

LA-UR-20-24632

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June 2020

Los Alamos National Laboratory Floodplain Assessment for the Decommissioning and Demolition Project at Technical Area-41

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ACRONYMS

AOC	Area of Concern
CFR	Code of Federal Regulations
D&D	Demolition and Decommission
DOE	U.S. Department of Energy
LANL	Los Alamos National Laboratory
NNSA	National Nuclear Security Administration
N3B	Newport News Nuclear BWXT Los Alamos
PRS	Potential Release Site
SWMU	Solid Waste Management Unit
TA	Technical Area
WWTF	Wastewater Treatment Facility

INTRODUCTION

The National Nuclear Security Administration (NNSA), a semi-autonomous agency within the U.S. Department of Energy (DOE), is proposing to take action at Los Alamos National Laboratory (LANL) Technical Area (TA) 41 (Figure 1) within the Los Alamos Canyon 100-year (yr) floodplain. Structures 41-004 and 41-007 are process-contaminated and no longer required. It is necessary to Demolition & Decommission (D&D) the structures to eliminate the risk to the public, reduce LANL's overall square footage, and to reduce cost for surveillance and maintenance. The Proposed Action consists of shoring Omega Road to allow passage of equipment and vehicles for the D&D of TA-41-004 (colloquially known as the Ice House) and TA-41-007 (formerly a waste water treatment facility (WWTF)) and associated structures (Figure 2). D&D of these facilities is currently planned to start in 2021.

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*, which was promulgated to implement DOE requirements under Executive Order 11988 *Floodplain Management*. 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.” 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.

BACKGROUND

TA-41 is located within upper Los Alamos Canyon and was used for nuclear weapons component development and testing. The Los Alamos Canyon 100-yr floodplain runs roughly west to east through the northern portion of LANL (Figure 2). There are numerous storm water management controls in Los Alamos Canyon above and below the proposed project area. The main channel through TA-41 is contained in a roughly 20ft wide by 20ft deep engineered channel (Photo 1) to prevent or reduce potential flooding to the facilities.

The Ice House (TA-41-0004) is a legacy facility located in the bottom of Los Alamos Canyon that supported former tritium packaging operations at other locations (Photo 1). Building 41-007 and associated structures [TA-41-0056 (lift station), TA-41-0008 (contact chamber), TA-41-0037 (retaining wall) and TA-41-0009 (drying beds)] are parts of a former WWTF that supported TA-41 facilities (Photo 2). In preparation for the D&D of these facilities, all materials and waste to be removed from the site has been characterized to determine appropriate waste disposal pathways.

Omega Road provides the only access to and from the project site. Omega Road is a decades-old asphalt road that runs west to east along the entire length of Los Alamos Canyon within DOE property and is not open to the public. Sections of the road have been compromised through several decades of use, minimal maintenance, and severe erosion from multiple canyon flood events following two significant regional/local wildfires (Photo 3). For the proposed D&D to

occur, compromised sections of Omega Road will require maintenance and rehabilitation in order to support transport of construction vehicles and equipment to the D&D locations.

