

Final Site-Wide Environmental Impact Statement for Continued Operation of Los Alamos National Laboratory

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U.S. Department of Energy
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Los Alamos National Laboratory

Summary

COVER SHEET

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TITLE: Final Site-Wide Environmental Impact Statement for Continued Operation of the Los Alamos National Laboratory (LANL SWEIS) (DOE/EIS-0552)

LOCATION: Los Alamos, New Mexico

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Abstract: Los Alamos National Laboratory (LANL) supports several NNSA missions. The continued operation of the Laboratory includes the DOE Office of Environmental Management legacy cleanup efforts at the LANL site.

This SWEIS analyzes the potential environmental impacts of three alternatives for continuing LANL operations through approximately 2038 and is compliant with section 102(2)(C) of NEPA and DOE's NEPA implementing procedures. **This Final SWEIS is approximately 296 pages.**

Under the No-Action Alternative, DOE/NNSA would continue current operations throughout LANL, including DD&D, legacy cleanup, and environmental remediation.

The Modernized Operations Alternative includes the scope of the No-Action Alternative plus additional modernization activities, including (1) construction of replacement facilities; (2) upgrades to existing facilities, utilities, and infrastructure; and (3) DD&D projects.

The Expanded Operations Alternative includes the actions proposed under the Modernized Operations Alternative plus actions that would expand operations and missions to respond to future national security challenges and meet increasing requirements. This alternative includes construction and operation of new facilities that would expand capabilities at LANL beyond those that currently exist.

Public Comments: DOE issued a Notice of Availability in the *Federal Register* (90 FR 1991) on January 10, 2025, and received comments on the Draft SWEIS. NNSA also held four public hearings during the comment period. Comments received during the comment period on the Draft SWEIS were considered in the preparation of this Final SWEIS.

It is certified by Brandon Williams, Under Secretary for Nuclear Security and Administrator, NNSA, with publication of this final document, that DOE/NNSA considered factors mandated by NEPA and represented a good-faith effort to prioritize documentation of the most important considerations within the congressionally mandated page limits and timeframe requirements; this Final SWEIS reflects NNSA's expert judgment and any information left out was not substantive enough to meaningfully inform decision-making.

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ACRONYMS AND ABBREVIATIONS

CEQ	Council on Environmental Quality
Ci	curie
CFR	Code of Federal Regulations
CMP	Campus Master Plan
CMR	Chemistry and Metallurgy Research
CRMP	Cultural Resources Management Plan
CT EIS	<i>Environmental Impact Statement for the Conveyance and Transfer of Certain Land Tracts Administered by the U.S. Department of Energy and Located at the Los Alamos National Laboratory, Los Alamos and Santa Fe Counties, New Mexico</i>
DD&D	decontamination, decommissioning, and demolition
DoD	U.S. Department of Defense
DOE	U.S. Department of Energy
DOE-EM	DOE Office of Environmental Management
EA	environmental assessment
EIS	environmental impact statement
EO	Executive Order
EPA	U.S. Environmental Protection Agency
EPCU	Electric Power Capacity Upgrade
FFRDC	Federally Funded Research and Development Center
FSI	Future Supercomputing Infrastructure
FTWC	Flanged Tritium Waste Container
GHG	greenhouse gas
GMAP	gaseous mixed activation products
HC	Hazard Category
HMP	Threatened and Endangered Species Habitat Management Plan
HPC	high-performance computing
kW-hr	kilowatt-hour
LANL	Los Alamos National Laboratory
LANSCE	Los Alamos Neutron Science Center
LCF	latent cancer fatality
LLW	low-level radioactive waste
M&O	Management and Operating
MEI	maximally exposed individual
MGY	million gallons per year
MLLW	mixed low-level radioactive waste
MT	metric ton
MW	megawatt
NAA	No-Action Alternative
NEEWC	National Energetic and Engineering Weapons Complex
NEPA	National Environmental Policy Act
NMED	New Mexico Environment Department
NNSA	National Nuclear Security Administration
NNSS	Nevada Nuclear Security Site
NPDES	National Pollutant Discharge Elimination System

OB/OD	open burning/open detonation
PV	photovoltaic
P/VAP	particulate/vapor activation product
R&D	research and development
RANT	Radioassay and Nondestructive Testing Facility
ROD	Record of Decision
ROI	region of influence
SDC	Seismic Design Category
SFNF	Santa Fe National Forest
SNM	special nuclear material
SWEIS	site-wide environmental impact statement
TA	technical area
TLW	TRU Liquid Waste Treatment Facility
TRU	transuranic (waste)
TWF	TRU Waste Facility
U.S.C.	United States Code
USFWS	U.S. Fish and Wildlife Service
VRM	visual resource management
WCRRF	Waste Characterization, Reduction, and Repackaging Facility
WETF	Weapons Engineering Tritium Facility
WIPP	Waste Isolation Pilot Plant
WTF	water treatment facility

SUMMARY

S.1 Introduction and Purpose and Need for Agency Action

This summary concisely presents information from the *Site-Wide Environmental Impact Statement for Continued Operation of Los Alamos National Laboratory* (DOE/EIS-0552) (LANL SWEIS or SWEIS). The information includes the purpose and need for agency action (Section S.1.3), a description of the 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 Los Alamos National Laboratory (Laboratory or LANL) is a Federally Funded Research and Development Center (FFRDC) sponsored by the National Nuclear Security Administration (NNSA). FFRDC sites are owned by the Federal Government but operated by contractors and provide federal agencies with research and development (R&D) capabilities that could not otherwise be met effectively by the Federal Government or the private sector alone. The continued operation of the Laboratory is critical to NNSA's primary missions of maintaining the U.S. nuclear stockpile, nonproliferation, and counterterrorism and counterproliferation.

NNSA prepared this SWEIS in accordance with the *National Environmental Policy Act of 1969* (42 U.S.C. §§ 4321–4336(e); NEPA), to analyze the potential environmental impacts of the continued operation of the Laboratory. The SWEIS is a “site-wide NEPA document,” which means that it is a broad-scope environmental impact statement that is programmatic in nature and identifies and assesses the impacts of ongoing and reasonably foreseeable future actions at the Laboratory (per 10 CFR 1021.104).¹ DOE/NNSA prepared SWEISs to evaluate operations at the Laboratory in 1979, 1999, and 2008 (see Section 1.4 of the SWEIS).

NNSA received input on the SWEIS from the public, tribal and local governments, other federal agencies, and interested stakeholders during the Draft SWEIS public comment period held from January 10 to April 10, 2025. This input was considered during preparation of this Final SWEIS and the accompanying Record of Decision (ROD), which states NNSA's decision and identifies alternatives considered in reaching its decision.

S.1.2 Background

The U.S. Government has owned the LANL site since 1943, and over time the Laboratory has been operated by three different Management and Operating (M&O) contractors. Triad National Security, LLC (Triad) has been the M&O contractor for the Laboratory since November 1, 2018. Whereas at the time of the 2008 LANL SWEIS, the Laboratory employed about 13,500 people and had an annual budget of about \$2 billion, the Laboratory now employs more than

¹ The Draft SWEIS was prepared in accordance with Council on Environmental Quality (CEQ) NEPA regulations (40 CFR Parts 1500–1508) and DOE NEPA Implementing Procedures (10 CFR Part 1021). After preparation of the Draft SWEIS, the CEQ NEPA regulations were rescinded and DOE revised 10 CFR Part 1021 and issued new DOE Implementing Procedures (see Section S.1.5.1). This Final SWEIS is compliant with NEPA and the current DOE NEPA Implementing Procedures.

16,000 people (federal staff, contractors, subcontractors) and has an annual budget of over \$4 billion.

In addition to its work supporting NNSA missions, the Laboratory conducts other important work for DOE and in partnership with other federal and non-federal entities, including significant work in support of DOE's Office of Science. The Laboratory is host to national user facilities such as the Los Alamos Neutron Science Center (LANSCE), including one of the nation's most powerful linear accelerators, and the National High Magnetic Field Laboratory. (See Appendix A, Section A.2 of the SWEIS for a summary of the Laboratory's missions.)

DOE's Office of Environmental Management (DOE-EM) executes the mission to clean up legacy contamination and dispose of waste resulting from past nuclear weapons development and government-sponsored nuclear research at LANL. These environmental remediation activities were analyzed in Appendix I of the *Final Site-Wide Environmental Impact Statement for Continued Operation of Los Alamos National Laboratory, Los Alamos, New Mexico* (2008 LANL SWEIS) (NNSA 2008). The DOE-EM mission at LANL continues today and is analyzed throughout the SWEIS and is detailed in Appendix G.

The LANL site is located in northern New Mexico, largely within incorporated Los Alamos County and, in part, Santa Fe County, and adjacent to a segment of Sandoval County (Figure S.1-1). Although the Laboratory has locations in Santa Fe, the main Laboratory campus is located approximately 40 road-miles from the city of Santa Fe.

LANL occupies about 40 square miles (25,536 acres) of land on the eastern flank of the Jemez Mountains along the area known as the Pajarito Plateau (LANL 2024). LANL operations are conducted within numerous facilities located in 50 designated technical areas (TAs), which include other noncontiguous properties situated near LANL.

Figure S.1-2 includes color coding to reflect the different planning areas identified in this SWEIS. The planning areas are defined and described in Section S.2.1.

Most of the LANL site area is undeveloped grassland, shrubland, woodland, and forest that serve to provide a buffer for security and safety, and space for future development and expansion. As of the end of 2023, LANL's facilities comprised 8.5 million square feet of laboratory, production, administrative, storage, service, and miscellaneous space; the total space available for operational use changes frequently as structures are demolished or built at LANL (LANL 2025).

This LANL SWEIS describes facilities and activities on a mission basis and organizes the description of the alternatives consistent with the planning areas identified in the Laboratory's *Campus Master Plan* (CMP) (LANL 2022a, 2022b). The CMP and associated planning processes provide the framework for facility and infrastructure development to make sure that the Laboratory can meet future national security challenges. The planning areas are utilized in this SWEIS to facilitate analysis of environmental impacts across the Laboratory. More details about the CMP, planning areas, and future development at LANL are provided in Section S.2.1.

