FINAL ENVIRONMENTAL ASSESSMENT FOR REMOVAL ACTIONS AT THE TECHNICAL AREA III CLASSIFIED WASTE LANDFILL, SANDIA NATIONAL LABORATORIES, NEW MEXICO

DOE/EA-1729

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ABBREVIATION / ACRONYM LIST

CFR	Code of Federal Regulations
CO	carbon monoxide
CO_2	carbon dioxide
CWL	Classified Waste Landfill
D&D	decontamination and demolition
DOE	Department of Energy
DSO	disassembly and sanitization operation
EIA	Energy Information Agency
ft	foot
ft^2	square foot
ft^3	cubic foot
FY	fiscal year
HEPA	High Efficiency Particulate Air
HWMF	Hazardous Waste Management Facility
KAFB	Kirtland Air Force Base
kg	kilogram
km	kilometer
lb	pound
LEV	local exhaust and ventilation
m	meter
m^2	square meter
m^3	cubic meter
MT	metric ton
MWL	Mixed Waste Landfill
NAAQS	National Ambient Air Quality Standards
NMAC	New Mexico Administrative Code
NMED	New Mexico Environment Department
NNSA	National Nuclear Security Administration
NPDES	National Pollutant Discharge Elimination System
SHPO	State Historic Preservation Officer
SNL/NM	Sandia National Laboratories/New Mexico
SSHASP	Site-Specific Health and Safety Plan
SSO	Sandia Site Office
SVOC	semi-volatile organic compound
SWB	Solid Waste Bureau
SWMF	Solid Waste Management Facility
SWTF	Solid Waste Transfer Facility
TA-I	Technical Area I
TA-II	Technical Area II
TA-III	Technical Area III
TPY	tons per year
U.S.C	United States Code
VTR	vault-type room
yd^3	cubic yard

1.0 PURPOSE AND NEED FOR AGENCY ACTION

This section establishes the purpose of the Proposed Action and the need to which the Department of Energy (DOE) National Nuclear Security Administration (NNSA) proposes to respond. Based on this purpose and need, reasonable alternatives (including the Proposed Action and No Action Alternative) are selected. These alternatives are described in Chapter 2, and their potential environmental effects are discussed in Chapter 4.

1.1 Background

Between 1989 and 1993, Sandia National Laboratories/New Mexico (SNL/NM) disposed of approximately 2,700 cubic yards (yd^3; 2,064 cubic meters [m^3]), roughly 250 tons (227.5 metric tons [MT]), of accumulated Cold War legacy materials, primarily classified materials related to the nuclear weapons program, through burial in the Classified Waste Landfill (CWL) in SNL/NM's Technical Area III (TA-III; Figure 1.1), located within the geographic boundaries of Kirtland Air Force Base (KAFB), Albuquerque, NM, on land owned by DOE. These materials were interred and covered with mounded soil during a series of seven different burial events (Figure 1.2). Historic records describe the landfill contents as consisting of roughly fifty percent classified magnetic tapes and other cybermedia, with the balance being a collection of pallets, drums, transportation containers, and trailers containing various components and other classified items fabricated of steel, wood, cork, plastics, and other such constituents, all of which were recorded as solid waste.

Although this site received no new material since 1993, it remained subject to State of New Mexico Environment Department (NMED) regulations for Solid Waste Managment. In August 2007, the State of New Mexico promulgated a new regulation requiring a formal permit application or closure plan be submitted to the NMED by August 1, 2008, for all facilities covered by the regulation. The DOE NNNSA Sandia Site Office (SSO) has decided to investigate alternatives for formally closing the landfill instead of filing a permit application to keep the facility in operational status. SSO submitted an excavation plan to NMED by the August 1, 2008 deadline.

The TA-III CWL, located on the eastern boundary of TA-III at SNL/NM, is operational but has not received any additional material since the Batch 7 placement in November 1993. The site is inspected quarterly, which includes routine methane monitoring along the perimeter security fence that has been performed since July 1996 as required by NMED. No methane has been detected, and methane generation is not anticipated at the TA-III CWL due to the nature of the materials. Annual reports for the landfill have been continuously submitted to the NMED Solid Waste Bureau (SWB) since 1992.

Prior to placement in the landfill, classified material was reviewed for potential reapplication, recycling, storage, or placement in the TA-III CWL. Each material listed was reviewed by SNL/NM Environment, Safety, and Health personnel for hazardous materials and/or waste. Any hazardous material and/or waste was redirected to other SNL/NM operations. Additionally, all materials were inspected by an SNL/NM Radiological Control Technician prior to acceptance and again prior to the batch shipment leaving the yard for placement to ensure that radioactive materials were not placed in the landfill.

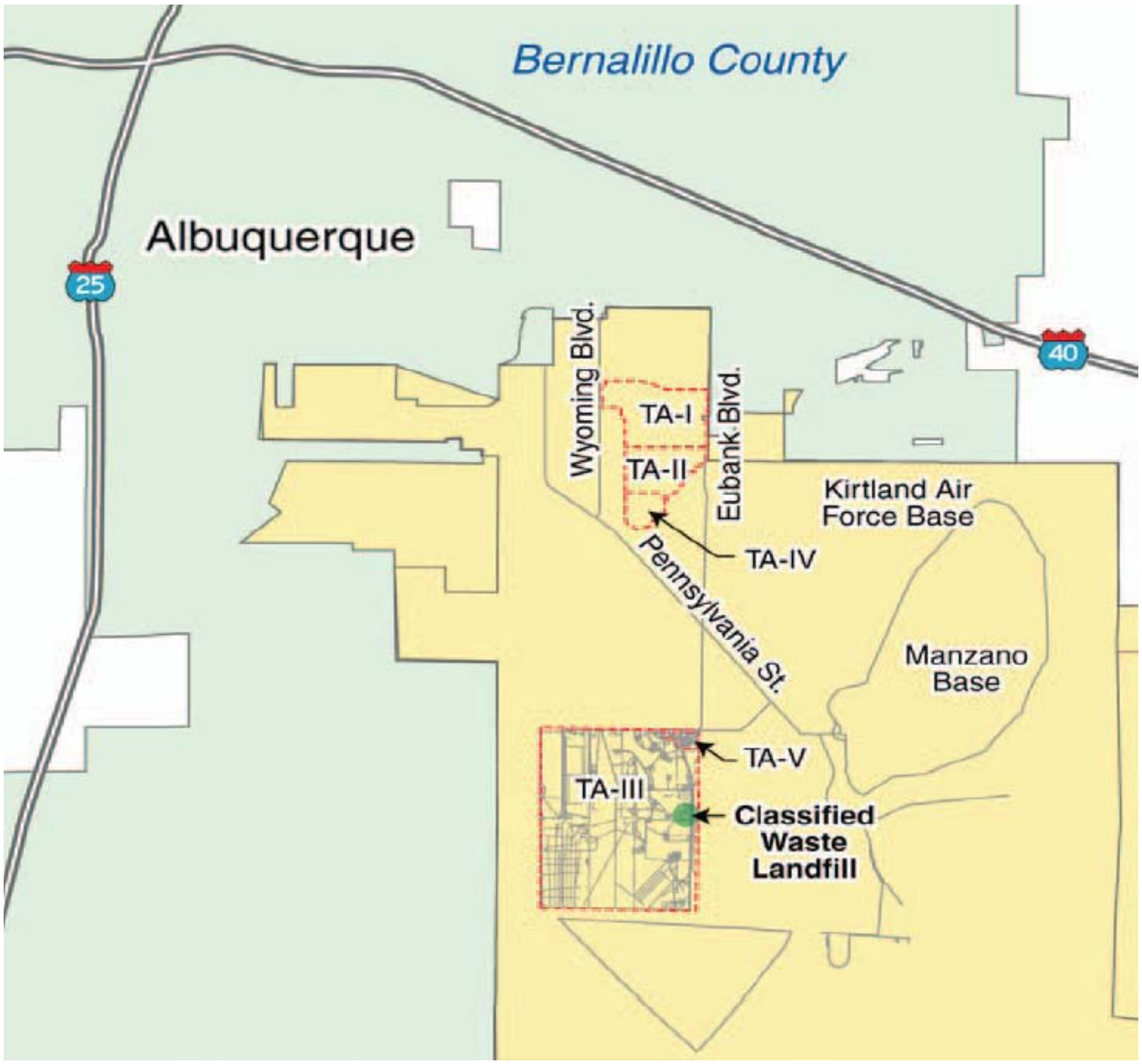

Figure 1-1. Classified Waste Landfill Location

While materials placed in the TA-III CWL met all regulatory criteria at the time of placement, subsequent changes in regulatory requirements and advances in analytical methodology raise questions regarding the prospect of final closure of the landfill. Additionally, while current security requirements allow burial as a means of sequestering classified material, it is not clear whether future changes in security policy will allow for burial as a method for final disposition. Some classified materials are currently stored in transportainers approved as vault-type rooms (VTRs) and processed at the Technical Area II (TA-II) disassembly and sanitization operation (DSO) in a stressed-membrane structure. It should be noted that stressed-membrane structures cannot themselves satisfy the requirements for VTRs contained in DOE Manual 470.4-2, *Physical Protection*. While work can be

