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February 2021

**Los Alamos National Laboratory
Floodplain Assessment for
Fire Risk Mitigations at the
Lower Slobbovia Explosives Testing
Site in Technical Area 36**

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Prepared for: U.S. Department of Energy
National Nuclear Security Administration
Los Alamos Field Office

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ACRONYMS

AOC	Area of Concern
CFR	Code of Federal Regulations
DOE	U.S. Department of Energy
ft	feet
in	inches
LAFD	Los Alamos Fire Department
LANL	Los Alamos National Laboratory
NNSA	National Nuclear Security Administration
PR-ID	Permits and Requirements Identification
SWMU	Solid Waste Management Unit
TA	Technical Area

INTRODUCTION

The National Nuclear Security Administration (NNSA), a semi-autonomous agency within the U.S. Department of Energy (DOE), is proposing to take fire pre-suppression actions at Los Alamos National Laboratory (LANL) Technical Area (TA) 36 (Figure 1). Constructing a fire break and a fuel break surrounding the Lower Slobbovia explosives testing site in addition to the current vegetation mowing practices would establish a safety perimeter to help prevent fires from spreading away from the firing point (Figure 2).

NNSA has prepared this floodplain assessment in accordance with 10 Code of Federal Regulations (CFR) Part 1022 *Compliance with Floodplain and Wetland Environmental Review Requirements* (10 CFR 1022), which 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 has published this Floodplain Assessment for a 15 day public review and comment period. Please provide comments on this Floodplain Assessment to Kristen Dors at:

Email: kristen.dors@nnsa.doe.gov

or

Mail: U.S. Department of Energy
Los Alamos Field Office
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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, mitigating measures and take into account all substantive comments received during the public comment period. After issuing the statement of findings, DOE/NNSA will endeavor to allow 15 days of public review prior to implementing the proposed action.