The Laboratory has almost 900 individual facilities, including nuclear and radiological facilities. Nuclear and radiological facilities are identified by a hazard category (HC), which relates to the potential consequences of an accident event (10 Code of Federal Regulations [CFR] Part 830). At the Laboratory, there are no HC-1 nuclear facilities, which are the type of nuclear facilities with the potential for significant offsite consequences. Rather, the nuclear facilities at

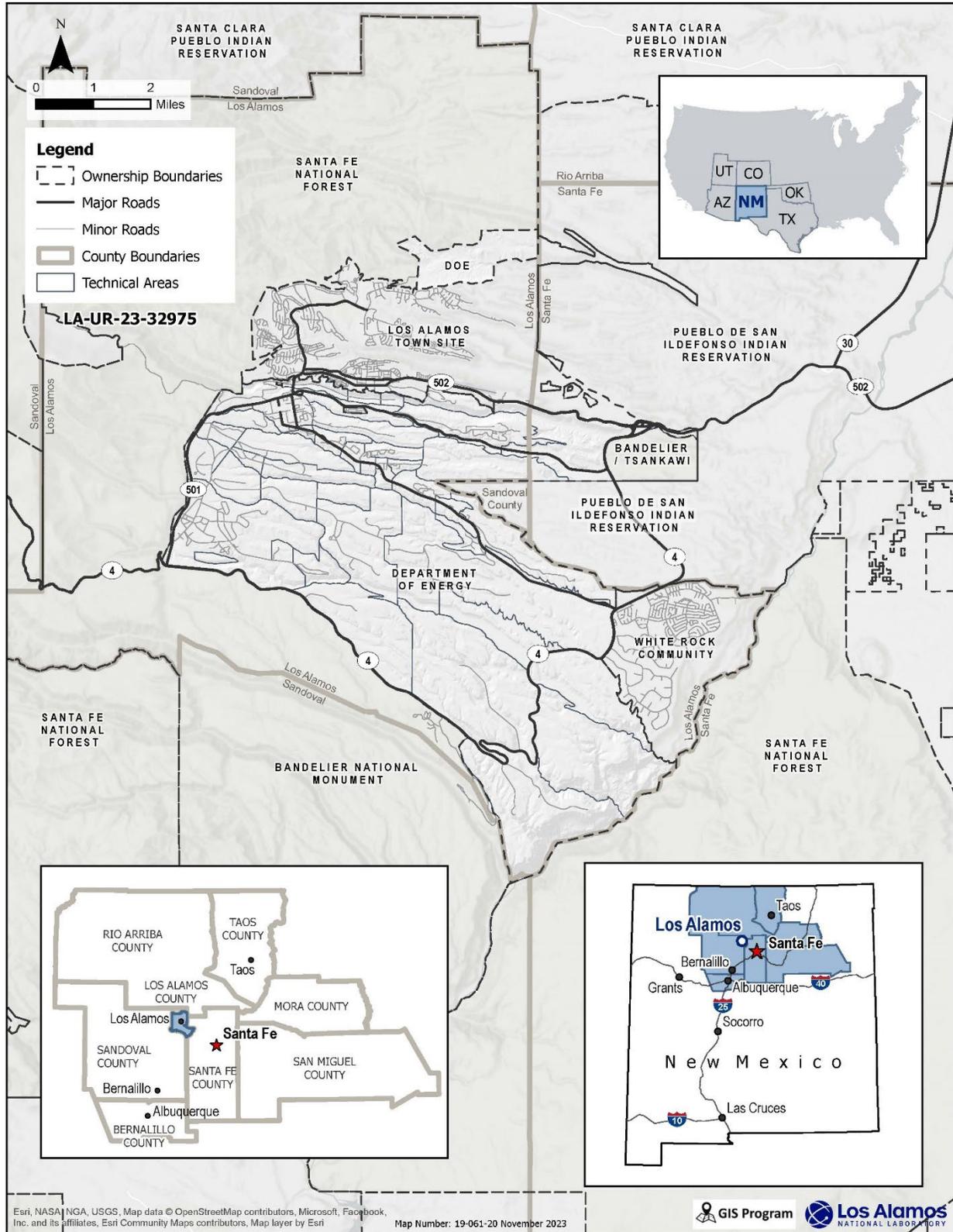


Figure S.1-1 Location of the Los Alamos National Laboratory Site

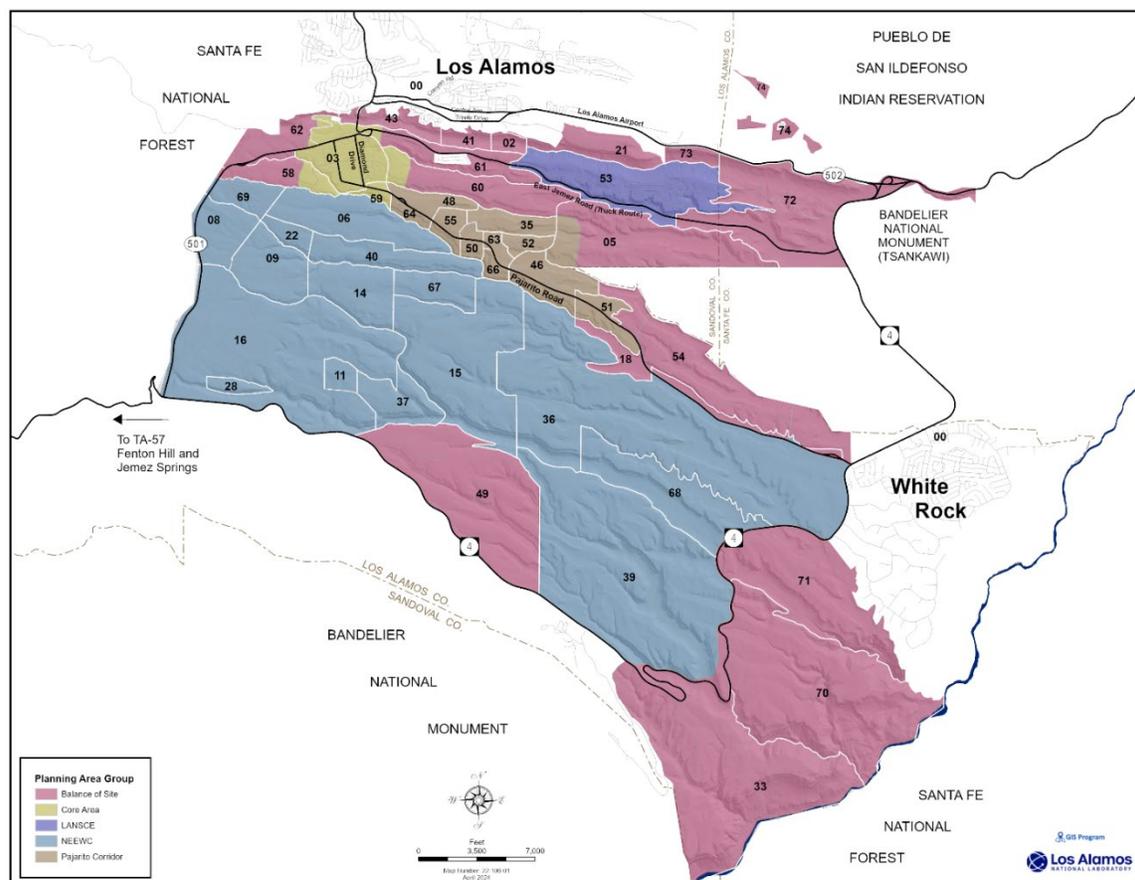


Figure S.1-2 Identification and Location of Technical Areas and Planning Areas Comprising the Los Alamos National Laboratory

LANL are either HC-2 or HC-3 (LANL 2018). Hazard categories are defined in the Glossary (Appendix O). Facilities that handle less than HC-3 threshold quantities of radioactive materials but require identification of “radiological areas” under 10 CFR Part 835 are designated as radiological facilities. All facilities are evaluated in this SWEIS. The Laboratory also includes accelerator facilities, which are operated in accordance with DOE Order 420.2D, “Safety of Accelerators.”

S.1.3 Purpose and Need for Agency Action

NNSA proposes to continue managing the Laboratory and its resources in a manner that meets evolving national security missions and that responds to the concerns of affected and interested individuals and agencies.

The purpose of the continued operation of the Laboratory has not changed since issuance of the 2008 LANL SWEIS and continues to be to provide support for DOE/NNSA’s core missions as directed by Congress and the President. NNSA’s need to continue operating the Laboratory is focused on its obligation to ensure a safe and reliable nuclear stockpile and fulfillment of agency missions. For the foreseeable future, NNSA, on behalf of the U.S. Government, will need to continue its nuclear weapons R&D, surveillance, computational analysis, components manufacturing, and nonnuclear aboveground experimentation. Currently, many of these activities

are conducted solely at the Laboratory. A curtailment or cessation of these activities would run counter to national security policy as established by Congress and the President.

The Laboratory plays vital roles in NNSA missions, including enhancing U.S. national security through the military application of nuclear energy; maintaining and enhancing the safety, reliability, and effectiveness of the U.S. nuclear weapons stockpile, including the ability to design, produce, and test, in order to meet national security requirements; promoting international nuclear safety and nonproliferation; reducing global danger from weapons of mass destruction; and supporting U.S. leadership in science and technology.

