide, and shipped to Y-12 in Oak Ridge. Y-12 also provides new HEU parts to the pit production facility, as required. Additional plutonium metal could be used from other sources (e.g., SRS, LANL, NNSS, or Pantex). In the impacts analysis of transporting pits, plutonium, and HEU in Chapter 4 of the PEIS, shipments of these materials are combined and referred to as "secure shipments." Other nonnuclear parts will be transported to the pit production facilities from the KCNSC or commercial vendors.

The pit production process will generate radioactive waste. TRU waste will be disposed of at the WIPP facility near Carlsbad, New Mexico. SRS has existing LLW disposal facilities. LLW from pit production activities at LANL is managed on site and transferred for disposal to either NNSS or a commercial facility. For either site, mixed LLW (MLLW), which is LLW that contains hazardous waste, could be disposed of at either NNSS or a commercial facility.

S.2.3 Planning Assumptions and Basis for Analysis

The following are some of the more specific assumptions and considerations that form the basis of the analyses and impact assessments in the PEIS.

The exact size and composition of the enduring nuclear weapons stockpile is determined annually. Federal law requires NNSA to implement a strategy to provide the enduring capability

generated from pit production would increase by about 65 percent for the period of unavailability.

[5] For these process descriptions, this PEIS acknowledges that LLW could include some hazardous constituents and be managed as mixed LLW. LLW and mixed LLW are discussed separately when describing the baseline and potential impacts of waste management.

and capacity to produce not less than 80 ppy beginning during 2030 (50 U.S.C. § 2538a). In addition, because national policy and pit production requirements could change over the 50-year analytical period evaluated in the PEIS, NNSA analyzes a broader range of pit production quantities for the action alternatives (see Sections S.2.4-S.2.6). Any pit production facility in the U.S. would be capable of manufacturing plutonium components and assembling pit types that support the enduring nuclear weapons stockpile, as well as any future newly designed pits.

Reasonable Sites. NNSA only considers LANL and SRS to be reasonable site alternatives for pit production. These are the only sites with available facilities and existing infrastructure that could be used to produce pits to meet the mandated schedule and current pit production requirements. NNSA does not consider construction of a new facility (greenfield) reasonable because it would not meet the federally mandated pit production rate in the near term and would be cost prohibitive relative to the use of available facilities and existing infrastructure at LANL and SRS. Additionally, the Fiscal Year 2026 *National Defense Authorization Act,* enacted on December 18, 2025, specifies production of plutonium pits at LANL and SRS (Public Law 119-60).

Analytical Timeline. Construction impacts are short-term (primarily within ~8 years); operational impacts are long-term and presented in terms of annual impacts across the 50-year analytical period. Options for beyond 50 years include life-extension or decontamination, decommissioning, and demolition; detailed decontamination, decommissioning, and demolition impacts require future NEPA evaluation, however, a programmatic assessment of these impacts is provided in Chapter 4 of the PEIS.

Waste and Transport. Wastes are managed per applicable federal/state/local regulations and DOE/NNSA orders. TRU waste meeting the WIPP acceptance criteria will be packaged and shipped to WIPP; other wastes will follow site procedures and prior DOE decisions. Transport of pits/plutonium/HEU uses NNSA secure shipments (e.g., between Pantex, LANL, SRS, NNSS) and supports final assembly at Pantex.

Supply Chain and Materials. Most nonnuclear pit components and specialty tooling are procured and shipped to production sites; associated impacts were addressed in prior NEPA documents or constitute commercial operations. Beryllium inventories are judged sufficient from existing NNSA/commercial sources; no new beryllium production capability is anticipated.

S.2.4 No-Action Alternative

Under the No-Action Alternative, NNSA will continue to implement previously approved decisions regarding pit production at LANL and SRS. Section S.2.4.1 addresses the No-Action Alternative activities at LANL, and Section S.2.4.2 addresses the No-Action Alternative activities at SRS.

S.2.4.1 No-Action Alternative – Los Alamos National Laboratory

At LANL,, NNSA would continue to implement the decision announced in the amended LANL ROD (85 FR 54550, September 2, 2020), to produce 30 ppy at LANL with surge capability to produce up to 80 ppy. This decision was reaffirmed in the ROD based on the 2026 Final LANL SWEIS (NNSA 2026b).

Since issuance of the 2020 amended LANL ROD, NNSA has continued with both programmatic- and line-item-related space reconfiguration in the LANL Plutonium Facility building 4 (PF-4) related to improving capacity and ability to support the pit production mission

requirements. The reconfiguration includes removal of legacy gloveboxes/enclosures and equipment and installation of new enclosures and equipment, both of which support improved capacity and reliability. This reconfiguration effort is expected to take several more years. Concurrently, NNSA has worked to improve the associated infrastructure, such as office building, entry/egress capability, security, waste management, and parking. These infrastructure-related efforts are expected to continue for several more years. Site support work encompasses construction and upgrades of roughly 30 support buildings (e.g., warehouses, offices, training and records facilities, cafeterias, security facilities, a Training and Development Center, a Cold Test Facility, and a fire station) and associated site improvements (roads, parking, laydown areas) phased over the next 5–8 years.

The recent ROD on the 2026 LANL SWEIS (NNSA 2026b) also included construction and operation of up to four additional staging locations for TRU waste generated from PF-4, primarily associated with pit production operations. The staging facilities will be constructed to minimize the effects that a lengthy interruption of WIPP TRU waste receipt could have on pit production activities at LANL.

Tables 2.4-1 and 2.4-2 in Chapter 2 of the PEIS provide the construction and operational parameters (e.g., land disturbed, workforce, waste generation) that were used to evaluate potential impacts in each environmental resource area for the No-Action Alternative.

S.2.4.2 No-Action Alternative – Savannah River Site

At SRS, NNSA will continue to implement the 2020 SRS ROD (85 FR 70601, November 5, 2020) to construct the SRPPF while also complying with the Settlement Agreement (DOE 2025b) discussed in Chapter 1, Section 1.6. The activities included in the No-Action Alternative at SRS are limited to construction activities. Operational, or pit production, activities are included in the Multi-Site and Single-Site alternatives (Sections S.2.5 and S.2.6, respectively).

