EA-0847; Environmental Assessment and (FONSI) U. S. Department of Energy Central Training Academy Live Fire Range

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The State of New Mexico Environment Department has reviewed and replied to the adequacy of the U. S. Department of Energy Central Training Academy's Live Fire Range Environmental Assessment document. The Environmental Department has requested that a spill containment plan be included in the Environmental Assessment. This plan has been prepared an is included as Attachment 2.

State of New Mexico Approval

May 25, 1993

Mr. Martin Strones
Office of Safeguards and Security
U.S. Department of Energy
Washington, D.C. 20585

Dear Mr. Strones:

New Mexico Environment Department staff reviewed the Environmental Assessment for the U.S. Department of Energy, Central Training Academy's Live Fire Range (EA), and have the following comments:

Due to the fact that substances such as cleaning solvents, gun bluing compounds, and gasoline are stored and used on the premises, a spill containment plan should be included in the EA. Provisions found in Section 1-

20.3 of the New Mexico Water Quality Control Commission Regulations (Regulations) outline procedures required in the event of a spill of such materials.

Provided that an acceptable spill containment plan is developed in accordance with Section 1-203 of the Regulations, the proposed activity will have little potential to negatively affect water quality. This determination is contingent on adherence to all mitigation measures outlined in the EA.

Sincerely,

Gedi Cibas, Ph.D.
Environmental Impact Review Coordinator

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cc: NMED File No. 747ER

United States Government Department of Energy memorandum

DATE July 29, 1993
REPLY TO
ATTN OF: Office of NEPA Oversight:Borgstrom:6-4600
SUBJECT: Environmental Assessment (EA) for the Central Training Academy Live Fire Range in Albuquerque, New Mexico (DOE/EA-0847)
TO: George L. McFadden
Director
Office of Security Affairs

On June 23, 1993, Marty Strones, SA-10, advised the Office of NEPA Oversight that state preapproval review was completed and requested we proceed with approval of the subject EA. The EA was originally transmitted to my office by your memorandum of January 26, 1993. The Office of NEPA Oversight authorized pre-approval review on April 13, 1993, and copies were provided to the State of New Mexico on May 11, 1993. We note that the State had minor comments concerning spill containment and requested that a spill containment plan be included in the EA.

Based on my staff's review and their recommendation, and after consultation with the Office of General Counsel, I have determined that the proposed action is not a major Federal action having a significant effect on the quality of the human environment, within the meaning of the National Environmental Policy Act of 1969 and its implementing regulations (40 CFR 1500-1508). Therefore, an environmental impact statement is not required.

Accordingly, the EA is approved subject to the incorporation of the minor comments noted in the attached copy of the EA and the addition of a spill containment plan as an appendix to the EA, and I have signed the accompanying Finding of No Significant Impact (FONSI). Publication of the FONSI in the Federal Register is unnecessary, because the proposed action would not produce effects of national concern. However, the local public should be notified of the availability of the EA and FONSI, in accordance with 40 CFR 1506.6, 10 CFR 1021.322, and DOE Order 5440.1E paragraph 6a(24).

Please send five copies of the EA to the Office of NEPA Oversight, along with a record of distribution of the EA and FONSI.

Peter W. Brush
Acting Assistant Secretary
Environment, Safety and Health

Attachments

cc: Martin E. Strones, SA-10

U.S. DEPARTMENT OF ENERGY FINDING OF NO SIGNIFICANT IMPACT
LIVE FIRE RANGE AT THE CENTRAL TRAINING ACADEMY ALBUQUERQUE, NEW MEXICO

AGENCY: U.S. Department of Energy

ACTION: Finding of No Significant Impact

SUMMARY: The Department of Energy (DOE) has prepared an Environmental Assessment (EA), DOE/EA-0847, for the proposed construction and operation of an expanded Live Fire Range Facility at the Central Training Academy in Albuquerque, New Mexico. Based on the analysis in the EA, DOE has determined that the proposed action is not a major Federal action significantly affecting the quality of the human environment, within the meaning of the National Environmental Policy Act (NEPA) of 1969. Therefore, the preparation of an environmental impact statement is not required and DOE is issuing this Finding of No Significant Impact (FONSI).

PUBLIC AVAILABILITY:

Copies of the EA and FONSI are available from:

Mr. Martin E. Strones
U.S. Department of Energy
Office of Safeguards and Security
19901 Germantown Road
Germantown Maryland 20874
Phone (301) 903-4542

For further information on the NEPA process, contact:

Ms. Carol Borgstrom
U.S. Department of Energy
Office of NEPA Oversight

1000 Independence Avenue, S.W.
Washington, DC 20585
Phone (202) 586-4600 or (800) 472-2756

BACKGROUND: The Central Training Academy (CTA) is a DOE Headquarters Organization located in Albuquerque, New Mexico, with the mission to effectively and efficiently educate and train personnel involved in the protection of vital national security interests of DOE. The CTA Live Fire Range (LFR), where most of the firearms and tactical training occurs, is a complex separate from the main campus. The purpose of the proposed action is to expand the LFR to allow more options of implementing required training.

PROPOSED ACTION: The proposed action involves the construction of certain new facilities and upgrades to existing facilities. The proposal includes 13 separate and discrete projects listed below that contribute to the overall function of the LFR:

- LFR Administration Building
- Indoor Range
- Helicopter Pads
- Indoor Shooting Simulator
- Rappelling Tower Addition
- Additional Bunker Storage
- Pistol Range 3
- Modular Classroom Relocation
- Rifle Range 3
- Armory Addition
- Hostile Environment Training Facility
- Improved Road Access
- Urban Tactical Simulator

These projects would be built on previously disturbed soil or in areas previously identified to be disturbed. New facilities would adjoin the existing LFR facilities on the east and west.

ALTERNATIVES: In addition to the proposed action, the DOE considered the following alternatives: (1) the no action alternative; (2) construction of a portion of the LFR projects; and (3) construction of the necessary LFR additions at another location or in a different configuration.

The no action alternative would require existing LFR facilities to support all required training; however, without the proposed additions, current facilities are unable to support required training needs.

Construction of a portion of the projects, was deemed unacceptable because it would result in limited training capabilities, and adversely affect DOE and the large number of other outside Federal, state, and local users of the range facilities with whom the CTA is trying to build and nurture supportive relations.

Construction in a different configuration or location was considered but deemed unacceptable since other locations would offer no obvious environmental advantage. In addition, the area immediately to the north of the LFR is extremely rugged and would require much site preparation and grading before it could be considered for use as a training range.

ENVIRONMENTAL IMPACTS: The proposed action would take place adjacent to an area previously developed. No environmental permits would be required for this action. The LFR currently consists of 39.9 acres of disturbed area. The proposed action would impact 27.12 previously undisturbed acres. Construction of the proposed facilities would result in a minor loss of habitat and displacement of wildlife (e.g., small mammals, birds, and reptiles). Construction would also result in temporary and minor increases in air missions and noise. Although a survey concluded that there was a large population of Neolloydia intertexta (white-flowered Visnagita), this species is common in central New Mexico and, according to the State Botanist, is to be removed from the New Mexico Endangered Pl ant Species List. Training activities would continue as they have in the last eight years, with construction activities planned in accordance with a policy of coexistence with the environment and conservation of the biological diversity in this unique area:

Operations of the Central Training Academy's LFR would have no adverse impacts to the environment. Small arms ammunition and diversionary devices used at the LFR are stored in Air Force earth-covered igloos located approximately five miles from the LFR. Under normal conditions, no environmental impacts from storage would be expected. In the event of an accidental explosion (probability 10^-4 to 10^-6 per year), impacts are expected to be minimal since

there is no permanent work force present.

The only hazardous material involved at the LFR is gun bluing solution. The bluing process is not routine and is estimated to be completed between 18 and 20 times annually, if necessary. The process generates less than 100 kilograms per month of hazardous waste. There are no radioactive materials involved with LFR operations.

DETERMINATION: Based on the information and analysis in the EA, DOE has determined that the proposed construction and operation involving the CTA's LFR does not constitute a major Federal action significantly affecting the quality of the human environment within the meaning of NEPA. Therefore, an environmental impact statement for the proposed action is not required.

Issued at Washington, D.C., this _____day of July 1993.

Peter Brush
Acting Assistant Secretary
Environment, Safety and Health

Environmental Assessment U.S. Department of Energy Central Training Academy Live Fire Range

1.0 BACKGROUND/HISTORY

The Central Training Academy (CTA) is managed and operated by Wackenhut Services, Incorporated (WSI), for the Department of Energy (DOE). The mission of the CTA is to educate and train personnel effectively and efficiently to protect vital national security interests of the DOE. The CTA provides DOE safeguards and security personnel with standardized training in such disciplines as tactical and firearms training, behavioral sciences, management and instructional training, and safeguards and technical security training. Tactical and firearms training includes firearms instructor training, tactical movement with firearms, understanding and use of basic explosive systems and devices, and sniper training. Rappeling, fastroping and heliborne assault techniques are also

included as tactical response training. The mission of the CTA is very dynamic and responds to changing DOE needs.

The CTA is located on Kirtland Air Force Base (KAFB). KAFB is sited to the southeast of Albuquerque, New Mexico. The City of Albuquerque is located in central New Mexico. The CTA campus is located on the east side of KAFB, west of the Manzano Mountain Storage Complex (Map 4).

The CTA Live Fire Range (LFR) is a separate CTA complex located approximately six miles by road to the east of the CTA Headquarters. It is situated in Coyote Canyon, approximately three-quarters of a mile west of Madera Canyon Road and immediately north of Coyote Canyon Road. The LFR is sited in the mouth of a large canyon located on U. S. Forest Service land. The LFR was later withdrawn from the U.S. Forest Service to the U.S. Army and subsequently to the U.S. Air Force when Kirtland was incorporated under Air Force control. The LFR itself is permitted to DOE by the Air Force. Some of the range safety fans extend into other areas of DOE permitted land (Map 5).

The CTA LFR concept was initially developed to meet DOE and Sandia National Laboratories Albuquerque (SNLA) needs. It now supports the CTA, SNLA, the Department of Energy/Albuquerque Operations (DOE/AL), DOE Transportation Safeguards Training Center (TSTC), and 22 other military, federal, state, and local law enforcement agencies.

