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Addendum to the Wetland Assessment for the Replacement Water Lines from Technical Area 48 to Technical Area 55 Project

Los Alamos National Laboratory

Los Alamos
NATIONAL LABORATORY

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ACRONYMS AND ABBREVIATIONS

Acronym	Definition
AOC	Area of Concern
CFR	Code of Federal Regulations
DOE	(U.S.) Department of Energy
EISA	Energy Independence and Security Act
EO	Executive Order
EPA	(U.S.) Environmental Protection Agency
LANL	Los Alamos National Laboratory
NEPA	National Environmental Policy Act
NMED	New Mexico Environment Department
NPDES	National Pollutant Discharge Elimination System
NNSA	National Nuclear Security Administration
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 new construction at Los Alamos National Laboratory (LANL). This wetland assessment has been 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 (CFR 2003).

The water line replacement project would install two 12-inch water lines along an alignment from Technical Area (TA) 48 to Pecos Road on the east side of TA-55 (Figure 1). The water lines would replace aging cast iron pipes that provide water for fire suppression to buildings within TA-55, and potable water to other areas in the Pajarito Corridor. A wetland assessment was published June 2022 (LANL 2022a) addressing potential wetland impacts from the project as proposed in 2022. Part of the project has been completed but due to issues with the original construction method, the project is proposing a different construction method along the northern fenced boundary of TA-55. A segment of the uncompleted part of the project would cross through the southern edge of a wetland next to Technical Area (TA) 55 (Figure 2). Project activities proposed within a portion of the wetland would include: (1) cutting wetland vegetation to ground level to allow equipment access, (2) open excavation to place two 12-inch high-density polyethylene water lines underground, (3) relocation of National Pollutant Discharge Elimination System (NPDES) Outfall 03A181 to meet facility security requirements, (4) installing a small elevated metal platform and stairs with handrail for the safety of NPDES Program outfall sampling personnel, and (5) removal of non-native invasive tree species to reduce competition for native plant species and provide forage and cover for wildlife.

Title 10 CFR 1022 was promulgated to implement federal agency (e.g., DOE) requirements under Executive Order 11990, Protection of Wetlands (EO 1977). A wetland is defined in 10 CFR 1022 as “an area that is inundated or saturated by surface of groundwater at a frequency and duration sufficient to support, and that under normal circumstances does support, a prevalence of vegetation typically adapted for life in saturated soil conditions, including swamps, marshes, bogs, and similar areas” (CFR 2003). This wetland assessment evaluates potential impacts to wetland values and functions from implementation of the proposed action changes from the 2022 wetland assessment, identifies alternatives to the proposed action, and allows for meaningful public comment.

