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Los Alamos National Laboratory Floodplain Assessment for the Travel-Time Equipment Installation Project

Los Alamos
NATIONAL LABORATORY

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ACRONYMS

AOC	Area of Concern
ANSI	American National Standards Institute
CFR	Code of Federal Regulations
DOE	U.S. Department of Energy
EO	Executive Order
ft	feet
LANL	Los Alamos National Laboratory
NNSA	National Nuclear Security Administration
NM 4	New Mexico State Road 4
NNSA	National Nuclear Security Administration
PR-ID	Permits and Requirements Identification

INTRODUCTION

The National Nuclear Security Administration (NNSA), a semi-autonomous agency within the United States Department of Energy (DOE), is proposing new construction at Los Alamos National Laboratory (LANL) across several locations within LANL property (Figure 1). This floodplain assessment is being prepared in accordance with DOE regulations set forth in Title 10 Code of Federal Regulations (CFR), Part 1022, *Compliance with Floodplain and Wetland Environmental Review Requirements* (10 CFR 1022) (CFR 2003). Two of those locations are within the lower Sandia Canyon floodplain (Figure 2). The proposed installations are intended to estimate vehicle travel times and post the information on existing electronic message signs to inform LANL commuters with traffic updates and gather data for current and future transportation planning. The project activities within the 100-year floodplain include: (1) installation of two wood poles (e.g., power-pole type) and (2) mounting traffic monitoring equipment and solar panels on the wood poles.

The 10 CFR 1022 was promulgated to implement 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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After the close of the public comment period and prior to issuing a floodplain statement of findings, DOE/NNSA will reevaluate the practicability of alternatives to the proposed floodplain action and mitigating measures and take into account all substantive comments received during the public comment period. After issuing a floodplain statement of findings, DOE/NNSA shall endeavor to allow at least 15 days of public review before implementing a proposed floodplain action.

Figure 1. Proposed travel-time equipment installation locations at LANL.