The continued operation of the Laboratory includes DOE's execution of legacy cleanup efforts at the LANL site. The current *Compliance Order on Consent between the State of New Mexico Environment Department (NMED) and the DOE* (2016 Consent Order [as modified]) is the principal regulatory driver for legacy waste cleanup at LANL.²

S.1.3.1 Other LANL Program Considerations and Needs

The NNSA is charged with supporting U.S. leadership in science and technology. Funded by a broad contingent of the scientific community—including NNSA, the DOE Office of Science, academic and industry partners, and Laboratory Directed Research and Development investments—basic science ensures that the Laboratory's research capabilities remain at the cutting edge and that LANL scientists and engineers are prepared to solve critical challenges. As discussed in Appendix A, Section A.2, the Laboratory works in many areas, such as counterterrorism, energy security and long-term energy needs, advancing bioscience and biosecurity, and breakthroughs in fundamental sciences and applied technology. Additionally, the Laboratory supports other government organizations, the advancement of science, and industry through the transfer of technology. These missions require infrastructure investments.

Approximately 30 percent of LANL facilities are more than 60 years old, and approximately 56 percent are more than 50 years old. About 40 percent of the Laboratory's assets (buildings and trailers) are considered to be in poor or very poor condition (LANL 2022a). Older buildings are less efficient and require more maintenance, including utility replacements and other large-scale refurbishments that are weighed against replacement with newer, more efficient, and better-designed buildings. Although the Laboratory maintains these facilities and conducts operations safely with appropriate environmental and safety controls, there is a need to both maintain and reinvest in a modern infrastructure for the future.

S.1.4 Scope and Alternatives in this Site-Wide Environmental Impact Statement

This SWEIS analyzes three alternatives: (1) No-Action Alternative, (2) Modernized Operations Alternative, and (3) Expanded Operations Alternative. A general overview of these

² The 2016 *Compliance Order on Consent between the State of New Mexico Environment Department (NMED) and the DOE* (as modified) (2016 Consent Order as modified) defines a process to establish annual milestones to achieve desired remediation end states. Information on the current Consent Order and Settlement Agreement can be found at:

<https://www.env.nm.gov/wp-content/uploads/sites/12/2016/05/LANL-Consent-Order-June-2016.pdf> and at <https://www.env.nm.gov/hazardous-waste/wp-content/uploads/sites/10/2024/09/NzcxOWIxNWEzOWE1OTZiMjc5NTcwNTY1YV8xNjc5MzE.pdf>

alternatives is presented below, and Section S.2 provides a listing of the projects, activities, and operational changes associated with each alternative.

The No-Action Alternative would continue current operations throughout the Laboratory that support current missions and includes implementation of approved projects (those with current, or in-process, NEPA coverage). These approved projects include: (1) construction of new facilities; (2) upgrades to existing facilities and infrastructure projects (including utility and transportation projects); (3) environmental remediation, (4) decontamination, decommissioning, and demolition (DD&D) activities; and (5) management and disposition of wastes (e.g., radioactive and hazardous waste) currently existing or newly generated from previously analyzed programs/activities.

The programmatic context for the Modernized Operations Alternative is the continued support of existing programs and activities by modernizing facilities, as necessary. This alternative includes the scope of the No-Action Alternative, plus additional modernization activities and DD&D. Under this alternative, NNSA would replace facilities that are approaching their end of life, upgrade facilities to extend their lifetimes, and improve work environments to enable NNSA to continue to meet operational requirements. Although this alternative involves additional new construction, proposals would not expand capabilities and operations at the Laboratory beyond those that currently exist.

The Expanded Operations Alternative includes the actions proposed in the Modernized Operations Alternative, plus actions that would enable expanded operations and missions to respond to future national security challenges and meet increasing requirements. This alternative would expand capabilities at the Laboratory beyond those that currently exist.

S.1.5 Public Involvement

The NEPA process for this SWEIS included two opportunities during which DOE/NNSA specifically requested public involvement: scoping and review of the Draft SWEIS. The scoping process included the receipt of comments on the potential scope of the Draft SWEIS from August 19, 2022, to October 18, 2022. During scoping, NNSA held online public meetings on September 13 and 14, 2022. In addition to these meetings, NNSA provided other methods (i.e., email or postal mail) for submitting comments on the SWEIS scope.

DOE issued a Notice of Availability in the *Federal Register* (90 FR 1991) on January 10, 2025, announcing a 60-day review period to receive comments on the Draft SWEIS. In response to requests, NNSA extended the comment period until April 10, 2025 (90 FR 11539, March 7, 2025). NNSA held hearings to receive comments and to present a summary of the Draft SWEIS. The hearings were held in Santa Fe, Española, and Los Alamos on February 11, 12, and 13, respectively. The hearings in Santa Fe and Los Alamos were hybrid, which allowed people to participate online. NNSA considered comments received during the 90-day comment period on the Draft SWEIS during the preparation of this Final SWEIS. DOE/NNSA has prepared a Comment Response Document (Appendix N) that presents summaries of the key topics raised during the comment period and the DOE/NNSA responses.

S.1.5.1 Primary Changes from the Draft SWEIS

In addition to those changes that were driven by comments received on the Draft SWEIS, this Final SWEIS reflects updates made to comply with regulatory changes and Executive Orders

(EOs) signed under the new Administration. The following list summarizes the primary, noteworthy changes made to the Draft SWEIS:

- The Draft SWEIS was published on January 10, 2025. On January 20, 2025, the U.S. President signed several EOs that rescinded previous EOs directly affecting analysis presented in the Draft SWEIS (e.g., EO 12898, “Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations,” and EO 14008, “Tackling the Climate Crisis at Home and Abroad”). Text related to the rescinded EOs was removed.
- On January 20, 2025, the U.S. President issued EO 14154, “Unleashing American Energy,” which directed the Council on Environmental Quality (CEQ) to “propose rescinding” its NEPA regulations in their entirety (i.e., 40 CFR Parts 1500–1508). On February 25, 2025, CEQ published an interim final rule rescinding its NEPA regulations. The rescission went into effect on April 11, 2025. References to the CEQ NEPA regulations remain for contextual purposes, as the Draft SWEIS was written in compliance with those regulations.
- On June 30, 2025, DOE rescinded most of 10 CFR Part 1021 and published its new NEPA implementing procedures, a copy of which is available at DOE (2025). NNSA prepared this Final SWEIS in accordance with these new DOE NEPA Implementing Procedures. Reference to 10 CFR Part 1021 as it existed prior to June 30, 2025, remains for contextual purposes, as the Draft SWEIS was written in compliance with those regulations. The new procedures and the NEPA statute include a page limit of 300 pages, not including appendices or citations. This Final SWEIS reflects adjustments to accommodate this page limit.
- After publication of the Draft SWEIS, LANL published the SWEIS Yearbook for 2023 (LANL 2025). The baseline information in Chapter 4 of this SWEIS has been updated to include the 2023 data as part of the baseline.
- Some of the information used for the development of analytical parameters (see Section 3.5) for the Draft SWEIS was updated in this Final SWEIS as a result of 2023 data, modeling, and improved understanding (e.g., total workforce, radiological worker exposure estimates, and radiological waste generation). The updated parameters have been consistently applied to the appropriate resource area analyses in Chapter 5.
- The Draft SWEIS included an evaluation of the Surplus Plutonium Disposition Program in the Expanded Operations Alternative. On May 23, 2025, U.S. President issued Executive Order 14302, “Reinvigorating the Nuclear Industrial Base,” which states, “The Secretary of Energy shall halt the surplus plutonium dilute and dispose program except with respect to the Department of Energy's legal obligations to the State of South Carolina.” Therefore, the Final SWEIS removed the Surplus Plutonium Disposition Program from consideration under the Expanded Operations Alternative.

S.2 Proposed Action and Alternatives

S.2.1 Introduction and Development of the SWEIS Alternatives

This section briefly describes the three alternatives that NNSA is evaluating for continued operation of LANL. To evaluate the potential environmental impacts, NNSA developed construction and operational parameters for each alternative (e.g., land disturbed, waste generated) (see Section S.2.5). As identified in Section S.1.2, the CMP provides a basis for the alternatives considered in this SWEIS.

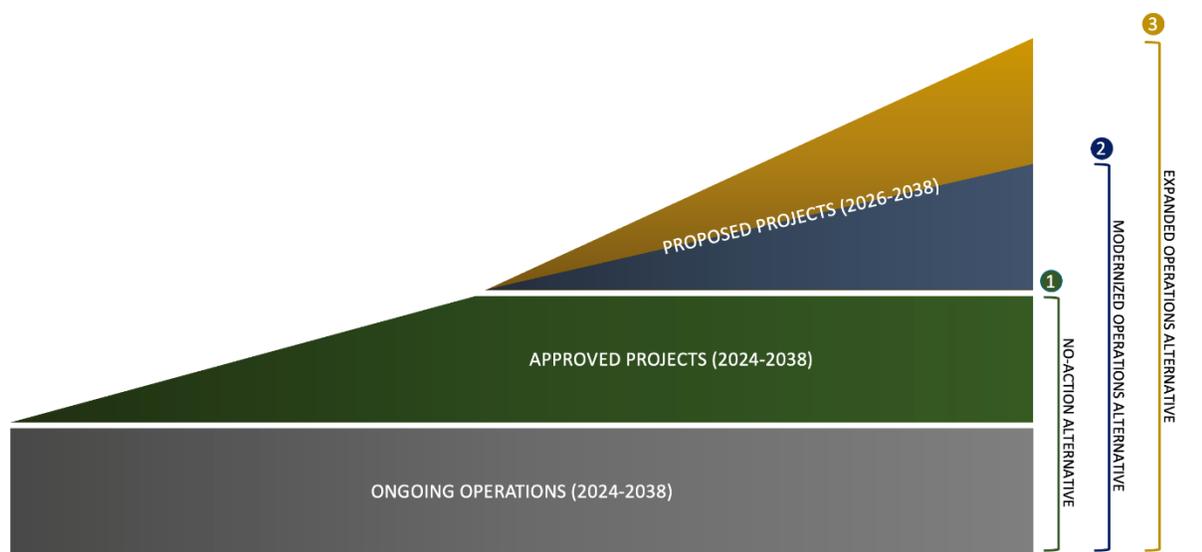
Campus Master Plan. In September 2021, LANL published the 2021 CMP (LANL 2022a), which was the Laboratory’s first comprehensive site plan in more than 20 years. In addition to providing the framework for facility and infrastructure development, the CMP established an integrated, site- wide process for ongoing collaborative planning efforts.