Constructing the SRPPF complex would require internal and external modifications of the MFFF, and installation of equipment directly associated with the pit production mission. In addition to these modifications of the MFFF, additional requirements for establishing pit production at SRS include: (1) removal of some existing facilities in F Area; (2) construction of new facilities and modification of some existing support facilities; and (3) construction of security infrastructure (including fencing) to surround the SRPPF. Key construction parameters are summarized in Chapter 2, Table 2.4-3 of this PEIS. Although some of the revised construction parameters are larger than those in the 2020 SRS ROD and supporting SRS EIS, they have been included the No-Action Alternative in this PEIS to provide the reader with a clearer understanding of the potential impacts of construction actions. If NNSA implemented the No-Action Alternative, those actions would be limited to only those identified in the 2020 SRS ROD (85 FR 70601).

S.2.5 Multi-Site Alternative

Under the Multi-Site Alternative, NNSA would produce pits concurrently at LANL and SRS. At the maximum annual production rate analyzed, NNSA would produce up to 80 ppy at LANL and up to 125 ppy at SRS, such that a total of up to 205 pits could be produced annually. In addition, the PEIS evaluates lower production rates at both LANL and SRS for the Multi-Site Alternative. At the steady-state, near-term production capacity, the PEIS analyzes the production of 30 ppy at LANL and 50 ppy at SRS, which is the pit production rate that would satisfy current national policy and the overall requirement to produce 80 pits in total. At the lowest annual

production rate analyzed, the production of 10 ppy at LANL and 50 ppy at SRS is considered a reasonable "capability-based production capacity" if pit production requirements were reduced in the future.

Regardless of the ultimate pit production capacity at LANL, the construction activities described for the No-Action Alternative (see Section S.2.4 and the accompanying construction parameters in Chapter 2, Table 2.4-1) would occur. The operational parameters presented for the No-Action Alternative for producing 30–80 pits at LANL are also applicable. The PEIS presents the operational parameters if LANL pit production capacity were ever reduced to 10 ppy. The primary reductions occur in parameters associated with waste generation, worker dose, and radiological transportation.

Under the Mult-Site Alternative, operations at the SRPPF complex would commence after construction was complete and would include plutonium processing/manufacturing areas, analytical chemistry/materials characterization, waste handling, control rooms, utilities, compressed air, electrical and backup generation, and standard support spaces; and dual offsite power feeds plus diesel backups to ensure critical system continuity. Key operational parameters are summarized in Chapter 2, Table 2.5-2 of this PEIS.

S.2.6 Single-Site Alternative

Under this alternative, NNSA would produce pits at either LANL or SRS. Single-site production at LANL would be the same as the No-Action Alternative, however, while 80 ppy is considered the maximum achievable production capacity at LANL without construction of another facility, it is not considered sustainable for long periods. Under single-site production at SRS, NNSA would produce 50–125 ppy at SRS only. NNSA would not produce pits for the stockpile at LANL but would maintain the existing LANL pit production capability in standby. In this mode, NNSA would perform activities equivalent to producing a minimal number of pits (e.g., 10 ppy) to maintain production competencies. In addition, plutonium research and development, surveillance, testing, and other plutonium missions would continue at LANL, as these activities are independent of pit production.

S.2.7 Potential Project Enhancements

The PEIS also considers potential enhancements at LANL and SRS to improve pit production efficiency and capability. These enhancements are at an early conceptual stage and subject to further design development. The PEIS evaluates available information to determine how these enhancements could affect potential impacts. Some of the enhancements could require additional NEPA review prior to implementation. The subsections below summarize the enhancements currently under consideration.

Increased Material Limits at RLUOB (LANL). Increasing the material-at-risk inventory limit at the Radiological Laboratory/Utility/Office Building (RLUOB) above the current 400 grams of plutonium equivalent could improve analytical chemistry and materials characterization support for PF-4 and increase facility throughput. Prior to implementation, the revised inventory would be evaluated for facility hazard category and security category requirements.

Move Other Missions from PF-4 To Achieve 80 ppy Steady-State Capacity (LANL). NNSA considered an enhancement that would move the plutonium-238 and Advanced Recovery and Integrated Extraction System missions out of PF-4 to create additional space for pit

production.[6] NNSA is not considering this as a near-term solution because it would cause disruptions to ongoing missions in PF-4 that could jeopardize achieving the 30 ppy capability planned in PF-4. If this proposal is revisited in the future, the mission relocation and construction activities at LANL would undergo their own NEPA review.

Install a Portable, Radioactive Waste Supercompactor (LANL and/or SRS). To improve efficiencies and provide waste volume reduction capabilities at LANL and/or SRS and reduce the risks associated with staging TRU waste in the event of an interruption in WIPP's ability to receive TRU waste, NNSA is considering implementation of a portable supercompactor at either the LANL site, SRS, or both sites. The portable supercompactor would have many of the same capabilities as the Supercompactor currently used by DOE-EM at the Idaho National Laboratory. The supercompactor would be a mobile unit that closely resembles a large semi-truck trailer and would include ventilation with HEPA filtration, hydraulic, liquid containment, and electrical systems.

Plutonium Metal Preparation in K Area (SRS). To accelerate initial pit production in SRPPF, NNSA is considering using gloveboxes and facilities in K Area, which are being developed and installed for the disposition of surplus plutonium, to perform plutonium purification and metal preparation. Prepared plutonium would be transferred to the SRPPF once operational. In the future, plutonium prepared in K Area could also be sent to LANL to supplement the pit production process at PF-4.

Analytical Receipt Inspection Center (SRS). To support supply chain needs for the High-Fidelity Test Operations Center and the SRPPF, NNSA is considering construction of a dedicated nonradiological receipt inspection facility. The inspection center would provide materials testing, office space, and temporary warehouse storage to support startup and sustained operations.