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

Email: karen.armijo@nnsa.doe.gov

Or

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

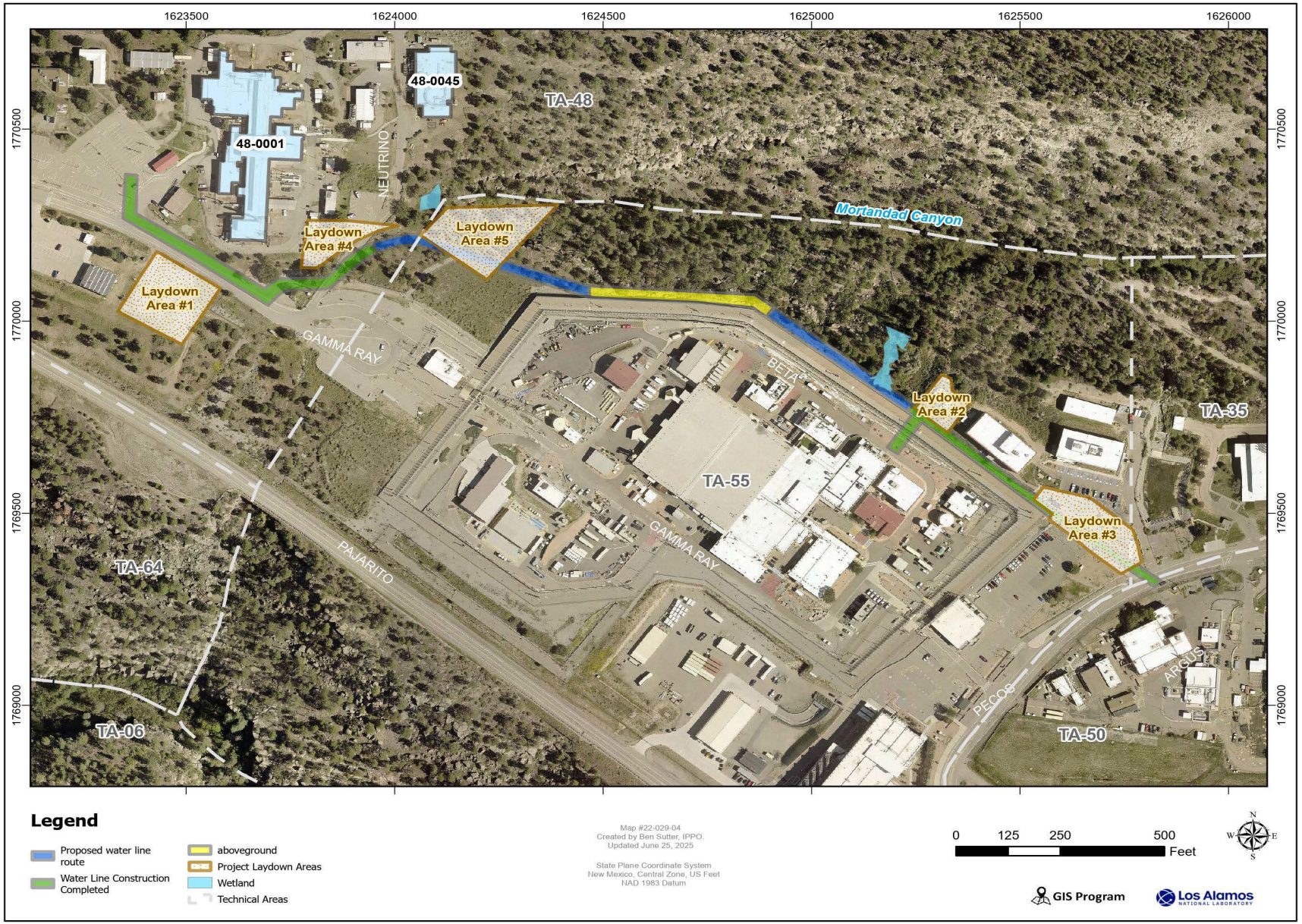

Figure 1. Location of proposed replacement water lines.

