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Floodplain Assessment for the Technical Area 72 Outdoor Live Fire Range Storage Magazines Project

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ACRONYMS AND ABBREVIATIONS

Acronym	Definition
AOC	Area of Concern
CFR	Code of Federal Regulations
DOD	(U.S.) Department of Defense
DOE	(U.S.) Department of Energy
DOW	(U.S.) Department of War
EPA	(U.S.) Environmental Protection Agency
LANL	Los Alamos National Laboratory
NM 501	New Mexico State Road 501
NMED	New Mexico Environment Department
NNSA	National Nuclear Security Administration
RCRA	Resource Conservation and Recovery Act
TA-72	Technical Area 72



INTRODUCTION

The National Nuclear Security Administration (NNSA), a semi-autonomous agency within the U.S. Department of Energy (DOE), is proposing new construction in lower Sandia Canyon at Technical Area 72 (TA-72) at the Outdoor Live Fire Range facility at Los Alamos National Laboratory (LANL). The proposed upgrades are intended to facilitate mission requirements of maintaining a trained and qualified armed Protective Force and to improve range safety. The project activities within the 100-year floodplain include installing two prefabricated storage magazines that meet Department of War (DOW), formerly the Department of Defense (DOD) requirements for arms and explosives materials such as ammunitions and associated infrastructure (Figure 1) and supporting infrastructure.

Title 10 Code of Federal Regulations (CFR) Part 1022 was promulgated to implement federal agency (e.g., DOE) requirements under Executive Order 11988, Floodplain Management (EO 1977). A floodplain is defined in 10 CFR 1022 as “the lowlands adjoining inland and coastal waters and relatively flat areas and flood prone areas of offshore islands,” and a base floodplain as “the 100-year floodplain; that is, a floodplain with a 1.0 percent chance of flooding in any given year” (CFR 2003). This floodplain assessment evaluates potential impacts to floodplain values and functions from implementation of the proposed action, identifies alternatives to the proposed action, and allows for meaningful public comment.

DOE/NNSA published this floodplain assessment for a 15-day public review and comment period. Please provide comments on this floodplain assessment to Karen Armijo at

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or

Mail: U.S. Department of Energy
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After the close of the public comment period and before issuing a floodplain statement of findings, DOE/NNSA will reevaluate the practicability of alternatives to the proposed floodplain action and the mitigating measures, taking into account all substantive comments received during the public comment period. After issuing a floodplain statement of findings, DOE/NNSA shall allow at least 15 calendar days of public review before implementing a proposed floodplain action.