Weapons Support Building (SRS). An existing facility in F Area, originally constructed for surplus plutonium disposition, is proposed for repurposing as a Weapons Support Building. Although outfitted with tanks and piping, the building has not been used for hazardous or radiological operations. Potential future uses include a control room, simulator space, a production assurance laboratory, and/or a waste characterization laboratory.

Machine Shops (SRS). NNSA is considering the construction and operation of new infrastructure to produce classified and unclassified tooling, fixturing, and parts in support of pit production at SRPPF. The functions of the machine shops would include: (1) classified and unclassified machining and manufacturing and (2) advanced processing and materials development. None of the activities within the proposed machine shops would use radiological materials (SRNS 2026). These facilities may also be used for other SRS missions.

[6] The plutonium-238 mission produces general-purpose heat sources and radioisotope thermoelectric generators for the Nation's space missions. The Advanced Recovery and Integrated Extraction System mission supports the Surplus Plutonium Disposition Program by preparing surplus weapons-grade plutonium for final disposition.

S.2.8 Alternatives Considered but Eliminated from Detailed Analysis

Redesign Weapons to Avoid Plutonium. Not feasible. Replacing plutonium pits with HEU-based designs likely would require underground testing and costly delivery-system changes and would conflict with statutory pit production requirements (50 U.S.C. § 2538a).

Only Reuse Existing Pits. Not feasible as sole solution. Stockpiled pits age and do not mitigate aging risks or enable enhanced safety features; statutory mandate requires manufacture of new pits (50 U.S.C. § 2538a).

Other DOE/NNSA or Non-NNSA Sites. Only LANL and SRS have existing infrastructure to meet near-term mandated rates; options such as the Fuel Processing Facility at Idaho National Laboratory carry greater seismic, hazard, legal, schedule, and cost risks and would not meet the statutory 2030 capability requirement. Further, the Fiscal Year 2026 *National Defense Authorization Act* specifies production of plutonium pits at LANL and SRS (Public Law 119-60).

New Greenfield Facility or LANL Modules. Unreasonable due to schedule and cost. New facilities/modules are estimated to require approximately 15–20 years to become operational, introducing unacceptable schedule risk versus upgrading PF-4/repurposing MFFF.

Use SRS Canyon Facilities (F/H-Canyon). Not viable. Facilities require extensive modification, have embedded infrastructure and layout constraints, uncertain 50-year service life, and higher project risk. H-Canyon also has an ongoing mission for at least another 15 years.

S.2.9 Preferred Alternative

The preferred alternative is the alternative that NNSA believes would fulfill its statutory missions and responsibilities, considering economic, environmental, technical, and other factors. This PEIS provides information on the potential environmental impacts of the alternatives. NNSA prepares cost, schedule, and technical analyses separately and will consider all relevant factors in preparation of its ROD. For the Pit Production PEIS, the Multi-Site Alternative is the preferred alternative based on national policy and considerations of environmental, economic, technical, and other factors. The Multi-Site Alternative would enable NNSA to meet statutory requirements and improve the resiliency, flexibility, and redundancy of the NSE by not relying on a single production site. This alternative is considered the best way to manage the cost, schedule, and risk of such a vital undertaking (DoD 2018).

S.3 Environmental Consequences

S.3.1 Introduction

NNSA evaluated the potential direct and indirect environmental impacts of three alternatives based on their descriptions in Chapter 2 of the PEIS and compared the potential impacts with the affected environment as described in Chapter 3 of the PEIS.

The PEIS evaluates the environmental impacts of the alternatives within defined regions of influence (ROIs) for LANL and SRS. The ROIs are specific to the type of effect evaluated and encompass geographic areas within which any significant impact would be expected to occur. For example, human health risks to the public from exposure to airborne contaminant emissions are assessed for an area within a 50-mile radius of the pit production facility. Table S.3-1 provides brief descriptions of the ROIs for the resource areas and sites analyzed in the PEIS.

S.3.2 Comparison of Environmental Consequences of the Alternatives

Table S.3-2 provides a summary comparison of the environmental consequences for plutonium pit production at LANL and SRS. Table S.3-3 provides additional details regarding infrastructure. The tables compare the potential impacts to environmental resources associated with pit production under the No-Action Alternative (production at LANL only) and the two action alternatives (Multi-Site and Single-Site), as described in Sections S.2.5 and S.2.6. The information in Table S.3-2 includes data for both construction and operations. A summary of accident risks related to pit production at LANL and SRS are presented in Tables S.3-4 and S.3-5, respectively. Detailed analyses supporting the summary comparisons within these tables are provided in Chapter 4 of the PEIS.

Table S.3-1 General Regions of Influence for the LANL and SRS Existing Environment

Environmental Resource	Region of Influence
Land use	LANL site (focused on TA-55) and nearby offsite areas
	SRS (focused on F Area) and nearby offsite areas
Aesthetic and scenic resources	LANL site (focused on TA-55) and nearby offsite areas
	SRS (focused on F Area) and nearby offsite areas
Geology and soils	LANL site (focused on TA-55) and nearby offsite areas
	SRS (focused on F Area) and nearby offsite areas
Water resources	LANL site and adjacent surface water and groundwater under the LANL site, nearby offsite areas, and extending northward into southern Colorado (with a focus on the Rio Grande)
	SRS and adjacent surface water and groundwater under SRS, nearby offsite areas (with a focus on the Savannah River and its tributaries)
Air quality (and climate)	LANL site and nearby offsite areas within local air quality control region (Upper Rio Grande Valley)
	SRS and nearby offsite areas within local air quality control region (Augusta-Aiken)
Noise	LANL site, nearby offsite areas, and access routes to and from the LANL site
	SRS, nearby offsite areas, and access routes to and from SRS
Biological resources	LANL site (focused on TA-55) and nearby offsite areas
	SRS (focused on F Area) and nearby offsite areas
Cultural and paleontological resources	LANL site (focused on TA-55) and nearby offsite areas
	SRS (focused on F Area) and nearby offsite areas
Socioeconomics	The five-county region where the majority of LANL employees reside
	The four-county area in South Carolina and Georgia where the majority of SRS employees reside
Traffic and radiological transportation	Transportation corridors between LANL and other sites where wastes/materials are transported
	Transportation corridors between SRS and other sites where wastes/materials are transported
Infrastructure	LANL site (focused on TA-55) and nearby offsite areas
	SRS (focused on F Area) and nearby offsite areas
Waste management	LANL site (focused on TA-55) and nearby offsite areas, plus offsite waste disposal areas
	SRS (focused on E and F Areas) and nearby offsite areas, plus offsite waste disposal areas
Human health and safety	LANL site and offsite areas within a 50-mile radius
	SRS and offsite areas within a 50-mile radius

LANL = Los Alamos National Laboratory; SRS = Savannah River Site; TA = technical area

Table S.3-2 Comparison of Environmental Consequences.