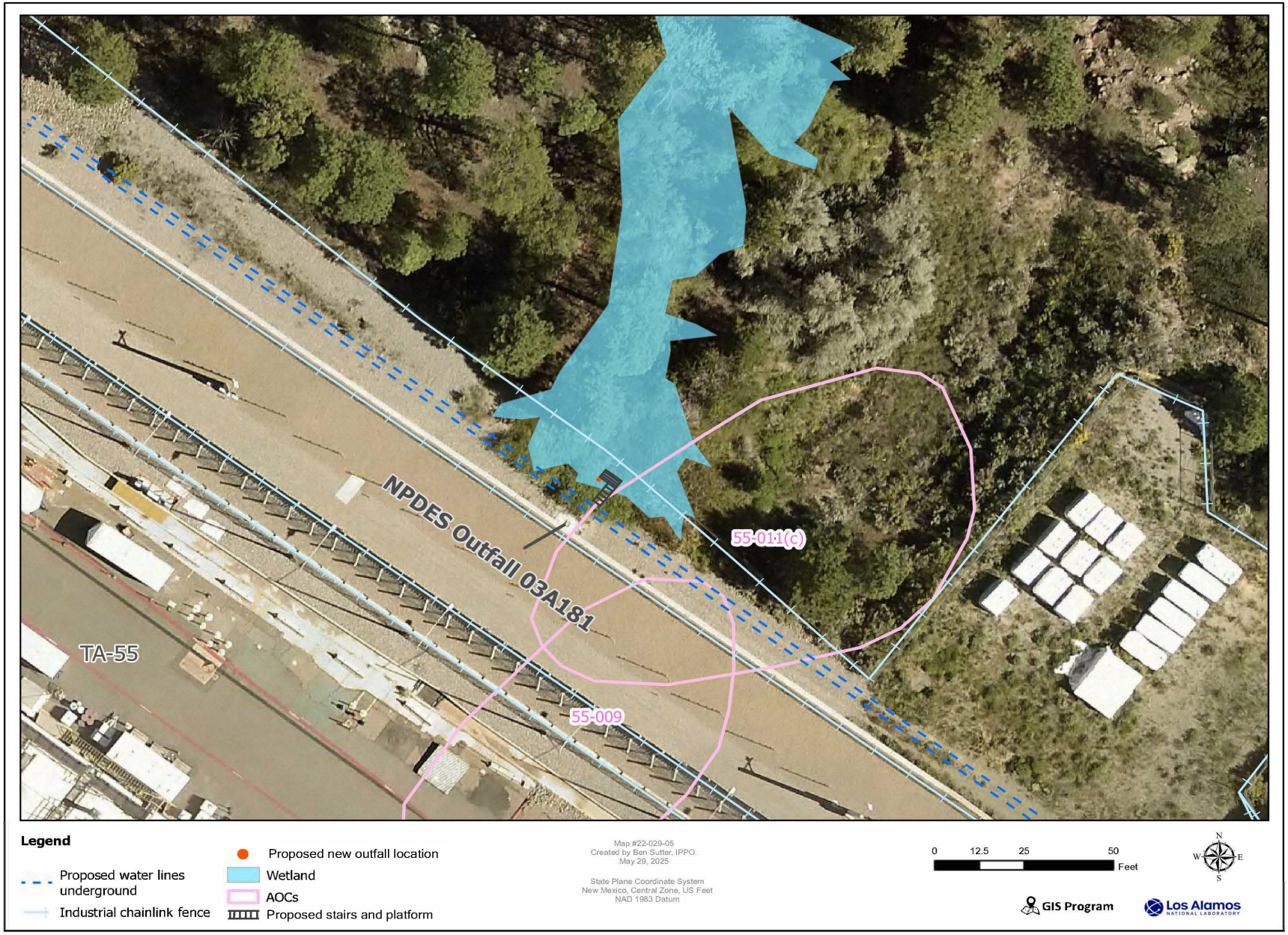

Figure 2. Location of proposed replacement water lines in relation to the TA-55 wetland.

BACKGROUND

Cast iron water pipes currently provide water to all facilities throughout the Pajarito Corridor. The pipes are aging and near the end of their life cycle. The proposed new water lines from TA-48 to Pecos Drive on the east edge of TA-55 will replace the aging cast iron pipes that provide water for fire suppression to buildings within TA-55 and potable water to other areas in the Pajarito Corridor.

The water lines replacement project started construction in 2022 with a plan to install the water lines by a combination of open excavation (e.g., trenching) and horizontal directional drilling. The entire project would install new water lines starting at Gamma Ray Road along the south of TA-48, continue along the north fenced boundary of TA-55, and tie into existing high- and low- pressure waterlines on Pecos Drive. A wetland assessment was published June 2022 (LANL 2022a) addressing potential wetland impacts from the proposed project as planned at that time.