performed in a stressed-membrane structure in compliance with this requirement, more transportainers are needed, and work proceeds more slowly than might be the case if the DSO work were performed

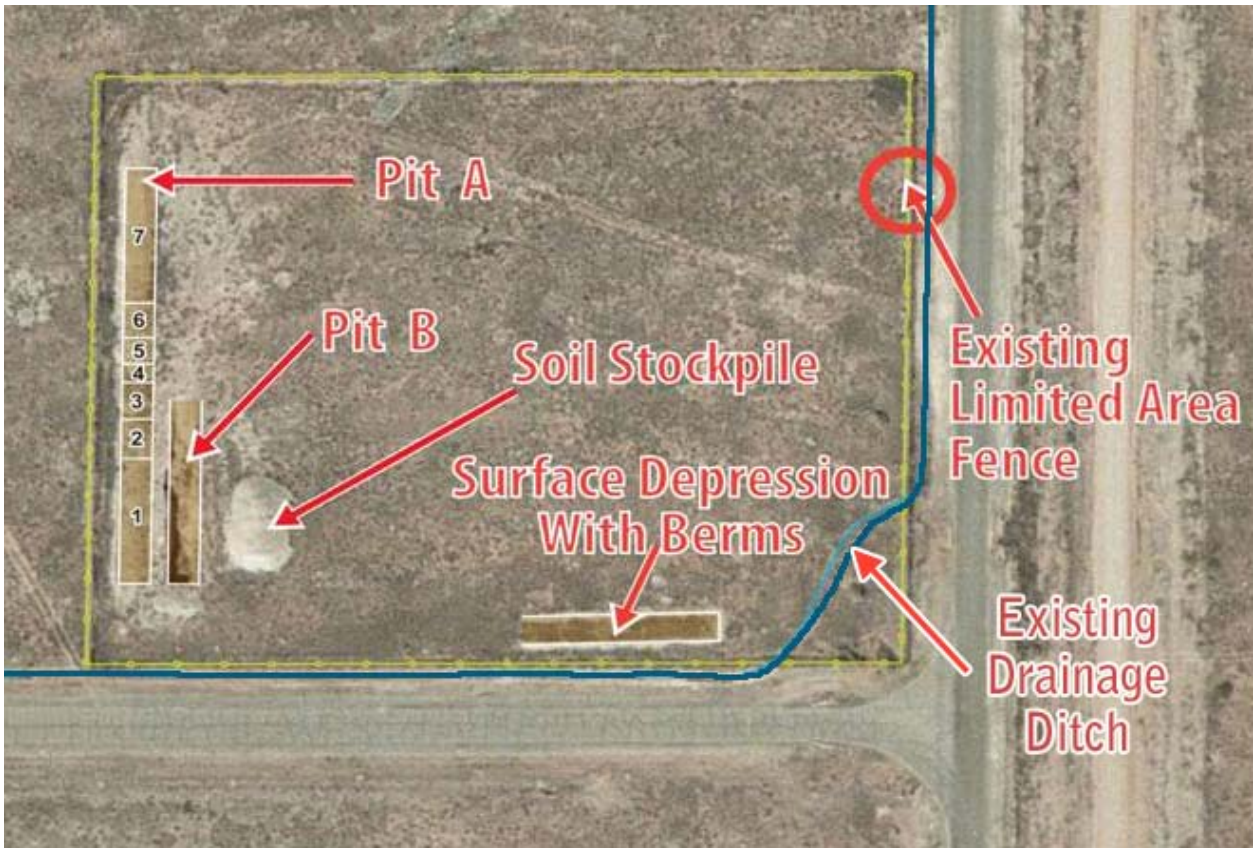

Figure 1-2. Classified Waste Landfill

in a building designated as a VTR because materials cannot be stored unattended in a stressed-membrane structure overnight. In the event that NNSA determines that excavating and processing the materials is warranted, it would be necessary to expand the TA-II DSO to approximately double its current size and capacity. Accordingly, the DOE/NNSA/SSO has elected to review the potential alternatives for final disposition of the classified materials.

1.2 Purpose and Need

The purpose and need for agency action is to 1) ensure that the final disposition of the materials currently contained within the TA-III CWL protects the materials and satisfies current and foreseeable future security imperatives; and 2) minimize risks regarding compliance with current and foreseeable future changes in land disposal regulations.

2.0 PROPOSED ACTION AND ALTERNATIVES

The *National Environmental Policy Act* of 1969 and implementing regulations including those issued by the Council on Environmental Quality (40 *Code of Federal Regulations* [CFR] 1500 to 1508) and the DOE (10 CFR 1021) require that, as a Federal agency, DOE/NNSA/SSO assess the potential environmental impacts of proposed activities affecting the human environment, as well as those of reasonable alternatives. A total of five alternatives were considered for meeting the need for agency action with respect to the CWL:

- *Proposed Action* – Excavate Landfill, Process and Dispose of Waste (Section 2.1)
- *No Action Alternative* – No removal of materials in landfill; no capping or other activities (Section 2.2)
- *Alternative I* – Excavate and Ship Materials to TA-II DSO Facility for Processing (Section 2.3)
- *Alternative II* – Excavate, Line Landfill, Replace Materials, Cap, and Monitor (Section 2.4)
- *Alternative III* – Cap and Monitor (Section 2.5)

Several alternatives were also considered but not subjected to detailed analysis; these are discussed in Section 2.6.

Environmental releases discussed in the following sections are summarized in Table 2.1.

Table 2-1. Comparison of Total Environmental Releases and Estimated Waste Generation

	Proposed Action	No Action Alternative	Alternative I	Alternative II	Alternative III	SNL/NM Annual Total**
Air Quality (TPY CO)	2.7 (2.5 MT)	Unknown*	2.8 (2.6 MT)	2.6 (2.3 MT)	0.06 (0.06 MT)	NA
Air Quality (Tons CO_2)	879.4 (800.3 MT)	Unknown*	881.8 (802.4 MT)	202.1 (193.9 MT)	50.5 (41.6 MT)	NA
Solid Waste	460 tons (419 MT)	0	460 tons (419 MT)	10 ft^3 (33 lb or 15 kg)***	5 ft^3 (16 lb or 7 kg)****	2,379,485 lb (1,190 tons or 1,083 MT)
Hazardous Waste	1,000 lb (455 kg)	0	1,000 lb (455 kg)	0	0	111,709 lb (50,777 kg)
Radioactive Waste	500 lb (227 kg)	0	500 lb (227 kg)	0	0	57,253 lb (25,977 kg)
Mixed Waste	0	0	0	0	0	27,526 lb (12,489 kg)

NA = Not Available – SNL does not report totals for CO and CO_2 for all operations.