The CMP divides LANL into the following five planning areas, as discussed in Chapter 3; Section 3.1 in the SWEIS:

- The Core Area
- The Pajarito Corridor Area
- The NEEWC Area
- The LANSCE Area
- Balance of Site Area

SWEIS Alternatives Overview. As described in Section S.1.4, the alternatives build on each other, starting with the No-Action Alternative, which reflects the use of existing facilities to continue current operations plus the construction and operation of new facilities, implementation of facility upgrades and utility/infrastructure projects, and DD&D of excess and aging facilities. The two action alternatives include the actions described for the No-Action Alternative, as well as additional actions which are listed in Sections S.2.3 and S.2.4.

Figure S.2-1 provides a high-level illustration of the comparative level of operations for the three alternatives. The analysis in this LANL SWEIS considers ongoing activities and proposed activities that could occur over approximately 15 years (2024–2038).



Approved & Proposed Projects Include:

- | | |
|--|---|
| - New facility construction projects | - Operational changes |
| - Modernization/upgrade of existing facilities, infrastructure, site utilities | - Decontamination, decommissioning, and demolition (DD&D) |

- 1 **No-Action Alternative:** Includes ongoing operations plus previously-approved projects (with separate completed NEPA documents)
- 2 **Modernized Operations Alternative:** Includes No-Action Alternative plus Modernization Operations Alternative projects (NEPA analyses in this SWEIS)
- 3 **Expanded Operations Alternative:** Includes No-Action Alternative, Modernization Operations Alternative, and Expanded Operations Alternative projects (NEPA analyses in this SWEIS)

*The level of operations is not to scale because the scale depends on the resource area being evaluated.

Figure S.2-1 Level of Operations for the LANL Alternatives

S.2.2 No-Action Alternative

The No-Action Alternative reflects continuation of current, ongoing operations and implementation of approved projects (those with current, or in-process, NEPA coverage). One example of an approved action based on an earlier NEPA document is NNSA's 2020 decision to implement elements of the Expanded Operations Alternative from the 2008 LANL SWEIS as needed to produce a minimum of 30 plutonium pits per year for the national pit production mission and to implement surge efforts to produce up to the analyzed limit to meet the previous and current Nuclear Posture Reviews (DoD 2018, 2022) and national policy (85 FR 54544, September 2, 2020).

The approved projects to be implemented under the No-Action Alternative include: (1) construction of new facilities; (2) upgrade of existing facilities and infrastructure projects (including utility and transportation projects); and (3) DD&D of excess and aging facilities for which NEPA analysis/documentation already exists or would be completed before publication of a ROD on the Proposed Action presented in this SWEIS. Therefore, as shown on Figure S.2-1, the No-Action Alternative includes a level of operation for LANL greater than ongoing operations. Under the No-Action Alternative, operations would continue at a steady-state into the future, but at a level lower than would be needed to fully support the growing NNSA mission requirements.

S.2.2.1 No-Action Alternative – New Facilities and Upgrade/Infrastructure Projects

Twenty-two new facilities, representing a development footprint of almost 1.5 million square feet (33.5 acres), would be constructed under the No-Action Alternative. Several of these projects represent multiple proposals for similar facilities in different locations. For instance, one “project” includes constructing 22 storage warehouses. This SWEIS combines similar projects to present a more efficient analysis of potential impacts. In addition, the Laboratory would upgrade existing facilities, potentially install a 10-megawatt (MW) solar PV array and a proposed electric power transmission line, and implement institutional construction laydown areas and site-wide transportation and parking projects. These utility/infrastructure projects have a projected total footprint of about 192 acres, 69 of which will be temporary construction areas (on and off site) that will be restored after construction. The full list of projects included in the No-Action Alternative is presented in Chapter 3, Section 3.2 of the SWEIS.

In addition, DOE would continue actively remediating contaminated areas at LANL under the No-Action Alternative and in accordance with the 2016 Consent Order (as modified). The potential impacts of the baseline planning for remediation are included in Chapter 5 of the SWEIS as an element of the No-Action Alternative.

S.2.2.2 No-Action Alternative – Operational Changes

The No-Action Alternative includes changes in current baseline operations that may or may not be associated with construction or upgrade of facilities, utilities, or infrastructure. These are described in more detail in Chapter 3, Section 3.2.3 of the SWEIS. Some examples include:

- **Increased plutonium pit production** to produce a minimum of 30 plutonium pits per year and to implement surge efforts to produce up to the analyzed limit.
- **Depressurize Flanged Tritium Waste Containers (FTWCs)** – The Laboratory and NNSA received approval from the EPA and NMED to depressurize and process four FTWCs under controlled conditions in September 2025. The Laboratory maintains a

public website³ to provide updated information about the action. As reported on the website, the depressurization and processing of the four FTWCs was performed in a safe, controlled, and methodical manner. The depressurization released less than 123 curies of tritium.

- **Chromium Interim Measures and Final Remedy** – DOE will implement the proposed action in DOE (2024) and use adaptive site management to select and implement options to remediate the hexavalent chromium contamination in Mortandad and Sandia canyons.
- **Continuation of Land Conveyance and Transfer** of approximately 1,280 acres, which remain to be conveyed from the 1999 Final Environmental Impact Statement for the Conveyance and Transfer of Certain Land Tracts Administered by the U.S. Department of Energy and Located at the Los Alamos National Laboratory (CT EIS; DOE 1999) (LANL 2023).

S.2.2.3 Notable Attributes Associated with the No-Action Alternative

As shown on Table S.2-1, a slight net decrease in facility square footage at LANL is expected under the No-Action Alternative, as projected construction associated with new facilities is slightly smaller than the projected facility DD&D actions. Most new facility construction will occur in the Pajarito Corridor Planning Area. Of the new facilities that are planned for construction, approximately 74 percent (1,081,000 square feet) is associated with warehouses, office buildings, parking structures, and a training and development center. Many of the new facilities are replacements for existing facilities, and operations associated with those replacement facilities would not change substantively compared to existing operations. However, implementation of the increased pit production mission will introduce notable operational changes compared to existing operations. For example, there will be changes in employment, radiological doses to workers and the public, radiological waste quantities, and transportation of nuclear materials/wastes. There will also be an increase in wastes associated with DD&D activities. These DD&D wastes include construction and demolition debris, radioactive wastes (low-level radioactive waste [LLW], mixed LLW [MLLW], and TRU waste), and hazardous wastes (including asbestos-contaminated wastes).

Table S.2-1 Summary of Construction and DD&D – No-Action Alternative

CMP Planning Area	Construction Footprint (ft ²)	Upgrade/Utility/Infrastructure Footprint (acres)	DD&D Footprint (ft ²)
Core Area	221,000	12	1,176,000
Pajarito Corridor	954,400	44	316,000
NEEWC	197,000	63	103,000
LANSCE	32,000	1	16,000
Balance of Site	57,000	72	19,000
TOTALS	1,461,400 (33.5 acres)	192 acres	1,630,000 (37.4 acres)

DD&D = decontamination, decommissioning, and demolition; ft² = square foot; LANL = Los Alamos National Laboratory; LANSCE = Los Alamos Neutron Science Center; NEEWC = National Energetic and Engineering Weapons Complex

³ <https://www.lanl.gov/engage/environment/ftwc>

S.2.3 Modernized Operations Alternative

The Modernized Operations Alternative includes the scope of the No-Action Alternative, as described in Section S.2.2, plus additional modernization activities. The alternative also includes proposed projects to improve efficiencies and reduce emissions (e.g., building efficiency upgrades, increased implementation of electric vehicle charging stations, and development of up to 795 acres of solar energy facilities). The proposed DD&D of additional facilities under the Modernized Operations Alternative would eliminate excess facilities and reduce costs and risk. The schedule for implementation of the individual projects would be dependent on several factors including, among other things, funding priorities and availability of the proposed land area (e.g., completion of planned DD&D of excess facilities). The full list of projects proposed under the Modernized Operations Alternative is presented in Chapter 3, Section 3.3 of the SWEIS. There are no additional proposed changes in operations identified for this alternative.

S.2.3.1 Notable Attributes Associated with the Modernized Operations Alternative

As shown on Table S.2-2, there would be a net increase in facility square footage at LANL under the Modernized Operations Alternative, as construction actions would exceed DD&D actions. The net effect would be an increase in facilities of over 2.2 million square feet at LANL in addition to that identified for the No-Action Alternative. Most new facility construction would occur in the Core Area and Pajarito Corridor planning areas. Of the new facilities that would be constructed, about 78 percent (over 2.6 million square feet) would be associated with storage warehouses, office buildings, light laboratory/office facilities, and parking structures. In addition to the construction footprint in Table S.2-2 for new facilities, there are proposed utility and infrastructure projects, which include solar PV arrays (a footprint of up to 795 acres), a remote parking area in TA-72 (25 acres), institutional laydown areas (38 acres), Los Alamos Canyon Bridge replacement (11.5 acres), and other site-wide roads and parking (54 acres).

Table S.2-2 Summary of Construction and DD&D – Modernized Operations Alternative

CMP Planning Area	Construction Footprint (ft ²)	Upgrade/Utility/Infrastructure Footprint (acres)	DD&D Footprint (ft ²)
Core Area	1,448,500	24.6	544,400
Pajarito Corridor	847,600	82.8	329,900
NEEWC	518,800	463	122,400
LANSCE	184,600	8.5	79,100
Balance of Site	431,000	349	140,000
TOTALS	3,430,500 (79 acres)	up to 928 acres	1,216,000 (27.9 acres)

DD&D = decontamination, decommissioning, and demolition; ft² = square foot; LANSCE = Los Alamos Neutron Science Center; NEEWC = National Energetic and Engineering Weapons Complex

Because most of the new facilities are replacements for existing facilities, operations associated with the Modernized Operations Alternative would be similar to existing operations at LANL. In most cases, there would not be notable changes in infrastructure requirements, effluents, or hazards at LANL. Depending on the degree of implementation of some renewable energy projects, there could be an overall decrease in the electricity use and air emissions associated with this alternative. There would be an increase in wastes associated with DD&D activities. These DD&D wastes would include construction debris, radioactive wastes (LLW and MLLW), and

hazardous waste (including asbestos-contaminated wastes). These changes are reflected in the analytical parameters used in the SWEIS (see Section S.2.5).