The LFR as currently configured, consists of five firearms ranges. There are two (2) pistol ranges, two (2) rifle ranges and a R&D range. The ranges gradually slope downward to the west and south. Generally, each of the ranges are bounded on three sides by large dirt berms which have some rock, vegetation, and debris of varying sizes within the soil composition; however, the Research & Development (R&D) range which is bermed only on the west, with the north boundary delimited by a naturally occurring hillside. The R&D range does not have berms or other delimiters to the east and south (see Map 3 or the CTA Live Fire Range Risk Analysis Report).

The LFR also contains eighteen (18) support facilities that are necessary for the Range operations. These include: three range control towers, a small tactical simulator tower, a 1600 s.f. Tactical Training Facility, a 420 s.f. Range Administration office trailer, a 380 s.f. Instructor's office trailer, an Equipment Issue/Office trailer (approximately 1500 s.f. portable facilities), two 375 s.f. Range Maintenance and Target Maintenance structures, a recently constructed 1900 s.f. building providing an Armory and Machine shop, a 1680 s.f. modular classroom building, an 840 s.f. trailer used as a classroom, a 540 s.f. structure used for weapons cleaning, a 1300 cu.f. small ammunition bunker, and three

very small (200-300 s.f.) equipment storage units.

2.0 PURPOSE AND NEED FOR THE PROPOSED ACTION

The purpose of the proposed action is to allow the CTA to complete its training mission at the LFR by increasing its ability to meet the demands placed on it by DOE Order 5630.15. The LFR is projected to increase significantly its operations as a result of requirements specified in DOE Order 5630.15. This Order requires that the CTA provide the focus for standardization of training in safeguards and security courses and programs. This is to be accomplished through a program of training standardization, certification of key skill personnel, development of skills enhancement courses, and approval of facility training programs. DOE Order 5630.15 mandates that the CTA develop and maintain effective training facilities and operations to effectively comply with all the above stated requirements. However, existing temporary support facilities are several years old, deteriorating, and currently inadequate for the projected increase of operations. The 13 projects listed and described in the Proposed Action of Section 3.0 would allow classes to be held on a much larger scale while minimally impacting the environment.

The safety and health of staff and students at the completion of these projects would also improve by controlling user access to the ranges and smooth the traffic flow in and out of the range areas. Training at the LFR also utilizes live ammunition, and the possibility of a traumatic accident exists. The CTA has specific guidance for handling emergencies. Also, throughout the CTA Safe Operating Procedures manual and lesson plans for range operations, specific safety responsibilities are identified to deal with abnormal conditions. However, in the unlikely event of an accident, the proposed helicopter landing pads at each end of the LFR would permit emergency medical response with maximum speed and minimal movement of the injured individual. At the completion of the proposed projects, training at the LFR would be accomplished in a more efficient, cost-effective, safe and environmentally sound manner.

3.0 PROPOSED ACTION

The proposed action involves the construction of certain new facilities and upgrades to existing facilities that will enable the LFR to meet more efficiently and effectively the overall

training demands as put forth in the CTA Mission Statement and DOE Order 5630.15. These upgrades include 13 separate and discrete projects that contribute to the overall function of the LFR. None of these projects is dependent on any other project for operation. These projects would be built on previously disturbed soil or in areas previously identified to be disturbed. The additional facilities would adjoin the existing LFR on the east and west. Preliminary site planning has shown that this is where these facilities would best fit with both the functions of the range and safety restrictions (Map 3). All identified cultural resources sites have been marked and would be properly protected during construction. Work would be halted immediately if new cultural material is discovered during construction.

The LFR currently consists of 39.9 acres of disturbed area with a Surface Danger Zone (SDZ) of 635.10 acres. New construction is estimated to disturb an additional 27.12 acres. Total disturbed area is proposed to be approximately 67.02 acres. This would give a total controlled area (including SDZ) of 702.12 acres.

Each of the proposed projects is discussed in detail in the following narrative. Additional information regarding existing operations can be found in the CTA Live Fire Range Risk Analysis Report which is available at the CTA for public review. Information on proposed projects can be found in the CTA Site Development Plan and Construction Plan, as well as included in yearly long term budget submissions. For ease of analysis, these projects are broken down into those to be located in previously disturbed areas (approximately 39.9 acres) and those which would require additional surface disturbing activities (approximately 27.12 acres). A map of the existing facilities is attached as Map 1. All proposed project locations as published in the Site Development Plan are identified on Map 2. The following projects comprise the proposed action:

LFR Administration Building
Modular Classroom Relocation
Indoor Range
Rifle Range 3
Helicopter Pads
Armory Addition
Indoor Shooting Simulator
Hostile Environment Training Facility
Rappelling Tower Addition
Improved Road Access
Additional Bunker Storage
Urban Tactical Simulator
Pistol Range 3

The LFR Administration Building would be located on a proposed newly disturbed area to the west of the existing range boundary (Map 1). Currently the office functions of this

proposed building are accomplished in substandard trailers that have been converted to office use. The proposed Administration Building would consist of offices, classrooms, and storage areas for materials and equipment typical of an office building. Preliminary analysis indicates the need for a building of approximately 6,500 square feet with associated parking area of 29,000 square feet. This parking area would also service the indoor shooting range and Rifle Range 3. An arroyo crossing for access to this project and the associated soil work would also be required. Utilities, including electrical (either overhead or direct burial), water storage tank and associated feeder lines, septic system (designed for gray water discharge and composting lavatories), telephone line extension and distribution, propane tank(s) with associated lines, would all be encompassed in the scope of this project to ensure a functional project/area. The new sewage is proposed to be handled either through a composting system or holding tank system. Only gray water is anticipated to be leached into the ground. Any remaining sediment would be pumped and hauled away for proper disposal. There would be no storage or use of hazardous materials. A Safety Assessment should not be required.

In addition to the construction of the Administration Building, it is anticipated that the modular classroom facilities currently located at the CTA campus area would be relocated to the LFR. These two classrooms are scheduled to be located adjacent to the proposed Administration Building for support requirements. There would be surface disturbing activity in an area that will have been disturbed during construction of the Administration Building. These buildings would require electrical and gray water sewer hookups.

The second project would be the construction of an indoor shooting range. The proposed indoor range would allow instructors to utilize a regulated environment for teaching during times of inclement weather. Presently, training is performed outdoors regardless of the prevailing conditions at the time. This training is limited by climatic conditions to 33 weeks per year. Although the training exposes students to actual weather conditions and problems they may experience in actual situations, it reduces the effectiveness of the training. Training should be conducted under optimum conditions in order to allow full concentration and retention by the individual on the instruction being offered. Distractions due to weather interfere with the student's learning, retention, and concentration. The concept for this range incorporates the latest technological advances in utilizing lead-free ammunition. It is proposed to be designed to utilize solely lead-free

frangible ammunition, thereby reducing the effects of lead in the environment. The range is expected to be approximately 13,000 square feet. Associated utilities as described for the Administration Building would also be installed in conjunction with the project. This project is planned to be located near the proposed Administration Building west of the existing LFR.

An additional outdoor range, tentatively called Rifle Range 3 (RR3), is also proposed for the previously undisturbed area. RR3 would be a combination pistol/rifle range which would eliminate some of the scheduling problems for the existing ranges. Although this range was originally conceived to provide covered firing positions, additional research has

determined that this is not feasible due to ventilation, lead and noise problems. The source of the lead problem is from the lead bullet and the lead-based primer. Lead particles from the bullet and primer would result in accumulation of lead. Exposure to personnel from this lead could be deleterious to their health. The noise is already a problem due to high-impact levels which, at the present time, is being properly controlled by the use of approved hearing protection. A covered position would aggravate the situation because of the echo effect, thus compounding the noise problem. Thus, RR3 is being redesigned to consist of a range with moveable shooting positions, with an associated class break area and range control tower. This project would disturb approximately 40,000 square feet of previously undisturbed area. Although some leveling and redirecting of water flow from precipitation runoff is anticipated in the location currently being considered, the effect would be minimized by use of pre-cast concrete walls and rip-rap to direct the water to existing arroyos. Rip-rap is a foundation or wall of stones or other material, enclosed in or tied with wire that is layed on an embankment slope to prevent erosion. The effect of the rock rip-rap and berm at the head of RR3 is to rechannel the existing arroyo back into one channel until it gets below the site. The flow in the arroyos would not be increased; both arroyos rejoin below the site as shown in Map 6. High peak flows of short duration characterize floods in the Albuquerque area. Intermittent, high-intensity summer thunderstorms produce the greatest flows, but flooding is not considered a high probability at the LFR altitude of over 6,000 feet. The LFR is not constructed on a floodplain. This project would require electricity for the range and class break building.

Helipads are required at the LFR both for training purposes and emergency evacuation purposes. As the LFR utilizes advanced weapons training with live fire, there is always the potential for traumatic injury. Arrangements have been made with the local hospital to provide emergency medivac to the LFR. However, established helipads would greatly enhance the safety of the operation. Two proposed helipads would be located at the

LFR: one adjacent to the paramedic office in the Administration Building (in the previously undisturbed area) and one in the previously disturbed Research and Development Range. This project would require leveling of the affected area, and the installation of lighting per FAA requirements. The pad size is estimated at 30' x 30' to accommodate emergency response helicopters.

The Armory Addition would increase the size of the existing armory/gunsmith facility. Currently, classes are being taught in the gunsmith work area. This practice creates an unsafe condition for both the gunsmiths and the students. Presently, the Armory building includes a classroom area which is surrounded by lathes, drill presses, and other gunsmithing equipment. The proximity of the equipment to the students in the classroom area restricts the use of the equipment while a class is in session. The addition to this building would allow a separation of the classes from the actual work area, while still allowing access to the shop for demonstration purposes. This expansion would also increase personnel safety as it would eliminate the overcrowding that now exists between the classroom facilities and the surrounding machinery. This project would be located in

a previously disturbed area within Pistol Range 2 and would expand the existing armory/gunsmith facility by an additional 3,000 square feet.

The Indoor Shooting Simulator is projected to provide the ability to train students in room clearing techniques and hostage rescue capabilities within an enclosed Indoor Tactical Simulator. This project is anticipated to be a two-story structure with multiple rooms and corridors that can be reconfigured to simulate various tactical scenarios. The proposed facility would be located on the previously disturbed area of the R&D Range. The design would incorporate lead-free frangible ammunition, as is being designed for the indoor range. The size is estimated at 1,600 square feet. Electricity would be required for this facility.