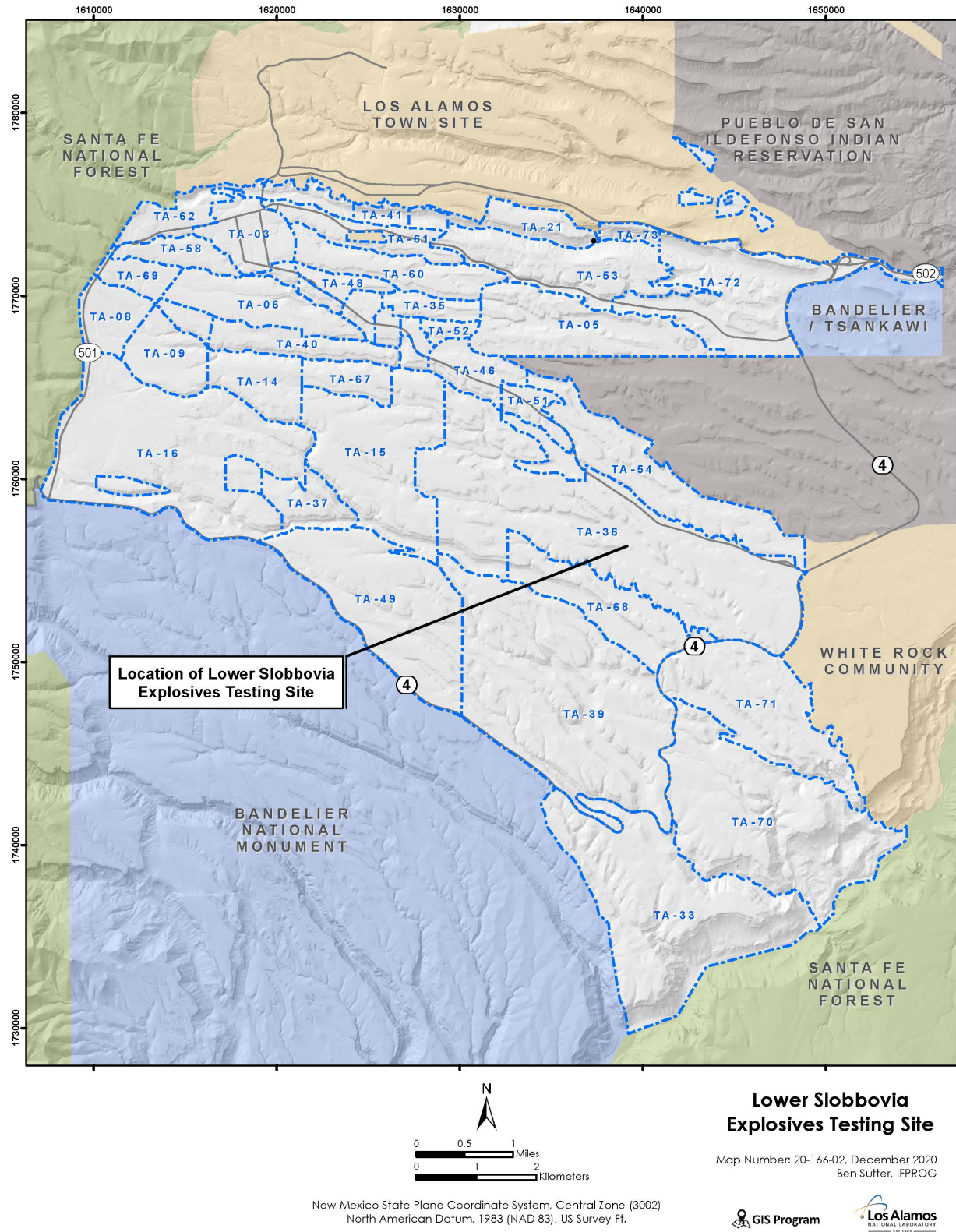


Figure 1. Location of TA-36 and the Lower Slobbovia Explosive Testing Site within the LANL boundary.