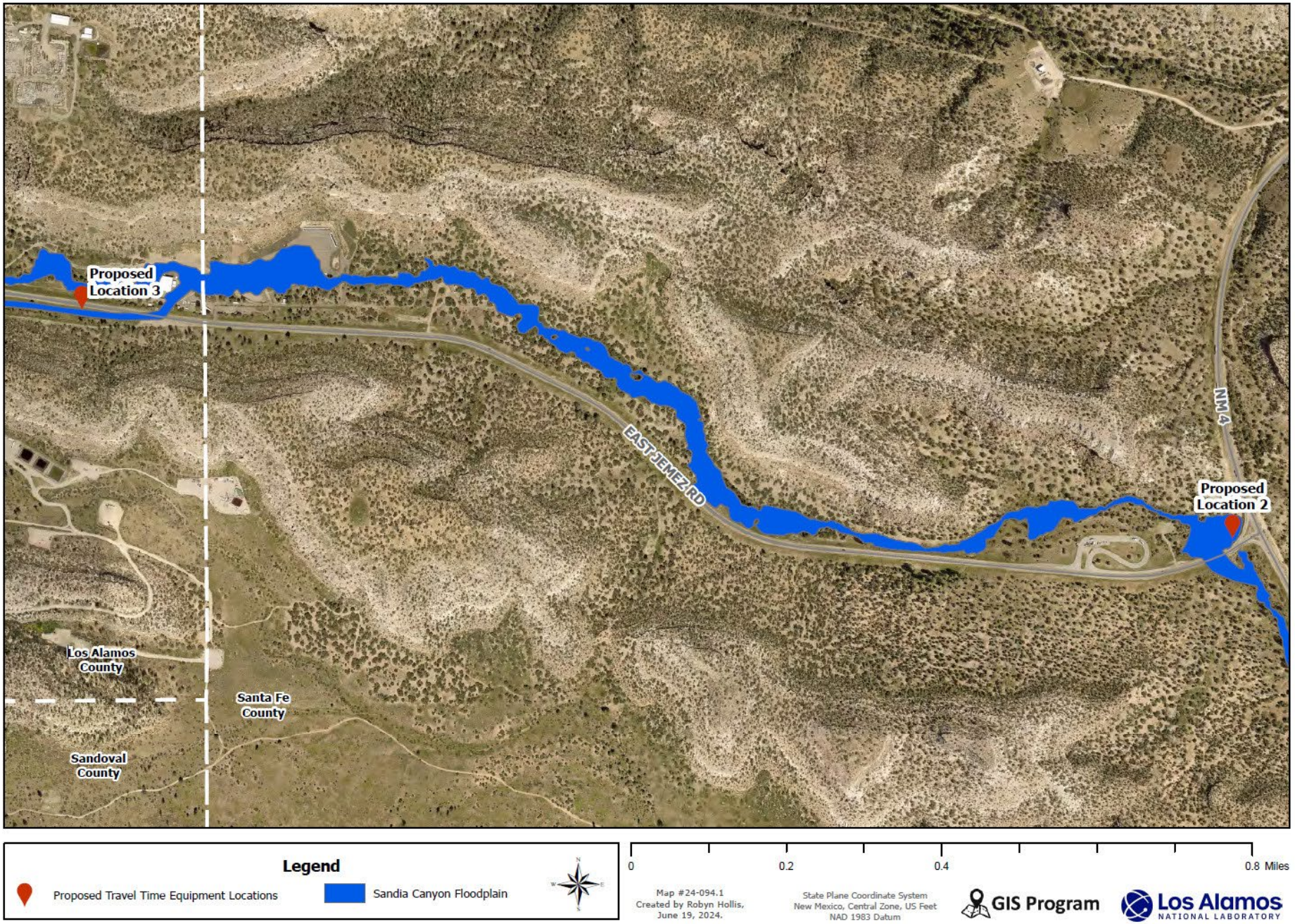

Figure 2. Proposed travel-time equipment installation locations in relation to Sandia Canyon 100-year floodplain.

BACKGROUND

LANL experienced substantial increases in workforce growth over the past 10 years. Traffic congestion is common, especially in the afternoon commute, at the approaches to New Mexico State Road 4 (NM 4) and the East Jemez Road Intersections causing travel delays, driver frustration, and increased traffic accidents (LANL 2022a, LANL 2022c).

This project proposes to install vehicle-monitoring equipment in seven locations across LANL property. The project also proposes to install one new electronic message sign. This sign will be an addition to the existing message sign system across LANL. Remote sensing technology using Bluetooth signals emitted from government and private vehicles (and/or their occupants) would collect traffic origin-destination data. The data can be used estimate travel time for real-time road travel and post the information on dynamic message signs. This would help drivers avoid traffic gridlocks by taking alternate routes or traveling at alternate times.

The vehicle-monitoring equipment would also provide data for analysis and modeling of current and future transport systems. LANL may develop more sustainable transport plans and ground traffic management, including developing alternatives that reduce single-driver vehicle use, such as increased off-site work, improved public transport, improved biking infrastructure, etc.

The lower Sandia Canyon 100-year floodplain, which is also the base flood elevation, runs roughly west to east (Figure 2). The canyon bottom is a mixture of developed and undeveloped areas. The proposed project locations associated with the floodplain are previously disturbed with paved roads, culverts, and road shoulder right-of-ways.

PROJECT DESCRIPTION

The project proposes to install one electronic message sign as well as traffic monitoring equipment with necessary structural support (e.g., mounting pole) and solar panels across several areas on LANL property. The proposed traffic monitoring equipment would be installed on existing traffic light mast arms or overhead signs at Locations 1, 4, 5, 6 and 7 (Figure 1). These locations are outside the floodplain. The proposed electronic message sign set on a concrete foundation would also be installed at Location 7. The proposed traffic monitoring devices at Location 2, on the northwest side of East Jemez Road and NM 4 junction (Figures 2 and 3), and Location 3, on the south side of East Jemez Road near the Los Alamos County line (Figures 2 and 4), are in the Sandia Canyon 100-year floodplain.