* Minor CO and CO_2 emissions could result from the No Action Alternative if monitoring wells were required; however these cannot be estimated because the number of wells that would be required is not known.
** SNL 2008.
*** See Section 2.4.2
**** See Section 2.5.2

2.1 Proposed Action – Excavate Landfill, Process and Dispose of Waste

The Proposed Action includes the following activities:

- Expansion of the site operational boundary to include a total of approximately 15 fenced acres, including a new area across the road, and installation of perimeter fencing, gates, and security assets. This would result in disturbance of approximately 18 acres and a new total facility area of approximately 15 acres within the fence.
- Construction of an approximately 15,000 to 17,000 square feet (ft^2; 1,394 to 1,579 square meters [m^2]) slab-on-grade metal building within the new southern portion of the site.
- Installation of temporary covers over the area to be excavated and the area used to conduct preliminary sorting of materials to be removed from the trench.
- Placement of up to 20 VTR transportainers for materials awaiting processing and materials awaiting shipment after processing.
- Excavation of Pit A and removal of materials contained within the landfill.
- Preliminary sorting of materials prior to processing.
- Disassembly of selected items.
- Shipment of selected items for additional processing and/or destruction (for example, incineration of electronic media).
- Recycling materials and components as appropriate.
- Decontamination and demolition (D&D) of all structures and fencing at project completion.
- Revegetation of the CWL and associated areas following D&D of structures and fencing.

Details of the Proposed Action construction, operations, and closure activities are described below.

2.1.1 Proposed Action Construction Activities

Under the Proposed Action, NNSA/SSO would negotiate with NMED an expansion of the landfill site operating boundary to encompass an area across the road to the south of the 5-acre landfill site. This site operating boundary extension would provide room for the development of new demilitarization and staging facilities that would enable the onsite demilitarization of classified materials and the onsite processing of wastes. The entire complex would be surrounded by a limited area fence, including vehicle gates and personnel turnstile, that would remain in place for the duration of the project. A parking area for the workforce would also be constructed outside the fence along the east side of the new southern portion of the site. A conceptual layout for the facility is provided in Figure 2.1.

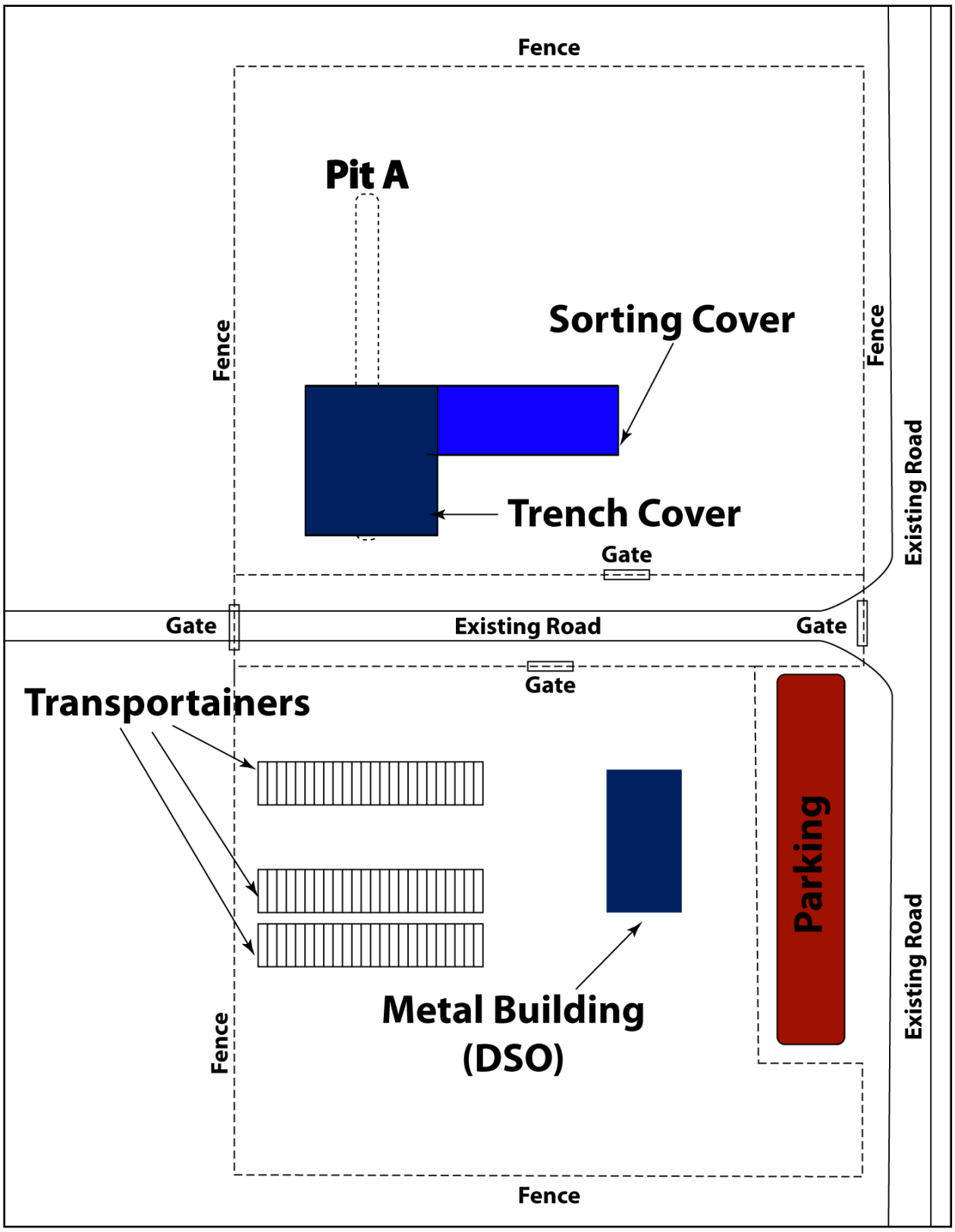

Figure 2-1. Conceptual Layout of Temporary Structures and Fencing at the CWL (not to scale)

A new metal warehouse building, providing 15,000 to 17,000 ft^2 (1,394 to 1,579 m^2) of usable space, would be tailored to the space, security, and safety basis requirements of hosting long-term demilitarization and waste processing operations and would be constructed within the new area to the south of the 5-acre landfill site. This new facility would be equipped with office space, restrooms, break area, and locker room and shower. The structure would be designed with modern fire protection and other building systems, in addition to a local exhaust and ventilation (LEV) system meeting current exhaust and ventilation standards, including a high efficiency dust collector filtration system, a DOE qualified High Efficiency Particulate Air (HEPA) filtration system, exhaust fans, and exhaust stacks. The facility would have a sealed concrete floor designed to support heavy equipment and would be equipped with two overhead vehicle doors and three personnel doors.

The entire building would be constructed to be consistent with the requirements for designation as a VTR as described in DOE Manual 470.4-2, *Physical Protection*. The facility would be designed around a central forklift aisle, with the containment tents for the demilitarization workstations on one side and classified staging space on the other, thus decreasing the number of additional transportainer VTRs required on the site to no more than twenty. To maximize space utilization and reduce the need for maintenance personnel in the VTR, the demilitarization workstations would be exhausted through the exterior wall of the building to the LEV system mounted on an external concrete slab.

Clearing and excavation activities would include grading for buildings and parking areas; trenching for utilities; and installing fencing; and would likely affect the entire 15-acre site, including the southern expansion. A fugitive dust control permit would be obtained from the City of Albuquerque Environmental Health Department's Air Quality Division. Following completion of the removal and processing of materials, all structures and fencing would be removed, and the site would be graded and re-vegetated.

2.1.2 Proposed Action Operations

The existing soil cover/overburden on Pit A is approximately 3-feet (ft; 0.9 meter [m]) thick, and may have a total volume of approximately 700 yd^3 (535 m^3). The soil cover would be incrementally removed in conjunction with the excavation progress of each cell. Sidewalls would be sloped at an approximate 2:1 ratio, generating additional soils to be managed onsite. The soil would be removed, stockpiled, stabilized (as necessary), and sampled for metals, semi-volatile organic compounds (SVOCs), and radionuclides and other constituents as necessary and appropriate. Residual soil that meets both the fill requirements and environmental criteria may be used during site restoration. Soil that does not meet environmental criteria would be treated as waste and handled by SNL/NM waste operations. The need to decontaminate equipment is not anticipated; however, if contamination does occur, a portable decontamination pad would be moved to the site, and decontamination activities would take place onsite.