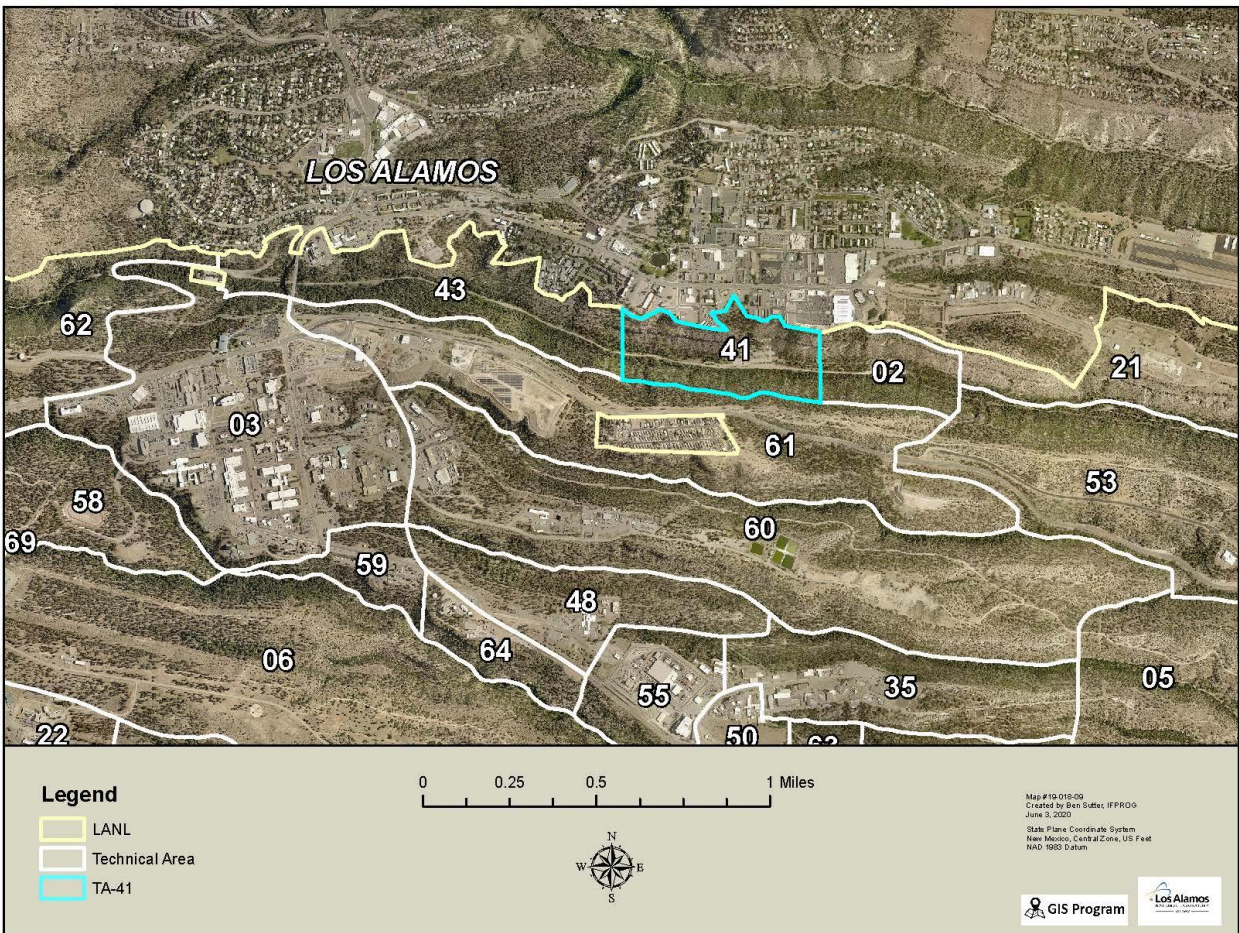


Figure 1. Location of Technical Area 41 in Los Alamos Canyon.

Compromised road sections are restricted to one-way traffic with safety managed through the use of signage, jersey barriers, and bollards. Activities associated with the maintenance and rehabilitation of Omega Road will be restricted to the existing 14 foot roadway corridor.

Area of Concern¹ (AOC) C-00-006 occupies the same footprint as the 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 AOC. The floodplain and the AOC intersect a small portion of building 41-0004 and much of structure 41-0007. Any structural materials to be removed from the AOC have been characterized to determine the appropriate disposal pathway (see discussion below).