The Hostile Environment Training Facility would be located to the west of the existing range and the planned Administration Building. It would be used to train students in advanced weapons manipulation skills under adverse conditions. It is anticipated that the building would be approximately 3,200 square feet in area with an access road and parking area. Electricity would be the only utility provided. Training in this facility requiring the use of irritant smokes or gases would mandate full compliance with the Albuquerque/Bernalillo County Air Quality Control Board regulations, as well as applicable New Mexico and Federal air quality standard requirements. All permits would be processed and approved prior to any training. Once training has begun, all necessary

monitoring would be conducted.

The Rappelling Tower addition would simulate a helicopter deployment. It would be designed adjacent to the existing rappel tower in Rifle Range 2 in a previously disturbed area. It would utilize the existing pea gravel for the base of the new structure to minimize the possibility of injuries to students. No additional area is proposed to be disturbed either during construction or use of this project.

An improved road access to the LFR is required in order to safely channel traffic to and from the range facility. Currently, a two lane improved dirt road gives access to the LFR, and the entry is from the east. With the new upgrades planned, the access would be from the west in order to control access and egress to the east. The proposed road would require either use of an existing arroyo crossing located 1 1/2 miles to the west of the range and upgrade of an existing two track road or the construction of an additional arroyo crossing and portion of new road. The arroyo crossing would be either a bridge or culvert crossing and would not impair or impact the flow of the arroyo. The preferred alternative is to utilize the existing crossing and upgrade the existing two track road.

The CTA currently buys ammunition in bulk purchases in order to receive price considerations and eliminate multiple shipments costing additional money. There is currently insufficient storage for the amount of ammunition purchased and used at the LFR. Interim measures have included off-site storage of ammunition. However, it is both

time consuming and labor intensive to transport small quantities of ammunition. Thus, the proposed action includes the installation of additional storage bunkers that would be located to the west of the existing range, consistent with both DOE and USAF regulations regarding ammunition storage. This project would cover approximately 200 square feet of previously undisturbed area.

The proposed Urban Tactical Simulator would allow security forces to simulate actual building entries along a simulated street environment. This project would be located in the east portion of the existing Research and Development Range, and would utilize lead-free frangible ammunition for the training. This project would be located in a previously disturbed area and would cover approximately 1/2 acre. The only utility required would be electricity.

Another outdoor range, tentatively called Pistol Range 3, is also proposed for a previously

undisturbed area. This project is expected to cover approximately 22,000 square feet of previously undisturbed area adjacent to Pistol Range 1.

The infrastructure to support the proposed facilities would require the extension or addition of the following utilities.

Electrical - The electrical system would be extended to new projects as needed. All poles (or underground direct burial cables) and transformer pads would be built on soil previously disturbed by construction.

Telephone - The present phone lines would be extended to the new facilities. In 1993, a new underground telephone cable system is planned for the canyon. At that time, the LFR would tie into this system to upgrade service.

Sewage - Sewage is proposed to be handled either through a composting system or holding tank system. Only gray water is anticipated to be leached into the ground. Any remaining sediment would be pumped and hauled away for proper disposal. A permit is required.

Water - Potable water would continue to be hauled in by truck. An additional storage tank would be set in or on the ground near the new Administration Building.

Heating - Liquified Petroleum Gas would remain as the primary source for supplying fuel to the heating system equipment at the Live Fire Range. Two centralized LP gas storage locations would be sited with new, underground piping networks to serve both the existing facilities and new facilities.

4.0 ALTER NATIVE ACTIONS

4.1 Alternatives Considered but Excluded from Detailed Analysis

(1) Construction of a portion of the projects.

Construction of only a portion of the proposed projects would not allow the CTA to complete the mission requirements set forth by DOE. DOE Order 5630.15 requires that the CTA shall provide a state-of-the-art training facility and program.

The program includes the development of standardized training programs and procedures for testing. Courses should be available to DOE organizations and contractors, with emphasis on providing training to Headquarters and Field Element instructors and instructor-candidates. Training should also include initial and refresher training to develop required skills and knowledge. Training capabilities would be limited, adversely affecting DOE and the large number of other outside federal, state and local users of the range facilities with whom the CTA is trying to build and nurture supportive relationships.

(2) Construction in a different configuration or location.

Construction of the projects in a different configuration or location is unreasonable for several reasons. The primary reason for the locations chosen were that the surface danger zones necessary for the additional ranges could fall readily into the surface danger zones that currently exist. Other locations would require the existing surface danger zones to be enlarged at a considerable expense of time and funds.

Terrain and CTA property boundaries are also considerations. Terrain to the north of the LFR is extremely rugged and therefore, not suitable for the purposes intended. Land to the east of the R&D range, and also to the south of the LFR are equally unsuitable because of the rugged terrain and the boundaries of the property currently permitted to the DOE CTA.

These alternatives are unreasonable because they do not allow the CTA to complete its increased training mission in an efficient, cost-effective, safe, and environmentally sound manner.

4.2 No Action Alternative

Under the no action alternative, the proposed projects would not be constructed, and the LFR would continue to be used as it has been under the existing facility configuration. Without the new construction and modernization, the current facilities would be inadequate to support the current and projected training needs as required by DOE

Orders. Thus, the CTA's operations would not meet the required training needs of the DOE Safeguards and Security community.

5.0 AFFECTED ENVIRONMENT

5.1 Demography

The 542nd Crew Training Wing is the host for over 180 tenants on Kirtland Air Force Base (KAFB). SNLA is one of the largest tenants with over 7,000 permanent employees and three million square feet of facility space. The base property is divided as follows: KAFB has a total of 52,000 acres; DOE controls 2,917 acres; 5,288 acres are covered by government use permits; 4,595 acres are categorized as forest service land withdrawal to DOE; and 20,702 acres are under Air Force control with most of these acres also being forest service land withdrawals. The total LFR, including the Surface Danger Zones (SDZs) as originally designed, covers approximately 675 acres at elevations ranging from 6,000 feet at the firing line to 7,600 + feet within the impact areas.

The total permanent base population is approximately 30,000. In addition, Kirtland organizations host numerous official visitors, contractors, and a variety of conferences and symposiums. The base population is projected to remain fairly constant with a potential for additional growth.

There are no nearby facilities that pose a notable hazard to personnel using the Live Fire Range, nor do operations at the LFR pose any notable hazards to personnel using the above referenced KAFB facilities. Personnel and vehicle traffic is limited primarily to DOE and United States Air Force (USAF) personnel traveling to their test facilities or training areas. It is possible for personnel to enter KAFB through roads which pass through this area from the north and east, but these roads have locked gates and warning signs.

5.2 Topography

The Central Training Academy is located in the foothills and canyons of the Manzano Mountains. These mountains are characterized by a gently sloping stream-dissected eastern face and a precipitous, rough canyoned westernside. The LFR range floor is at approximately 6,000 feet in elevation and is located in the upper Sonoran life zone and falls within the Pinyon Juniper Belt.

5.3 Land Use

DOE users share the co-use withdrawn Forest Service land with Air Force, SNLA, the Defense Nuclear Agency, and two laboratories of the Lovelace Foundation. Both Lovelace and the Air Force have facilities in the remote areas in the southern part of the base. Land use by DOE, together with the Air Force and other tenants of KAFB East,

involves the commitment of almost 50,000 acres of land to government use. Only a small part of this total is actually disturbed. An aerial photo is attached as Map 3 which shows the area proposed to be disturbed. See Draft Aerial Cable Site and Burn Site Environmental Assessments and the USAF KAFB Comprehensive Base Plan.

5.4 Geology and Seismology

The CTA is situated in the eastern portion of the Albuquerque-Belen Basin, one of the largest of a series of north-trending basins in the Rio Grande trough. About 90 miles long and 30 miles wide, this basin is widest in the Albuquerque area, and is bounded by the Sandia and Manzano mountains to the east, the Lucero Uplift and Pueblo Plateau to the west and the Nacimiento Uplift to the north, with the Socorro Channel defining the southern boundary. Large-scale faulting, deepening of the basin, and tilting of the mountain areas occurred in the late Miocene times. Subsequently, basin deposits have been laid down in a sequence of complex layers. The Live Fire Range is located primarily in an alluvial-arroyo area with the SDZs located in Precambrian-Metamorphic Rock.

Basin deposits comprise poorly consolidated Cenozoic deposits eroded from the surrounding mountain areas following the faulting and structural changes that occurred in late Miocene times. The upper part of the basin is a complex sequence of gravel, sand, silt, clay, and caliche deposits known as the Santa Fe Formation. Underlying these deposits are sedimentary rocks of unknown total thickness, but gravity and aeromagnetic mapping indicate that these rocks extend down to about 10,000 feet (3,000 m) below sea level, or about 15,000 feet (4,600 m) below ground level. These sedimentary rocks rest on a bed of Precambrian rocks which underlie the entire basin and then lift up to form the western plateaus and eastern mountains. The Sandia Mountains are about 5,000 feet (1,500 m) above the basin, giving a total difference in elevation between the Precambrian rocks in the basin and the mountains of about 20,000 feet (6,100 m). On the west side, Precambrian rocks lie at about sea level, with sedimentary rock overlying them to a height of about 5,000 feet (1,500 m) above sea level.

The eastern section of KAFB is separated by major faulting. The Hubbell Springs and Sandia faults are postulated to be a set of north/south-trending, down-to-the-west, en echelon blocks. Tijeras Fault, while it is mostly downthrown to the west also, is slightly different in that it appears to be downthrown to the east near KAFB. Hubbell Springs Fault has been described as one of the most remarkable faults in the Rio Grande Rift. It is unbroken for over 56 km and runs nearly due north from Socorro County, New Mexico, to somewhere near the southern portion of KAFB. Hubbell Bench (south of

KAFB) is one of the most easily recognizable fault scarps in the basin with offsets of 5 to 30 meters. Sandia Fault is thought to parallel the Hubbell Springs Fault north of KAFB and the City of Albuquerque, but bears west along the western side of Four Hill (Manzano Base) in the KAFB area. It is thought to be the boundary between the Sandia Uplift and the main Albuquerque Basin. Tijeras Fault is assumed to be the boundary between the Sandia and Manzano uplifts. Strike slippage is thought to consist of southwesterly

movement of the northern block. The fault starts at least as far north as Madrid, New Mexico, and has been traced southwesterly through Tijeras Canyon and along the eastern side of Four Hills.

The Albuquerque area has been classified as lying in Seismic Risk Zone 2, which is a zone subject to moderate seismic damage, and corresponds to intensity VII of the Modified Mercalli Scale, or an acceleration of about 0.1 g. Moderate damage is a reasonable expectation, but of rare incidence. The largest shock to be expected in New Mexico in a 1 period is of magnitude 6 (Sanford et al., 1972).