The material would be incrementally removed from Pit A. All removal operations would be conducted within the security fencing in an engineered frame and fabric structure. Material would be removed utilizing excavators, front-end loaders, and lifting devices (as necessary) for larger items. Site conditions would determine specific excavation methods. Trench sidewalls would be stabilized as

necessary in accordance with the Site-Specific Health and Safety Plan (SSHASP) that would be developed for the project. Most of the material is solid waste with minimal chemicals. However, there is the potential for a small amount (i.e.,less than 250 pounds [lb; 114 kilograms (kg)]) of high-energy sources/explosives within Pit A. Potential sources include ammunition, detonator cables, and caps. Safety protocols for management of these materials would also be specified in the SSHASP. Upon excavation and removal from the trench, materials would be transferred to a prepared layout pad and spread out to facilitate screening. A radiological survey would be performed to determine whether radioactive material is present. Classified items would be segregated. After the initial material removal, the remaining material (soil, smaller items, and debris) may be placed in a screen plant to segregate soil from debris. A smaller, mobile screen unit may also be used, depending upon site conditions. Additional hand sorting may be performed to remove the remaining classified material. The material processed by the screen plant would then be sent to a sorting and segregation area.

Items retrieved from the trench would be initially sorted and segregated based upon DOE classification. Classified material removed from the trench would be stored in VTR containers within the expanded portion of the landfill, and would be disassembled and/or demilitarized within the new operations facility.

The DSO would focus on taking classified materials removed from the landfill and rendering the classified part or pieces unclassified. The operation would use various methods including, but not limited to, shredding, destruction by a ring mill, cutting with band saws, use of a log splitter, and/or basic hands-on disassembly of the components. Cutting and other separation techniques would be used to accomplish these tasks within a highly structured program designed to protect the worker and the environment. HEPA-filtered ventilation systems with downdraft tables and fume hoods would be used to control potential contaminants resulting from disassembly operations. The DSO process is expected to result in recyclable metals, nonhazardous solid waste, and a small fraction of hazardous material. All the material would be inspected to ensure compliance with current solid and hazardous waste regulations. If hazardous waste is generated by DSO operations, establishment of a satellite accumulation point (SAP) could be established. If needed, the SAP would be established in conformance with Federal and State requirements.

Approximately 125 tons (113.8 MT) of the material removed from the landfill would be cybermedia that would be shipped to a secure incineration facility in Aragonite, Utah, approximately 697 miles (1,093 kilometers [km]) from the TA-III CWL.

2.1.3 Proposed Action Closure

Following removal, disassembly, sanitization, and disposal/recycling activities, soil samples would be collected and analyzed to ensure that no residual contamination is present. The trench would then be backfilled with clean fill.

All structures would be removed from the site. The metal building would be disassembled and either used at another location or recycled, and the concrete pad would be removed, and the concrete

recycled. Fencing would be removed and either reused or recycled, and the entire site would be graded to be consistent with the surrounding drainage and re-vegetated using native plant seed.

2.1.4 Proposed Action Air Quality

Bernalillo County has been designated as a maintenance area under the *Clean Air Act* for carbon monoxide (CO) emissions and is in attainment for other federally-regulated pollutants. Trucks and construction equipment would generate CO emissions. The New Mexico Administrative Code (NMAC), Title 20, Part 11.04, (20 NMAC 11.04), titled *General Conformity*, implements Section 176(c) of the *Clean Air Act*, as amended (42 United States Code [U.S.C] 7401 et seq.), and regulations under 40 CFR 51, Subpart W, with respect to conformity of general Federal action in Bernalillo County. Regulation 20 NMAC Part 11.04.II.1.2, paragraph B, establishes the emission threshold of 100 tons per year (TPY) of CO at SNL/NM that would trigger the requirement to conduct a conformity analysis. Table 2.1 provides estimates of the CO emissions anticipated to be generated by operation of diesel and gasoline engines and subsequent CO emissions that would result from project construction. It is anticipated that construction activities conducted under the Proposed Action would result in the emissions of approximately 2.7 tons (2.5 MT) throughout the life of the project, which is substantially below the 100 TPY threshold; therefore, a conformity analysis is not required.

Transportation of approximately 125 tons (113.8 MT) of cybermedia to the Clean Harbors facility in Aragonite, Utah would involve approximately 20 trucks making round trips of approximately 1,700 miles (while the one-way distance is 697 miles [1,023 km], 1,700 miles was used for the sake of generating a conservative analysis). This would result in the generation of 0.031 tons (0.028 MT) of CO, which is included in the 2.7 ton (2.5 MT) project total. The Proposed Action would also result in the generation of approximately 879.4 tons (800.3 MT) of carbon dioxide (CO_2) of which 101 tons (91.9 MT) would be released by excavation and processing of the material, 63.4 tons (57.7 MT) generated by transportation of cybermedia to the Clean Harbors facility, 669.3 tons (609.0 MT) created by incineration of 125 tons (113.8 MT) of waste, and 45.7 tons (41 MT) released during D&D activities.

2.1.5 Proposed Action Waste Management

Construction wastes would consist of solid waste such as packaging material (e.g., wooden crates), cardboard, and plastic; scrap material such as electrical wire, insulation, gypsum drywall, floor tiles, carpet, scrap metal, and empty adhesive and paint containers; as well as concrete debris. These wastes would be recycled through agreements with local contractors, or collected in roll-off bins located onsite, and transported to the City of Rio Rancho landfill, as appropriate. Approximately 40 yd^3 (31 m^3) of solid waste would be generated during construction of the new onsite structures.

Pit A contains approximately 2,700 yd^3 (2,064 m^3), or nearly 250 tons (227.5 MT) of materials. Most of this material (at least 99 percent) would be managed as solid waste upon disassembly and sanitization of the classified items. The cybermedia (approximately 125 tons [113.8 MT]) of the 250-ton [227.5-MT] total) would be transported and incinerated at a secure facility certified for the

destruction of classified materials. It is anticipated that the facility to be used for this purpose would be the Clean Harbors facility at Aragonite, UT, approximately 75 miles (121 km) west of Salt Lake City.

D&D of the new building after completion of DSO activities is expected to produce solid waste in the form of construction debris, consisting mostly of concrete from the pad and miscellaneous scrap material. The metal building and all of the demilitarization equipment would be decontaminated and reapplied. Uncontaminated building material would be recycled, as practical. D&D activities are anticipated to generate approximately 200 tons (182 MT) of concrete and 10 tons (9.1 MT) of general debris. Added to the waste generated by removing materials from the landfill, this results in a total of approximately 460 tons (418.6) of solid waste resulting from the Proposed Action. All solid waste would be transferred to the Solid Waste Transfer Facility (SWTF) for management and disposal at the City of Rio Rancho landfill. All other material would be reapplied or reused.

Records do not indicate that hazardous or radioactive wastes were deposited in the landfill; however, hazardous and radioactive waste could result from disassembly of materials that are not themselves categorized as hazardous or radioactive but may contain components that include hazardous or radioactive materials. It is anticipated that DSO activities would produce less than 1,000 lb (455 kg) of hazardous waste. Disassembly of components containing radioactive materials could generate less than 500 lb (227 kg) of radioactive waste. No mixed waste is anticipated to be generated; however, given that small quantities of hazardous and radioactive materials may be present, there is the potential that such wastes could be generated in very small quantities. Hazardous, radioactive, and mixed wastes, if generated, would be managed as part of SNL/NM's operational waste streams.

Under the Proposed Action, excavation and DSO operations would be conducted from fiscal year (FY) 2011 through FY 2015, a period of 5 years. Based on the assumption that these operations would generate a total of 250 tons (227.5 MT) of solid waste, 1,000 lb (455 kg) of hazardous waste, and 500 lb (227 kg) of radioactive waste, it is anticipated that an average of 50 tons (45.5 MT) of solid waste, 200 lb (91 kg) of hazardous waste, and 100 lb (45 kg) of radioactive waste would be generated annually as a result of the Proposed Action operations. The 200 tons (182 MT) of concrete and 10 tons (9.1 MT) of general debris from D&D of the site structures would be generated in FY 2016. Hazardous waste would be processed through the SNL/NM Hazardous Waste Management Facility (HWMF), solid waste through the SNL/NM Solid Waste Management Facility (SWMF), and radioactive waste through the SNL/NM Radioactive and Mixed Waste Management Facility.