No-Action Alternative	Multi-Site Alternative	Single-Site Alternative
Land Use		
LANL (see Section 4.1.1 of the PEIS)		
Total permanent land development would be about 70 acres (13.5 acres building footprint; 43.5 acres roads – access/pull-in, retaining walls, sidewalks; 13 acres staff parking). Temporary development of 29 acres for construction laydown areas, which would eventually be restored. About 27 acres of the total disturbance are currently undisturbed. No change to the current or future land use designation. Activities represent a continuation of existing land uses and would be compatible with existing and approved future land uses at and surrounding the site.	Same as No-Action Alternative.	Same as No-Action Alternative.
SRS (see Section 4.2.1 of the PEIS)		
Total permanent development of 65 acres within F Area to construct the SRPPF complex. Temporary development of 42 acres for construction laydown and staging areas, which would eventually be restored. About 9.3 acres of current pine forest would be converted to a parking lot. No change to the current or future land use designation. Activities represent a continuation of existing land uses and would be compatible with existing and approved future land uses at and surrounding the site.	Same as No-Action Alternative.	Same as Multi-Site Alternative.
Aesthetic and Scenic Resources		
LANL (see Section 4.1.2 of the PEIS)		
Construction activities would result in temporary changes to the visual appearance due to the presence of cranes, construction equipment, demolition, facilities in various stages of construction, and possibly increased dust. All affected planning areas would retain their existing visual resource management classes.	Same as No-Action Alternative.	Same as No-Action Alternative.

No-Action Alternative	Multi-Site Alternative	Single-Site Alternative
SRS (see Section 4.2.2 of the PEIS)		
Construction activities would result in additional temporary changes to the visual appearance within F Area due to the presence of cranes, construction equipment, demolition, facilities in various stages of construction, and possibly increased dust. Because all actions are internal to the site, there would be no short- or long-term impacts to the offsite visual environment.	Same as No-Action Alternative.	Same as Multi-Site Alternative.
Geology and Soils		
LANL (see Section 4.1.3 of the PEIS)		
Disturbance of about 27 acres of previously undisturbed soil would occur. Any new facility would be designed and constructed to meet seismic design criteria commensurate with the risk category requirements.	Same as No-Action Alternative.	Same as No-Action Alternative.
SRS (see Section 4.2.3 of the PEIS)		
All but 9.3 acres of the disturbance at SRS would be within previously disturbed areas. Any new facility would be designed and constructed to meet seismic design criteria commensurate with the risk category requirements.	Same as No-Action Alternative.	Same as Multi-Site Alternative.
Water Resources		
LANL (see Section 4.1.4 of the PEIS)		
Surface Water: Approximately 27 acres of impervious surfaces would be newly introduced from new facilities and infrastructure projects. New facilities would increase impervious surfaces, which could increase stormwater runoff. LANL meets stormwater compliance monitoring requirements, and implementation of a stormwater pollution prevention plan would minimize any pollution that might leave the site by stormwater. There would be no construction and operations projects that would affect the floodplains at LANL. Groundwater: Any discharge from facilities to groundwater would be monitored, managed, and subject to the requirements of applicable permits.	Same as No-Action Alternative.	Same as No-Action Alternative.

No-Action Alternative	Multi-Site Alternative	Single-Site Alternative
SRS (see Section 4.2.4 of the PEIS)		
Surface water: Because all but 9.3 acres of projected disturbances are in previously disturbed areas, there would be a 9.3-acre increase in impervious surfaces. SRS has permits, plans, and procedures in place to minimize the potential for stormwater runoff to carry soil particles or any potential surface water contaminant away from construction areas. SRS has a BMP plan; spill prevention, control, and countermeasures plan; and stormwater pollution prevention plan to comply with NPDES permit requirements. There would be no construction projects that would affect the floodplains at SRS. Groundwater: Because the site is already a developed area, infiltration and groundwater recharge rates from precipitation are expected to be very similar to those under existing conditions.	Construction impacts would be the same as the No-Action Alternative. Surface Water: There would be no operational activities that would affect the floodplains at SRS. Groundwater: Operations would not result in discharges to groundwater.	Same as Multi-Site Alternative.
Air Quality		
LANL (see Section 4.1.5 of the PEIS)		
Fugitive dust would be generated during clearing, grading, and other earth-moving operations. Construction emissions would not exceed *de minimis* thresholds for criteria pollutants. The LANL has implemented measures to maintain emissions below the threshold. No radiological emissions would be expected during construction activities; radiological emissions during pit production would include 4.5×10^{-8} curies of PuEq for production of 30 ppy and 1.2×10^{-7} curies of PuEq for 80 ppy. Annual GHG emissions would increase by more than 2,300 metric tons of CO_2e from transportation of nuclear materials and waste associated with production of up to 80 ppy.	Same as No-Action Alternative.	Same as No-Action Alternative if LANL is the single site. If SRS is the single site, radiological emissions would be reduced. The average annual radiological emissions at LANL would be about 1.5×10^{-8} curies per year of PuEq. Annual GHG emissions would be reduced compared to the No-Action Alternative. There would only be about 350 metric tons of CO_2e from transportation of nuclear materials and waste associated with production of 10 ppy.