5.5 Soil

The soil association at the LFR is primarily Tesajo-Millet Stony Sandy Loam, with the mountainous SDZs composed primarily of Salas Complex soils. The Tesajo-Millet soil combination is about 40 percent Tesajo stony sandy loam that has 3 to 20 percent slopes, and 40 percent Millet stony sandy loam that has 3 to 15 percent slopes. The Millet soil is on ridges on alluvial fans. The Tesajo soil is in swales adjacent to the parallel to the intermittent streams and is subject to flooding. Runoff is medium, and the hazard of water erosion is moderate for undisturbed areas with native vegetation. Arroyo channels and rock outcrop, which make up about 20 percent of the unit, are also included within this mapping unit. These soil types are primarily used for watershed, wildlife habitat, community development and range.

Depth to bedrock for Millet soils is generally greater than 5 feet, with the first ten inches of soil consisting of a stony sandy loam and gravelly stony clay loam. Between ten and twenty-three inches, it becomes very gravelly sandy loam, and between twenty-three and sixty inches, it becomes very gravelly sand. Shrink swell potential of this soil is moderate with moderate risk of corrosion to uncoated steel and low risk of corrosion to concrete.

Depth to bedrock for Tesajo series is also greater than 5 feet, with the first sixty inches consisting of very gravelly loam to very gravelly loamy sand. The shrink swell potential

is as low as are the corrosion risks to both uncoated steel and concrete. Soil features affecting dikes, levees and other embankments for both the Tesajo and Millet soil series are seepage and piping. These soils are also difficult to pack, resulting in some of the erosion problems presently arising at the LFR. The Soil Conservation Service rates these soils as belonging to dryland capability classification subclass VII soils are unsuitable for

cultivation or are very severely limited, chiefly by the risk of erosion unless protective cover is maintained. (Soil Survey of Bernalillo County, New Mexico, U. S. Soil Conservation Service)

5.6 Hydrology

Both CTA sites slope southwesterly toward the Rio Grande, the major drainage channel for the entire Albuquerque area. Tijeras Arroyo drains the campus area, whereas Coyote Canyon drains the LFR.

Depth to aquifers would vary dependent upon the depth to the precambrian layer and whether or not there is a fault or fracture nearby. Generally, water seems to be found at depths ranging from 300 to 600 feet from the surface.

High peak flows of short duration characterize floods in the Albuquerque area. High-intensity summer thunderstorms of relatively short duration produce the greatest flows, but flooding is not considered a high probability.

Hydrogeology east of the fault systems is poorly understood because there are few monitoring wells and the geology between the fault systems and the canyons of the Manzano Mountains is very complex. The direction of groundwater flow typically would be out of the canyons and westward toward or perpendicular to the fault system. SNLA currently is studying the flow in the vicinity of the fault complex. A surface microcavity survey is planned to delineate the location of the fault blocks. Once information on fault location is known, installation of 3 or 4 wells is planned. One of the holes may be angled to intercept the boundary between two blocks. Field tests would be performed to help determine the nature of this boundary and its potential impact on regional flow.

5.7 Wildlife

Most of the wildlife of the KAFB area are herbivores which feed primarily on grass plants and browse plants. These species include deer, rodents, rabbits, reptiles and birds.

Omnivores include such species as coyotes, bobcats, bear and cougar. Red tail hawks, vultures and eagles have also been identified in the area of the LFR. The Live Fire Range has a persistent deer herd that can often be sighted on berms when the ranges are not in use. Although there would be marginally less browse for the wildlife population, operation of the existing range facilities has shown that wildlife would adapt and no other activities in the area would be disrupted by these projects.

5.8 Vegetation

The plant community on the west side of the Manzano Mountains is a mixture of trees, shrubs, and understory plants. Oneseed Juniper (Juniperus monosperma) is common and gives the plant community an evergreen woodland aspect. Oakbrush (Quercus spp.) is dominant among the abundant shrub plants. Less abundant are skunkbrush (Rhus trilobata), sacahuista (Nolina spp.), range ratany (Krameria glandulosa), feather dalea (Dalea frutescens), and rubber rabbitbrush (Chrysothamnus nauseosus). Apache plume (Fallugia paradoxa), four wing salt bush (Atriplex canescens), and saltcedar (Tamarix

spp.) is common in drainageways. Small soapweed, broom snakeweed (Gutierrezia sarothrae), cholla cactus (Opuntia spp.), and prickly pear cactus (Opuntia spp.) occur in small amounts. Black grama (Bouteloua eriopoda), the dominant grass, is about 25 percent of the total vegetation by weight. Less abundant are blue grama (Bouteloua gracilis), hairy grama (Bouteloua hirsuta), bush muhly (Muhlenbergia porteri), bluegrass (Poa pratensis), New Mexico feathergrass (Stipa neomexicana), sand dropseed (Sporobolus cryptandrus), three-awn (Aristida longiseta), and bottlebrush squirreltail (Sitanion hystrix). Globemallow groundsel (Senecio spp.), and bricklebush (Purshia tridentata) are the most prominent perennial forbs. Annual plants are indian paintbrush (Custilleia coccinea), bladderpod (Lesquerella spp.), cheatgrass (Bromus tectorum), six weeks grama (Bouteloua barbata), tumbleweed (Salsola spp.), lambsquarters (Chenopodium album), and fiddleneck (Amsinckia intermedia). If this plant community is disturbed, oneseed juniper and oakbrush become the most prominent plants and the understory is a few grasses and numerous annual plants.

A survey was conducted to identify any threatened and endangered (T&E) plant(s) that occurred within the project boundaries, and would be adversely affected by construction of additional range facilities. The survey concluded that there was a large population of Neolloydia intertexta (white-flowered Visnagita). Although this is listed as a state Endangered Species, it is common in central New Mexico and expected to be removed from the New Mexico Endangered Plant Species List in January 1994. The primary focus of the study was the Pediocactus papyracanthus (grama-grass cactus). No grama-grass

cactus were found within the project site. More detail can be found in the Endangered Plant Survey, (Attachment 1).

5.9 Cultural Resources

An intensive archaeological survey discovered six sites and ten isolated finds. The first site (Site 221) was a field house which was found at the northern end of the alluvial fan near the northern extent of the survey. It exhibits rock remains of three sides of a rectangular structure, the fourth buried in silt. No artifacts were found within or around the structure. The second site (Site 222) was a lithic and ceramic scatter with a hearth which was found at the lower end of the alluvial fan just north of Arroyo del Coyote. The third site (Site 223) was a small pueblo structure which was found directly west of the second site. This site is estimated to have 15 rooms, and had lithics, ceramics, ground stone and one notable leaf shaped Archaic knife. The fourth site (Site 224) was a small pueblo structure which was found just NW of the third site. This structure was estimated to have 12 rooms. The fifth site (Site 225) was a single square structure which was found just NW of the fourth site. Only one shard was found at this site. The sixth site (Site 226) was a room block of possibly 12 rooms which was found just north of the fifth site. This site had abundant shard scatter, one ground stone and few lithics.

Three of the identified sites (Sites 221,225, and 226) are out of range of the construction projects. Three additional sites (Sites 222, 223, and 224) would be fenced prior to construction and protected. These sites shall be fenced 5 meters from the identified perimeter to prevent any damage to these sites. Work would be halted immediately if new cultural material is discovered during construction. A Cultural Resource Clearance was received by both the U. S. Forest Service and the New Mexico State Historic Preservation Officer.

5.10 Waste Management

Since 1987, efforts have been made to minimize wastes and ease disposal problems by recycling. A waste minimization report is prepared on an annual basis. However, since the CTA is a training facility, as opposed to a production or research facility, there are few hazardous waste concerns. The CTA has an ongoing commitment to waste minimization. An example of the CTA's waste minimization efforts is reflected in the June 1991 change from the use of Safety-Kleen to ZEP Dyna 143 to clean weapons. Safety-Kleen was a characteristic hazardous waste because of its ignitability. ZEP Dyna 143 is not

characterized as a hazardous waste and does not require disposal as did the Safety-Kleen. This change resulted in a reduction of almost 2,000 lbs. per annum in the quantity of hazardous waste generated. An explanation of the ZEP cleaning system is described below.

Sewage - Sewage is proposed to be handled either through a composting system or holding tank system. Only gray water is anticipated to be leached into the ground. Any remaining sediment would be pumped and hauled away for proper disposal. A permit is required.

Solvents - The CTA currently uses a ZEP parts cleaning system to clean weapons after use . The ZEP parts cleaning system consists of a 30-gallon drum which holds a large stable tank with a flexible metal spout. The unit has two filters designed to minimize waste disposal by filtering the solvent several times during operation of the unit. The filter pump circulates solvent from inside the drum through a filter element that traps and removes suspended particles from the liquid. The solvent then drains back into the drum. The vendor that supplies the system also supplies a filtration system for recycling the solvent. Only the filtration media require disposal. These are collected along with patches and rags used for weapons cleaning and disposed of in accordance with all applicable regulations. The result is a system that continuously cleans solvent while in operation. The solvent does not require disposal at any time, but may require periodic replenishment due to usage and loss due to evaporation.

Guns are blued with a solution of sodium hydroxide, sodium nitrate, and sodium nitrite. By alternating bluing and parkerizing operations, and monitoring the pH of the waste solutions in the tank, the tank is being operated as an elementary neutralization unit in accordance with EPA regulations. To qualify as a hazardous waste, a solution must have

a pH of less than 2 or greater than 12.5. At this time, the solution is being disposed of as though it still possessed the hazardous characteristic of corrosivity. The operations occur only when needed and generate less than 100 kilograms per month.

Lead/Brass - Periodically, the bullet traps used at the LFR must be rebuilt. The bullet traps are bullet containment devices that contain any hand gun round at point blank range without spraying debris to shooter or participants. Lead residue from the traps is collected for recycling. Lead is collected from the bullet traps and stored in DOT approved, sealed five-gallon cans purchased specifically for this purpose. The lead is stored until brass casings are accumulated to make an attractive package for recylcers

to bid on both the brass shell casings and lead together. Included in the bid specifications is a statement that the lead must be used for recycling purposes. The brass shell casings are recovered and sold by bid to recyclers who use it to manufacture reloaded ammunition. Other items currently included in the recycling programs are batteries, paper and cardboard targets used at the LFR.

Gasoline - A maximum of six to seven cans of gasoline are stored in approved five gallon safety cans at the LFR. The gasoline is used to fuel the maintenance carts, All Terrain Vehicle and forklift.