S.2.4 Expanded Operations Alternative

The Expanded Operations Alternative includes the actions proposed under the Modernized Operations Alternative, as described above, plus actions that would expand operations and missions to respond to future national security challenges and meet increasing requirements. This alternative includes construction and operation of new facilities that would expand capabilities at LANL beyond those that currently exist. For example, under the Expanded Operations Alternative NNSA is proposing to construct and operate an additional supercomputing complex that would enable NNSA to expand the capabilities of that program. NNSA also proposes to construct and operate a new x-ray-free electron laser facility in TA-53 to supplement the capabilities of LANSCE. Construction and operational parameters associated with the Expanded Operations Alternative are discussed in Section S.2.5. The full list of projects proposed under the Expanded Operations Alternative is presented in Chapter 3, Section 3.4 of the SWEIS.

S.2.4.1 Expanded Operations Alternative – Operational Changes

The Expanded Operations Alternative includes changes in operations (above those proposed in the No-Action Alternative) that may or may not be associated with construction of facilities, utilities, or infrastructure. These are described in more detail in Chapter 3, Section 3.4.2 of the SWEIS and examples include:

- **Wildland fire risk reduction treatments** to revise fire mitigation treatment standards to minimize wildfire risk on LANL property and promote forest health and resilience.
- **Feral/invasive cattle management** to include live trapping, relocation, and/or lethal control.

S.2.4.2 Notable Attributes Associated with the Expanded Operations Alternative

As shown on Table S.2-3, there would be an increase in facility square footage at LANL under the Expanded Operations Alternative, as there are only construction actions and no DD&D actions. There would be an increase in facilities of about 705,000 square feet above that identified in Table S.2-2 for the Modernized Operations Alternative.

Table S.2-3 Summary of Construction and DD&D – Expanded Operations Alternative

CMP Planning Area	Construction Footprint (ft ²)	Utility and Infrastructure Footprint (ft ²)
Core Area	10,000	590,000
Pajarito Corridor	66,000	7,100
NEEWC	306,800	36,000
LANSCE	197,100	482,000
Balance of Site	125,000	871,000
TOTAL	704,900	1,986,000

DD&D = decontamination, decommissioning, and demolition; ft² = square foot; LANSCE = Los Alamos Neutron Science Center; NEEWC = National Energetic and Engineering Weapons Complex

Although most operations associated with the Expanded Operations Alternative would be similar to existing operations at LANL, there would be notable increases to annual electricity and

water requirements. Several proposed facilities would involve nuclear material operations that could increase radiological air emissions, radiological waste quantities, worker and public radiological doses, and hazards at LANL.

S.2.5 Analytical Parameters for the Alternatives

A primary challenge in preparing a site-wide analysis is to address the impacts of the individual projects/actions while also addressing the totality of impacts. To accomplish those dual goals, NNSA defined and accumulated data for each of the projects/actions proposed for each of the alternatives. For each project/action, NNSA consulted with subject matter experts from the Laboratory to quantify key parameters (e.g., land disturbed, waste generated). The accumulated parameters for construction and operations (which include contributions from all proposed projects) are presented in Appendix A of the SWEIS for each of the alternatives (Tables A.3.5-1 and A.3.5-2, respectively). As an example, the accumulated land disturbance ranges from 226 acres for the No-Action Alternative to 1,137 acres for the Expanded Operations Alternative.

This same process was used to develop parameters such as workforce, water use, and waste generation. In some instances, the accumulated parameters are largely driven by the contribution of one or two projects/actions. For example, the increased water and electricity usage at LANL in the future would be primarily associated with cooling water usage for the expanded supercomputing facility and operation of the x-ray free electron laser facility at TA-53. Similarly, for the No-Action Alternative, operational increases would largely result from implementation of the increased pit production mission. As these examples illustrate, in developing the key parameters for the SWEIS analysis, NNSA can account for projects/actions both individually and in totality, and the analysis in this SWEIS addresses each of these aspects.

S.2.6 Alternatives Considered but Eliminated from Detailed Study

NNSA considered public input and comments received during the scoping process in determining the range of alternatives in this LANL SWEIS. NNSA only considered reasonable alternatives that would meet the purpose and need described in Section S.1.3. The following alternatives were considered in developing the SWEIS but were eliminated from detailed analysis because they did not allow LANL to fulfill the NNSA mission requirements. The specific reasons for elimination are provided in Chapter 3, Section 3.6 of the SWEIS.

- Complete closure of LANL,
- Transfer of current missions/operations from LANL to other sites,
- Conversion of LANL to an academic laboratory and/or an environmental research laboratory,
- Relocation of all nuclear materials and nuclear research to another site,
- Reduced operations at LANL, and
- Shift funding from weapons work to environmental cleanup.

S.2.7 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. NNSA has identified the Expanded Operations Alternative as the preferred alternative for the continuing operations of LANL.

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 3 of the SWEIS and compared the potential impacts with the affected environment as described in Chapter 4 of the SWEIS. The potential impacts are presented using the methodologies described in Appendix C of the SWEIS.

The SWEIS evaluates the environmental impacts of the alternatives within defined regions of influence (ROIs). 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 general public from exposure to airborne contaminant emissions are assessed for an area within a 50-mile radius of the center of the LANL site. Table S.3-1 provides brief descriptions of the ROIs for the resource areas analyzed in the SWEIS.

Table S.3-1 General Regions of Influence for the Environmental Resources

Environmental Resource	Region of Influence
Land and visual resources	LANL site and nearby offsite areas
Geology and soils	LANL site 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
Climate, air quality, and noise	LANL site, nearby offsite areas within local air quality control regions
Noise	LANL site, nearby offsite areas, and access routes to and from the site
Ecological resources	LANL site and nearby offsite areas
Human health and safety	LANL site and nearby offsite areas within 50 miles
Cultural and paleontological resources	LANL site and nearby offsite areas
Socioeconomics	The five-county region where the majority of LANL employees reside
Infrastructure	LANL site and nearby offsite areas
Waste management	LANL site and nearby offsite areas, plus offsite waste disposal areas
Transportation	Transportation corridors between LANL and other sites where wastes/materials are transported
Environmental restoration	LANL site and nearby offsite areas

S.3.2 Comparison of Environmental Consequences of the Alternatives

A summary comparison of the environmental consequences for the continued operation of LANL is provided in Table S.3-2. Table S.3-3 provides a summary of potential impacts to infrastructure. The tables compare the potential impacts to environmental resources associated with the continued operation of LANL under the No-Action Alternative and the two action alternatives. The information in Table S.3-2 includes data for both construction and operations. Detailed analyses supporting the summary comparisons are provided in Chapter 5 of the SWEIS. Table S.3-4 summarizes potential accident risks associated with LANL's nuclear facilities. Table S.3-5 provides potential impacts of site-wide seismic events and a site-wide wildfire event.

Table S.3-2 Comparison of Environmental Consequences

No-Action Alternative	Modernized Operations Alternative	Expanded Operations Alternative
Land Use and Visual Resources (see Section 5.2 of the SWEIS)		
<p>Total permanent land development for all five planning areas would be 120 acres (33 acres of facilities, 124 acres of infrastructure, and 37 acres recovered through DD&D). Site-wide development footprint would be 3,407 acres (4% more than the baseline).</p> <p>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.</p>	<p>Total permanent land development for all five planning areas would be 979 acres (79 acres of facilities, 928 acres of infrastructure, and 28 acres recovered through DD&D). Site-wide development footprint would be 4,393 acres; an increase of 29% over the NAA.</p> <p>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.</p>	<p>Total permanent land disturbance for all five planning areas would be 1,041 acres (95 acres of facilities, 974 acres of infrastructure, and 28 acres recovered through DD&D). Site-wide development footprint would be 4,447 acres, an increase of 31% over the NAA.</p> <p>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.</p>
<p>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/DD&D, and possibly increased dust. All planning areas would retain their existing VRM classes. The EPCU project would construct transmission lines and structures across the Rio Grande.</p>	<p>Construction activities would result in additional temporary changes to the visual appearance due to the presence of cranes, construction equipment, demolition, facilities in various stages of construction/DD&D, and possibly increased dust. All planning areas except Balance of Site would retain their existing VRM classes. Potential solar PV arrays in locations near the site boundary would cause a degradation in the VRM class for Balance of Site. The replacement bridge would cause short-term adverse visual impacts from construction and staging areas. Long-term, no adverse visual impacts are anticipated.</p>	<p>Construction activities would result in additional temporary changes to the visual appearance due to the presence of cranes, construction equipment, demolition, facilities in various stages of construction/DD&D, and possibly increased dust. All planning areas except Balance of Site would retain their existing VRM classes. The proposed 20-acre pumped hydropower demonstration near the site boundary would be visible from Bandelier National Monument and cause a degradation in the VRM class for Balance of Site.</p>
Geology and Soils (see Section 5.3 of the SWEIS)		
<p>Disturbance of about 62 acres of previously undisturbed soil would occur; no prime farmland exists on LANL; all offsite development would be in previously disturbed areas. Ongoing remediation efforts would continue to improve soil conditions at LANL. Faulting and seismic events could result in potential hazards to existing and planned facilities at the LANL site. Any new facility would be designed and constructed to meet seismic design criteria commensurate with the risk category</p>	<p>Disturbance of about 731 acres of previously undisturbed soil (above the NAA) would occur; no prime farmland exists on LANL. Ongoing remediation efforts would continue to improve soil conditions at LANL.</p>	<p>Disturbance of about 806 acres of previously undisturbed soil (above the NAA) would occur; no prime farmland exists on LANL. Ongoing remediation efforts would continue to improve soil conditions at LANL.</p>