¹An 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

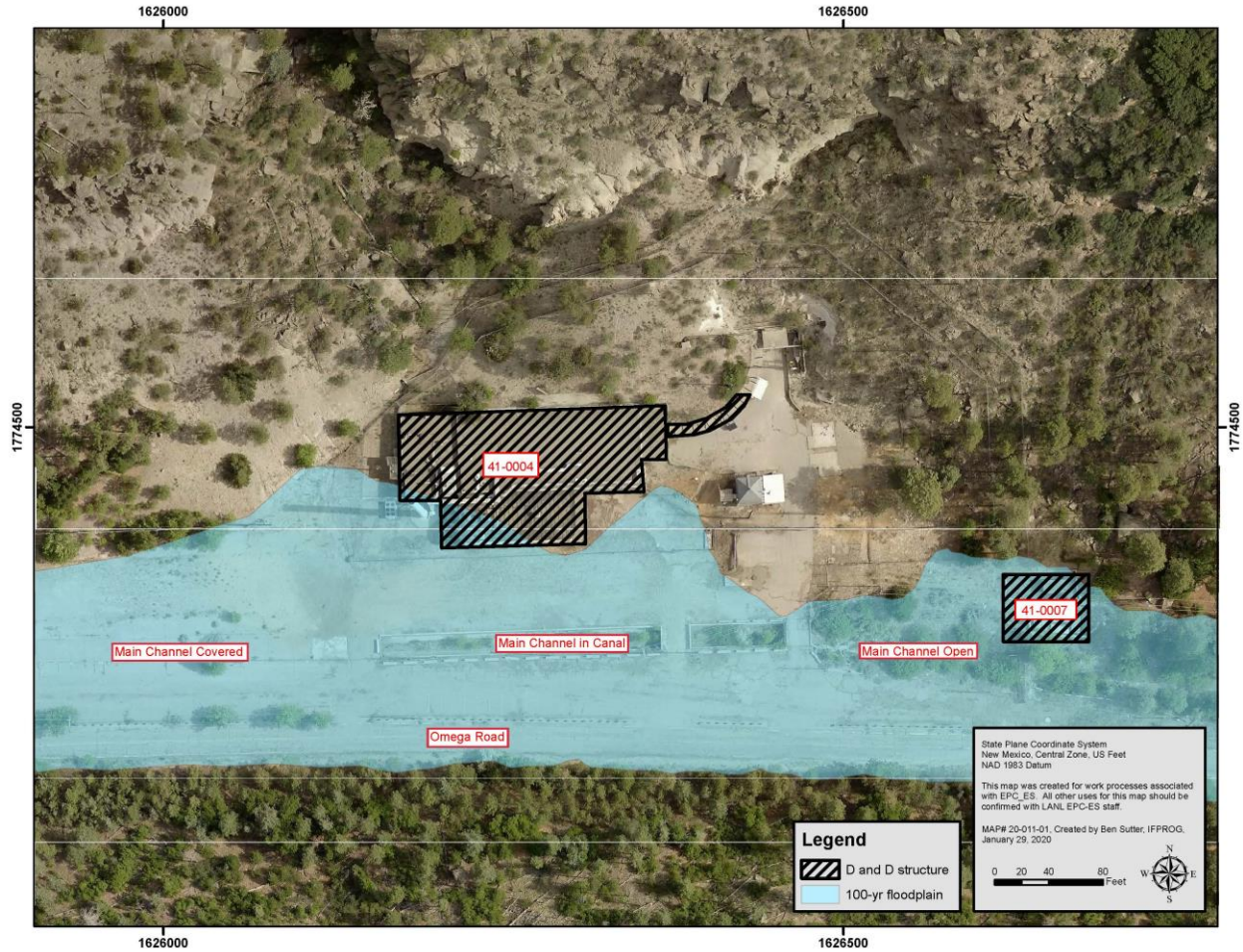


Figure 2. TA-41 D&D Project Targeted Structures and the Los Alamos Canyon 100-yr floodplain.

PROJECT DESCRIPTION

This project consists of road maintenance and rehabilitation activities of Omega Road and D&D of previously referenced TA-41 facilities. Road maintenance will consist of shoring Omega Road to allow passage of equipment and vehicles to TA-41. The proposed project is scheduled to start in October 2020 with road shoring activities. The D&D of the Ice House and TA-41-007 with associated structures will follow. The project will require the use of large excavators and several tractor trailers for transportation of heavy equipment and removal of D&D waste.

Four sections of Omega road will need to be widened to a maximum of 14 feet with road surface conditions suitable for ensuring safe and efficient passage of the excavators and tractor trailers for the duration of the project. The roads can be safely widened and rehabilitated by filling compromised areas with base course and compacting as appropriate. No paving or resurfacing is required. One section of the road will require moving concrete barriers further back onto the shoulder of the road, again, all work will be within the previously disturbed roadway corridor.

The condition and function of the widened sections of road will be routinely evaluated and maintained to ensure safe and efficient passage of the excavators and tractor trailers for the duration of the project. Upon completion of the project, the widened sections of road will remain in the modified condition.

A subcontractor to Triad National Security, LLC (Triad), the management and operations contractor for LANL under contract to DOE/NNSA, will perform the maintenance and rehabilitation of a portion of Omega Road and the D&D of the identified TA-41 facilities. The subcontractor's approach (design, schedule, and cost) for performing the work will be evaluated and approved per standard Triad subcontract procurement requirements and processes. Triad will provide appropriate oversight during work planning and execution including identification and enforcement of traffic safety requirements. All applicable environmental permitting and compliance requirements will be fully implemented during the planning and execution phases of the work scope.