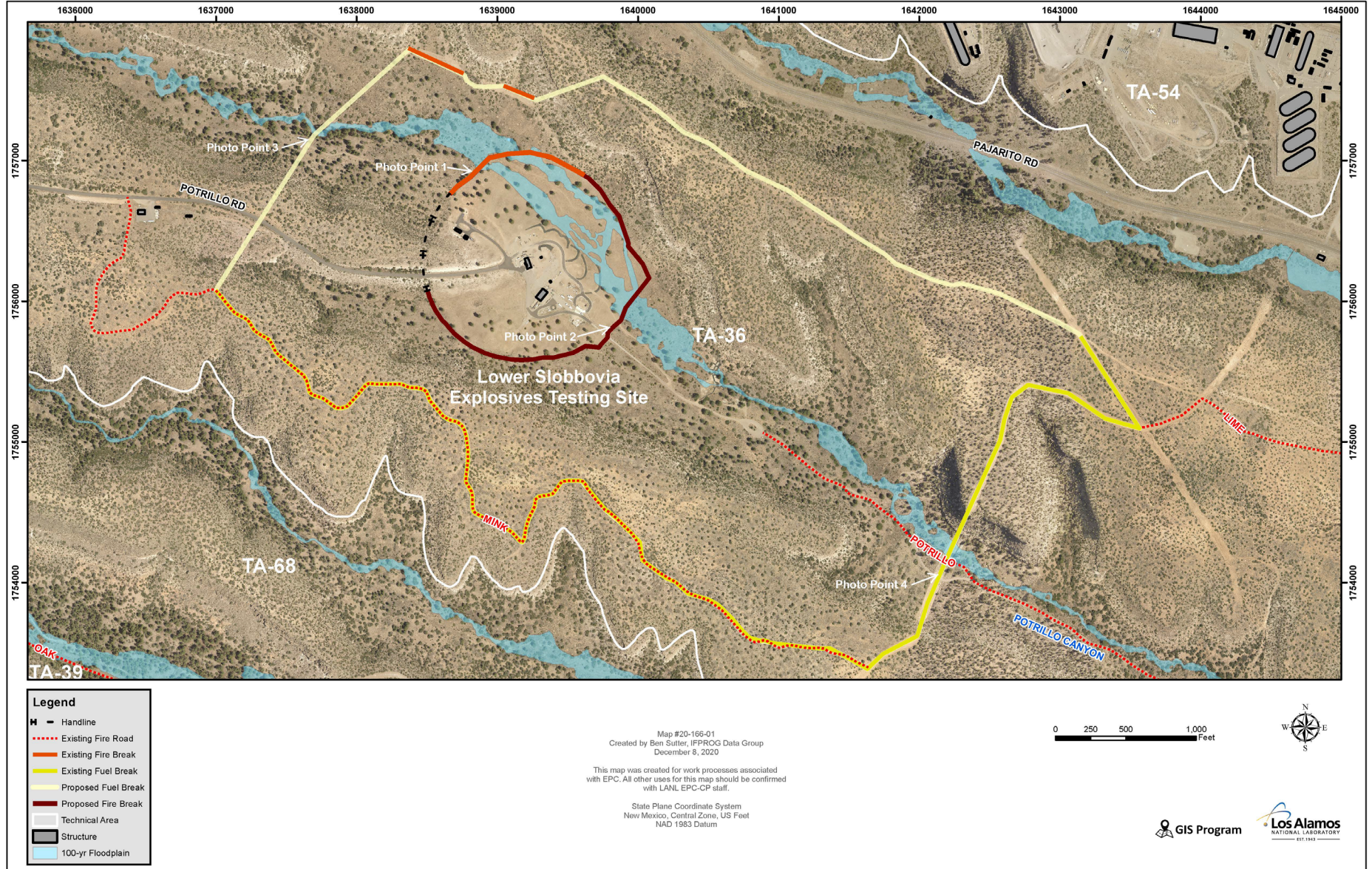


Figure 2. Lower Slobbovia explosives testing site inner fire break, outer fuel break, and 100-yr floodplain.

BACKGROUND

Lower Slobbovia explosives testing site is located in the Potrillo Canyon 100-yr floodplain, which runs roughly northwest to southeast through the central portion of LANL. Activity at the firing site has the potential for dispersing small burning metal fragments up to 600 feet (ft) from the firing site. Fire risk mitigation efforts are concentrated on mitigating the impact of fire starts from these fragments.

Current management activities include mowing herbaceous vegetation in an area of a minimum of 700 ft from the firing site to a maximum height of 6 inches (in) twice a year. In addition, during the growing season all vegetation within 600 ft of this firing site is mowed and maintained below 6 in of growth. The proposed project would include an inner fire break¹ base course line free of vegetation and an outer fuel break² cleared of trees and shrubs that both encircle the Lower Slobbovia site in TA-36 (Figure 2). Mowing vegetation and establishing these fire control lines helps to suppress potential fires and protect the surrounding urban areas and ecological and cultural resources. These fire treatments also support the *LANL Wildland Fire Mitigation and Forest Health Plan* (LANL 2019) through the management of wildland fire mitigation at explosives testing sites. The objective of explosives testing site fuel prescription is to control vegetation around explosive operations locations and to have no escaped fires.

The fire break and fuel break are intended to contain fire starts from the current operations conducted on this explosives testing site. Resources, such as fire engines and crew trucks, from the Los Alamos Fire Department (LAFD) are stationed on site during tests that are determined to pose a fire risk. However, because of safety restrictions specific to the tests being done, they may not be allowed to enter the area for 30-45 minutes following some tests while site personnel ensure materials left on site after a test do not pose additional safety issues.