Solid Waste Products - Trash products are picked up weekly through a SNLA contract and do not provide any air, ground, or water pollution hazards. These trash products contain normal office garbage such as non-recyclable paper and other paper products, food wastes and occasionally glass and plastic wastes. At no time are hazardous wastes included with these trash products.

6.0 ENVIRONMENTAL CONSEQUENCES

6.1 Potential Impacts from Routine Operations

The LFR operations do not present any significant hazard or risk to the environment through air or water pollution. All water brought to the site is from approved KAFB sources or through commercially approved contract. The main source of potable water at the LFR has always been a 10,000 gallon underground storage tank. Over the years, SNLA has continued to deliver potable water per original agreements for the design and installation of the underground storage tank. Another source of potable water at the LFR is a contract with a local vendor to deliver bottled water. Commercially bottled 5-gallon bottles and dispensers have been placed in various locations at the LFR for use by staff and students.

Construction work would temporarily raise the level of air emissions from dust and other building material particulates. Personnel working in the area, both during and after construction, would be required to wear proper eye protection as required in OSHA 29

CFR 1910.133. The area in use is governed by the Bernalillo County Air Quality Control Board. No air quality standards would be exceeded. The potential requirement for a National Emissions Standards for Hazardous Air Pollutants (NESHAP) permit as a point source for lead would be negated. Hazardous waste (lead) problems within the range

would also be eliminated. The ventilation requirements critical to protecting the health of personnel would become less stringent due to the elimination of the use of lead primers and lead shot. Noise levels would also temporarily increase during construction. Consequently personnel in the area would be directed to wear ear protection as required in OSHA 29 CFR 1910.95 when the noise levels exceed OSHA standards. Impact noise levels would also increase during operations to a peak of about 160 decibels -+ at ear level according to Air Force Regulation 161-35 dated April 9, 1982.

Scientific data shows that metallic lead in the form of bullets, shot or pellets does not cause harm to the environment either on land or in the water. In metallic form, lead is virtually insoluble in pure water. Particulated metallic lead will quickly bind with soil molecules and become permanently insoluble. Scientific data also shows that metallic lead is not a leachate and even with the best of soils and water to transport it, metallic lead would take 14,000 years to migrate 60 feet below the surface to where aquifers normally exist. No scientific evidence exists to support the allegation that the environment would be affected from the deposit of metallic lead on land or in a backstop area.

Guidance from EPA states that the discharge of ammunition at shooting ranges does not constitute the disposal of solid or hazardous waste as proclaimed in a memorandum dated December 30, 1991 from DOE Headquarters Office of Environmental Guidance following notification from EPA. Metals left in the soil from normal use firing range operations have not been discarded, per se, but are part of the normal intended use of firing range operations. EPA did indicate that when a firing range was deactivated permanently, the provisions of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) may apply, with treatment and/or disposal subject to the requirements of the Resource Conservation and Recovery Act (RCRA).

There would be no adverse impacts to the environment upon removal of the office trailers currently used at the LFR.

6.2 Potential Impacts to Vegetation and Soils

These projects would require surface disturbing activities in a previously undisturbed area of approximately 27.12 acres. Although the vegetation in the immediate area would be disturbed, the potential risk and impact to the environment would be negligible. Soil in this area is unsuitable or very severely limited for cultivation unless protective cover is maintained. Therefore, the impact to soils would also likely be negligible.

6.3 Potential Impacts to Wildlife

Wildlife species could be adversely affected by a number of factors, including noise, loss of habitat, and habitat fragmentation. Fragmentation of critical wildlife habitat could cause species to use less suitable travel corridors and foraging areas that could result in an overall decrease in species numbers and diversity, and loss of habitat (foraging, nesting, bedding, watering areas). In addition, new construction could have minimal impacts to wildlife use in the area. Training activities would continue as they have in the last eight years.

Construction activities throughout the grassland-juniper and woodland environment, and some drainages at the lower portions of the pinon-juniper woodland, could result in adverse impacts through loss of valuable foraging areas. Projects requiring ground clearing of vegetation along drainages and foothills could cause alteration or loss of travel corridors and bedding sites that are near foraging habitat and critical winter range for mule deer. Disturbance to these areas could result in both short- and long-term impacts to wildlife population numbers within the proposed area.

Similarly, fires ignited by project work could cause destruction of all habitat types. CTA management has been very successful in accident prevention historically and expects that no significant impact on facilities is likely to occur due to fire. To help prevent any destruction from wildfires, CTA personnel receive fire safety training as well as Forest Service training in fighting open range fires. In addition, fire extinguishers are located throughout the range complex and students are briefed on their location and other fire fighting equipment as required. A 1,000 gallon pumper truck resides at the LFR for use in the event of a fire emergency. Kirtland Air Force Base provides fire inspection and response services. KAFB Fire Department personnel and equipment can respond to the LFR within approximately 15-20 minutes. Placement of man-made structures at the base of the arroyos and canyons, particularly along Coyote Canyon, could disrupt movement of wildlife into and out of the area. However, due to the limited impacted area, it is felt these potential disruptions would be minimal.

Although most activities in the proposed area would have some degree of noise impact, most of these impacts should be temporary or infrequent. Thus, construction activities planned for the LFR would be conducted in accordance with a policy of coexistence with the environment and conservation of the biological diversity in this unique area. Operation of the existing range facilities has shown that wildlife would adapt to noise and other

disturbances as a result of daily operations. No other activities in the area would be disrupted by these projects and additional activities at the range.

6.4 Potential Impact to Threatened. Endangered. or Sensitive Plant Species

Pediocactus papyracanthus, grama-grass cactus, was the primary focus of the Threatened & Endangered Plant study since it is listed as a candidate species by the U.

S. Fish and Wildlife Service. The survey was conducted on April 18, 1991 during the flowering period for grama-grass cacti, and none were found.

Neolloydia intertexta, white-flowered Visnagita, was very common on the site, and is also currently protected by the State of New Mexico. Well over 500 specimens of this cacti were seen on this site. Densities of this magnitude are not uncommon along the eastern edge of the Rio Grande Valley. During an August 1992 conversation with New Mexico State Botanist Bob Sivinski, he stated that this species of cacti would be deleted from the New Mexico Endangered Plant Species List at the next publication expected in January 1994.

An exceptionally robust population of Mammillaria heyderi (Heyderi's Pincushion cactus) was encountered at this site. This species is one of the few cacti which has been removed from the New Mexico State Sensitive Species list during ongoing revisions of that list.

Other rare or sensitive species known to occur in Bernalillo County in similar habitats include Mammillaria wright (Wright's Fish-hook Cactus), Astragalus kentrophytus (Spiney leaf milk-vetch), Astragalus shortianus (Shorts milk-vetch), Oenothera caespitosa yar. exima (Evening Primrose), and Dalea scariosa (La Jolla Prairie Clover). None of these species were found in the project area. More detail can be found in the Endangered Plant Survey (Attachment 1).

Transplantation to the nearby U. S. Forest Service cactus plantation of these cacti is the most logical mitigation measure. This will be performed as deemed necessary by DOE and the U. S. Forest Service before any construction begins. The CTA is also considering the possibility of allowing cacti collectors to gather the Neolloydia intertexta (white-flowered Visnagita) and the Mammillaria heyderi (Heyderi's Pincushion cactus) cacti, which are commonly found in this type of environment and not critical to this area prior to any construction.

6.5 Potential Impacts to Waste Management

It is the policy of both the DOE and WSI to minimize the generation of waste whenever possible. In keeping with this policy, there is a continuous, aggressive effort to identify all sources of waste and any opportunity to reduce them. This includes non-hazardous wastes as well as hazardous wastes. Since the CTA is a training facility, as opposed to a production or research facility, there are few environmental impacts, each of which is limited. Recycling efforts at the CTA are also common practice whenever possible. It is not anticipated that new construction would introduce any new waste being generated at the CTA LFR.

It is expected that during the construction phase of these projects, there would be a temporary increase of non-hazardous waste. However, this waste would be disposed in

accordance with all applicable regulations. This would not result in any adverse affects to the environment.

Because the CTA is a training facility, an increase in the number of scheduled of courses would affect the amount of solid waste products which consists of typical office garbage, which are currently picked-up on a weekly basis under a SNLA contract. These wastes provide no air, ground or water pollution hazards. This waste would be hauled away on a regular basis so as to avoid build-up. Consequently, this is not expected to substantially change this waste stream because of the upgraded facilities.

Currently, the only hazardous solvent being disposed of from the LFR is the gun bluing solution. This gun bluing process is only performed on an as-needed basis, and is therefore not anticipated to increase the amount of hazardous solvent currently being disposed. The bluing process is not routine and is estimated to be completed between 18 and 20 times per year, if deemed necessary. The bluing process generates less than 100 kilograms per month of hazardous waste.

Patches and rags used for weapons cleaning are also collected and disposed of in accordance with applicable federal regulations for Toxicity Characteristic Leaching Procedure (TCLP) lead and volatile organic compounds. WSI is currently in the process of awarding a contract to an approved hazardous waste disposal contractor to dispose of this waste stream. The amount of this waste varies and increases when firearms courses are being held. The disposal of the various amounts of patches and rags is not

expected to incur any problems.

6.6 Abnormal Events - Probability and Consequences

The DOE has prescribed that all personnel be protected in the undertaking of explosives operations. This requires that the level of safety provided shall be at least equivalent to that of the best industrial practice and that the risk of death or serious injury shall be limited to the lowest practicable minimum. With regard to these requirements, the munitions at the LFR are currently stored in accordance with the DOE Explosives Safety Manual and DOE Order 5480.16. These documents consider risks, quantities, distances, compatibility and procedural requirements. The CTA LFR Risk Analysis Report also estimates the risks of munitions storage to be minimal. The CTA has taken action to reduce already minimal risk by removing all small arms ammunition and diversionary devices to Air Force earth-covered igloos located in another area of KAFB. These igloos are located approximately five miles from the LFR and are kept in strict compliance with the requirements of DOE, Air Force and DOE explosive manuals which consider risks, quantities, distances, compatibility and procedural requirements. Providing secure and safe storage of explosives in amounts necessary to meet operational requirements reduces the potential for accident. Also, to minimize the likelihood of an explosion occurring in the ammunition bunkers, frequent inspections are also completed by the CTA

ES&H staff, the DOE and Kirtland Air Force Base 542nd Crew Training Wing. If a hazard were to be observed at any time, it would be corrected immediately.