No-Action Alternative	Multi-Site Alternative	Single-Site Alternative
SRS (see Section 4.2.5 of the PEIS)		
Fugitive dust would be generated during clearing, grading, and other earth-moving operations. Construction emissions would not exceed *de minimis* thresholds for criteria pollutants. No radiological emissions would be expected during construction activities.	Construction impacts would be the same as the No-Action Alternative. Radiological emissions during pit production would range from 8.4×10^{-5} to 1.2×10^{-7} Ci of PuEq for production of 50 to 125 ppy. Annual GHG emissions would increase by a range of 2,410 to 5,450 metric tons of CO2e from transportation of nuclear materials and waste associated with production of up to 50 to 125 ppy.	Same as Multi-Site Alternative if SRS is the single site. No operational emissions if LANL is the single site.
Noise		
LANL (see Section 4.1.6 of the PEIS)		
Although construction activities would cause temporary noise impacts, activities would be confined to the LANL property boundary and more than 800 feet from residential areas or businesses.	Same as No-Action Alternative.	Same as No-Action Alternative.
SRS (see Section 4.2.6 of the PEIS)		
Construction of the SRPPF complex at SRS would temporarily increase local noise levels from heavy equipment and vehicle traffic, but sound would attenuate quickly and not affect the public or wildlife beyond about 400 feet from the site.	Same as No-Action Alternative.	Same as Multi-Site Alternative.
Biological Resources		
LANL (see Section 4.1.7 of the PEIS)		
About 27 acres of previously undisturbed land would be developed. Some project sites overlap buffer habitat for the Mexican spotted owl, a federally listed threatened species. The proposed projects that occur within either core or buffer habitat would be reviewed before implementation to ensure compliance with the HMP, and further consultation with the USFWS would be conducted, as required. Construction would have no appreciable impact on native vegetation, plant species of concern, or wetlands. Operations would be consistent with current activities and would have no appreciable impact on biological resources.	Same as No-Action Alternative.	Same as No-Action Alternative.

No-Action Alternative	Multi-Site Alternative	Single-Site Alternative
SRS (see Section 4.2.7 of the PEIS)		
Potential impacts from construction could include habitat loss, human disturbance, and noise. Terrestrial resources would not be adversely affected because SRPPF is highly developed and does not support habitat that attracts a wide variety of wildlife. Threatened or endangered species would not be impacted because habitat for these species does not exist in F Area	Construction impacts would be the same as the No-Action Alternative. Operations would not impact biological resources.	Same as Multi-Site Alternative.
Cultural and Paleontological Resources		
LANL (see Section 4.1.8 of the PEIS)		
Potential impacts to cultural resources would be avoided or reduced by locating projects in areas previously disturbed and with modern developments already present; re-routing construction to avoid resources; marking or fencing cultural resources that are at risk; and monitoring construction activities to ensure that erosion is controlled and inadvertent impacts do not happen. For projects that have not yet been sited, NNSA would comply with the Section 106 Programmatic Agreement and Cultural Resources Management Plan to identify significant cultural resources and avoid, reduce, and/or mitigate any impacts in accordance with federal, state, and local policies.	Same as No-Action Alternative.	Same as No-Action Alternative.
SRS (see Section 4.2.8 of the PEIS)		
With the exception of a 9.3-acre wooded area that would be developed, proposed construction and operational activities at SRS would occur on previously disturbed lands and would utilize BMPs with no notable impacts to cultural resources. Any ground-disturbing activities would employ archaeological monitoring in accordance with the Programmatic Memorandum of Agreement.	Construction impacts would be the same as the No-Action Alternative. Operations would not impact cultural resources.	Same as Multi-Site Alternative.

No-Action Alternative	Multi-Site Alternative	Single-Site Alternative
Socioeconomics		
LANL (see Section 4.1.9 of the PEIS)		
The following range of socioeconomic impacts could occur for production of 30–80 ppy: • Additional direct employment: 864–2,083 • Additional indirect employment: 531–1,279 • Additional direct earnings: $117.5M–$283.2M • Anticipated value added from LANL: $181.7M–$438.1M There would be an average of 250 construction workers per year, peaking at 300 workers in any given year, through 2035. Due to the low potential for impacts on the ROI population, steady-state operations would not be expected to affect community services and schools.	Same as No-Action Alternative.	Same as No-Action Alternative if LANL is the single site. If SRS is the single site, socioeconomic impacts would be reflective of the lower end of the range of the No-Action Alternative.
SRS (see Section 4.2.9 of the PEIS)		
The following socioeconomic impacts are associated with peak construction periods at SRS: • Additional direct employment: 4,500 • Additional indirect employment: 1,328 • Additional direct earnings: $359.6 • Anticipated value added from SRS construction: $659.0M There would be a peak of 4,500 construction workers in any given year of construction. The average construction workforce would be smaller.	The following range of socioeconomic impacts could occur for production of 50–125 ppy: • Additional direct employment: 1,705–2,840 • Additional indirect employment: 1,044–1,739 • Additional direct earnings: $224.6M–$374.1M • Anticipated value added from SRS: $363.1M–$604.9M There would be a peak of 4,500 construction workers in any given year of construction. Due to the low potential for impacts on the ROI population, steady-state operations would not be expected to affect community services and schools.	Same as Multi-Site Alternative if SRS is the single site. If LANL is the single site, impacts would trend back toward the levels of the No-Action Alternative.