2.2 No Action Alternative

Under the No Action Alternative, the CWL would not be excavated, and the materials contained therein would not be removed, disassembled, sanitized, disposed of, or recycled. NNSA would initiate the administrative process to formally close the site.

If required by NMED as part of the process of closing the landfill, monitoring wells would be installed. This would result in minor CO emissions, quantities of which would be dependent on the number of monitoring wells required. Ground disturbance associated with well drilling would be

limited to the area occupied by the drilling rig(s), support vehicles, and access routes. Much of the work would likely occur in previously disturbed areas.

Because detailed records of the materials deposited within the CWL do not indicate that hazardous, radioactive, or mixed waste were interred, impacts to groundwater appear unlikely.

Threatened and endangered species are not known to inhabit the CWL site; however, a biological survey would be conducted within 2 weeks prior to any drilling or other associated ground-disturbing activities.

2.2.1 No Action Alternative Air Emissions

Under the No Action Alternative, no CO emissions would result unless installation of monitoring wells was required. This would result in minor CO emissions, the quantity of which would depend on the number of wells required.

2.2.2 No Action Alternative Waste Management

Under the No Action Alternative, no waste would be generated.

2.3 Alternative I: Excavate and Ship Materials to TA-II DSO Facility for Processing

Under Alternative I, the landfill would be fully excavated and the removed materials would then be sorted and repacked into handling containers under tent-like enclosures within the 5-acre landfill site itself. The materials would then be shipped to TA-II where the existing demilitarization facilities would be roughly doubled in size and capacity to handle the processing of the TA-III CWL materials. The existing stressed-membrane structure in TA-II would continue to support its current workload and clients with little interaction with the TA-III CWL demilitarization effort, although the older stressed-membrane structure could be abandoned in favor of the newer structure at the conclusion of the TA-III CWL effort. The existing TA-II stressed-membrane structure would be upgraded with new LEV systems. These upgrades would include a high-efficiency dust collector filtration system, a DOE-qualified HEPA filtration system, exhaust fans, and exhaust stacks. Upgrades to fire protection and other building systems would also be performed.

An additional stressed-membrane structure, providing roughly 15,000 ft^2 (1,394 m^3) of new space, would be erected near the existing stressed-membrane structure to supplement the current operations. This new stressed-membrane structure would be constructed with a new exhaust and ventilation system designed to meet current industrial hygiene standards. The volume of materials being moved to TA-II from the TA-III CWL excavation would also require that an additional 30 to 40 transportainer VTRs be located at TA-II, and the existing utilities and fiber optic infrastructure would be expanded to support the new larger operation and increased traffic. A mobile office has recently been installed in TA-II to provide office space, restrooms, and showers for the personnel who support the existing demilitarization operations in TA-II. Under Alternative I, an additional and similarly-sized mobile office containing offices, restrooms, change rooms, showers, and other workforce

requirements would be constructed to support the additional workload and operational expansion imposed by the TA-III CWL effort.

2.3.1 Alternative I Air Emissions

Under Alternative I, CO emissions would include all sources described for the Proposed Action plus CO generated by vehicles transporting material to the TA-II DSO facility and returning to the CWL – approximately 9.2×10^{-3} TPY. The total CO emissions for Alternative I would be approximately 2.8 tons (2.5 MT).

Alternative I would generate a total of approximately 881.8 tons (802.4 MT) of CO_2, 1.1 tons of which would be generated as a result of trucks making round trips from TA-III to TA-II to transport materials for processing.

2.3.2 Alternative I Waste Management

Because Alternative I and the Proposed Action are similar except for the location of the DSO facility, and because the structures in both alternatives would be reused or recycled upon completion of the project, it is anticipated that waste generation would be approximately the same as that described in Section 2.1.5.

2.4 Alternative II: Excavate, Line Landfill, Replace Materials, Cap, and Monitor

Under Alternative II, a cover would be erected above the landfill for security purposes. The CWL would be excavated, and materials would be stored onsite in transportainer VTRs during installation of a liner for the landfill. The liner would be designed and installed in compliance with all applicable regulations. Following completion of the liner installation, the materials would be returned to the excavation. A cap, also designed to regulatory compliance specifications, would be installed above the landfill. Based on calculations for a larger landfill cap proposed for another TA-III project (the Mixed Waste Landfill [MWL], which is approximately 113,100 ft^2 (10,507 m^2) in area compared to the approximately 6,000 ft^2 [557 m^2] area of the CWL), the following materials would be required (scaled down to the size of the CWL):

Table 2-2. Materials for Cap Construction

Material	Quantity (cubic yards)
Subgrade Preparation – Fill	345
Biointrusion Barrier – Crushed Rock	260
Native Soil Layer	700
Topsoil Layer	207

As required by NMED, monitoring wells would be installed around the landfill, and would be sampled periodically for potential contamination.

2.4.1 Alternative II Air Emissions

Under Alternative II, CO emissions would be slightly higher than those generated by the No Action Alternative. Emissions calculations for another, larger landfill cap being constructed in TA-III indicate that emissions for that project would be 1.07 TPY. Assuming that emissions would vary with landfill area in a more or less linear fashion, CO emissions for constructing the cap under Alternative II would be approximately 0.06 TPY. Emissions associated with lining the trench would likely be much less than those generated by constructing the cap, and therefore would be bounded by that figure. It is assumed that returning the materials to the excavation would generate approximately the same amount of CO as that generated by removal from the trench – approximately 1.29 TPY. Installation of monitoring wells would also result in CO emissions, the quantity of which would depend on the number of wells required; however, these emissions would be substantially less than those associated with the construction of the cap. Alternative II would generate approximately 2.6 tons (2.3 MT) of CO and 202.1 tons (193.9 MT) of CO_2 throughout the life of the project.

2.4.2 Alternative II Waste Management

A small amount (less than 10 cubic feet (ft^3) [0.28 m^3]) of unregulated solid waste would be generated as a result of Alternative II. Assuming that this would be similar to construction waste (116 lb/yd^3 or 69 kg/m^3), this would equate to 33 lb (15 kg) of solid waste. No hazardous, radioactive, or mixed waste would be generated.

2.5 Alternative III – Cap and Monitor

Under Alternative III, no excavation would be performed, and materials would not be removed from the landfill. As in Alternative II, a cap designed to regulatory compliance specifications would be installed above the landfill. As required by NMED, monitoring wells would be installed around the landfill, and would be sampled periodically for potential contamination. Materials required for cap construction would be identical to those for Alternative II (see Table 2.2).

2.5.1 Alternative III Air Emissions

Under Alternative III, CO emissions would be limited to those generated by construction of the cap and installation of monitoring wells. CO emissions from constructing the cap would be approximately 0.06 tons (0.06 MT), and CO_2 emissions would be approximately 50.5 tons (41.6 MT). Installation of monitoring wells would also result in CO emissions, the quantity of which would depend on the number of wells required; however, these emissions would be substantially less than those associated with the construction of the cap.

2.5.2 Alternative III Waste Management

A small amount (less than 5 ft^3 [0.14 m^3]) of unregulated solid waste would be generated as a result of Alternative III. Assuming that this would be similar to construction waste (116 lb/yd^3 or 69 kg/m^3), this would equate to 16 lb (7 kg). No hazardous, radioactive, or mixed waste would be generated.

2.6 Alternatives Considered But Not Analyzed In Detail

The following alternatives were considered but were not analyzed in detail for the reasons described below.