No-Action Alternative	Modernized Operations Alternative	Expanded Operations Alternative
<p>requirements. Potential impacts from geologic hazards (i.e., seismic events) are discussed under “accidents.”</p>	<p>There would be extensive grading of soils for site preparation and installation of the solar arrays (641 acres are currently undisturbed), which could result in wind and water erosion of native soils if graded areas remain uncovered for long periods of time. Faulting and seismic conditions are the same as under the NAA.</p>	<p>The Laboratory would apply wildland fire risk reduction treatments to certain high-risk areas, which would have the potential to destabilize soils and increase erosion and runoff. The risks associated with extensive grading (from Modernized Operations) also apply to Expanded Operations. Faulting and seismic conditions are the same as under the NAA.</p>
<p>Water Resources (see Section 5.4 of the SWEIS)</p>		
<p><u>Surface Water:</u> Approximately 62 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.</p> <p><u>Groundwater:</u> Any discharge from septic tanks or other facilities to groundwater would be monitored, managed, and subject to the requirements of applicable permits. Groundwater quality in the Sandia and Mortandad canyons would continue to improve as an effective groundwater treatment plan associated with the Final Remedy for remediation of the hexavalent chromium plume would be implemented.</p>	<p><u>Surface Water:</u> Approximately 90 acres of impervious surface would be newly introduced from the new facilities and infrastructure projects. Stormwater permitting would be the same as under the No-Action Alternative. There would be no construction and operations projects that would affect the floodplains at LANL. TA-3 would require a new or modified outfall permit; however, discharges would be within current permit limits.</p> <p><u>Groundwater:</u> No changes from the NAA.</p>	<p><u>Surface Water:</u> Approximately 126 acres of impervious surface would be newly introduced from the new facilities and infrastructure projects. Stormwater permitting would be the same as under the No-Action Alternative. Water lines supporting the FSI/HPC WTF would cross streams and floodplains during construction, which would be subject to the <i>Clean Water Act</i> section 404/401 requirements. Floodplain assessment would be required per Executive Order 11988, “Floodplain Management,” prior to any construction. This project would also implement a new NPDES-permitted outfall into Two-Mile Canyon.</p> <p><u>Groundwater:</u> No changes from the NAA.</p>

No-Action Alternative	Modernized Operations Alternative	Expanded Operations Alternative
Air Quality and Noise (see Section 5.5 and Appendix H of the SWEIS)		
<p>Fugitive dust would be generated during clearing, grading, and other earth-moving operations. Construction emissions would exceed the <i>de minimis</i> thresholds for PM₁₀. The Laboratory would use measures to reduce below the threshold.</p> <p>No radiological emissions would be expected during construction activities; radiological emissions during operations include 2,753 Ci/year, made up of:</p> <ul style="list-style-type: none"> • 1,850 Ci of tritium • 800 Ci GMAP • 100 Ci MFP • 3 P/VAP • 8.9×10⁻⁶ americium • 8.9×10⁻⁴ plutonium • 1.5×10⁻¹ uranium <p>Depressurization of FTWCs (a one-time event) released less than 123 curies of tritium in September 2025. Potential health effects of radiological releases are presented below under “human health.”</p> <p>There is a potential for short-term radiological air emissions during DD&D of 13 radiologically contaminated facilities, however, the activities would be performed in accordance with an NNSA-approved DD&D plan to protect the environment, workers, and the public.</p> <p>An increase of GHG emissions of roughly 11,000 metric tons of carbon dioxide equivalent (CO_{2e}) annually during construction would be a negligible (~3 percent) increase from 2022 site-wide emissions.</p>	<p>Fugitive dust would be generated during clearing, grading, and other earth-moving operations. Construction emissions would exceed the <i>de minimis</i> thresholds for PM₁₀. The Laboratory would use measures to reduce below the threshold.</p> <p>No radiological emissions would be expected during construction activities; radiological emissions during operations would include 150 Ci/year GMAP (in addition to NAA); potential health effects of radiological emissions are presented below under “human health.”</p> <p>There is the potential for short-term radiological air emissions for DD&D of 29 radiologically contaminated facilities; however, the activities would be performed in accordance with an NNSA-approved DD&D plan to protect the environment, workers, and the public.</p> <p>An increase of roughly 17,000 metric tons of CO_{2e} annually during the peak of construction would be a minor adverse (~5 percent) increase from the NAA.</p>	<p>Fugitive dust would be generated during clearing, grading, and other earth-moving operations. Construction emissions would exceed the <i>de minimis</i> thresholds for PM₁₀. The Laboratory would use measures to reduce below the threshold.</p> <p>No radiological emissions would be expected during construction activities; radiological emissions during operations would include about 650 Ci/year in addition to the Modernized Operations Alternative made up of:</p> <ul style="list-style-type: none"> • 650 Ci GMAP • 3.0×10⁻⁶ americium • 2.4×10⁻⁵ plutonium • 1.4×10⁻² uranium <p>Potential health effects of radiological emissions are presented below under “human health.”</p> <p>There would be no additional DD&D activities from those presented under the No-Action and Modernized Operations alternatives.</p> <p>An increase of roughly 18,100 metric tons annually during the peak of construction would be a minor adverse (~5 percent) increase from the NAA.</p>

No-Action Alternative	Modernized Operations Alternative	Expanded Operations Alternative
<p>Although construction, remediation, and DD&D activities would cause temporary noise impacts, almost all activities would be confined to the LANL property boundary and more than 800 feet from residential areas or businesses.</p> <p>Impacts from a 12% increase in the workforce would result in a negligible increase in traffic noise.</p>	<p>The Los Alamos Canyon Bridge Replacement and DD&D of the Health Research Laboratory would be within 400 feet of private residences, within 800 feet of two churches, and more than 1,000 feet from Los Alamos High School. Noise would be noticeable but would abate after construction.</p> <p>Construction of solar PV arrays at Site B would be near the site boundary and construction noise could temporarily impact residences in the White Rock community.</p> <p>Impacts from a 5% increase in the workforce above the No-Action Alternative would result in a negligible increase in traffic noise.</p>	<p>In addition to the other alternatives, construction of the pumped hydropower demonstration at TA-39 and TA-49 would be within 800 feet from the LANL site boundary. The construction noise of the project would be north of the Bandelier National Monument, about 1.5 miles to the northwest of the Juniper Family Campground.</p> <p>Impacts from an 8% increase in the workforce above the No-Action Alternative would result in a negligible increase in traffic noise.</p>
Ecological Resources (see Section 5.6 of the SWEIS)		
<p>Nine projects could occur in undeveloped sites in habitat for the Mexican spotted owl, a federally listed threatened species. The projects would require review under the LANL Habitat Management Plan and individual ESA section 7 consultation with the USFWS.</p> <p>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 ecological resources.</p>	<p>Fifteen projects would potentially occur in undeveloped habitat for the Mexican spotted owl. The projects would require review under the LANL HMP and individual ESA section 7 consultation with the USFWS.</p> <p>The proposed Los Alamos Canyon Bridge replacement would cross both core and buffer habitat for the Jemez Mountains salamander, a federally listed endangered species. The project would require review under the LANL HMP as well as USFWS consultation.</p>	<p>In addition to the projects under the Modernized Operations Alternative, eight projects would potentially occur in undeveloped habitat for the Mexican spotted owl. The projects would require review under the LANL HMP and individual ESA section 7 consultation with the USFWS.</p> <p>The proposed FSI/HPC would require new power lines and the supporting WTF would require new water lines. Any powerlines would be constructed in accordance with industry guidelines for protecting raptors. The water lines would traverse core and buffer habitat for the Jemez Mountains salamander and require review under the LANL HMP as well as USFWS consultation.</p> <p>Expansion of the OB/OD would decrease pollutants and risks to birds and other animals and plants in the region.</p> <p>Thinning or clearing of forest land to reduce the risk of wildfire could potentially affect the Mexican spotted owl and Jemez Mountains salamander. The Laboratory would continue following the HMP and protected species guidelines, giving greater allowance for removal of damaged or diseased high-risk trees within the species' habitats.</p>

No-Action Alternative	Modernized Operations Alternative	Expanded Operations Alternative
		Management actions to reduce invasive feral cattle would reduce existing impacts, such as trampling and overgrazing of riparian vegetation, degradation of water quality from cattle defecations, and increased soil erosion from degradation of vegetation cover.
Human Health (see Section 5.7 and Appendix D of the SWEIS)		
<p><u>Nonradiological Impacts:</u></p> <ul style="list-style-type: none"> • Lost days due to injury/illness per year: 500 • Number of occupational fatalities per year: 1.5 • Radiological Impacts: <p><u>Public:</u></p> <ul style="list-style-type: none"> • Collective dose to 50-mile population: 6.11 person-rem • Population risk: 3.7×10^{-3} LCF • Offsite MEI dose: 3.07 millirem • MEI risk: 1.8×10^{-6} LCF <p><u>Workers:</u></p> <ul style="list-style-type: none"> • Number of radiation workers: 4,678 • Average annual dose to individual radiation worker: 143 millirem • Average annual radiation worker risk: 8.6×10^{-5} LCF • Collective annual dose to radiation workers: 668 person-rem • Total annual radiation worker risk: 0.40 LCF <p>A one-time event of depressurizing four FTWCs in September 2025 resulted in a dose to the MEI of less than 0.0123 millirem.</p>	<p><u>Nonradiological Impacts (including NAA):</u></p> <ul style="list-style-type: none"> • Lost days due to injury/illness per year: 515 • Number of occupational fatalities per year: 1.5 • Radiological Impacts (including NAA): <p><u>Public:</u></p> <ul style="list-style-type: none"> • Collective dose to 50-mile population: 6.18 person-rem • Population risk: 3.7×10^{-3} LCF • Offsite MEI dose: 3.18 millirem • MEI risk: 1.9×10^{-6} LCF <p><u>Workers:</u></p> <ul style="list-style-type: none"> • Number of radiation workers: 4,758 • Average annual dose to individual radiation worker: 143 millirem • Average annual radiation worker risk: 8.6×10^{-5} LCF • Collective annual dose to radiation workers: 680 person-rem • Total annual radiation worker risk: 0.41 LCF 	<p><u>Nonradiological Impacts (including NAA):</u></p> <ul style="list-style-type: none"> • Lost days due to injury/illness per year: 536 • Number of occupational fatalities per year: 1.6 • Radiological Impacts (including NAA): <p><u>Public:</u></p> <ul style="list-style-type: none"> • Collective dose to 50-mile population: 6.73 person-rem • Population risk: 4.0×10^{-3} LCF • Offsite MEI dose: 3.66 millirem • MEI risk: 2.2×10^{-6} LCF <p><u>Workers:</u></p> <ul style="list-style-type: none"> • Number of radiation workers: 4,940 • Average annual dose to individual radiation worker: 141 millirem • Average annual radiation worker risk: 8.5×10^{-5} LCF • Collective annual dose to radiation workers: 696 person-rem • Total annual radiation worker risk: 0.42 LCF