The CTA puts forth an aggressive effort to follow the guidelines and standards for explosives safety including frequent inspections of ammunition storage facilities. Consequently, the probability of an explosion occurring at one of these munitions storage bunkers per year is not likely (10 -4 to 10 -6). Risks to personnel from these explosives handling and storage operations are also expected to be minimal.

6.7 Cumulative Effects

Although it is expected that training activities at the LFR will continue to increase, it is difficult to predict accurately the amount of growth necessary for the LFR staff to meet the needs of the DOE. It is not expected that the projected increase in operational activity will present any problems to the environment that could not be adapted to by wildlife. The probability of an explosion at one of the ammunition storage bunkers at the LFR is not likely, and therefore would not impact the environment incrementally.

Increases in noise levels because of gunfire is not expected to affect wildlife adversely. In order to protect human health during courses which require gunfire, the CTA students and staff would be provided with and required to use personnel protective equipment to reduce the sound levels to the required level. When noise levels are expected to exceed 115 dB, feasible administrative controls would also be utilized.

According to the New Mexico Game and Fish Department, Habitats Division, impacts to vegetation and wildlife species can be considered adverse if (1) pre-existing wildlife cannot be supported following removal or alteration of vegetation from a project area; (2) project-associated disturbance such as habitat destruction, noise, human presence, project operation, pollution, etc., result in long-term wildlife population decreases that are greater than one breeding season; and (3) severe erosion occurs from removal of vegetation or other disturbance results in irreversible effects to the surrounding habitat.

In considering the three factors outlined above, the cumulative impact of LFR operations would be restricted to a disturbed area containing approximately 67 acres which were originally part of Cibola National Forest. Cumulative impacts to the forest ecosystem from LFR operations is expected to be minimal and limited in all cases through proper engineering and planning. Based on liaison with staff members from the New Mexico State Forestry and the U. S. Forest Service, no long-term or permanent harm is expected to occur to the affected environment because of the proposed action. The forest ecosystem should be restorable to its natural state when LFR operations are completed without artificial means.

6.8 Impacts from the No Action Alternative

Under the no action alternative, the LFR would continue to be used for DOE training with no additional impacts from routine operations anticipated. However, without new construction and modernization, the existing facilities would be inadequate to support the current and projected training needs as required by DOE Orders. Thus, the CTA's operations would not meet the required training needs of the DOE Safeguards and Security community.

7.0 LISTING OF AGENCIES AND PERSONS CONSULTED

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Chris Tuttle - 542nd CTW/EM, United States Air Force, Kirtland Air Force Base

Eugene L. Emerson - Organization 6512, Sandia National Laboratories Albuquerque

Floyd Thompson - District Ranger, United States Forest Service, Sandia Ranger District
Ken Karkula - United States Forest Service, Sandia Ranger District
Susan Johnson - United States Forest Service, Sandia Ranger District

Bob Sivinski - New Mexico State Forestry, NM State Botanist

John C. Peterson - United States Fish and Wildlife Service

Tom Merlin - New Mexico State Historic Preservation Officer

Patricia L. Barlow - Plant Taxonomist, Botanical Consortium

Don McCarter - New Mexico State Game and Fish Department
Jon Klingel - New Mexico State Game and Fish Department

8.0 LIST OF REFERENCES

U. S. Department of Energy, 1992. Safeguards and Security Training Program, Washington, D.C.

U.S. Department of Agriculture, Forest Service, Sandia Ranger District, 1991. Cultural Resource Clearance, Tijeras, New Mexico.

U.S. Department of the Air Force, 1982. Hazardous Noise Exposure, AF Regulation 161-35, Washington D.C.

Barlow, Patricia L. (Botanical Consortium), 1991. Endangered Plant Survey of the Coyote Canyon Firing Range Addition, Albuquerque, New Mexico.

DOE (U.S. Department of Energy, Central Training Academy) 1989. Risk Analysis Report Live Fire Range Volumes l and ll, Albuquerque, New Mexico.

United States Air Force, 1989. Kirtland Air Force Base Comprehensive Base Plan,

Albuquerque, New Mexico.

DOE (U. S. Department of Energy), 1992. Federal Register - 10 CFR 1021 National Environmental Policy Act Implementing Procedures, Washington, District of Columbia

DOE (U. S. Department of Energy, Central Training Academy), 1992. Site Development Plan, Albuquerque, New Mexico.

DOE (U. S. Department of Energy, Central Training Academy), 1990. Site Development Plan, Albuquerque, New Mexico.

Sanford et al., 1972. Seismicity of the Rio Grande Rift in New Mexico, New Mexico Bureau of Mines and Mineral Resources, Circular 120.

9.0 LIST OF MAPS

10.0 LIST OF ATTACHMENTS

ATTACHMENT 1 Threatened & Endangered Plant Survey

Endangered Plant Survey the
Coyote Canyon Firing Range Addition
Central Training Academy
Department of Energy
Kirtland Air Force Base
Bernalillo Co., New Mexico

18 April 1991

Prepared for:
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1.0 Introduction

The existing Firing Range in Coyote Canyon is located on the Sandia Military Reservation in Bernalillo Co., New Mexico in approximately Township 9 North, Range 4 East. The proposed new facility site is immediately west of the existing facility in a small side canyon to Coyote Canyon. This project involves major earthmoving including site leveling and the building of large berms, effectively eliminating the vegetation in the immediate area.

2.0 Methods

A field reconnaissance of the proposed site was conducted on

18 April, 1991. The area designated as the proposed site was the valley botton between the hills to the west and north west and the existing facility. Marcus Hayes (Wackenhut representative) de fined the perimeter of the survey on site at the beginning of the fieldwork. The survey was performed by a trained plant taxonomist walking back and forth across the area at intervals of approximately 15 meters. A list of the species observed during the survey was recorded. Locations of Mammillaria heyderi plants were sketched on a rough map of the area. The area immediately adjacent to the fence line to the south was also briefly surveyed for a roadway to be constructed.

3.0 Results and Discussion

3.1 Vegetation

The vegetation of Coyote Canyon is typical of the western valleys of the Manzano Mountains showing features of the Chihuahuan Desert Grasslands. Plants associated with the Chihuahuan Desert Grasslands found here include Opuntia engelmannii, Menodora scabra, Neolloydia intertexta, and various species of Bouteloua. The protected nature of the west facing canyons probably accounts for this plant association being found at the relatively high elevation of about 5,700ft. A list of the species encountered is appended as Attachment 1.

3.2 Potential Rare Species within the Project Area

Pediocactus papyracanthus, grama-grass cactus, was the primary focus of this study. This species is listed as a candidate species by the U.S. Fish and Wildlife Service. The U.S. Forest Service reguested that the area be surveyed for this species as it had been found in a nearby canyon several years ago. Grama-grass cacti have spines that are very grass-like; this with their small size makes them quite difficult to find during most of the year. This survey was conducted during the flowering period for grama-grass cacti. No

Pediocactus papyracanthus were found within this project site.

Neolloydia intertexta was very common on the site. This species is protected by the State of New Mexico (see Attachment 2). Its designation as a protected species is merited not by its rareness but by it liability to be collected to extinction by cacti collectors. Well over 500 specimens of N. intertexta were seen on the site. Densities of this magnitude are not uncommon along the eastern edge of the Rio Grande Valley.

An exceptionally robust population of Mammillaria heyderi was encountered at this site. This species is one of the few cacti to be proposed to be removed from the New Mexico State Sensitive Species list during the current ongoing revision of that list.

Other rare or sensitve species known to occur in Bernallilo County in similar habitats include Mammillaria wrightii, Astragalus kentrophytus, Astragalus shortianus, Oenothera caespitosa var.exima, and Dalea scariosa. None of these species were found in the project area.

4.0 Conclusions

The endangered species survey of the proposed expansion of the Coyote Canyon Firing Range disclosed a large population of Neolloydia intertexta, which, though listed as a state Endangered Species, is common in central New Mexico. Pediocactus papyracanthus was not found on this site.

The information contained herein is true to the best of my knowledge.

Signed Date

List of Attachments:

1) List of species encountered on the project site.

2) New Mexico Natural Resources Department Rule No.85-3.

3) Curriculum vitae of author of this report.

Attachment 1. List of plants observed at the Coyote Canyon Firing Range extension site. 4-18-90.

Family	Species name	Authority	Common name
Apiaceae	Cymopteris fendleri	Gray	Chimaya
Asclepiadaceae milkweed	Asclepias latifolia	(Torr.) Raf.	Broad-leaved
Cactaceae	Coryphantha vivipara	(Nutt.) Briff. & Rose	
	Echinocereus fendleri	Engelm.	
	Mammillaria heyderi	Muhlenpfordt	
	Neolloydia intertexta	(Engelm.) L. Benson	
	Opuntia clavata	Engelm.	Club cholla
	Opuntia engelmannii	Salm-Dyck	
	Opuntia imbricata	(Haw.)DC.	Cholla
	Opuntia violacea	Engelm.	Prickly-pear
Chenopodiaceae	Atriplex canescens	(Pursh) Nutt.	Fourwing saltbush
	Chenopodium spp.	.	Goosefoot
	Eurotia lanata	(Pursh) Moq.	Winterfat
	Salsola kali	L.	Tumbleweed
	Sarcobatus vermiculatus	(Hook.) Torr.	Greasewood
Compositae	Artemisia dracunculus	L.	False terragon
	Berlandiera lyrata	Benth.	
brickelbush	Brickellia californica	(Torr. & Gray) Gray	California
	Chrysopsis spp.	.	Golden aster
thistle	Cirsium neomexicanum	Gray	New Mexican
	Gutierrezia sarothrae	(Pursh) Britt. & Rusby	
	Happlopappus gracilis	(Nutt.) Gray	Goldenweed
	Leucelene ericoides	(Torr.) Greene	White aster
butterweed	Senecio douglasii var. longilobus	(Benth.) L. Benson	Threadleaf
Cucurbitaceae	Cucurbita foetidissima	H.B.K.	Buffalo gourd
Cupressaceae juniper	Juniperus monosperma	(Engelm.) Sarg.	One-seeded

Ephedraceae	Ephedra torreyana	Wats.	Torrey joint fir
Fumariaceae	Coorydalis aurea	Willd.	
Liliaceae	Nolina microcarpa	Wats.	Bear grass
	Yucca elata	Engelm.	Soaptree yucca
Malvaceae	Sphaeralcea spp.	.	Globemallow
Oleaceae	Mendora scabra	Gray	Rough menodora
Poaceae	Andropogon scoparius	Michx.	Little bluestem
	Aristida spp.	.	Three-awn
	Bouteloua curtipendula	(Michx.) Torr.	Side-oats grama
	Bouteloua eriopoda	(Torr.) Torr.	Black grama
	Bouteloua gracilis	(H.B.K.) Lag.	Blue grama
	Sporobolus spp.	.	Dropseed
Polygonaceae	Eriogonum jamesii	Benth.	Antelope-sage
	Rumex hymenosepalus	Torr.	Wild rhubarb
Rosaceae	Fallugia paradoxa	(D.Don) Endl.	Apache plume
Solanaceae	Lycium spp.	.	Wolfbane
Verbenaceae	Verbena spp.	.	