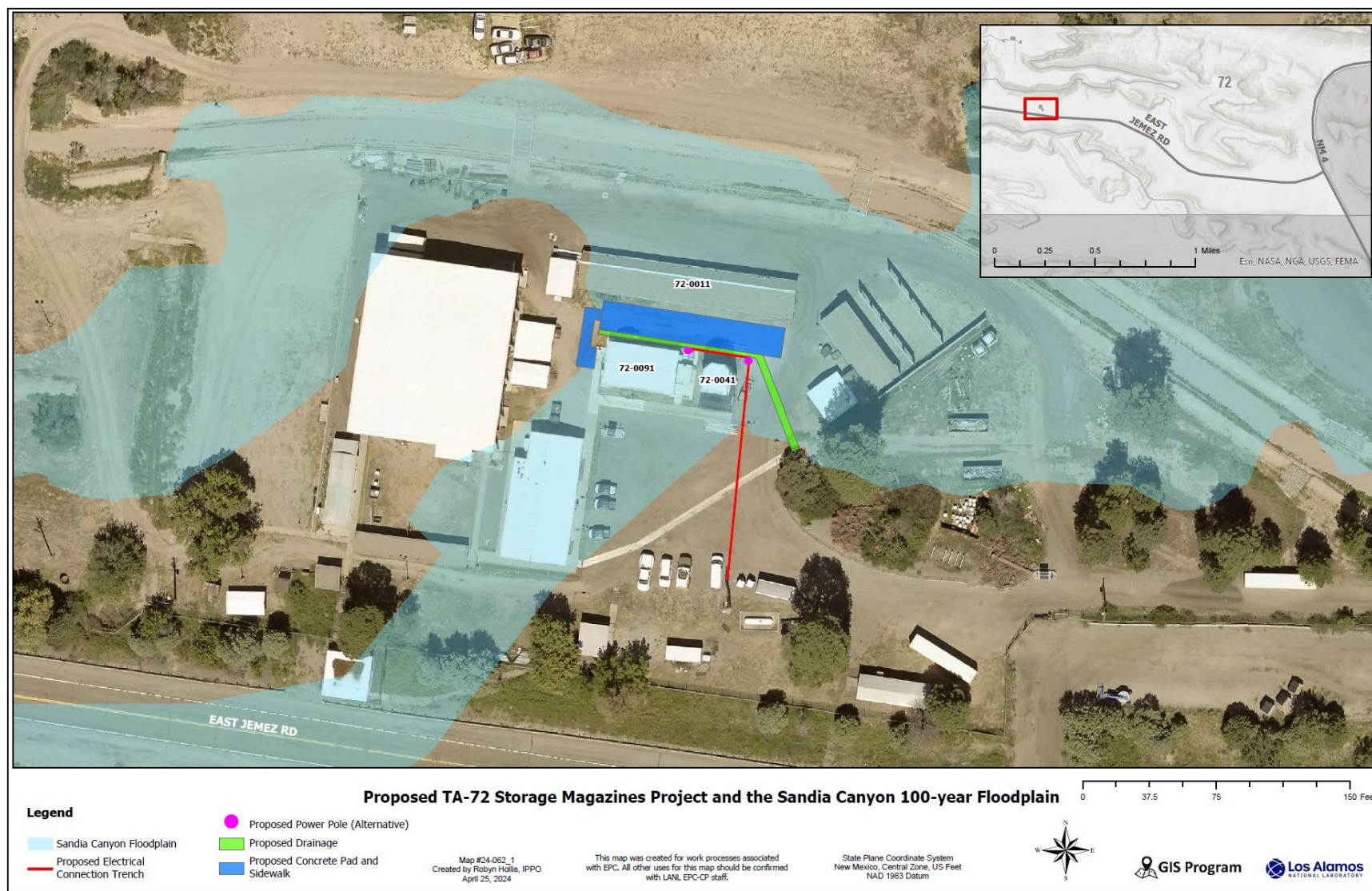


Figure 1. Proposed TA-72 Storage Magazines Project and the Sandia Canyon 100-year Floodplain.

BACKGROUND

The LANL TA-72 Outdoor Live Fire Range is located on East Jemez Road approximately 1.5 miles east of New Mexico State Road 501 (NM 501). The proposed project area has had a live fire range since the 1950s. Over the years, LANL has made multiple changes and improvements to the range facilities. In 2019, the facility underwent significant updates and repairs to ensure that capability is maintained for LANL Protective Force tactical training. Within the facility are multiple small ranges for use of different caliber munitions. This facility is not open to the public but can be seen from a public road, NM 501.

Recent facility analysis identified the need to replace several storage structures with structures that meet updated DOD compliance regulations (DOE 2021a) for materials such as ammunitions. Range upgrades will help fulfill mission requirements to ensure that armed Protective Force personnel are trained and qualified to protect the LANL workforce and operations as required by

- DOE Order 470.3B, Graded Security Protection (GSP) Policy (DOE 2008);
- DOE Order 470.4B, Safeguards and Security Program, Admin Change 1 (DOE 2021b); and
- DOE Order 473.3A, Protection Program Operations (DOE 2018).

Two new prefabricated storage magazines and supporting infrastructure are proposed for installation to meet the more-stringent DOD requirements.

The segment of the Sandia Canyon 100-year floodplain, which is also the base flood elevation, runs roughly west to east in the proposed project location (Figure 1). The canyon bottom is a mixture of developed and undeveloped areas. The proposed location for the storage magazines and supporting infrastructure is in the floodplain within the TA-72 Outdoor Live Fire Range boundary (Figure 1). The canyon bottom in the project area is developed with an asphalt millings parking area, dirt and gravel access roads, paved and gravel walkways, and buildings.

PROJECT DESCRIPTION

This assessment focuses on activities that occur in or near the Sandia Canyon 100-year floodplain between structures 72-0011 and 72-0091. The project proposes installation of

- a concrete base pad for the storage magazines,
- a sidewalk,
- two storage magazines,
- a drainage swale, and
- electrical power connection to the storage units.