This assessment focuses on activities occurring in or near the Sandia Canyon 100-year floodplain that include (1) installation of two wood poles (e.g., power pole type) and (2) mounting vehicle travel-sensor equipment and solar panels on the wood poles. Figure 2 shows the proposed locations within the Sandia Canyon floodplain.

The project proposes to use a digger derrick truck with rubber tires in each location to auger a hole and place an American National Standards Institute (ANSI) O5.1 CLASS H3 (ANSI 1987) round wood pole no more than 90 feet (ft) high total and approximately 19 inches in diameter. Additional equipment used may include hand tools, a vacuum potholer, backhoe, and mini-excavator.

A traffic-monitoring sensor that detects Bluetooth signals from passing vehicles would be attached to the pole at the manufacturer's recommended height. A small solar panel would also be attached to the pole next to the traffic monitoring equipment to provide power.

Figure 3. Proposed travel-time equipment at Location 2 (intersection of East Jemez Road and NM 4) looking northeast.

Figure 4. Proposed travel-time equipment at Location 3 (south side of East Jemez Road near the Los Alamos County line) looking west.

FLOODPLAIN IMPACTS

The proposed project footprint in the Sandia Canyon 100-year floodplain is approximately 0.31 acres with a maximum total short term disturbance of approximately 0.02 acres. The area as described includes necessary space for materials staging and field verification and the minor adjustment of equipment as needed to ensure that it is located in keeping with the manufacturer's distance requirements. As a long-term disturbance, the two poles would add a small increase in impervious surfaces to the floodplain (approximately 3.94 square feet total).

Each excavated hole for a pole would be augured a maximum of 9 ft below ground surface and approximately 42 inches in diameter. After pole placement, excavated soil would be backfilled into the hole and compacted around the pole base. Any excess soil would be stabilized at the excavation site following guidelines in the LANL Seeding Specification (LANL 2021) or disposed of in accordance with the LANL Waste Management Procedure P409 (LANL 2022b). Any additional disturbance caused by equipment traffic would be also be stabilized.

LANL maintains a Permits and Requirements Identification (PR-ID) process used by LANL subject matter experts 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 regulatory agency authorizations, such as US Army Corp of Engineers permit requirements and Clean Water Act permit requirements. The process aids in identifying potential impacts to the natural and beneficial floodplain values and potential effects on lives and property.

Short-Term Impacts

The following requirements were identified and reviewed in the PR-ID process to avoid potential impacts:

- The project does not propose work in any wetlands within LANL property. No wetland impacts are expected.
- This project is not 1 acre or larger; therefore, it will not require National Pollution Discharge Elimination System Construction General Permit coverage. However, the project is required to utilize appropriate best management practices to contain excavated materials and all other potential pollutants within the work site limits and away from potential stormwater flow. Controls may include temporary controls to reduce sediment transport during construction, final stabilization to control erosion after construction activities are completed, and pollution prevention measures, such as housekeeping and spill prevention. Any required vegetation stabilization will be completed in accordance with the LANL Seeding Specification (LANL 2021).
- The project will not have any additional requirements for the Energy Independence and Security Act, Section 438. Proposed installation of two wood poles will result in a small increase in impervious surfaces (approximately 3.94 square feet total).
- Per consultation with the US Army Corps of Engineers (2023 Dail), a Clean Water Act Section 404 Dredge and Fill permit or New Mexico State Section 401 Water Quality

Certification will not be required for this project (Federal Register 2023) under the following conditions:

  - Project activities must not temporarily stage vegetation, soils, or equipment within the watercourse;
  - Activities must not push soils into the watercourse;
  - Vegetation that has been removed or masticated must not be left in the watercourse; and
  - Heavy equipment must not be used within the stream channel, especially if conditions are too wet to prevent damage to the soil structure.

- Based on LANL surveys and procedures, no historical or archeological resources are located within 100 ft of the proposed project areas. No impacts are expected to occur to cultural resources; however, the project must follow the LANL procedure for inadvertent discoveries (LANL 2006 and LANL 2015).