No-Action Alternative	Modernized Operations Alternative	Expanded Operations Alternative
<i>Cultural and Paleontological Resources (see Section 5.8 of the SWEIS)</i>		
<p>Potential impacts to cultural resources would be avoided or reduced by locating projects in areas previously disturbed and with modern developments already present; rerouting construction to avoid resources; marking or fencing cultural resources that are at risk; and monitoring construction activities to ensure erosion is controlled and inadvertent impacts do not happen.</p> <p>The LANL site has undergone a comprehensive review to identify significant historic buildings, structures, and objects, in accordance with its Cultural Resources Management Plan. The Manhattan Project National Historical Park properties would see beneficial impacts from relocating operations that work with explosives away from those properties.</p> <p>Consultation for the Chromium Final Remedy EA is ongoing. Cultural resources in the area of potential effect are within the Pueblo de San Ildefonso Reservation, and the Pueblo cultural resources concerns for the hexavalent chromium plume area have yet to be identified.</p>	<p>Eleven known cultural resources could be physically impacted; four are considered significant and would require mitigation prior to construction. It is anticipated that four new facilities in the Pajarito Corridor Planning Area as well as the increased worker activity in the area could result in impacts to the settings of traditional cultural properties and associated practices. In addition, two of the nine potential solar PV array areas and the TA-72 parking area and bus transfer station are likely to impact the settings of traditional cultural properties. Additional tribal consultations would be required for these projects.</p> <p>Fire Station 5 in TA-16 has been declared eligible for the National Register as a historic building. Its upgrade and adaptive reuse would be implemented in accordance with LANL’s CRMP.</p>	<p>Twenty-two known cultural resources could be physically impacted (in addition to those identified in the Modernized Operations Alternative); 15 are considered significant and would require mitigation prior to construction. Twelve of the known resources would be impacted by the 20-acre pumped hydropower facility in TA-39 and TA-49. Impacts would include those identified for the Modernized Operations Alternative.</p> <p>Proposals without specific locations (e.g., burial of site utility lines, forest thinning and wildland fire risk reduction treatments, and feral/invasive cattle management) would be managed in accordance with the CRMP and NHPA section 106 Programmatic Agreement, as necessary.</p>

No-Action Alternative	Modernized Operations Alternative	Expanded Operations Alternative
Socioeconomics (see Section 5.9 of the SWEIS)		
<p>The following socioeconomic impacts are in addition to the baseline described in Section 4.9.</p> <ul style="list-style-type: none"> • Additional direct employment: 2,064 • Additional indirect employment: 1,028 • Additional direct earnings: \$236.2M • Anticipated value added from LANL: \$359.1M <p>There would be an average of 650 DD&D/construction workers per year, peaking at 1,300 workers in any given year, through 2030; DD&D would continue through 2038.</p> <p>Due to the low potential for impacts on the region of influence population, steady-state operations would not be expected to affect community services and schools.</p>	<p>The following socioeconomic impacts are in addition to the No-Action Alternative.</p> <ul style="list-style-type: none"> • Additional direct employment: 780 • Additional indirect employment: 284 • Additional direct earnings: \$69.8M • Anticipated value added from LANL: \$102.9M <p>There would be an average of 530 DD&D/construction workers per year, peaking at 1,060 workers in any given year. Construction and DD&D would continue in parallel with operations until 2038.</p> <p>Due to the low potential for impacts on the ROI population, steady-state operations would not be expected to affect community services and schools.</p>	<p>The following socioeconomic impacts are in addition to the No-Action Alternative.</p> <ul style="list-style-type: none"> • Additional direct employment: 1,485 • Additional indirect employment: 651 • Additional direct earnings: \$153.3M • Anticipated value added from LANL: \$230.4M <p>There would be an average of 710 DD&D/construction workers per year, peaking at 1,420 workers in any given year. Construction and DD&D would continue in parallel with operations until 2038. There would be no additional DD&D than that proposed under the Modernized Operations Alternative.</p> <p>Due to the low potential for impacts on the ROI population, steady-state operations would not be expected to affect community services and schools.</p>
Infrastructure (see Section 5.10 of the SWEIS)		
Existing infrastructure would be adequate to meet all requirements (see Table S.3-3).	Existing infrastructure would be adequate to meet all requirements after implementation of EPCU project under the NAA (see Table S.3-3).	Existing infrastructure would be adequate to meet all requirements after implementation of EPCU project under the NAA (see Table S.3-3).
Waste Management (see Section 5.11 of the SWEIS)		
<p>Construction, environmental remediation, DD&D, and operations would generate the following projected annual quantities of waste:</p> <ul style="list-style-type: none"> • LLW (m³/yr): 14,015 • MLLW (m³/yr): 610 • TRU/ waste (m³/yr): 840 • Hazardous (MT/yr): 3,226 • NMSW (MT/yr): 848 • Nonhazardous (MT/yr): 5,928 	<p>Operations (including construction and DD&D) would generate the following projected annual quantities of waste including those generated under the NAA:</p> <ul style="list-style-type: none"> • LLW (m³/yr): 14,941 • MLLW (m³/yr): 626 • TRU/ waste (m³/yr): 843 • Hazardous (MT/yr): 3,406 • NMSW (MT/yr): 2,484 • Nonhazardous (MT/yr): 9,569 	<p>Operations (including construction and DD&D) would generate the following projected annual quantities of waste including those generated under the NAA:</p> <ul style="list-style-type: none"> • LLW (m³/yr): 16,276 • MLLW (m³/yr): 653 • TRU/ waste (m³/yr): 849 • Hazardous (MT/yr): 3,574 • NMSW (MT/yr): 5,358 • Nonhazardous (MT/yr): 9,820

No-Action Alternative	Modernized Operations Alternative	Expanded Operations Alternative
Transportation and Traffic (see Section 5.12 and Appendix F of the SWEIS)		
<p><u>Traffic and Parking:</u> Construction/DD&D 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.</p> <p>A gradual increase (i.e., less than or equal to about 2 percent per year in the first 4 years) in the LANL workforce under the No-Action Alternative would not be expected to significantly, adversely impact operation of the primary and secondary road networks at LANL.</p> <p>The proposed parking structure in TA-48 and the offsite parking and shuttle service would help accommodate increased levels of onsite traffic and parking. The Laboratory would deploy 26 acres of new or reconfigured roads and 18 additional acres of parking, both of which would improve onsite vehicular flows and address parking space shortages.</p> <p><u>Radiological Transport:</u> During operations, DD&D, and environmental remediation, LANL would regularly transport radiological waste, SNM, and other nuclear materials to and from the LANL site. The estimated impacts of these shipments would be:</p> <ul style="list-style-type: none"> • Dose to transport crews: 1,358 person-rem per year • LCF Risk to transport crews: 0.81 LCF • Incident-free dose to general public: 210 person-rem • LCF Risk to Public: 0.126 LCF • Accident Risk to Public: 6.1×10^{-4} LCF 	<p><u>Traffic and Parking:</u> The impacts to traffic and local transportation would not be notably different than under the NAA. Construction of five parking structures, a 25-acre remote parking and bus transfer station, 41 acres of new or reconfigured roads, and 11 acres of parking associated with the new facilities. The Los Alamos Canyon Bridge replacement should improve traffic flow, although during construction, traffic congestion would be expected in the area.</p> <p><u>Radiological Transport:</u></p> <ul style="list-style-type: none"> • Dose to transport crews: 1,375 person-rem per year • LCF Risk to transport crews: 0.83 LCF • Incident-free dose to general public: 215 person-rem • LCF Risk to Public: 0.129 LCF • Accident Risk to Public: 6.1×10^{-4} LCF • Number of Traffic Fatalities from Accidents: 0.057 <p>Approximately 1,530 LLW/MLLW offsite shipments to NNSS and 248 TRU waste shipments to WIPP would occur annually, an increase of 6% and 0.4%, respectively, over the NAA.</p> <p>Annual offsite shipments of hazardous waste would increase by about 5% over that projected for the NAA.</p>	<p><u>Traffic and Parking:</u> The impacts to traffic and local transportation would not be notably different than under the NAA. Construction of 20 acres of new or reconfigured roads and 6 acres of parking associated with new facilities, beyond that described for the Modernized Operations Alternative.</p> <p><u>Radiological Transport:</u></p> <ul style="list-style-type: none"> • Dose to transport crews: 1,401 person-rem per year • LCF Risk to transport crews: 0.84 LCF • Incident-free dose to general public: 224 person-rem • LCF Risk to Public: 0.135 LCF • Accident Risk to Public: 6.1×10^{-4} LCF <p>Number of Traffic Fatalities from Accidents: 0.06</p> <p>An estimated average of 258 SNM/high-activity material shipments would be made annually between 2024 and 2038 to and from LANL, an increase of one annual shipment over the NAA.</p> <p>Approximately 1,659 offsite shipments of LLW/MLLW (assumed for analytical purposes to go to NNSS) and 252 TRU waste shipments to WIPP would occur annually, an increase of 15% and 2%, respectively, over the NAA.</p> <p>Annual offsite shipments of hazardous waste would increase by about 10% over that projected for the NAA.</p>