The far west and far east sections of the water lines, constituting approximately 40 percent of the total project, have been completed or are in active construction (Figure 1). Horizontal directional drilling from TA-48 under the north fenced boundary of TA-55 was attempted but resulted in issues including the loss of a drilling bit. The project determined that the local geology consisting of fractured tuff was not feasible to continue drilling through this section of the project. This method was abandoned due to the added complexity, time and cost to the project. The project proposes to complete the water lines underground through open excavation for the majority of the remaining project and aboveground in one section that does not have enough space for underground installation outside the TA-55 fenced boundary. This wetland assessment addresses only project actions that have not been initiated and may impact LANL wetlands.

Most of the mesa top in the TA-48 and TA-55 area is developed with buildings, roads, fences, and other structures. The remaining areas are vegetated with ponderosa pine (*Pinus ponderosa*) and piñon pine (*Pinus edulis*)/juniper (*Juniperus sp.*) forest intermixed with chamisa (*Chrysothamnus nauseosus*) and sagebrush (*Artemisia tridentata*). Two small wetlands exist in or near the proposed project (Figure 1).

The TA-48 wetland is located on the east side of TA-48 to the east of Neutrino Road, is approximately 0.06 acre in size, and is dominated by cattail species (*Typha* sp.). This wetland is part of Solid Waste Management Unit (SWMU) 48-010, an unlined surface impoundment constructed in 1978 by excavating directly into the tuff rock. The surface impoundment formerly received cooling tower blowdown discharge, noncontact cooling water discharge, and storm water runoff from the parking lot for building TA48-0045. Currently the surface impoundment receives only storm water from the small, paved parking area located west of the TA-48 wetland south of building TA48-0045. Any flow from the impoundment, which is rare, flows into a tributary of Mortandad Canyon. The proposed project route would pass to the south of the TA-48 wetland and is not expected to impact that area; however, the project has taken additional measures to ensure no impacts.

The TA-55 wetland is located on the north edge of the mesa and is approximately 0.13 acres in size. The TA-55 wetland contains a mix of tree, shrub, and forb species including water birch (*Betula occidentalis*), narrowleaf cottonwood (*Populus angustifolia*), narrowleaf willow (*Salix exigua*), rush species (*Juncus sp.*), sedge species (*Carex sp.*), panicled bulrush (*Scirpus microcarpus*), and cattail (*Typha latifolia*). Non-native invasive species are also present. The southern end of the wetland is within the urbanized area of TA-55. The remainder is a mixture of formerly disturbed and revegetated areas and undisturbed areas.

Past disturbances in this area include asphalt paving, structures, fill/gravel, and deposition of building debris. This area flows into a tributary of Mortandad Canyon.

Most of the water flowing to this area is from the intermittent discharge of treated cooling tower blowdown (LANL 2019a) from NPDES Outfall 03A181 (Figure 2). Total discharges range from 2 to 3.5 million gallons per year. Water flows from the outfall and disperses through the gravel security access. The water then flows through the wetland from the approximately 20 percent slope on the north side of the gravel security access and in several braided channels flowing to the north towards the canyon edge. The vegetation has continued to grow up over the gravel security access and closer to the outfall. The TA-55 facility must maintain an envelope of operational security. The vegetation is currently infringing into the security envelope and will periodically require removal from the gravel security access.

The outfall in its current location is a mostly level and open area with easy access for NPDES Outfall Program personnel to sample discharge water. Discharge water is sampled for analysis weekly with collected volumes often exceeding several gallons. Program personnel are required to hand transport coolers sometimes more than 50 pounds across short distances.

PROJECT DESCRIPTION

The project proposes to complete installation of the water lines on the mesa top to the south of a Mortandad Canyon tributary. Two 12-inch high-density polyethylene water lines (one high pressure and one low pressure) would be installed in parallel continuing from the boundary of TA-48 and TA-55 and continue along the north fenced boundary of TA-55. Approximately 1426 feet total of water lines remain to be installed (Figure 1): approximately 480 feet of aboveground installation and approximately 982 feet underground installation in two sections. Five laydown areas would be used for staging materials and equipment.