Buildings 41-004 and 41-007 and associated structures are composed primarily of concrete and steel. Specialized heavy equipment is used to demolish and remove all aboveground portions of the structures. Asbestos, universal waste, and any other regulated material will be removed from the buildings before starting the demolition. There is a portion of 41-004 that is radiologically contaminated. Debris from this portion of 41-004 will be segregated and put into roll off containers prior to being shipped to an approved facility. Other waste materials will be stockpiled and sorted on site, either within the D&D footprint or on adjacent paved areas, then characterized and disposed of in accordance with the LANL Waste Management Procedure P409 and the LANL Waste Management Administrative Procedure Tool 704 "Construction and Demolition Debris".

Below-ground utilities have been disconnected and rerouted and will remain in place. Below-ground footings and foundations will be removed except for those associated with retaining walls. 41-004 is partially built into a hill on the side of the canyon and the demolition needs to ensure that the hillside is left in a stable condition with respect to collapse and erosion. This may entail civil engineering support to ensure that some retaining walls that are in the area are left structurally intact and other engineering methods are employed to ensure the hillside is stable. D&D/waste management activities are scheduled to be completed in Fall 2021. When completed, the site will roughly match the surrounding grade and be stabilized with a combination of base course and native vegetation per the LANL Seeding Specification (32-9219).

Adjacent to TA-41-0004 are structures that have been designated as having historic importance. This includes a tunnel that goes into the canyon wall, as well as a guard tower and guard shack. A covered concrete walkway connects TA-41-0004 to the guard shack and tunnel entrance. This walkway shall be removed up to a point near the guard shack. The remaining structure will need to be finished in a manner appropriate with the historic nature of the remaining structures and in compliance with State Historic Preservation Office requirements.

FLOODPLAIN IMPACTS

The proposed project would involve work within the 100-yr floodplain. The following floodplain impact assessment discusses the long- and short-term impacts (positive, negative, direct, and indirect) of the proposed project on the floodplain.

Short-term Impacts

Short-term direct and indirect impacts to the floodplain from this project include temporary ground disturbance associated with the maintenance and rehabilitation of a portion of Omega Road and D&D of TA-41 structures and potential spills or leaks (fuel, oil, hydraulic fluid) that could occur during these activities. 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, threatened and endangered species habitat, cultural resources, floodplains or wetlands, regulatory agency authorizations such as US Army Corp of Engineers permit requirements. The following requirements identified in the PR-ID process will help avoid or mitigate short-term impacts to floodplain resources:

- Project personnel must coordinate with LANL archeologists in EPC-ES to discuss protections for any cultural resources (archaeological sites or historic buildings) that may occur in the project area. Any inadvertent discoveries² will be immediately reported to EPC-ES cultural resources. Adjacent to TA-41-0004 are structures that have been designated as having historic importance, these structures will remain intact.
- This project will require NPDES 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 D&D activities are completed. Vegetation stabilization will be completed in accordance with the LANL Seeding Specification 32-9219 (https://engstandards.lanl.gov/specs/32_9219R4.doc).
- This project will not require compliance with the Energy Independence and Security Act, Section 438, which requires that stormwater runoff from new Federal construction or reconstruction projects be released at pre-development levels. D&D activities will result in a reduction in impervious surfaces and should result in a net decrease in storm water runoff from the area.

² Inadvertent Discoveries: During all ground-disturbing project activities, you must immediately stop work if you encounter bones (possible burials), clusters or alignments of rock situated above bedrock (possible masonry walls), charcoal stains (possible hearths or burned wooden structures), or clusters of artifacts such as pottery, pieces of chipped stone, and historic debris such as cans or glass. The LANL Cultural Resources SME will arrange an emergency field inspection to be conducted prior to the resumption of project ground-disturbing activities at the specific location of the inadvertent discovery.

- There will be no soil-disturbing activities in the water course, therefore this project will not require 404 permit coverage or 401 certification.
- This project will involve disturbance of a Solid Waste Management Unit/Area of Concern (SWMU/AOC) and mitigating activities must be identified and followed (see description below).

There are several SWMUs³ and AOCs in the project area within the floodplain. The SWMUs and AOCs impacted by this project are AOC C-00-006, SWMU 41-002(a), 41-002(b), and 41-002(c) (Figure 3). SWMU and AOC contaminants of potential concern are summarized in Table 1.

Table 1. SWMUs and AOCs impacted by the project.