No-Action Alternative	Multi-Site Alternative	Single-Site Alternative
Transportation and Traffic		
LANL (see Section 4.1.10 of the PEIS)		
Traffic and Parking: Construction activities would utilize the existing transportation infrastructure in the region and could potentially cause periodic light-to-moderate adverse impacts to local traffic flows from construction worker commuting and the intermittent presence of additional construction vehicles. A gradual increase (i.e., less than or equal to about 2 percent per year in the first four years) in the LANL workforce would not significantly impact operation of the primary and secondary road networks at LANL. Radiological Transport: During operations, LANL would transport radiological waste and secure shipments to and from the LANL site. The range of estimated annual impacts of these shipments for production of 30–80 ppy would be: • Dose to transport crews: 6.5–16.9 person-rem/yr • LCF risk to transport crews: 0.0039–0.010 LCF/yr • Incident-free dose to general public: 2.5–6.4 person-rem/yr • LCF risk to public: 0.0015–0.0038 LCF • Accident risk to public: 5.9×10^{-6} – 1.6×10^{-5} LCF • Number of traffic fatalities from accidents: 0.0097–0.025/yr	Same as No-Action Alternative.	Traffic and Parking: Same as No-Action Alternative. Radiological Transport: Same as No-Action Alternative if LANL is the single site. If SRS is the single site, there would be less radiological transportation than the No-Action Alternative and the following health impacts would be expected for pit production of 10 ppy: • Dose to transport crews: 2.2 person-rem/yr • LCF risk to transport crews: 0.0013 LCF/yr • Incident-free dose to general public: 1.0 person-rem/yr • LCF risk to public: 0.0006 LCF • Accident risk to public: 1.9×10^{-6} LCF • Number of traffic fatalities from accidents: 0.0032/yr

No-Action Alternative	Multi-Site Alternative	Single-Site Alternative
SRS (see Section 4.2.10 of the PEIS)		
Traffic and Parking: Construction activities and commuter traffic would represent less than 1 percent of the total employment in the ROI and would not adversely affect the LOS of local roads.	Traffic and Parking: Same as No-Action Alternative. Radiological Transport: During operations, SRS would transport radiological waste and secure shipments to and from SRS. The range of estimated annual impacts of these shipments for production of 50–125 ppy would be: • Dose to transport crews: 23–46 person-rem per year • LCF risk to transport crews: 0.014–0.028 LCF per year • Incident-free dose to general public: 8.3–16.5 person-rem per year • LCF risk to public: 0.0050–0.0099 LCF • Accident risk to public: 1.3×10^{-5} – 3.3×10^{-5} LCF • Number of traffic fatalities from accidents: 0.027–0.060 per year	Same as Multi-Site Alternative if SRS is the single site. If LANL is the single site, impacts would trend back toward the levels of the No-Action Alternative.
Infrastructure		
LANL (see Section 4.1.11 of the PEIS)		
Existing infrastructure would be adequate to meet all requirements (*see* Table S.3-3).	Same as No-Action Alternative.	Same as No-Action Alternative.
SRS (see Section 4.2.11 of the PEIS)		
Existing infrastructure would be adequate to meet all requirements (*see* Table S.3-3).	Same as No-Action Alternative.	Same as Multi-Site Alternative.
Waste Management		
LANL (see Section 4.1.12 of the PEIS)		
Construction would not generate radioactive waste. Any hazardous waste would be shipped off site for treatment and disposal. Production of 30–80 ppy would generate the following projected range of annual quantities of waste: • LLW (m^3/yr): 3,029–7,627 • MLLW (m^3/yr): 102–262 • TRU/ waste (m^3/yr): 280–634 • Hazardous waste (MT/yr): 169–451 • Solid sanitary waste (MT/yr): 778–1,141	Same as No-Action Alternative.	Same as No-Action Alternative if LANL is the single site. If SRS is the single site, production of 10 ppy would generate the following annual quantities of waste: • LLW (m^3/yr): 953 • MLLW (m^3/yr): 33 • TRU/ waste (m^3/yr): 90 • Hazardous waste (MT/yr): 118 • Solid sanitary waste (MT/yr): 778

No-Action Alternative	Multi-Site Alternative	Single-Site Alternative
SRS (see Section 4.2.12 of the PEIS)		
Construction would not generate radioactive waste. Solid sanitary waste (MT/yr): 517	Construction would not generate radioactive waste. Any hazardous waste would be shipped off site for treatment and disposal. Production of 50–125 ppy would generate the following projected range of annual quantities of waste: • LLW (m^3/yr): 4,650–9,400 • MLLW (m^3/yr): 7.6–15 • TRU/ waste (m^3/yr): 459–765 • Hazardous waste (m^3/yr): 16–40 • Solid sanitary waste (MT/yr): 196–327	Same as Multi-Site Alternative if SRS is the single site. If LANL is the single site, impacts would trend back toward the levels of the No-Action Alternative.
Human Health		
LANL (see Section 4.1.13 of the PEIS)		
Construction activities would be expected to result in the following human health impacts: • Lost days due to injury/illness: 72 • Occupational fatalities: 0.6 Production of 30-80 ppy would result in: <u>Nonradiological Worker Impacts</u>: • Lost days due to injury/illness per year: 23–56 • Occupational fatalities per year: 0.05–0.1 <u>Radiological Impacts</u>: *Public:* • MEI dose and collective dose to population: Very small additional contribution above baseline *Workers:* • Number of radiological workers: 1,028–2,003 • Average annual dose to individual radiological worker: 360–465 millirem • Average annual radiological worker risk: 2.2×10^{-4} to 2.8×10^{-4} LCF • Collective annual dose to radiological workers: 370–931 person-rem • Total annual radiological worker risk: 0.22–0.56 LCF	Same as No-Action Alternative.	Same as No-Action Alternative if LANL is the single site. If SRS is the single site, construction impacts and impacts to the population would be the same as No-Action Alternative. Production of 10 ppy would result in the following human health impacts to workers: • Number of radiological workers: 1,028 • Average annual dose to individual radiological worker: 160 millirem • Average annual radiological worker risk: 9.6×10^{-5} LCF • Collective annual dose to radiological workers: 164 person-rem • Total annual radiological worker risk: 0.10 LCF

No-Action Alternative	Multi-Site Alternative	Single-Site Alternative
SRS (*see* Section 4.2.13 of the PEIS)		
Construction activities would be expected to result in the following human health impacts: • Lost days due to injury/illness: 441 • Occupational fatalities: 6 • Production of 50–125 ppy would result in: • Nonradiological Worker Impacts. • Lost days due to injury/illness per year: 36–60 Occupational fatalities per year: 0.07–0.12	Construction impacts would be the same as the No-Action Alternative. <u>Nonradiological Worker Impacts</u>: Lost days due to injury/illness per year: 36–60 Occupational fatalities per year: 0.07–0.12 <u>Radiological Impacts</u>: *Public:* MEI dose and collective dose to population: Very small additional contribution above baseline *Workers*: • Number of radiological workers: 1,280–2,130 • Average annual dose to individual radiological worker: 110–167 mrem • Average annual radiological worker risk: 6.6×10^{-5} to 1.0×10^{-4} LCF • Collective annual dose to radiological workers: 141–356 person-rem • Total annual radiological worker risk: 0.08–0.21 LCF	Same as Multi-Site Alternative if SRS is the single site. If LANL is the single site, impacts would trend back toward the levels of the No-Action Alternative.