No-Action Alternative	Modernized Operations Alternative	Expanded Operations Alternative
<ul style="list-style-type: none"> Number of Traffic Fatalities from Accidents: 0.055 <p>An estimated annual average of 257 SNM/high-activity material shipments (including pits to and from Pantex) would be made between 2024 and 2038 to and from LANL.</p> <p>About 1,441 LLW/MLLW offsite shipments (assumed for analytical purposes to go to NNSS) and 247 TRU waste shipments to WIPP would occur annually.</p> <p>Annual offsite shipments of hazardous waste would increase by approximately 4% over baseline conditions.</p>		
<p>Accidents and Intentional Destructive Acts (see Section 5.14 and Appendix D of the SWEIS)</p>		
<p>The range of potential accident risks from operating facilities under the NAA are presented in Table S.3-4.</p> <p>Impacts of potential site-wide events (seismic, wildfire) assumed to affect multiple facilities are presented in Table S.3-5.</p> <p>Potential impacts from intentional destructive acts may be similar to or could exceed the range of potential accident impacts presented in the SWEIS. Analysis of these potential impacts are presented in Appendix M (classified).</p>	<p>The range of accidents presented for the NAA would also be representative of operations under the Modernized Operations Alternative, which are presented in Table S.3-4.</p> <p>The impacts of potential site-wide events would be the same as under the NAA.</p> <p>Potential impacts from intentional destructive acts may be similar to or could exceed the range of potential accident impacts presented in this SWEIS. Analysis of these potential impacts are presented in Appendix M (classified).</p>	<p>The range of accidents presented for the NAA would also be representative of operations under the Expanded Operations Alternative, which are presented in Table S.3-4.</p> <p>Because of the addition of proposed TRU waste staging areas, impacts of potential site-wide events would increase. These impacts are presented in Table S.3-5.</p> <p>Potential impacts from intentional destructive acts may be similar to or could exceed the range of potential accident impacts presented in this SWEIS. Analysis of these potential impacts are presented in Appendix M (classified).</p>

Ci = curie; CO_{2e} = carbon dioxide equivalent; CRMP = Cultural Resources Management Plan; CT EIS = *Final Environmental Impact Statement for the Conveyance and Transfer of Certain Land Tracts Administered by the U.S. Department of Energy and Located at Los Alamos National Laboratory, Los Alamos and Santa Fe Counties, New Mexico*; DD&D = decontamination, decommissioning, and demolition; EPCU = Electric Power Capacity Upgrade; ESA = Endangered Species Act; FSI = future supercomputing infrastructure; FTWC = flanged tritium waste container; GHG = greenhouse gas; GMAP = gaseous mixed activation products; HMP = Threatened and Endangered Species Habitat Management Plan; HPC = high-performance computing; LANL = Los Alamos National Laboratory; LCF = latent cancer fatality; m³/yr = cubic meters per year; MEI = maximally exposed individual; MFP = mixed fission products; MT/yr = metric ton per year; MW = megawatt; NAA = No-Action Alternative; NHPA = National Historic Preservation Act; NMSW = New Mexico Special Waste; NNSA = National Nuclear Security Administration; NNSS = Nevada National Security Site; NPDES = National Pollutant Discharge Elimination System; OB/OD = open burning/open detonation; PM₁₀ = particulate matter less than 10 microns in diameter; PV = photovoltaic; P/VAP = particulate/vapor activation products; ROI = region of influence; SWEIS = supplemental environmental impact statement; TA = technical area; TRU = transuranic; USFWS = U.S. Fish and Wildlife Service; VRM = Visual Resource Management; WTF = water treatment facility

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

Resource Parameter	Existing Capacity	Baseline Average (2017–2023)	No-Action Demand	Modernized Operations	Expanded Operations
Domestic water (MGY)	542	271.5	294	306	504
Sanitary wastewater (gal/d)	602,800	311,689	363,289	382,789	400,414
Electricity – power consumption (MkW-hr/yr)	651 ^a	440 average	621 average; 730 peak ^b	658 average; 774 peak ^b	810 average; 1,174 peak ^b
Electricity – average annual peak demand (MW)	116.0 ^a	70.0 average	86.7 average; 111.4 peak ^b	92 average; 132 peak ^b	110 average; 171 peak ^b
Natural gas (dec/d)	22,110	4,645	4,155	3,913	3,913
Petroleum fuel (gal/yr)	N/A	901,484	1,262,484	1,668,484	1,739,484

DD&D = decontamination, decommissioning, and demolition; dec/d = decatherms per day; EPCU = electric power capacity upgrade; gal/d = gallons per day; gal/yr = gallons per year; MGY = million gallons per year; MkW-hr/yr = million kilowatt-hours per year; MW = megawatt; N/A = not applicable

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 under the No-Action Alternative.

b Monthly peak.

Table S.3-4 Summary of Accident Risks Applicable to All Alternatives

Accident Scenario	Conservative Meteorology		Average Meteorology	
	MEI (LCF)	Offsite Population (LCF)	MEI (LCF)	Offsite Population (LCF)
DBA-1: TA-55, PF-4: Plutonium Facility glovebox fire	1.15×10^{-6}	1.13×10^{-4}	1.64×10^{-7}	2.01×10^{-5}
DBA-2: TA-55, PF-4: Plutonium Facility fire involving heat source plutonium	2.48×10^{-8}	1.21×10^{-6}	1.74×10^{-9}	2.12×10^{-7}
DBA-3: TA-54, Area G: Vehicle impact while transporting TRU waste containers with ensuing fuel pool fire	1.01×10^{-7}	2.25×10^{-6}	2.06×10^{-8}	4.12×10^{-7}
DBA-4: TA-54, Area G: Refueling vehicle impacts TRU Storage Array with ensuing fuel pool fire	8.28×10^{-7}	1.08×10^{-5}	9.12×10^{-8}	1.95×10^{-6}
DBA-5: TA-54, Area G: Large combustible fire in TRU Storage Array	1.02×10^{-7}	3.37×10^{-6}	2.65×10^{-8}	6.00×10^{-7}
DBA-6:^a				
DBA-7: TA-3, CMR: Explosion in CMR Wing 9	4.98×10^{-7}	1.63×10^{-4}	1.51×10^{-7}	3.00×10^{-5}
DBA-8: TA-54, RANT: Vehicle impacts waste containers inside RANT with ensuing pool fire	2.90×10^{-7}	1.41×10^{-5}	8.22×10^{-8}	2.95×10^{-6}
DBA-9: TA-16, WETF: Process Room fire	6.63×10^{-7}	2.82×10^{-4}	3.55×10^{-7}	3.09×10^{-5}
DBA-10: TA-63, TWF: Vehicle impact in Shipping/Receiving Area with ensuing pool fire	1.11×10^{-8}	2.76×10^{-6}	1.64×10^{-9}	4.76×10^{-7}
DBA-11: TA-50, WCRRF: High impact seismic event and fire inside building	5.52×10^{-7}	1.12×10^{-4}	8.46×10^{-8}	1.92×10^{-5}
DBA-12: TA-50, TLW: External fire spreads into the TLW Treatment Facility	3.48×10^{-8}	4.62×10^{-6}	4.79×10^{-9}	8.21×10^{-7}
DBA-13: TA-53, LANSCE: Explosion due to deflagration from natural gas leak	7.80×10^{-8}	2.79×10^{-6}	1.81×10^{-8}	5.42×10^{-7}

CMR = Chemistry and Metallurgy Research Facility; ER = Experimental Room in Lujan Center; FTWC = flanged tritium waste container; LANSCE = Los Alamos Neutron Science Center; LCF = latent cancer fatality; MEI = maximally exposed individual; RANT = Radioassay and Nondestructive Testing Facility; TA = technical area; TLW = TRU Liquid Waste Treatment Facility; TRU = transuranic; TWF = Transuranic Waste Facility; WCRRF = Waste Characterization, Reduction, and Repackaging Facility; WETF = Weapons Engineering Tritium Facility

a The depressurization of the four FTWCs occurred in September 2025 without incident.

Table S.3-5 Summary of Impacts from Potential Site-Wide Events

Site-wide Event	Average Meteorology	
	MEI (LCF)	Offsite Population (LCF)
<i>No-Action Alternative</i>		
Annual Risk Totals for SDC-2 Seismic/Fire involved Facilities	3.36×10^{-7}	1.38×10^{-5}
Annual Risk Totals for SDC-3 Seismic/Fire involved Facilities – Entire Site (SDC-2 plus SDC-3)	5.30×10^{-7}	3.35×10^{-5}
Annual Risk Totals for Site-wide Wildfire Event	2.66×10^{-6}	2.85×10^{-4}
<i>Modernized Operations Alternative</i>		
Annual Risk Totals for SDC-2 Seismic/Fire involved Facilities	3.36×10^{-7}	1.38×10^{-5}
Annual Risk Totals for SDC-3 Seismic/Fire involved Facilities – Entire Site (SDC-2 plus SDC-3)	5.30×10^{-7}	3.35×10^{-5}
Annual Risk Totals for Site-wide Wildfire Event	2.66×10^{-6}	2.85×10^{-4}
<i>Expanded Operations Alternative</i>		
Annual Risk Totals for SDC-2 Seismic/Fire involved Facilities – Expanded Operations Alternative	4.47×10^{-7}	2.51×10^{-5}
Annual Risk Totals for SDC-3 Seismic/Fire involving SDC-3 Seismic/Fire Involving Entire Site (SDC-2 plus SDC-3 Seismic/Fire Events)	8.55×10^{-7}	4.89×10^{-5}
Annual Risk Totals for Site-wide Wildfire Event	3.53×10^{-6}	3.75×10^{-4}

LCF = latent cancer fatality; MEI = maximally exposed individual; SDC = Seismic Design Category

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