All work would follow applicable LANL engineering standards (<http://engstandards.lanl.gov>). All dimensions from this point forward are approximate unless otherwise noted.

The project proposes to install a 16' × 102' base pad that comprises two concrete pads surrounded by crushed stone. See Figure 1 and Figure 2 for the proposed pad location. Two 9' × 41' reinforced concrete

pads over compacted aggregate base course would be installed to support the storage magazines. The concrete pads and base course could require excavation down to 9.6". Compacted crushed stone 6" deep would be placed on existing ground that surrounds the concrete pads. A reinforced concrete sidewalk would be installed to connect the west side of Building 72-0091 to the west end of the pad. The sidewalk would be 6' wide $\times$ 32' long over a base of compacted aggregate base course. The sidewalk could require excavating down to 4". An excavator and front-end loader would be used for the pad and sidewalk installation. A small front-end loader and compactor would be used to place the crushed stone.



Figure 2. Proposed storage magazines location on the north side of Building 72-0091 looking northwest.

On the concrete pad, the project would place two 40' $\times$ 8' $\times$ 8' prefabricated storage magazines that meet or exceed Bureau of Alcohol, Tobacco, Firearms and Explosives specification 27 CFR 555.208 and U.S. Military specifications, including DOD 5100.76-M, Physical Security of Sensitive Conventional Arms, Ammunition, and Explosives; and Army Regulation 190-11, Physical Security of Arms, Ammunition, and Explosives. Placement would include use of a large flatbed vehicle to deliver the containers and heavy equipment, such as a crane or forklift, for lifting and placing the containers.

A swale would be installed to drain stormwater away from the storage magazines and surrounding structures. The swale along the south side of the storage magazines would be 2' wide $\times$ by 100' long and 6" deep, stabilized with turf reinforcement matting. The swale would transition to a concrete valley gutter to drain stormwater southeast to an existing drainage swale (Figure 1). The valley gutter would be 4' wide $\times$ 60' long. Flow paths within the floodplain would not be significantly modified from pre-project conditions to post-project conditions. A small excavator and hand tools would be used to shape and finish the swale.

For lights and security systems, the project proposes to establish an electrical connection through an underground conduit to the two storage magazines. A trench, 2' 18" deep $\times$ 14" wide would be dug from an existing transformer south of Building 72-0041 north to the two storage magazines (Figure 1). The proposed trench would be 180' in length; however, only 83' would be in the Sandia Canyon floodplain. The trench would be returned to original grade and finish (e.g., gravel, asphalt millings, concrete). A small backhoe and skid steer would be used for the trench.

If the project cannot install underground conduit, the proposed alternative would be to install two power poles and an overhead electrical power line. A digger derrick truck with rubber tires would be used to auger two excavations 18" in diameter to a maximum of 6' below ground surface. Two round wood poles sized in accordance with American National Standards Institute (ANSI) 05.1-2022 (ANSI 2022) no more than 40' tall and 12–13" in diameter would be placed in each hole; excavated soil would be backfilled and compacted around the pole base. Additional equipment used could include hand tools, a vacuum potholer, a backhoe, and a mini excavator. Any excess soils would be stabilized at the excavation site following guidelines in the LANL Seeding Specification (LANL 2021) or disposed of in accordance with (Policy) P409, *LANL Waste Management* (LANL 2022).

Floodplain Impacts and Mitigations

The portion of the Sandia Canyon floodplain impacted by this project would be 3,200 square feet (0.07 acres).

The excavation to install the proposed concrete pads would be two areas, each 9' $\times$ 41' $\times$ 9.6" deep. The excavations would be stabilized with concrete, and the surrounding area would be stabilized with crushed stone. The excavation to install the proposed sidewalk would be 6' wide $\times$ 32' long $\times$ 4" deep. This excavation would be stabilized with concrete.

The proposed swale would require a shallow, contoured excavation 2' wide $\times$ 100' long $\times$ 6" deep. The swale would be stabilized with turf reinforcement matting. The concrete valley gutter would be excavated 4' wide $\times$ 60' long $\times$ 18" deep and stabilized with concrete.