PROJECT DESCRIPTION

The Lower Slobbovia explosives testing site is set up with a series of existing and proposed fire breaks and fuel breaks for fire pre-suppression and protection of the canyon (Figure 2). The inner fire break crosses the Potrillo Canyon floodplain in multiple locations. It would utilize an existing fire break where it crosses the floodplain at the north end (Photo 1), but the remainder would be new construction. The inner fire break along the southern section would be 15-ft wide, cleared of vegetation and topsoil and topped with 6 in of base course³ (Photo 2). Some soil from the clearing activities would be used to create a low earth berm downstream from the fire break to mitigate sediment transport from the disturbed area. The fire break crosses a rocky ridge to the west of the firing site. This “hand line” section would be cleared of vegetation only (Figure 2).

¹ A natural or constructed gap in vegetation used to stop or check fires that may occur, or to provide a control line from which to work.

² A natural or manmade change in fuel characteristics which affects fire behavior so that fires burning into them can be more readily controlled.

³ Base course material is composed of angular crushed stone, angular crushed or screened gravel, sand, or a combination of such materials free from deleterious materials such as vegetation, silt, and clay balls.



Photo 1. The northern fire break floodplain crossing utilizing an existing fire break (Photo Point 1, Figure 2, facing north).



Photo 2. The southern fire break floodplain crossing requiring vegetation removal and base course application (Photo Point 2, Figure 2, facing north).

The outer fuel break crosses the floodplain in two locations. It utilizes an existing fuel break at the eastern crossing but would require new fuel break construction through the floodplain at the western crossing. The southern section of this outer fuel break would use the existing fire road, with new fuel break construction to close the gaps (Figure 2). Portions of the fuel break that are not established would be cleared of trees and shrubs 10-15 ft wide by hand (no heavy equipment or extensive soil disturbance). This permits the passage of fire-suppression equipment in the event of an emergency and can be used as anchor points for fire suppression activities. The western fuel break crossing would require tree and shrub removal (Photo 3). However, the eastern fuel break crosses the floodplain over an established fuel break (Photo 4) and would not require additional vegetation removal.

The inner fire break base course would be maintained free of all vegetation while the outer fuel break would be maintained free of trees and shrubs to allow passage of fire suppression equipment in the event of an emergency.



Photo 3. The western fuel break floodplain crossing requiring tree and shrub removal and base course application (Photo Point 3, Figure 2, facing north).



Photo 4. The eastern fuel break floodplain crossing utilizing an existing fire break (Photo Point 4, Figure 2, facing north).

FLOODPLAIN IMPACTS

The following floodplain impact assessment discusses the long- and short-term impacts (positive, negative, direct, and indirect) of the proposed project on the floodplain. The floodplain at the inner fire break and Lower Slobbovia explosives testing site is relatively flat, does not have a defined channel, and is an ephemeral reach in Potrillo Canyon. The only flow occurs as occasional stormwater dispersed as sheet flow across the floodplain. The floodplain at the outer fuel break is narrower but relatively flat with a more defined channel (Photo 3). Occasional stormwater flows through this section of the floodplain.

Short-term Impacts

LANL maintains a Permits and Requirements Identification (PR-ID) process for LANL subject matter experts to identify, evaluate and resolve project-specific issues such as 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 following requirements identified in the PR-ID process help avoid or mitigate impacts to floodplain resources:

- This project would require National Pollutant Discharge Elimination System Construction General Permit coverage. This permit requires controls to limit soil erosion, sediment loss, and spills and leaks during and after construction. Controls include temporary perimeter controls to reduce sediment transport during construction and final stabilization to control erosion after vegetation clearing activities are completed. Vegetation stabilization would be completed in accordance with the LANL Seeding Specification 32-9219 (LANL 2018).
- The activities associated with this project would not add new impervious surfaces. Therefore, the Energy Independence and Security Act Section 438, which requires that stormwater runoff from new Federal construction or re-construction projects be released at pre-development levels, does not apply.
- This project is within the ephemeral waters of Potrillo Canyon. Under previous 404 rules, ephemeral waters at the Laboratory were considered jurisdictional and subject to 404 and State 401 requirements. Projects located in ephemeral waters may no longer require submittal of a pre-construction notification and or state 401 certification. Triad would request a formal Jurisdictional Determination from the USACE for clarification of our compliance requirements.
- This project would involve disturbance of the Potrillo Canyon Area of Concern⁴ (AOC). Mitigation activities would be identified and followed (see description below).