No-Action Alternative	Multi-Site Alternative	Single-Site Alternative
Accidents and Intentional Destructive Acts		
LANL (*see* Section 4.1.14 of the PEIS)		
The range of potential accident risks from production of 30–80 ppy are presented in Table S.3-4. Potential impacts from intentional destructive acts are classified but may be similar to or could exceed the range of potential accident impacts presented in this PEIS.	Same as No-Action Alternative.	Same as No-Action Alternative.
SRS (see Section 4.2.14 of the PEIS)		
No potential accidents involving radiological material.	The range of potential accident risks from production of 50–125 ppy are presented in Table S.3-5. Potential impacts from intentional destructive acts are classified but may be similar to or could exceed the range of potential accident impacts presented in this PEIS.	Same as Multi-Site Alternative.

BMP = best management practice; Ci = curies; CO_2e = carbon dioxide equivalent; GHG = greenhouse gas; HMP = Threatened and Endangered Species Habitat Management Plan; LANL = Los Alamos National Laboratory; LCF = latent cancer fatality; m^3/yr = cubic meters per year; MEI = maximally exposed individual; mrem = millirem; MT/yr = metric ton per year; NNSA = National Nuclear Security Administration; PEIS = programmatic environmental impact statement; ppy = pits per year; PuEq = plutonium-239 equivalent; ROI = region of influence; SRPPF = Savannah River Plutonium Processing Facility; SRS = Savannah River Site; TRU = transuranic; USFWS = U.S. Fish and Wildlife Service; yr = year

Table S.3-3 Summary of Consequences Related to Infrastructure

Resource Parameter	Existing Capacity	Baseline Average (2017–2023)	Alternative		
			No-Action	Multi-Site	Single-Site
Domestic water (MGY)	LANL: 542	271.5	20–30	20–30	20–30
	SRS: 788	288	16.6	12–19	12–19
Electricity – power consumption (MkW-hr/yr)	LANL: 651[a]	440	5.92–5.94	5.92–5.94	4.2–5.94
	SRS: 4,400	320	17.5	30	0–30
Electricity – average annual peak demand (MW)	LANL: 116.0[a]	70.0	1.9	1.9	1.9
	SRS: 500	60	2-3	11	0–11

LANL = Los Alamos National Laboratory; MGY = million gallons per year; MkW-hr/yr = million kilowatt-hours per year; MW = megawatt; SRS = Savannah River Site

a Electrical consumption and import capacity are expected to increase from 651 to 1,100 million kw-hr per year and from 116 MW to 200 MW, respectively, upon completion of the EPCU project at LANL

b Monthly peak.

Table S.3-4 Summary of Accident Risks Applicable to All Alternatives at LANL (LCF/year)

Accident	Maximally Exposed Individual[b]	Offsite Population[c]	Noninvolved Worker[d]
TA-55, PF-4 glovebox fire	1.2×10^{-6}	1.1×10^{-4}	7.8×10^{-6}
Vehicle impact while transporting TRU waste containers with ensuing fire	1.0×10^{-7}	2.2×10^{-6}	4.2×10^{-7}
Refueling vehicle crash into TRU storage array with ensuing fire	8.3×10^{-7}	1.1×10^{-5}	1.4×10^{-6}
Large combustible fire in TRU storage array	1.0×10^{-7}	3.3×10^{-6}	2.6×10^{-7}
Facility-wide seismic event and fire in PF-4	3.7×10^{-8}	4.1×10^{-6}	2.7×10^{-6}
Nuclear criticality	8.4×10^{-10}	2.2×10^{-7}	4.5×10^{-7}

LANL = Los Alamos National Laboratory; LCF = latent cancer fatality; PF-4 = Plutonium Facility building 4; ppy = pits per year; TA = technical area; TRU = transuranic

a Impacts presented for 80 ppy. Impacts for 30 ppy would be bounded by analysis for 80 ppy.

b See Table D.3-6 of the 2026 LANL SWEIS (NNSA 2026a) for the specific distance of the MEI for each accident presented.

c Based on a projected future population (year 2032) of approximately 552,115 persons residing within 50 miles of PF-4.

d At a distance of 100 meters.

Source: NNSA 2008a, 2026; LANL 2026

Table S.3-5 Summary of Accident Risks Applicable to Action Alternatives at SRS (LCF/year)

Accident	Maximally Exposed Individual[b]	Offsite Population[c]	Noninvolved Worker[d]
Process module fire, initiated in a process enclosure	8.8×10^{-7}	4.6×10^{-3}	8.4×10^{-5}
Fire in shipping and receiving	5.5×10^{-6}	0.028	4.0×10^{-4}
Explosion in a laboratory enclosure	5.6×10^{-8}	2.9×10^{-4}	1.0×10^{-4} [e]
Over-pressurization of a TRU waste enclosure	5.1×10^{-11}	2.7×10^{-7}	4.1×10^{-8}
Energetic impact and loss of confinement of molten plutonium	1.1×10^{-6}	5.5×10^{-3}	7.1×10^{-5}
Energetic impact and loss of confinement of material in container	2.2×10^{-7}	1.1×10^{-3}	3.0×10^{-4}
Nuclear criticality in solution systems	2.0×10^{-11}	1.0×10^{-7}	9.0×10^{-9}
Loss of glovebox inerting system results in release	1.4×10^{-6}	7.1×10^{-3}	3.0×10^{-4}
Loss of power causes loss of vessel purge and fires	3.0×10^{-8}	1.6×10^{-4}	5.0×10^{-6}
Vehicle crash into waste storage pad with fire	2.1×10^{-6}	8.3×10^{-3}	0.01[e]
Seismic event with ensuing fires	5.5×10^{-8}	2.2×10^{-4}	9.0×10^{-6}