The trench to install underground conduit would be excavated in the floodplain 14" wide $\times$ 83' long $\times$ 2' 18" deep. After conduit placement, excavated soil would be backfilled into the trench and compacted. The project would stabilize the area with original finish material (e.g., gravel, asphalt millings, concrete). If the project cannot install underground conduit, power poles would be installed. Two holes would be excavated 18" diameter $\times$ 6' deep. After pole placement, excavated soil would be backfilled and compacted around the pole bases.

The project would stabilize any excess soil at the excavation site following guidelines in the LANL Seeding Specification (LANL 2021) or dispose of excess soil in accordance with P409, *LANL Waste Management* (LANL 2022). The project would also stabilize any additional disturbance caused by equipment traffic.

Short-Term Impacts and Mitigations

LANL subject matter experts use a LANL-maintained project review tool to identify, evaluate, and resolve project-specific issues, such as the presence of underground utilities, contaminated soils, spills and leaks, soil disturbance and stabilization, threatened and endangered species habitat, floodplains or

wetlands; and to ensure regulatory agency authorizations, such as U.S. Army Corps of Engineers permit requirements and Clean Water Act permit requirements. The tool aids in identifying potential impacts to the natural and built environment from the proposed project.

Subject matter experts identified and reviewed the following requirements to avoid potential impacts:

- No wetlands impacts are expected. The project does not propose work in any wetlands within LANL property.
- The total proposed area of project disturbance is not 1 acre or larger; therefore, National Pollution Discharge Elimination System Construction General Permit coverage is not required.
- No additional impervious surfaces or modification to stormwater flow paths are proposed. The project would not be subject to any additional requirements regarding the Energy Independence and Security Act, Section 438.
- No soil-disturbing activities will occur in the watercourse. In accordance with U.S. Army Corps of Engineers regulations, a Clean Water Act Section 404 dredge-and-fill permit or New Mexico State Section 401 Water Quality Certification would not be required for this project (Federal Register 2023).
- No impacts are expected to occur to cultural resources. Based on LANL surveys and procedures, no historical or archaeological resources are located within 100 feet of the proposed project areas. The project must follow the LANL procedure for inadvertent discoveries (LANL 2019).
- No impacts are expected to occur to threatened or endangered species. Based on LANL surveys and procedures, no threatened or endangered species habitat is located near the proposed project area.
- The proposed project will involve minimal disturbance of the Sandia Canyon Area of Concern¹ (AOC) C-00-007. The project must coordinate with LANL Consent Order personnel before construction begins. Any material excavated within an AOC boundary must be managed within that boundary, returned to the point of origin, and stabilized using LANL-approved best management practices. Any material that cannot be managed on site must be managed, characterized, and disposed of in accordance with P409, *LANL Waste Management*, and associated documents (LANL 2022).

The Sandia Canyon AOC C-00-007 is associated with the footprint of the Sandia Canyon 100-year floodplain. The 100-year floodplain represents the extent to which post-Laboratory aged sediments and contaminants could have been deposited. AOC contaminants of potential concern are summarized in Table 1. Existing sampling data can be viewed by the public on the Intellus website (<http://www.intellusnm.com>).

Table 1. AOCs Potentially Impacted by Project Activities

AOC	Description	Contaminants of Potential Concern
C-00-007	Sandia Canyon System	Organic chemicals, inorganic chemicals, radionuclides, PCBs

¹ An AOC is any area having a known or suspected release of hazardous waste or hazardous constituents that is not from a solid waste management unit and that the Secretary of the New Mexico Environment Department has determined may pose a current or potential threat to human health or the environment.

Soil is not expected to be removed from the AOC as a result of construction activities. The project proposes that all disturbed soil be kept on site, returned to its point of origin, and stabilized in place (LANL 2021). Any soil removed from the AOC from excavation must be disposed of in accordance with P409, *LANL Waste Management* (LANL 2022).

The project would avoid or minimize additional potential short-term direct and indirect floodplain impacts from release of pollutants to the floodplain and exposure to stormwater through implementation of the following best management practices:

- Hazardous materials, chemicals, fuels, and oils would not be stored within the floodplain.
- Heavy equipment would not be used within the stream channel, especially if conditions are too wet to prevent damage to the soil structure.
- Equipment would be refueled at least 100 feet from the Ancho Canyon floodplain.