SWMU/AOC	Description	Contaminants of Potential Concern
AOC-C-00-006	LA Canyon AOC	Organic Chemicals, Inorganic Chemicals, Radionuclides
SWMU 41-002(a)	TA-41 WWTF	Organic Chemicals, Inorganic Chemicals, Radionuclides
SWMU 41-002(b)	TA-41 WWTF	Organic Chemicals, Inorganic Chemicals, Radionuclides
SWMU 41-002(c)	TA-41 WWTF	Organic Chemicals, Inorganic Chemicals, Radionuclides

AOC C-00-006 occupies the same footprint as the 100-yr floodplain. Omega Road shoring activities will be restricted to the existing roadway corridor and will not impact the AOC. The floodplain and the AOC intersect a small portion of building 41-0004 and most of 41-0007 and its associated structures.

Solid Waste Management Units 41-002(a), 41-002(b) and 41-002(c) are all components of a former WWTF and are interconnected by a network of drainlines that are completely inactive. The treatment plant was built in 1951 and received sanitary waste from TA-41 and TA-02

³ A SWMU is any discernible unit at which solid waste has been placed at any time, and from which NMED determines there may be a risk of a release of hazardous waste or hazardous waste constituents, irrespective of whether the unit was intended for the management of solid or hazardous waste.