LCF = latent cancer fatality; ppy = pits per year
a Impacts presented for 125 ppy. Impacts for 50 and 80 ppy are bounded by analysis for 125 ppy.
b At site boundary, approximately 6.7 miles from release.
c Based on projected future population (year 2032) of 1.0 million persons residing within 50 miles of the SRPPF.
d Calculated at a distance of 100 meters.
e Considers prompt fatality (nonradiological) of a worker during event occurrence.
Source: SRNS 2025a, 2025b, 2026

S.3.3 Complex-Wide Impacts of Multi-Site Pit Production

The concurrent production of pits at LANL and SRS has the potential to result in some environmental impacts that could be considered additive. The two most notable resource areas in which additive environmental impacts could occur are as follows:

1. **Transportation of Waste and Nuclear Materials.** Transportation of waste and nuclear materials from both pit production sites would be traversing the same highways on the routes to the same locations for material transport (e.g., Pantex, LANL, SRS) and for radiological waste (e.g., NNSS, WIPP). Therefore, these potential impacts are additive and are further addressed in Section S.3.3.1.
2. **Waste Management**. Pit production at LANL and SRS both generate quantities of radioactive and hazardous wastes. These wastes are transported to a limited number of treatment, storage, and disposal (TSD) facilities across the U.S. for treatment (as needed) and disposal. Therefore, these potential impacts are additive and are further addressed in Section S.3.3.2.

S.3.3.1 Transportation of Radiological Material

Under the Multi-Site Alternative, the highest potential impacts would occur if both LANL and SRS produced the maximum number of pits concurrently (i.e., 80 ppy at LANL and 125 ppy at SRS). Under this maximum production capacity, the potential transportation impacts would be considered additive, although the combined set of impacts would be on a much larger total population.

Incident Free. Under this maximum production capacity, the estimated annual collective radiation dose to transportation crews would total 62.8 person-rem. The estimated annual collective doses to the population along these routes would be 22.8 person-rem. This would correspond to an annualized total of 0.038 excess LCF among all transportation workers and 0.014 annualized excess LCF in the collective population.

Impacts of Accidents During Transportation. Under the maximum production capacity, the estimated total annualized transportation accident risk for all projected accidents involving radioactive shipments would be 4.9×10^{-5} LCF to the general population. This can be directly compared to the estimated nonradiological accident risk (traffic accidents) of 0.086 fatality per year from shipments of the same materials.

S.3.3.2 Waste Management

Under the Multi-Site Alternative, the highest potential complex-wide impacts would occur if both LANL and SRS produced the maximum number of pits concurrently (i.e., 80 ppy at LANL and 125 ppy at SRS). This section presents a summary of those impacts.

Table S.3-6 provides the combined estimates of the projected range of waste quantities generated at each site from pit production.

Table S.3-6 Combined Estimates of Radioactive Waste Quantities

Waste Type	LANL (30–80 ppy)	SRS (50–125 ppy)	Combined Total (80–205 ppy)
LLW (m^3/yr)	3,029–7,627	4,650–9,400	7,679–17,027
MLLW (m^3/yr)	102–262	8–15	120–277
TRU waste (m^3/yr)	280–634	459–765	739–1,399

LLW = low-level radioactive waste; m^3/yr = cubic meters per year; MLLW = mixed low-level radioactive waste;; ppy = pits per year; TRU = transuranic

For LLW, NNSA expects that the majority of LLW generated at SRS would be disposed of on site in E Area and therefore would not be cumulative with the wastes generated at LANL. The disposal of the LANL LLW is managed through a combination of NNSS and commercial TSDs. The ability of these facilities to accommodate the LANL LLW is described in Section 5.11.1.1 of the 2026 LANL SWEIS (NNSA 2026a).

For MLLW, both LANL and SRS manage their MLLW by sending it to licensed and permitted TSDs for treatment and disposal. The ability of these facilities to accommodate the LANL MLLW is described in Section 5.11.1.1 of the 2026 LANL SWEIS (NNSA 2026a). SRS's potential contribution to the annual volume of MLLW is less than 10 percent of that at LANL, and there is adequate capacity in licensed and permitted TSDs to manage these volumes without impact.

The only authorized disposal site for TRU waste is WIPP. The *WIPP Land Withdrawal Act* includes provisions that allow no more than 175,564 cubic meters of total TRU waste volume and 5.1 million curies of remote-handled TRU waste to be disposed of at WIPP. As of December 2024, about 45

percent of the total TRU waste volume capacity limit authorized in the *WIPP Land Withdrawal Act* had been disposed of in eight disposal panels. Under the maximum production capacity, up to 1,399 cubic meters of TRU waste could be generated per year.

The TRU waste inventory estimates from DOE sites that would send TRU waste to WIPP change frequently due to retrieval, treatment, characterization, and shipping activities. Consequently, TRU waste inventory estimates are collected annually from generator/storage sites and reported via DOE's Annual Transuranic Waste Inventory Report, which is used for strategic planning. The latest report was published in January 2026 and reflects a data cutoff date of December 31, 2024 (DOE 2026). Per that report, the WIPP facility emplaced about 2,780 cubic meters of TRU waste in 2024. The report also indicates that, based on current projections for TRU waste volumes (some sites [e.g., SRS] reporting projections out to 2083), the total estimated volume is slightly under the *WIPP Land Withdrawal Act* limit (175,000 cubic meters). Although there would be increases in waste amounts and shipments to WIPP, adverse impacts to WIPP operational capabilities are not expected.

S.4 References

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