- *Excavate, process at CWL in a copy of the TA-II DSO* – From the standpoint of environmental effects, it would appear that this option would be similar to and bounded by the Proposed Action, the major difference being the use of a stressed-membrane structure instead of a metal building.
- *Excavate, truck in small batches to 867 Technical Area I (TA-I) for processing* – Building 867 has inadequate space, is partly contaminated with beryllium, lacks essential infrastructure, and is past its useful life (the building is scheduled for D&D in 2010).
- *Excavate, truck to TA-III copy of TA-II DSO* – It is not clear whether this alternative meets the test of reasonability, depending on whether use of a stressed-membrane structure is reasonable in the context of establishing the DSO as a VTR. Also, this alternative would require demolition of another stressed-membrane structure to make room for the temporary office space. Except for the location, environmental effects would be similar to and bounded by Alternative I.

3.0 AFFECTED ENVIRONMENT

This chapter discusses the local environment that would be affected by the Proposed Action and alternatives. The CWL is located on the eastern boundary of SNL/NM's TA-III, within the boundaries of KAFB, in a secured site encompassing approximately 5 acres (20,234 m^3). A 6-ft (1.8-meters [m]) high, chain-link fence surrounds the current boundary of the landfill site. The site slopes gently to the west. No major arroyo channels occur in the area; however, a small roadside drainage ditch that diverts surface runoff from Eubank Boulevard cuts across the southeastern corner of the site to flow into a roadside drainage along the outside southern fence (see Figure 1.2). Most surface-water flow occurs along this road ditch into westward drainages. Vegetation at the site primarily consists of native grasses.

Land-disturbing activities associated with the alternatives would be limited to, at most, the expanded boundaries of the site, as shown in Figure 2.1. Parts of this area, especially those occupied by Pit A, Pit B, and the berm, have already been disturbed.

3.1 Regional Setting and Air Quality

The mountains, canyons, and Rio Grande Valley significantly influence wind patterns in the Albuquerque Basin and interact to form a complex condition. The 13-mile (21-km) escarpment, which forms the west face of the Sandia Mountains, greatly influences flow, creating diurnal up-slope and down-slope wind patterns. Mountain vegetation and elevations also create differences in ambient temperature and rainfall compared to the valley region. Tijeras Canyon, slightly northeast of SNL/NM, is the largest canyon pass in the area, dividing the Sandia and Manzanita Mountains. This canyon tends to create strong channeled or funneled winds. Dense, cold air creates temperature inversions during the winter months. These inversions, combined with low wind speed and basin geography, restrict the dispersion and dilution of air pollutants by trapping the pollution near the surface. Thus, the entire basin can be considered a single air shed when evaluating the emission, accumulation, and transportation of air pollutants (SNL 2004).

Meteorological monitoring commenced at SNL/NM in January 1994. The eight-tower meteorological monitoring network consists of six 33-ft (10-m) towers, and one 200-ft (60-m) tower (SNL 2008). All towers are instrumented at the 10-ft (3-m) and 33-ft (10-m) levels. Instrumentation is also installed at the top of the tall towers. Meteorological variables measured at all tower levels include wind speed, wind direction, temperature and relative humidity. There are also three rain gauges and two atmospheric sensors in the meteorological network (SNL 2004).

SNL/NM is located in the Albuquerque Middle Rio Grande Intrastate Air Quality Control Region. Under the National Ambient Air Quality Standards (NAAQS), Bernalillo County is currently in maintenance status for CO. Depending on emission levels, modification to existing sources or construction of new sources emitting CO may require a general or transportation conformity analysis as well as additional levels of controls to comply with the NAAQS. In addition, modification to existing sources or construction of new sources emitting the other criteria pollutants for which a preconstruction permit must be obtained are required to comply with the NAAQS (SNL 2004).

3.2 Resources Considered but not Analyzed in Detail

3.2.1 Cultural/Archaeological Resources and Historic Properties

The proposed project would not disturb any known cultural resources. If cultural resources were encountered during clearing or excavation, work in the immediate vicinity shall be halted, the immediate vicinity of the resources shall be secured, and the SSO shall be notified. The project area was included in a cultural resources assessment. The results of that assessment are described in a November 30, 1990, letter from Kenneth J. Lord, Chambers Group, Inc. to Carlos Medrano, Division 7821, Sandia National Laboratories. A letter from Thomas W. Merlan, State Historic Preservation Officer (SHPO), of the Office of Cultural Affairs Historic Preservation Division, dated June 18, 1991, concurs with the determination that:

> "...the proposed future removal and cleanup of toxic and radioactive waste and projects to remodel and renovate existing structures in SNL Tech Areas III and V will have no effect on any historic properties. In concurring with this determination, it is my opinion that none of the 23 recorded isolated artifact occurrences and none of the existing structures in the Tech Areas meet any of the criteria of eligibility of inclusion in the National Register of Historic Places (36 CFR Part 60.4)…
>
> It is also possible that buried archaeological manifestations may be uncovered by future ground disturbing activities. If any such discoveries are made, artifacts and features should be protected in place and this office notified immediately of the find. Cultural resources discovered during construction will be evaluated and treated in accordance with the provisions of 36 CFR Part 800.11."

3.2.2 Biological Resources

No threatened, endangered, or special status species or critical habitat are present at the CWL. A biological survey of the project area was conducted on July 20, 2009. Overall, the area is grassland, and the dominant grasses are galleta (*Hilaria jamesii*), black grama (*Bouteloua eriopoda*), blue grama (*Bouteloua*) three-awn (*Aristida* spp), and sand drop-seed (*Sporobolus cryptandrust*). In addition to the grasses, there are a few shrubs and forbs including four-wing saltbush (*Atriplex canescens*), yucca (*Yucca glauca*), and prickly pear (*Opuntja* spp.). The most abundant forbs are snakeweed (*Gutierrezia sarothrae*), Russian thistle (*Salsola iberica*) and summer cypress (*Kochia scoparia*). At the time of the survey, there were no nesting birds that would be impacted by the Proposed Action or alternatives. No prairie dog activity was noted. However, mourning dove (*Zenaida macroura*), horned lark (*Eremophila alpestris*), loggerhead shrike (*Lanius ludovicianus*), and western Meadowlark (*Sturnella neglecta*) were all seen in the area. Another biological survey would be conducted within 2 weeks of initiating any ground-disturbing activities at the site. All alternatives include reestablishment of native vegetation following project completion.

3.2.3 Water Resources

The groundwater at SNL/NM is the source of drinking water for SNL/NM, KAFB, and adjacent portions of the City of Albuquerque and Pueblo of Isleta. Groundwater characteristics within KAFB area vary among and within three hydrogeologic regions. These characteristics include aquifer type, hydraulic properties, horizontal groundwater-flow directions, vertical hydraulic gradients, trends in water-level decline resulting from water supply pumping, and groundwater geochemistry. Many of these characteristics are directly related to the geologic media that provide the local framework for the regional aquifer (SNL 2004).

Groundwater withdrawal by water supply wells for the City of Albuquerque and KAFB has resulted in significant changes to groundwater flow in the Santa Fe Group aquifer system over the past 30 years, as discharge exceeds recharge for this region of the Albuquerque Basin. Groundwater flow beneath KAFB has been altered from a principally westward direction to northwestward and northward flow directions along the western and northern portions of KAFB. Basin-wide declines from steady-state conditions have been estimated to range from 20 to 160 ft (6 to 48 m). The greatest declines are near the eastern limit of fluvial deposits of the ancestral Rio Grande (SNL 2004).

The surface water system within KAFB consists primarily of ephemeral drainages, including Tijeras Arroyo, Arroyo del Coyote, and an unnamed drainage south of Arroyo del Coyote. Floods and runoff occur most commonly during the summer thunderstorm season (July through September), when approximately 50 percent of the average annual rainfall occurs (SNL 2004). Depth to groundwater in the TA-III vicinity is estimated at approximately 500 ft (152 m) below land surface (DOE 1999). All alternatives involve water use that is a small fraction of SNL/NM's annual utilization.