- Location 3 of the proposed project (Figure 1) is in threatened or endangered species habitat, based on LANL surveys and procedures. The project is required to coordinate with LANL Environmental Stewardship personnel for work requirements, including seasonal restrictions, vegetation removal restrictions, and on-site surveys prior to project field work.

- The project will involve disturbance of the Sandia Canyon Area of Concern[1] (AOC) C-00-007. Any disturbed soil from the AOC would be stabilized, using LANL-approved best management practices, and managed on site. The project is required to take precautions to avoid inadvertently transporting potentially contaminated soil from the site. If any soil is removed from the AOC, it must be managed, characterized, and disposed of in accordance with the LANL Waste Management Procedure P409 (LANL 2022b).

The Sandia Canyon AOC 72-001occupies the same footprint as the Sandia Canyon 100-year floodplain. The 100-year floodplain represents the extent to which post-Lab aged sediments and contaminants could have been deposited and therefore is used to delineate the extent of the AOC. 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).

[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 or vegetation is not expected to be removed from the AOC as a result of construction activities. The project proposes to keep all disturbed soil and vegetation on site, returned to its point of origin, and stabilized in place (LANL 2021). Any soil or vegetation that must be removed from the AOC must be managed, characterized, and disposed of in accordance with the LANL Waste Management Procedure P409 (LANL 2022b).

Potential short-term direct and indirect floodplain impacts from release of pollutants to the floodplain and exposure to stormwater would be avoided or minimized 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 ft from the Sandia Canyon floodplain.

Potential direct effects to migratory birds and other biological resources are minimal, as little or no habitat would be disturbed. The Migratory Bird Treaty Act prohibits killing migratory birds, including nestlings and eggs in an active nest. Therefore, if vegetation removal is required, during the nesting season (May 15 through July 15), an onsite inspection for bird nests from LANL Biological Resource subject matter experts would be required. Construction 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

No long-term impacts to the floodplain are anticipated as a result of this project. The proposed installation of traffic monitoring equipment is limited to existing disturbed areas adjacent to NM 4 and East Jemez Road. Periodic maintenance to replace batteries every three to five years or to diagnose equipment issues will utilize utility vehicles with rubber tires that are not expected to create further soil disturbance. The poles would not need replacement for 40 to 50 years if the project continues for that length of time. Flow paths within the floodplain would have little to no modification from pre-project conditions to post-project conditions. The poles and equipment within the floodplain would be monitored after high-flow events in case debris becomes entrapped on the poles. If this occurs, maintenance options would be assessed and scheduled.

This assessment also considered the impacts of the proposed actions in the floodplain on the conservation of habitat for existing flora and fauna, aesthetic values, and public interest. The proposed action would not impact cultural resources because none are expected to be 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 because the project would occur in areas that have been previously disturbed. The public is expected to benefit from the proposed action through real-time traffic messages.

ALTERNATIVES

The alternatives available to DOE/NNSA include the no-action alternative. The no action alternative was not selected by DOE/NNSA because the current volume of vehicles trying to access the approaches to NM 4 and the East Jemez Road Intersections is causing travel delays, driver frustration, and increased traffic accidents. Another alternative, placing the monitoring equipment in other locations, was not selected because the equipment would be out of range for optimal data collection and retrieval as well as optimal placement of poles for road safety. Other locations considered are not as high a priority for traffic-safety improvement.

As described in this assessment, the proposed project would improve the overall flow of traffic at the approaches to NM 4 and the East Jemez Road intersections by using the real-time data collected from vehicle-monitoring equipment to estimate travel time and display the information on electronic message signs. This would allow drivers to plan alternate routes or travel at alternate times. The vehicle-monitoring equipment would also provide data for current and future transportation planning, including efforts to develop transportation alternatives that reduce single-driver vehicle use, such as increased off-site work, improved public transport, improved biking infrastructure, etc.

CONCLUSIONS

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

In accordance with 10 CFE 1022, 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, prior to implementing the proposed action, provide the Statement of Findings on the proposed floodplain action.

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