A section of water lines would be installed aboveground in an area that is too narrow to allow open excavation (e.g. trenching) and large equipment access. The aboveground section would be placed on concrete supports and constructed of ductile iron with heat tracing and insulation. Both ends of the ductile iron would be connected to the polyethylene lines using approved standard engineered methods. This proposed project section would be accessed from the west at TA-48 and inside TA-55 using equipment such as mini-excavator where possible, crane, and hand tools. This activity is outside the wetlands and is not expected to cause impacts to the wetlands.

Two sections of proposed water lines would be installed underground (Figure 1). The section to the west would be accessed from TA-48 from a small parking lot south of Building 48-0045. The section to the east would be accessed from Pecos Drive on the gravel security access that runs along the north edge of the mesa top from the TA-55 security fenced boundary sloping down to an industrial chain link fence (Figures 2 and 3). To install the water lines underground, the project proposes open excavation by trenching a maximum of 6 feet below ground surface and approximately 6 feet wide. After water line placement, excavated soil would be backfilled into the trench and compacted. No aboveground structures or impervious surfaces are proposed to be associated with this section of the water lines installation. Equipment would include excavators, mini-excavators, front end loaders, compaction equipment, a crane, chain saws, and hand tools.

Figure 3. Area of proposed TA-55 wetland impact looking west.

Some vegetation around the proposed open excavation in the TA-55 wetland would be cut at ground surface for safety of operations and to allow for equipment and vehicle access.

Flow from NPDES Outfall 03A181 would be temporarily piped over the open excavation area during construction and would continue to supply water to the TA-55 wetland. The project proposes to permanently move the discharge point of NPDES Outfall 03A181 approximately 18 feet to the northeast after completion of the water lines installation. A PVC-type pipe would be attached to the existing discharge pipe and buried under the gravel security access. The pipe would discharge to the north slope of the gravel security access into the existing wetland vegetation.

Relocating the outfall to the slope of the gravel security access would create an access safety issue for the program personnel. The project proposes to address the safety issue by installing an approximately 5 feet by 3 feet platform directly below the outfall and an approximately 10 feet long by 3 feet wide stairs with handrails descending from the gravel security access into the wetland (Figure 2). The platform, stairs and handrails would be constructed of all-weather, non-skid, metal grate (e.g., steel, aluminum) and elevated above ground surface on supporting concrete piers. Approximately eight concrete piers would be constructed by excavating 8-12 inches in diameter and 12-24 inches deep.

The Project also proposes to remove non-native invasive tree species of russian olive (*Elaeagnus angustifolia*), paper birch (*Betula papyrifera*), and siberian elm (*Ulmus pumila*). LANL Biological Resources personnel would identify the trees to remove. Trees would be cut with hand saws or chain saws near ground level. Material would be removed from the wetland boundary by hand for appropriate disposal.

WETLAND IMPACTS AND MITIGATIONS

This wetland assessment addresses only project actions that have not been initiated, and which may impact LANL wetlands. The proposed project route would pass to the south of the TA-48 wetland and is not expected to impact that area. However, as an added precaution, the project has taken measures such as installation of additional sediment and erosion controls and enforcement of project boundaries near wetlands to ensure impacts are minimized.

Project activities proposed within a portion of the TA-55 wetland would include: (1) cutting wetland vegetation to allow safe operations and equipment access, (2) open excavation to place two 12-inch high-density polyethylene water lines underground, (3) relocation of NPDES Outfall 03A181, (4) installing a small metal platform and stairs with handrail, and (5) removal of non-native invasive tree.