4.0 ENVIRONMENTAL CONSEQUENCES

This chapter describes and compares the environmental consequences of the Proposed Action and alternatives. Descriptions of the Proposed Action and alternatives are provided in Chapter 2 of this EA, and affected aspects of the environment are discussed in Chapter 3. The following sections compare potential environmental consequences of the five alternatives (Sections 4.1 through 4.5). Cumulative impacts are discussed in Section 4.6. Section 4.7 describes abnormal events. Other aspects of the environment were considered in the scoping of the analysis; however, only those potentially affected by the proposed project are discussed in this chapter. Table 4-1 compares air emissions and waste volumes related to operations under the No Action Alternative and the Proposed Action. The issues summarized in Table 4.1 are addressed in Sections 4.1 through 4.5.

Table 4-1. Comparison of Total Environmental Releases and Estimated Waste Generation

	Proposed Action	No Action Alternative	Alternative I	Alternative II	Alternative III	SNL/NM Annual Total**
Air Quality (TPY CO)	2.7 (2.5 MT)	Unknown*	2.8 (2.6 MT)	2.6 (2.3 MT)	0.06 (0.06 MT)	NA
Air Quality (Tons CO_2)	879.4 (800.3 MT)	Unknown*	881.8 (802.4 MT)	202.1 (193.9 MT)	50.5 (41.6 MT)	NA
Solid Waste	460 tons (419 MT)	0	460 tons (419 MT)	10 ft^3 (33 lb or 15 kg)***	5 ft^3 (16 lb or 7 kg) ****	2,379,485 lb (1,190 tons or 1,083 MT)
Hazardous Waste	1,000 lb (455 kg)	0	1,000 lb (455 kg)	0	0	111,709 lb (50,777 kg)
Radioactive Waste	500 lb (227 kg)	0	500 lb (227 kg)	0	0	57,253 lb (25,977 kg)
Mixed Waste	0	0	0	0	0	27,526 lb (12,489 kg)

NA = Not Available – SNL does not report totals for CO and CO_2 for all operations.
* Minor CO and CO_2 emissions could result from the No Action Alternative if monitoring wells were required; however these cannot be estimated because the number of wells that would be required is not known.
** SNL 2008.
*** See Section 2.4.2
**** See Section 2.5.2

Environmental effects considered but not analyzed in detail include the following:

- Cultural/archaeological resources – As noted in Section 3.2.1, no cultural or archaeological resources are known to be present in the vicinity of the CWL. Should such resources be encountered, work would be halted and consultation with the New Mexico SHPO initiated.
- Biological resources – No threatened or endangered species or critical habitat would be impacted by any of the alternatives. A biological survey would be performed within

2 weeks of ground-disturbing activities to ensure that migratory birds are not affected.

- Water resources – When compared with annual water use at SNL/NM (approximately 524,870,000 gallons per year), anticipated water use under the alternatives would be miniscule. For example, water use for construction, site preparation, and excavation under the Proposed Action could result in use of 200,000 gallons of water, which amounts to less than 0.04 percent of SNL/NM's annual water use. No discharge of pollutants is anticipated, and appropriate erosion control methods would be employed. All work would be conducted under a National Pollutant Discharge Elimination System (NPDES) permit.

4.1 Proposed Action

As described in Section 2.1, the Proposed Action includes construction of the DSO and associated structures; excavation of the material from the landfill; disassembly and sanitization of the materials; recycling wastes as appropriate; disposal of waste; transportation and incineration of cybermedia; D&D of all site structures; and re-vegetation of the project area.

4.1.1 Proposed Action Air Quality

Under the Proposed Action, approximately 2.7 tons (2.5 MT) of CO would be emitted by construction equipment during the construction, operations, and decommissioning of the facility structures and equipment. No discernible changes in air quality are anticipated as a result of Proposed Action construction activities. CO emissions from equipment used for construction would affect air emissions under the Proposed Action. However, the total construction-related CO emissions would result in emissions less than the 100 TPY threshold requiring a conformity analysis; therefore, a conformity analysis is not required. No discernible impact to air quality in the Albuquerque area is anticipated. A surface disturbance permit issued by the City of Albuquerque would be required for the project and would cover fugitive dust emissions resulting from the excavation, grading, and other soil disturbing activities as well as from the screen plant. Water would be used for dust suppression as appropriate to minimize particulate emissions. The Proposed Action would also emit approximately 879.4 tons (800.3 MT) of CO_2 over the life of the project. CO_2 emissions are discussed in Section 4.6.

4.1.2 Proposed Action Waste Management

Removal of materials from the CWL under the Proposed Action would result in the generation of approximately 250 tons (227.5 MT) of solid waste. Approximately 125 tons (113.8) of this would be cybermedia, which would be shipped offsite to a commercial incinerator certified for destruction of classified materials. It is anticipated that, where possible, materials would be recycled following the disassembly process, and the remaining material would be disposed of as solid waste. Construction and demolition activities associated with the Proposed Action would result in generation of approximately 210 tons of additional solid waste, bringing the total to 460 tons (419 MT).

Waste generated by the Proposed Action on an annual basis by operations at the CWL is expressed as a percentage of the total waste output of SNL/NM as given in the 2007 Annual Site Environmental Report, in Table 4.2.

Table 4-2. Estimated Annual Waste Generation from Proposed Action as a Percentage of SNL/NM's Annual Waste Output

Waste Type (Units)	Proposed Action	SNL Total	Percentage
Solid Waste (TPY)	50 tons (45.5 MT)	1,190 tons (1,083 MT)	4.20%
Hazardous Waste (lb/yr)	200 lb (91 kg)	111,709 lb (58.9 tons or 53.6 MT)	0.18%
Radioactive Waste (lb/yr)	10 lb 4.5 kg	57,253 lb (28.6 tons or 26 MT)	0.02%

Waste generated by Proposed Action operations represents a small percentage of the annual waste generation of SNL/NM, and is well within the capabilities of SNL/NM waste management facilities. Construction and demolition waste would either be recycled or disposed of in an appropriate landfill. Due to the relatively small annual output of the waste, and the fact that most would be unregulated waste, no discernible environmental effects are anticipated as a result of the Proposed Action.

4.2 No Action Alternative

Under the No Action Alternative, the CWL would not be excavated, and materials would not be removed from the landfill. If required by NMED as part of the process of closing the landfill, monitoring wells would be installed. This would result in minor CO emissions, quantities of which would be dependent on the number of monitoring wells required. Ground disturbance associated with well drilling would be limited to the area occupied by the drilling rig(s), support vehicles, and access routes. Much of the work would likely occur in previously disturbed areas.

Because detailed records of the materials deposited within the CWL indicate that substantial quantities of hazardous, radioactive, or mixed waste were not interred, impacts to groundwater appear unlikely.

Threatened and endangered species are not known to inhabit the CWL site; however, a biological survey would be conducted within 2 weeks prior to any drilling or other ground-disturbing activities.

4.2.1 No Action Alternative Air Emissions

No air emissions would result from the No Action Alternative, no effects on air quality are anticipated unless installation of monitoring wells was required. This would result in minor CO emissions, the quantity of which would depend on the number of wells required. Such emissions would be short-term and minor in quantity; therefore, no impacts to air quality are anticipated.

4.2.2 No Action Alternative Waste Management

No waste would be generated under the No Action Alternative; therefore, no effects on waste management at SNL/NM are anticipated.

4.3 Alternative I: Excavate and Ship Materials to TA-II DSO Facility for Processing

Under Alternative I, the landfill would be fully excavated and the removed materials would then be sorted and repacked into handling containers under tent-like enclosures within the 5-acre landfill site itself. Materials would then be transported by truck to a new stressed-membrane structure in TA-II for DSO processing. Construction-related environmental effects of Alternative I would be similar to those resulting from the Proposed Action, except that much of the construction would be conducted in TA-II instead of TA-III. Transportation of material to TA-II would result in additional air emissions.

4.3.1 Air Emissions

Additional air emissions over the Proposed Action would be generated by trucks transporting materials to the TA-II DSO Facility and returning to TA-III. As stated in Section 2.3.1, total emissions would amount to approximately 2.8 tons (2.6 MT) of CO. No discernible effects on air quality would result from activities conducted under Alternative I. Alternative I would also emit approximately 888.1 tons (802.4 MT) of CO_2 over the life of the project. CO_2 emissions are discussed in Section 4.6. A surface disturbance permit issued by the City of Albuquerque would be required for the project and would cover fugitive dust emissions resulting from the excavation, grading, and other soil disturbing activities. Water would be used for dust suppression as appropriate to minimize particulate emissions.