Attachment 2. NM Endangered Species Laws

NATURAL RESOURCES DEPARTMENT
408 Galisteo Street
Villagra Building, Suite l29
Santa Fe, New Mexico 87503

.NRD Rule No. 85-3 October 28, 1985

Endangered Plant Species in New Mexico

1. AUTHORITY

1. 1A Pursuant to the authority vested in the New Mexico Natural Resources Department by the provisions of Section 9-10-5 and 9-10-10 NMSA (1978), the following regulation is hereby adopted to govern the listing of endangered plant species, subspecies and varieties in New Mexico.

2. DEFINITIONS

2.1. Collection

2.1.1. Collect shall be defined as the taking of a plant specimen or plant part.

2.1.2. Collection is defined as a group of plants or parts of plants to be seen, studied or kept together.

2.2 Known Locations

Known locations are those contained in the Natural Resources Information System of the Natural Resources Department.

2.3. Natural Resources Information System (NRIS)

NRIS is a comprehensive computerized data retrieval system housed in the New Mexico Natural Resources Department. It contains data bases on the distribution of rare plants.

2.4. Population Site

An area of occurrence of a particular species.

2.5. Specimen

The physical parts or a plant in its entirety, collected from a population site for the purpose of scientific study.

2.6. Taking

Taking is defined as the removal of plant or pl ant part in such a way that it may have commercial value or may be useable in a collection.

2.7. Voucher Specimen

A specimen collected from a population site for the purpose of documenting that site. It should be accompanied by pertinent information on the population, ecology, location, date of the collection and any other notes the collector can present concerning the site containing data bases on rare plants and animal, paleontology, geology, vegetative communities and natural areas.

3. CRITERIA FOR INCLUSION ON LIST

3.1. A Plant species must meet one of the following criteria to be included on the state endangered species list:

3.1.1. The taxon is listed as threatened or endangered under the provisions of the Federal Endangered Species Act (16 U.S.C. Sections 1531 et seq.), or is considered proposed under the tenets of the act; or

3.1.2. The taxon is a rare plant across its entire range and of such limited distribution and population size that unregulated collection could adversely impact it and jeopardize its survival in New Mexico; or

3.1.3. The taxon may be widespread in its distribution and may occur in adjacent states or Mexico, but its numbers are being significantly reduced to such a degree that within the foreseeable future the survival

of this species in New Mexico is jeopardized.

3.2. Once a plant species meets one of these criteria, notice of the inclusion and a public hearing which affords the opportunity for public comment will be held in accordance with 9-10-5 NMSA (1978).

3.3. If the Department finds that the survival of a species is in imminent danger, then the Department may make an emergency inclusion of that species on the endangered species list. The emergency inclusion must then be ratified in the standard procedures outlined in 3.3, within sixty days.

3.4. The final decision to include a species on the endangered species list is made by the Secretary of the Natural Resources Department or his designee.

4. LIST OF NEW MEXCO STATE ENDANGERED SPECIES

4.1. The following list of plants constitutes the New Mexico State Endangered Species List. Listed are the plant's scientific name, its common name, and the criteria for inclusion by the subsection numbers in section 3.

Endangered Plant Species	Criterion For Inclusion
Allium gooddingii (Goodding's Onion)	3.1.2
Aquilegia chaplinei (Chapiin's Columbine)	3.1.2

Argemone pleicantha ssp. pinnatisecta (Sacramento Prickle-poppy)	3.1.2
Astragalus gypsodes (Gypsum Milkvetoh)	3.1.2
Astragalus humillimus (Mancos Milkvetch)	3.1.1
Atriplex pleiantha (Succulent Dwarf Saltbush)	3.1.2
Cereus greggii (Night-blooming Cereus)	3.1.3
Chaetopappa elegans (Sierra Blanca Cliff Daisy)	3.1.2
Chaetopappa hersheyi (Hershey's Cliff Daisy)	3.1.2
Cirsium vinaceum (Mescalero Thistle)	3.1.2
Cleome multicaulis (Slender Spiderflower)	3.1.2
Coryphantha duncanii (Duncan's Pincushion Cactus)	3.1.2
Coryphantha organensis (Organ Mountain Pincushion Cactus)	3.1.2
Coryphantha scheeri (all varieties)	3.1.2

(Scheeri's Pincushion Cactus)	
Coryphantha sneedii var. leei	3.1.1

(Lee's Pincushion Cactus)	
Coryphantha sneedii var. sneedii (Sneed's Pincushion Cactus)	3.1.1
Cypripedium calceolus var. pubescens (Golden Lady's Slipper)	3.1.3
Echinocereus kue:.zleri (Kuenzler's Hedgehog Cactus)	3.1.1
Echinocereus lloydii (Lloyd's Hedgenog Cactus)	3.1.1
Epithelantha micromeris (Button Cactus)	3.1.3
Erigeron hessii (Hess's Fleabane)	3.1.2
Erigeron rhizomatus (Zuni Fleabane)	3.1.1
Eriogonum densum (Woolly Buckwheat)	3.1.2
Eriogonum gypsophilum (Gypsum Buckwheat)	3.1.1
Escobaria orcuttii (all varieties) (Orcutt's Pincushion Cactus)	3.1.2
Escobaria sandbergii (Sandberg's Pincushion Cactus)	3.1.2
Escobaria villardii (Villard's Pincushion Cactus)	3.1.2
Euphorbia antisyphilitica (Candilla)	3.1.3

Fritillaria atropurpurea (Checker-Lily)	3.1.3
Gilia formosa (Aztec Gilia)	3.1.2
Habenaria dilatata var. dilatata (Bog Orchid)	3.1.3
Happlopappus microcephalus	3.1.2

(Small-headed Goldenweed)	
Hedeoma apiculatum (McKittrick Pennyroyal)	3.1.1
Hedeoma todsenii (Todsen's Pennyroyal)	3.1.1
Hexalectris nitida (Crested Coralroot)	3.1.3
Hexalectris spicata (Crested Coralroot)	3.1.3
Lepidospartum burgesii (Gypsum Scalebroom)	3.1.2
Lilium philadelphicum (Mountain Lily)	3.1.3
Lycopodium annotinum (Clubmoss)	3.1.3
Mammillaria viridflora (Green-flowered Fish-Hook Cactus)	3.1.2

Mammillaria wrightii (all varieties) (Wright's Fish-hook Cactus)	3.1.2
Malaxis tenuis (Adder's Mouth)	3.1.3
Neoloydia intertextus (all varieties) (White-flowered Visnagita)	3.1.3
Opuntia arenaria (Sand Prickly Pear)	3.1.2
Opuntia viridiflora (Green-flowered Cholla)	3.1.2
Pediocactus knowltonii (Knowlton's Cactus)	3.1.1
Penstemon alamosensis (Alamo Penstemon)	3.1.2
Perityle cernua (Nodding Cliff Daisy)	3.1.2
Polygala rimulicola (all varieties) (Guadalupe Milkwort)	3.1.2
Potentilla sierrae-blancae	3.1.2

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(White Mountain Cinqnuefoil)

Proboscidea sabulosa (Dune Unicorn Plant)	3.1.2
Sclerocactus mesae-verdae (Mesa Verde Cactus)	3.1.1

Sclerocactus parviflora (all varieties) (Small-flowered Devil's Claw Barrel)	3.1.3
Sclerocactus whipplei (all varieties) (Whipple's Devil's Claw Barrel)	3.1.3
Scrophularia macrantha (Mimbres Figwort)	3.1.2
Senecio quaerens (Gilia Groundsel)	3.1.2
Sibara grisea (Gray Sibara)	3.1.2
Sophora qypsophila var. guadalupensis (Guadalupe Mountain Mescal Bean)	3.1.2
Sphaeralcea procera (Porter's Globemallow)	3.1.2
Spiranthes parasitibca (Lady Tresses)	3.1.3
Spiranthes magnicamporum (Lady Tressess)	3.1.3
Talinum humile (Pinos Altos Flame Flower)	3.1.2
Talinum longipes (Long-stemmed Flame Flower)	3.1.2
Toumeya papyracantha (Pediocactus papyracanthus) (Grama Grass Cactus)	3.1.2
Vauquelinia pauciflora (Few-flowered Rosewood)	3.1.2

5. PERMITS

5.1. Permits to collect state endangered plant species may be issued by the Secretary of the New Mexico Natural Resources Department for the purpose of conducting scientific studies that enhance the understanding of, the distribution of, or conditions required for, survival of endangered plant species; or for the propagation or transplantation activities that enhance the survival of endangered plant species.

5.1.1. Collection Permits will only be issued to individuals. No one may operate under the authority of another's permit. One may apply for a master collecting permit, allowing the Permittee to issue subpermits to individuals named in the master permit application.

5.1.1.1. Each person applying for a permit must demonstrate sufficient expertise to carry out the permitted activities in a competent Manner. The following elements will be considered in the request for a permit: educator. in Botany or related area, field experience, collection numbers, access ions into a recognized herbarium, publications, and recommendations from recognized authorities.

5.1.1.2. The applicant will acknowledge willingness to comply with all applicable laws, regulations, and conditions by his signature on the application.

5.1.1.3. Providing false or incomplete information on the application

will be grounds for rendering the permit invalid and may subject the permittee to prosecution or other legal penalties.

5.1.1.4. A copy of the permit must be carried on the permittee at all times during the collection and field work on endangered species.

5.1.2. A permit for collection from a known location for scientific studies may be issued if the studies will generate new knowledge in the genetic, anatomical, chemical, morphological, life history or in other relevant areas of research enhancing the understanding of the conditions required for the survival of the endangered species.

5.1.2.1. Known locations will be provided with the permit when the permittee requires it for the permitted study. The permit will contain any special parameters for the collections.