The minimum total disturbance expected in the wetland from proposed open excavation activities and a minimum area of proposed vegetation cutting would be approximately 197 square feet (0.004 acre). The maximum area proposed to be disturbed in the TA-55 wetland would be no more than approximately 539 square feet (0.01 acre) which is the area of the wetland between the TA-55 fenced boundary and the industrial chain link fence to the north (Figure 2 and 3). This entire expanded area is not anticipated to be impacted but is included as contingency for project activities that may require disturbance. An additional approximately 8 square feet of disturbance is expected by excavating to place concrete piers to support structures to safely access the relocated outfall. The metal grate platform and stairs will be elevated above ground surface on the concrete piers.

Short-Term Impacts and Mitigations

The proposed underground water lines installation would clear, grub, and trench across the south edge of the TA-55 wetland then backfill the trench. This proposed activity would be a short-term direct negative impact. Only the area required for water lines installation would be excavated. The proposed project would limit additional disturbance as much as possible in the wetland area to mitigate construction impacts. The disturbed area would be returned to original grade and approximate surface water flow path(s). Flow paths would have little to no modification from pre-project conditions to post-project conditions. Disturbed areas that were previously covered with gravel would be stabilized with gravel. Disturbed areas that were previously vegetated would be stabilized following guidelines in the LANL Seeding Specification (LANL 2021).

Excavated soil, bedding sand, and other related materials would not be placed or stored next to the open excavation within the wetland boundary. Materials and equipment would be staged to the east and west of the wetland to avoid potential release of materials and pollutants to the wetland. The project would stabilize any excess soil at the excavation site following guidelines in the LANL Seeding Specification (LANL 2021) or dispose of in accordance with P409, *LANL Waste Management* (LANL 2022b). Any additional disturbance caused by equipment traffic would also be stabilized.

Wetland vegetation proposed to be cut around the open excavation for safety of operations and equipment and vehicle access would be cut at ground surface leaving root structures intact. This is a short-term direct negative impact to the wetland. Vegetation such as willows and cattails readily regrow from rooted stems and rhizomes. Regular water discharge from the outfall is expected to promote re-growth.

The proposed action of temporarily piping water discharge from NPDES Outfall 03A181 over the open excavation area during construction would result in a short-term direct impact. The water discharge would continue to supply water to approximately 92 percent of the TA-55 wetland. The construction area would be returned to original grade and approximate surface water flow path(s). Flow paths would have little to no modification from pre-project conditions to post-project conditions. Please refer to the Long-Term Impacts and Mitigations section for a description of relocating the outfall.

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 authorization, such as permit requirements of the U.S. Army Corps of Engineers and the Clean Water Act. The tool aids with identifying potential impacts to the natural and built environments from the proposed project. Subject matter experts identified and reviewed the following requirements to avoid potential direct and indirect impacts:

- The project does not propose work in any 100-year floodplains within LANL property; no floodplain impacts are expected.
- The total proposed area of project disturbance will be larger than 1 acre; therefore, NPDES Construction General Permit coverage is required. The project is required to use industry standard stormwater controls to contain excavated materials and all other potential pollutants within worksite limits and away from potential stormwater flow (LANL 2025). These controls – installed and maintained in accordance with manufacturer guidance - include temporary materials (silt fence, etc.) to reduce erosion and sediment transport, manage run-on and runoff, contain excavated materials, and keep potential pollutants within the work site limits and away from potential stormwater flow during construction. The project is required to use appropriate, industry standard, best management practices such as procedures that include waste management and spill prevention. All disturbed areas must have final stabilization in accordance with the LANL Seeding Specification (LANL 2021) to control erosion after completion of construction activities. Any required vegetation stabilization will use the LANL Seeding Specification seed mix, which contains native perennial grasses, forbs, and shrubs. Native species selection benefits local animal species, helps suppress weeds, and restores natural habitats, thus ensuring long-term ecological stability.
- Based on project scope and project design drawings, the proposed project would be subject to additional requirements regarding the Energy Independence and Security Act (EISA), Section 438 (PLAW 2007). Section 438 of the EISA requires newly developed or redeveloped projects at federal facilities with a footprint greater than 5,000 square feet to maintain or restore, to the maximum extent technically feasible, the predevelopment hydrology of the area, which includes stormwater rate, duration, and volume. Upon completion of construction activities, impacts are expected to be mitigated and minimized with reestablishment of vegetation per LANL seeding specification (LANL 2021). Impacts are expected to be mitigated and minimized by ensuring that the project coordinates with LANL Stormwater personnel to design appropriate controls for each project area. No modifications to stormwater flow paths are proposed.
- Project activities are not expected to impact a water course, therefore coverage by U.S. Army Corps of Engineers regulations, 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).