4.3.2 Alternative I Waste Management

Waste generation under Alternative I would be identical to that resulting from the Proposed Action. As with waste generation discussed in Section 4.1.2, no discernible environmental effects are anticipated from the generation of waste under Alternative I.

4.4 Alternative II: Excavate, Line Trenches, Replace Materials, Cap, and Monitor

Under Alternative II, the materials would be removed from the landfill. A liner would be installed in the excavated landfill, and the materials would be returned to the excavation site. A cap would be constructed, and monitoring wells would be installed.

4.4.1 Alternative II Air Emissions

Under Alternative II, approximately 2.6 TPY (2.3 MT) of CO would be emitted by construction equipment during the excavation of the materials, installation of the liner, return of the materials to the landfill, and construction of the cap. No discernible changes in air quality are anticipated as a result of Alternative II construction activities. CO emissions from equipment used for construction would affect air emissions under Alternative II. However, the total construction-related CO emissions would

result in emissions less than the 100 TPY threshold requiring a conformity analysis; therefore, a conformity analysis is not required. No discernible impact to air quality in the Albuquerque area is anticipated. Alternative II would also emit approximately 202.1 tons (193.9 MT) of CO_2 over the life of the project. CO_2 emissions are discussed in Section 4.6. A surface disturbance permit issued by the City of Albuquerque would be required for the project and would cover fugitive dust emissions resulting from the excavation, grading, and other soil disturbing activities. Water would be used for dust suppression as appropriate to minimize particulate emissions.

4.4.2 Alternative II Waste Management

A small amount (less than 10 ft^3 [0.28 m^3]) of unregulated solid waste would be generated as a result of Alternative II. Assuming that this would be similar to construction waste (116 lb/yd^3 or 69 kg/m^3 [California Integrated Waste Management Board 2009]), this would equate to 33 lb (15 kg) of solid waste. This represents a miniscule amount when compared to SNL/NM's annual waste generation, and would not affect SNL/NM's solid waste management system or the City of Rio Rancho landfill. No hazardous, radioactive, or mixed waste would be generated under Alternative II. No discernible environmental effects are anticipated as a result of waste generation under Alternative II.

4.5 Alternative III – Cap and Monitor

Under Alternative III, materials would remain undisturbed, and a cap would be constructed above Pit A. The cap would be re-vegetated with native plant species. Monitoring wells would be constructed as required for closure of the landfill.

4.5.1 Alternative III Air Emissions

Under Alternative III, approximately 0.06 TPY (0.06 MT) of CO would be emitted by construction equipment during the construction of the cap. No discernible changes in air quality are anticipated as a result of Alternative III construction activities. CO emissions from equipment used for construction would affect air emissions under Alternative III. However, the total construction-related CO emissions would result in emissions less than the 100 TPY threshold requiring a conformity analysis; therefore, a conformity analysis is not required. No discernible impact to air quality in the Albuquerque area is anticipated. Alternative III would also emit approximately 50.5 tons (41.6 MT) of CO_2 over the life of the project. CO_2 emissions are discussed in Section 4.6.

4.5.2 Alternative III Waste Management

A small amount (less than 5 ft^3 [0.14 m^3]) of unregulated solid waste would be generated as a result of Alternative III. Assuming that this would be similar to construction waste (116 lb/ yd^3 or 69 kg/m^3 [California Integrated Waste Management Board 2009]), this would equate to 16 lb (7 kg). This represents a miniscule amount when compared to SNL/NM's annual waste generation, and would not affect SNL/NM's solid waste management system or the City of Rio Rancho landfill. No hazardous waste is anticipated to be generated under Alternative III. No discernible environmental effects are anticipated as a result of waste generation under Alternative III.

4.6 Cumulative Effects

As shown in Table 4.1 and in the other sections of this chapter, waste generation and air emissions resulting from the Proposed Action and alternatives represent a small fraction of similar environmental outputs resulting from routine operations at SNL/NM. Emissions of CO into the Albuquerque airshed would be minor, with no alternative resulting in emissions greater than 10 percent of the threshold that would require a conformity determination. The overwhelming majority of waste generated by the Proposed Action and alternatives would be unregulated solid waste and would represent a minor percentage of the waste generated by SNL/NM on an annual basis. Some environmental benefit would be realized as a result of all alternatives (except perhaps the No Action Alternative), as all other alternatives involve the reestablishment of native vegetative species at the CWL site. However, it should be noted that this benefit would be realized on a relatively small number of acres, and would therefore be unlikely to represent a significant positive impact.

All alternatives, except perhaps the No Action Alternative, would involve the generation of CO_2 (see Table 4.1). CO_2 is categorized as a greenhouse gas, and is generally considered to contribute to retention of heat in the earth's atmosphere. Increased levels of atmospheric CO_2 have been linked by many scientists and organizations with increases in global temperature. Increased global temperature, in turn, would likely lead to such effects as sea level rise, alteration of coastal ecosystems, regional drought and flood effects, melting of permafrost at high latitudes, increased intensity and occurrence of storms, ocean acidification, coral depletion, decline of some fisheries, changes in agricultural production, and other effects that may have substantial and far-reaching consequences on local, regional, and global scales.

While all emissions of CO_2 contribute to the total atmospheric concentration of greenhouse gases, the immense scale and wide distribution (both in time and space) of these effects make it impossible to predict with any reasonable specificity the effects of a given action with respect to global climate change. It should be noted, however, that the Proposed Action and alternatives represent short-term activities with relatively minor CO_2 emissions. The emissions that would result from the alternatives range from 50.5 to 881.8 tons (46 to 802.4 MT). These totals would be emitted over a period of several years. By comparison, the DOE Energy Information Administration (EIA) estimated CO_2 emissions in the United States for 2007 at 6,021.8 million metric tons (DOE/EIA 2008). Even the alternative with the highest CO_2 emissions, Alternative I, at 881.8 tons (802.4 MT), would represent a mere 0.0000133 percent of the 2007 total for the United States. Therefore, it appears unlikely that the Proposed Action or alternatives would contribute substantially to the significance of impacts associated with global climate change.

Tables 2.1, 4.1, and 4.3 provide information on environmental releases and waste generation resulting from the Proposed Action and alternatives as well as available information on total waste generation from SNL/NM's annual operations. In all cases, all alternatives result in waste generation that is a small fraction of the total annual operational output. Therefore, the Proposed Action would not have a significant effect on SNL's waste management system.

None of the alternatives results in CO emissions that would be near or above the 100 TPY threshold above which a conformity analysis would be required. No significant cumulative effects from CO emissions are anticipated.

Accordingly, it is not anticipated that the Proposed Action or any of the alternatives would result in significant impacts to the human environment, nor would it be likely that any of the alternatives would contribute to the significance of other actions conducted in the vicinity of the CWL or concurrently with activities that would be conducted under the Proposed Action and other alternatives.

4.7 Intentional Destructive Acts

Intentional destructive acts include such actions as sabotage or terrorism. These acts may be of specific concern in situations where the nature of a project or activity, as well as the nature and location of associated facilities, may be such that the effects of the act itself – for example, a bombing or deliberately set fire – would be substantially greater when considered in the context of the proposed activities.

In the case of the Proposed Action and alternatives assessed in this EA, the majority of work would be conducted in a secure facility in a remote location, with some transport of materials over public highways. Given that the quantities of hazardous and radioactive materials contained within the CWL are anticipated to be minor; that they would not be worked with, stored, or transported at the same time; and that the only substantial transportation effort involves transport of cybermedia to the Clean Harbors facility, there appears no reason to believe that an intentional act of destruction would likely increase the risk of exposure of workers or the public to hazardous or radioactive materials or other impacts than those that would result from the attack itself. Therefore, it appears unlikely that the effects of an intentional destructive act would be greater if the CWL were targeted than if any other target were attacked.

5.0 REFERENCES

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