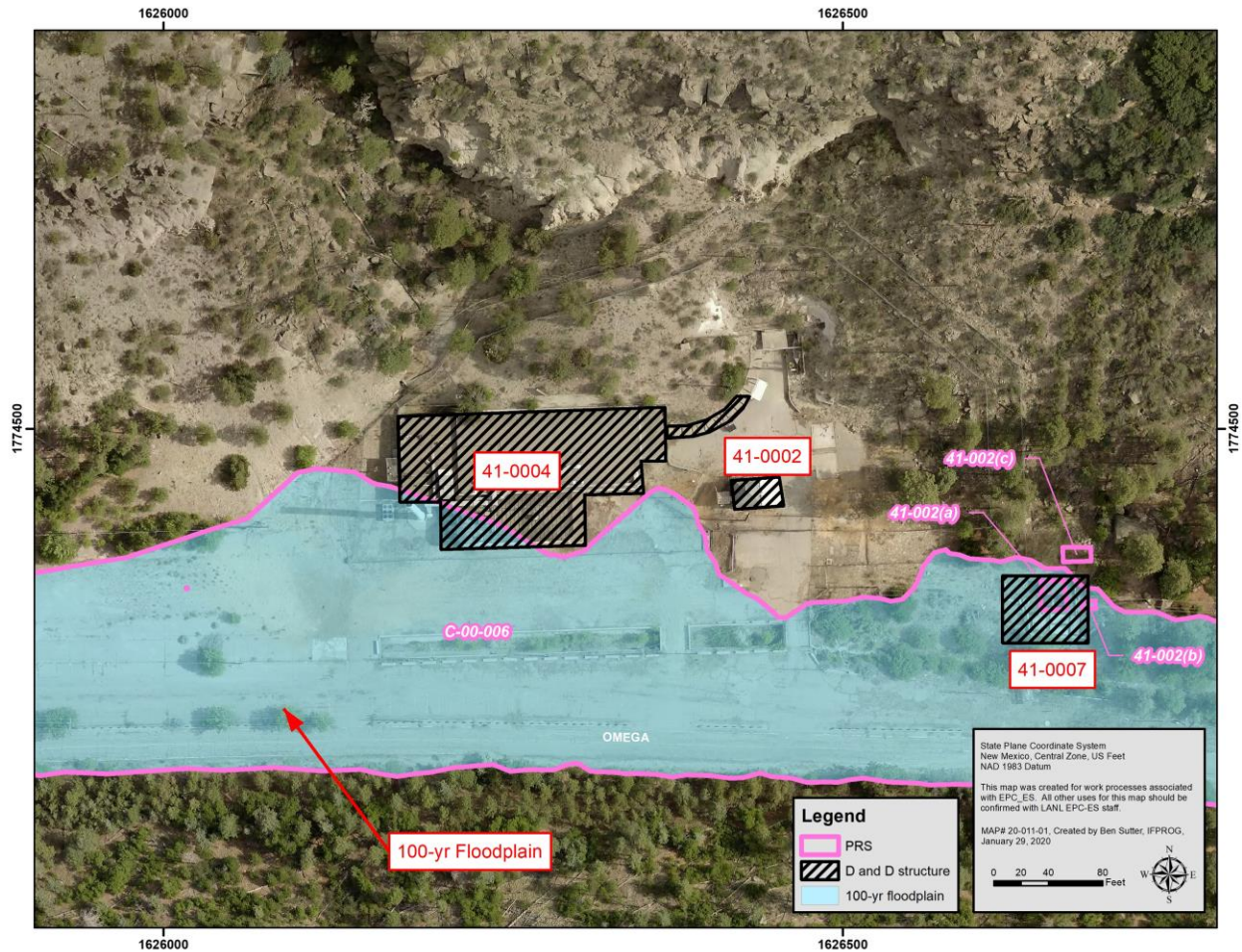


Figure 3. AOCs and SWMUs = Potential Release Sites (PRS), associated with the TA-41 D&D project. AOC C-00-006 occupies same footprint as the 100-yr floodplain.

Triad will coordinate with N3B prior to removal of the SWMU components associated with the former sanitary sewage plant. As stated earlier, waste materials removed from an AOC or SWMU have been characterized and will be stockpiled and sorted on site, then disposed of in accordance with the LANL Waste Management Procedure P409 and the LANL Waste Management Administrative Procedure Tool 704 “Construction and Demolition Debris”.

Other short-term direct and indirect impacts from the project will be avoided or minimized through implementation of the following best management practices:

- Hazardous materials, chemicals, fuels, and oils will not be stored within the floodplain.
- The entire workable canyon bottom is contained within the 100-yr floodplain, Radiological waste materials will be stored in metal roll off bins, either within the D&D footprint or on adjacent paved areas. Non-radiological waste materials will be stockpiled and then loaded into end dump trailers and removed from the site. Uncharacterized underground materials will be characterized and disposed of in accordance with the

LANL P409 Waste Management Administrative Procedure Tool 704 “Construction and Demolition Debris”.

- Heavy equipment will not be used if conditions are too wet to prevent damage to the soil structure.
- Equipment will be refueled at least 100ft from the Los Alamos 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 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 31), an onsite inspection for bird nests from LANL Biological Resource subject matter experts would be required. Construction activities will conform to requirements stipulated in the Migratory Bird Best Management Practices Source Document for Los Alamos National Laboratory (LANL 2011).

Long-term Impacts

No long-term direct or indirect impacts to the floodplain are anticipated. At the completion of the project all disturbed areas will be recontoured to match the existing grade except where portions of the original facilities will be left in place as retaining walls. Maintenance and rehabilitation of Omega Road will only occur within the original roadway corridor and will not impact the 100-yr floodplain.

This assessment also considered the impacts of the proposed floodplain actions on the conservation of habitat for existing flora and fauna, cultural resources, aesthetic values, and public interest. The proposed action will not remove any potential habitat. Some areas disturbed during removal of structures 41-004 and 41-007 will be revegetated with native species and will result in a net gain of vegetated habitat. The proposed action will not impact cultural resources as there are no cultural resource sites within the potential affected area. The proposed action will 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 D&D project is entirely located within LANL property and is uninhabited.

ALTERNATIVES

Only the No Action alternative was considered (and rejected). Structures 41-004 and 41-007 are process-contaminated structures that are no longer required. It is necessary to D&D the structures to eliminate the risk to the public, reduce LANL’s overall square footage, and to reduce cost for surveillance and maintenance.

CONCLUSIONS

Although the proposed project may result in limited and minor short-term, direct and indirect impacts to the 100-yr floodplain, it will not result in adverse impacts to the floodplain values or functions. This project will not result in long-term adverse impacts to the 100-year floodplain. Temporary disturbance within the floodplain will cease following completion of construction activities. Best management practices will be implemented. This proposed project will not significantly modify existing elevations and flow paths within the floodplain from pre-project conditions to post project conditions or result in other long-term negative impacts to the floodplain and its functionality. No effects to lives and property associated with floodplain modifications are anticipated.

DOE/NNSA has published this Floodplain Assessment for a 15 day for public review and comment period. After the close of the public comment period and prior to issuing a floodplain statement of finding 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. DOE/NNSA will endeavor to allow 15 days of public review prior to implementing the proposed action.

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Photos



Photo 1. View of concrete-lined channel with the Ice House (41-004) and Guard Shack (41-002) in background.



Photo 2. View of former waste water treatment facility (41-0007).



Photo 3. Omega Road will require some shoulder repair to accommodate wide vehicles.