- A National Environmental Policy Act (NEPA) evaluation is required for the proposed project as determined by LANL NEPA personnel and would include this wetland assessment. The DOE/NNSA NEPA Compliance Officer must issue an approval of the coverage recommendation in the NEPA evaluation document before the proposed project begins and can be implemented.
- Based on LANL surveys and procedures, there are no historical or archaeological issues related to the proposed water lines installation along the north fence of TA-55. Proposed project activities will not affect the historic integrity of any of the nearby historic buildings. An archaeological site near the proposed project has been visibly marked and will be monitored by LANL Cultural Resources personnel during the project. The proposed project must follow the LANL procedure for inadvertent discoveries (LANL 2019b).
- Based on LANL surveys and procedures, the project intersects Mexican Spotted Owl habitat. Impacts are expected to be mitigated and minimized by requiring the project to coordinate with LANL Biological Resources personnel. A Biological Assessment is not required. The proposed project must comply with annual noise and light protection standards and habitat protection. (LANL 2017).
- Proposed project activities associated with the TA-55 wetland would be located adjacent to two Potential Release Sites (Figure 2) summarized in Table 1.: Area of Concern[1] (AOC) 55-011(c) and SWMU[2] 55-009. The project must coordinate with LANL Consent Order personnel to identify areas prior to construction and avoid disturbance if possible. If the project cannot avoid disturbance, any material excavated within an AOC/SWMU boundary must be managed within that boundary, returned to the point of origin, and stabilized using LANL seeding specification (LANL 2021). 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 2022b). Existing sampling data can be viewed by the public in the Intellus website (http://www.intellusnm.com).

Table 1. Potential Release Sites potentially impacted by project activities associated with TA-55 wetland.

AOC/SWMU	Description	Contaminants of Potential Concern
AOC 55-011(c)	Storm drain	None [Note: This site has been issued an NFA (No Further Action) approval from NMED]
SWMU 55-009	Concrete enclosure- inactive sanitary sewer monitoring station	None [Note: This site has been issued an NFA (No Further Action) approval from NMED]

[1] An AOC is any area that has a known or suspected release of hazardous waste or hazardous constituents that is not from an SWMU and that the Secretary of the New Mexico Environment Department (NMED) has determined could pose a current or potential threat to human health or the environment.

[2] An SWMU is any discernible unit at which solid waste has been placed at any time and from which NMED determines a potential risk of release of hazardous waste or hazardous waste constituents, irrespective of whether the unit was intended for the management of solid or hazardous waste.

Potential short-term direct and indirect wetland impacts from release of pollutants to the wetland and exposure to stormwater would be avoided or minimized through implementation of the following practices:

- Support structure such as personnel trailers would not be located within 100 feet of the wetland.
- Any disturbed areas will be stabilized by revegetating with an appropriate native seed mix or plants (LANL 2021) or near the wetland with non-vegetative material such as riprap, gravel mulch, or a rolled erosion control product.
- Hazardous materials, chemicals, fuels, and oils would not be stored within 100 feet of the wetland.
- Heavy equipment would not be used within area of proposed wetland vegetation cutting if conditions are too wet to prevent damage to the soil structure.
- Equipment would be refueled at least 100 feet from the wetland.