⁴An 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 NMED has determined may pose a current or potential threat to human health or the environment.

The Potrillo Canyon AOC (C-00-013) occupies the same footprint as the Potrillo Canyon 100-yr floodplain. The 100-yr 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 AOCs. Solid Waste Management Unit (SWMU) and/or AOC contaminants of potential concern are summarized in Table 1. The fire break would cross the floodplain and AOC in several locations.

Table 1. SWMUs and AOCs impacted by the project.

SWMU/AOC	Description	Contaminants of Potential Concern
AOC-C-00-013	Potrillo Canyon AOC	Organic Chemicals, Radionuclides, Inorganic Chemicals, High Explosives

Soil would not be removed from the Potrillo Canyon AOC as a result of construction activities. All disturbed soils would remain on site and be stabilized in place. Areas of soil disturbance not topped with base course would be stabilized with vegetation following NPDES Construction General Permit requirements.

Other potential short-term direct and indirect floodplain impacts from the project 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 floodplain if conditions were too wet to prevent damage to the soil structure.
- Equipment would be refueled at least 100ft from the canyon bottom.

Potential direct effects to migratory birds and other biological resources would include short-term disturbance related to noise and human presence during construction. Adult migratory birds would give way to construction equipment to avoid being killed or injured. The Migratory Bird Treaty Act prohibits intentionally 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 is the best management practice. 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

Construction and maintenance of the fire and fuel breaks across the Potrillo Canyon floodplain would not result in long-term direct or indirect impacts to the floodplain. Areas on the perimeter of the inner fire break temporarily disturbed by construction would be revegetated with grasses and forbs to control soil erosion and to mitigate losses of wildlife habitat. The floodplain at the inner fire break is relatively flat and does not have a defined channel. Stormwater flow in this area is dispersed across the floodplain and would not be impacted by application of base course. The lack of concentrated flow is not expected to disperse the base course downstream.

This assessment also considered the impacts of the proposed floodplain actions on the conservation of habitat for existing flora and fauna, aesthetic values, and public interest. The proposed action would not remove any protected habitat. The proposed action would not impact aesthetic values since all construction activities are internal to LANL and the area cannot be seen by the public. The floodplain within the proposed project is entirely located within LANL property and is uninhabited.

ALTERNATIVES

Fire behavior and risk modeling has identified the need for additional treatments to minimize the risk of fire escape to surrounding areas up and down canyon from this testing site. Due to the potential risk of fire escape from the testing site, the No Action Alternative was rejected. Because of the required LAFD delayed response and subsequent risk of a fire breaching the inner fire break during that delay, the inner fire break-only alternative was also rejected. The Preferred Alternative of an inner fire break surrounded by an outer fuel break was determined to provide an appropriate balance of reducing fire risk and minimizing environmental impact.

CONCLUSIONS

Although the proposed project would result in limited and minor direct and indirect impacts to the 100-yr floodplain, including limited long-term changes in vegetation structure, it would not result in adverse impacts to the floodplain values or functions. Temporary disturbance within the floodplain would cease following completion of construction activities. Best management practices would be implemented, including revegetation of disturbed areas not topped with base course and maintenance of the fire and fuel breaks. This proposed project would not significantly modify existing elevations and flow paths within the floodplain from pre-project conditions. No effects to lives and property associated with floodplain modifications are anticipated.

LITERATURE CITED

EO 1977. Executive Order 11988 *Floodplain Management*

CFR 2003. 10 Code of Federal Regulations (CFR) Part 1022 *Compliance with Floodplain and Wetland Environmental Review Requirements*

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