Potential direct effects to migratory birds and other biological resources are limited because minimal habitat has been disturbed. Shrub and grass removal occurred in October 2025. The Migratory Bird Treaty Act prohibits killing migratory birds, including nestlings and eggs in an active nest which includes vegetation removal during the nesting season (May 15 through July 15). If future vegetation removal is proposed during the nesting season, LANL Biological Resources subject matter experts would conduct an onsite inspection for bird nests. Site activities would conform to requirements stipulated in the Migratory Bird Best Management Practices Source Document for Los Alamos National Laboratory (LANL 2020).

Long-Term Impacts and Mitigations

Minimal long-term impacts to the floodplain are anticipated as a result of this project. The proposed installation of storage magazines is limited to the existing disturbed areas of the TA-72 Outdoor Live Fire Range. The project would install the electrical conduit underground, return the disturbed areas to original grade, and stabilize any disturbed soil. If the project cannot install underground conduit, installation of two power poles is also limited to existing disturbed areas.

Flow paths within the floodplain would not be significantly modified from pre-project conditions to post-project conditions. After high-flow events, the area within the floodplain would be monitored for erosion and debris entrapped in the laydown area, and maintenance options would be assessed and scheduled.

This assessment also considers the impacts of the proposed actions in the floodplain on habitat conservation for existing flora and fauna, aesthetic values, and public interest. The proposed action would not impact cultural resources because none are expected to be discovered in the project area. The proposed action is not expected to remove any protected species habitat. The proposed action is not considered to negatively impact aesthetic values or public interest because the proposed action will occur in an area that has been previously disturbed and is not accessible to the public.

Alternatives

The alternatives available to DOE/NNSA include the no action alternative, which was not selected by DOE/NNSA because the existing storage structures do not meet the new requirements for storage of ammunition and munitions specified in DOE Order 473.2A, *Protective Force Operations* (DOE 2021a).

The alternative of offsite storage was not selected because of the time and fuel spent by staff who would travel 32 miles round trip every time firing range supplies are needed. Access to onsite storage reduces overall cost and impact to programmatic schedules.

The proposed project as described in this assessment would improve the overall safety of the TA-72 Outdoor Live Firing Range. Range upgrades will help fulfill mission requirements and meet the more stringent DOD requirements for safe storage and operation of arms and explosives materials such as ammunitions.

Conclusions

The proposed project would result in limited and minor direct and indirect impacts to the Sandia Canyon 100-year floodplain and would not result in adverse impacts to the floodplain values or functions. Temporary disturbance within the floodplain would cease following completion of installation activities. Best management practices would be implemented. This proposed project would not significantly modify flow paths within the floodplain from pre-project conditions to post-project conditions. No effects to lives or property associated with floodplain modifications are anticipated.

In accordance with 10 CFR 1022 (CFR 2003), DOE/NNSA will publish this floodplain assessment and initiate a 15-calendar-day public comment period. DOE/NNSA will take into account all substantive comments received on this floodplain assessment and reevaluate the practicability of alternatives before providing the Statement of Findings on the floodplain action.

Literature Cited

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- DOE 2018. DOE Order 473.3A. Protection Program Operations, <https://www.directives.doe.gov/directives-documents/400-series/>.
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LANL 2021. LANL Master Specification Section 32 9219-Seeding Rev. 5. LANL Engineering Standards, <http://engstandards.lanl.gov/>

LANL 2022. P409, *LANL Waste Management*, as directed by the following:

New Mexico Administrative Code (NMAC), Title 20, Environmental Protection

10 CFR, Energy

40 CFR, Protection of Environment

48 CFR, Federal Acquisition Regulations System

49 CFR, Transportation

Department of Energy Acquisition Regulation (DEAR) Part 970.5223, Integration of Environment, Safety, and Health into Work Planning

DOE Order 435.1, Radioactive Waste Management

DOE M 435.1-1, Radioactive Waste Management Manual

DOE Order 414.1D, Quality Assurance

DOE Order 458.1, Radiation Protection of the Public and the Environment

DOE Order 460.2B, Departmental Materials Transportation Management

DOE Order 474.2A, Nuclear Material Control and Accountability

LANL Institutional RCRA Permit, EPA and NMED RCRA Operating Permit