Potential direct effects to migratory birds and other biological resources are minimal because little 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 Resources 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 and Mitigations

Relocating the NPDES Outfall 03A181 discharge point would result in a permanent long-term impact to the southern end of the TA-55 wetland. Moving the outfall discharge point will move the wetland's water supply closer to the industrial chain link fence. The hydrophytic vegetation associated with the wetland is expected to reduce in size by approximately 200 square feet or 4 percent of the existing wetland and remain on the north side of the gravel security access. While this is a permanent modification to the wetland boundary, this will reduce the need for continual removal of vegetation to maintain the facility security requirements.

Installing a platform and stairs with handrails for safe access to the relocated outfall would result in a limited permanent long-term impact to the southern end of the TA-55 wetland. The concrete piers would result in a direct impact by reducing the wetland by approximately 8 square feet. The metal grate platform and stairs would be permeable to sunlight elevated above ground surface. These structures are expected to be less of a direct impact because these structures will not impede flow paths or vegetation growth

Invasive species such as Russian Olive (*Elaeagnus angustifolia*) can easily form dense, monotypic stands that can choke out other wetland species (USDA 2014). The proposed removal of non-native invasive tree species would provide a long-term benefit to habitat by reducing competition for native plant species and providing forage and cover for wildlife.

This assessment also considers the impacts of the proposed actions in the wetland on the 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 project would occur in areas that are internal to LANL and are not accessible to the public

ALTERNATIVES

The alternatives available to DOE/NNSA include: (1) no action alternative, (2) routing the proposed water lines through the canyon bottom to the north of TA-55, (3) routing the water lines along Pajarito Road, and (4) continue to attempt horizontal directional drilling under the north fenced boundary of TA-55.

A no action alternative was not practicable because the existing cast iron pipes are at the end of their life cycle and will continue to deteriorate. DOE must also fulfill safety requirements to provide fire suppression to buildings within TA-55.

Routing the proposed water lines through the canyon bottom of the Mortandad Canyon tributary was not practicable because it would cause the greatest impact to LANL natural resources. There are larger wetland areas and threatened and endangered species habitat located in that proposed route. The additional environmental analyses and permitting processes, such as a new biological assessment and environmental assessment, would also add considerable time and cost to the project.

The route along Pajarito Road was not practicable because the area around TA-48 and TA-55 has multiple underground utilities. The project was unable to locate a corridor with enough space to add a new utility line and areas that avoided placing water lines close to other utilities such as electrical and sewer.

Horizontal directional drilling under the north fenced boundary of TA-55 was not practicable because of the local geology. Drilling through fractured tuff resulted in continual issues including stuck drilling bits which had added complexity, time and cost to the project.

CONCLUSIONS

The majority of the actions proposed for the unconstructed part of the project would result in limited and minor direct and indirect short-term impacts to the TA-55 wetland and would not result in adverse impacts to the wetland values or functions. Temporary disturbance within the wetland would cease following completion of construction activities. The proposed project would implement best management practices to mitigate impacts during construction. The proposed project would not significantly modify flow paths within the wetland from pre-project conditions to post-project conditions. Removal of invasive plant species is expected to benefit native plant species.

Relocating NPDES Outfall 03A181 would result in a limited long-term direct impact moving the wetland's water supply to the north side of the gravel security access. Future vegetation cutting impacts to the wetland for security requirements would be reduced. Installing a metal grate platform and stairs would also result in a limited long-term direct impact to the TA-55 wetland but would not significantly modify flow paths within the wetland from pre-project conditions to post-project conditions. These actions would not result in adverse impacts to the wetland values or functions. No effects to lives or property associated with wetland modifications are anticipated.

In accordance with 10 CFR 1022 (CFR 2003), DOE/NNSA will publish this wetland assessment and initiate a 15-calendar-day public comment period. DOE/NNSA will reevaluate the practicability of alternatives to the proposed wetland action and the mitigating measures, taking into account all substantive comments received.

LITERATURE CITED

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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 Oder 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

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