5.1.2.2. If specimens are collected, at least one voucher specimen shall be deposited in a New Mexico herbaria at either the University of New Mexico, New Mexico State University, Western New Mexico University or the U.S. Forest Service, Albuquerque Office.

5.1.2.3. The investigator shall collect in such a way as to not reduce the population (e.g. take a single stem from an herbaceous Perennial, leaving the root intact, or other

methods appropriate to the particular species).

5.1.2.4. Collecting for exchange purposes, or to have a species represented in a herbarium is prohibited.

5.1.2.5. Collections may be prohibited in some known locations where survival is especially precarious.

5.1.3 A permit for collection from new populations may be issued for collecting voucher specimens or for verification of species in a particular location.

5.1.3.1. The investigation shall make no long-term detrimental effect on the population. A maximum of three specimens may be collected, if the population is sufficient.

5.1.3.2. If the population is very small and the taking of a single individual is detrimental, then only a fragment of an individual for voucher purposes may be taken.

5.1.3.3. At least one specimen of the three from each collection locality

shall be deposited and accessioned at either the herbaria at the University of New Mexico, New Mexico State University, Western New Mexico University or the U.S. Forest Service, Albuquerque Office. Affixed to each specimen will be information regarding locality data, description of the habitat, estimated vigor of the

population, estimated numbers of individuals in the population and estimated recruitment to the population.

5.1.3.4. To assist in the identification and preservation of Endangered Plant Species in New Mexico, all new populations of such plants shall be reported to the Resource Management and Development Division of the Natural Resources Department with in thirty days after collection. The report shall contain accurate locality data, description of the habitat, estimated vigor of the population, estimated numbers of individuals in the population, estimated recruitment of the population and the place of deposition of specimens.

5.1.4. Permits to propagate or transplant endangered plant species may be issued when evidence is presented that the activity will enhance the survival capability of that particular species.

5.1.4.1. Permits to transplant endangered species (not including federally listed or proposed taxa) may be issued when such species occur on areas of land use conversion.

5.1.4.2. Permits for transplantation will be issued by the secretary of the Natural Resources Department upon approval of a proposal submitted by the applicant to NRD outlining the need for such transplantation,

the method to be employed, the site to which the plants will be taken for transplantation, and the qualifications of the person carrying out the transplantation.

5.1.5. This permit does not give the bearer authority to collect federally threatened or endangered plants, or plants proposed for federal listing. Collection of these species requires a federal collecting permit issued by the U.S. Fish and Wildlife5.1.5 Service.

5.1.6. This permit does not extend to the permittee the privilege to trespass or enter on lands without the permission of the owner. The permittee should contact the appropriate management agency or private landowner before beginning studies or collection on Indian, federal, state, or private, lands.

5.1.7. This permit does not give the bearer authority to collect, propagate, or transplant New Mexico state listed endangered plants or federal ply listed endangered, threatened, or plants proposed for federal listing on Indian lands within the New Mexico state boundary. In order to collect, propagate, or transplant New Mexico listed endangered plant species or federally listed plants on Indian lands requires appropriate Tribal Permit in addition to federal permits.

5.2. Certain prohibited activities shall render the permit invalid and may cause the permittee to be subject to prosecution under applicable federal and state laws.

5.2.1 These activities include but are not limited

to the following:

5.2.1.1. Collection of a population of endangered plant species outside the scope of the provisions of the permit.

5.2.1.2. Failure to deposit samples in a designated New Mexico herbarium as required by this regulation.

5.2.1.3. Collecting specimens under permit for commercial use.

5.2.1.4. Allowing use of the permit by someone else.

5.2.2. A law enforcement officer may seize any and all plant species held illegally.

Attachment 3. Curriculum vitae of author.

Patricia L. Barlow

[redacted]

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Education:
Bachelor of Science (Education, Secondary Science) 1986
University of New Mexico; currently seeking Masters Degree
(Biology, Plant Taxonomy, expected graduation Summer 1991)
University of New Mexico.

Related work experience:
Instructor: 1990. Assistant Instructor of Architecture. Landscape Plants, CRP 470/470. Summer session. UNM
Instructor: 1990. Threatened and Endangered Species of the New

Mexico Flora, Biol.402/502. Spring semester. UNM

Interim Curator of the Herbarium: Museum of Southwestern Biology, 1989. UNMM.

Instructor: 1989 Flora of New Mexico, Biol. 363, Summer session. UNM.

Teaching assistant: 1987-1989 (Flora of New Mexico) UNM; 1986 (General Biology) UNM.

Assistant Curator of the Herbarium: 1987-1989. Biology Dept. UNM.

Reforestation contractor: 1975-1978 Hoedads, Inc. Eugene, Oregon. 1978-1982 South Western Forestry Workers Co-operative, Bernalillo, New Mexico.

Biological illustrator:1974-1975: Oregon State University, Plant Pathology Department.

Professional experience:

Current contracts

1991 Floristic Survey of the Mel rose Bombing Range, Roosevelt and Curry Counties, NM Army Corps of Engineers, Albuquerque, NM.

Completed contracts

3/1991 Assessment of suitability of habitat for Astragalus accumbens on the proposed Humate Mine, Lobo Creek, Cibola Co., NM. GNR Services, Inc. , Phoenix, Arizona

12/1990 Endangered Species survey of the Water Pipeline Additions in the Lake Valley Community, San Juan Co., NM. U.S. Public Health Service.

10/1990 Endangered Species survey of the Water Pipeline Additions in the Baca and Casamero Lake Communities, McKinley Co., NM. U.S. Public Health Service.

10/1990 Preliminary Examination of Flora of the Melrose Bombing Range, Curry & Roosevelt Co., NM. Army Corps of Engineers.

1990 T&E and Sensitive Plant Inventory, BLM Socorro Cost-Share Project, The Nature Conservancy, New Mexico Field Office. Horse Mt. WSA Ladrone Mt. WSA, San Pedro ACEC

5/1990 Endangered Species Survey, Project 40-C: Gun and Beach

Head Sites, White Sands Missile Range, Naval Ordnance Missle Test Station.

4/1990 Endangered Species Survey, H.W. Lockner Engineering (St. Petersburg, FL), Proposed Los Alamos - Santa Fe highway right-of-way.

4/1990 SAWS project, Rare Plant survey of 3,900 acres, White Sands Missile Range, Army Corps of Engineers.

11/1989 Endangered Species Survey, NEXRAD radar tower site, Bernalillo Co. ,NM, SRI International (Menlo Park, CA).

9/1989 Mitigation project for sensitive species, Bitter Creek, NM, ENSR (Fort Collins).

8/1989 Endangered Species Survey, ENSR (Fort Collins), Proposed ENRON Gas Pipeline, Roswell, NM.

2/1989 Endangered Species Survey, Cade Sites, White Sands Missile Range.

12/1988 Endangered Species Survey, BDM Corporation, White Sands Missile Range.

11/1988 Plant survey, Nature Conservancy, San Miguel Co., NM.

11/1988 Endangered Species Survey, Stallion Range, White Sands Missile Range.

10/1988 Endangered Species Survey, Socorro Waste Water Treatment Facility, NM.

Other studies

1990 Sensitive Species Look-up: a computer program to look up occurence of New Mexican sensitive species by county. (assisted by Karen Lightfoot, State Botanist)

1989 Floristic Survey of the Corrales Bosque, Sandoval Co., NM

1988 Identification of Ethnobotanical specimens for study of plant uses in Catron Co., NM. MS thesis of Denise Hosler, University of Colorado, Denver.

1987 Floristic Survey of Jicarilla Ranger District, Rio Arriba County, New Mexico (U.S.F.S., Reggie Fletcher, Principle Investigator).

1986 Floristic Survey of Largo Creek, Catron County, New Mexico (University of New Mexico, Dr. William C. Martin, supervisor).

1987 Internship: Computer use in herbaria (Smithsonian Institution, George Russel, supervisor).

References:

Bob Sivinski, State of New Mexico Botanist (505) 827-7853.

Donna House, Tribal Lands Protection Planner for The Nature Conservancy (505) 983-5832.

Bill Hevron, Navajo Natural Heritage Program Botanist (602) 871-6534.

Paul Knight, Eco-Plan Botanist (505) 823-1000.

Anne Cully, U.S. Fish & Wildlife Service (505)883-7877.

Dr. Timothy Lowrey, Professor of Botany (505) 277-2604.

Rene Galeano-Popp, U.S.F.S. Regional Botanist (505) 842-3228.

William Dunmire, TNC Public Lands Coordinator (505) 988-3867.

Craig Clark, Environmental Unit of the Army Corps of Engineers (505) 766-6569.

ATTACHMENT 2. Central Training Academy Live Fire Range Spill Containment Plan
Central Training Academy
Hazardous Material Spill Containment Plan

A. PURPOSE

These procedures identify the steps to be taken by Wackenhut Services, Inc. (WSI) or other response personnel to ensure that appropriate responses are taken in the event of an unplanned release of a hazardous material.

B. RESPONSIBILITIES

Supervisors. Supervisors of organizations that use hazardous materials shall ensure that employees in their organization(s) are familiar with the release/spill control and reporting measures contained herein and for establishing control measures within their area of responsibility. The supervisors should also maintain a hazardous material inventory of all chemicals used or stored in their immediate work areas, and verify that spill containment materials and equipment are complete and in their proper locations. Supervisors shall ensure that response personnel are designated within their area of responsibility, if applicable, and perform the duties of the Emergency Director in his/her absence, until properly relieved.

Employees. Each employee is responsible for following the procedures identified herein, and in the CTA Emergency Plan.

Environmental, Safety & Health Program Manager. The ESHPM is designated the Emergency Director (ED) and is the primary point of contact. In the event of his/her absence, the Environmental, Safety & Health Assistant Program Manager will act as the ED. Upon receiving notification of an unplanned release, the ED will report to the General Manager, who along with the ED is responsible for reporting to the Department of Energy. The ED also reports the unplanned release to other regulatory or response agencies. The ESHPM responsibilities also include providing spill containment materials and equipment and ensuring that they are complete and properly located. (See also Subsection C.5 for a procedural breakdown of ESHPM duties.)

C. PROCEDURES

Spill cleanup procedures will vary depending on the type and quantity of material spilled, and on the site characteristics. In general, the approach to spill clean-up is first to contain the spill by securing the spill source and deploying spill containment materials. In many cases, the secondary containment or spill control measures provided will contain the spill. Following the clean-up and necessary reporting requirements, the ED will determine whether any procedural or equipment changes need to be made.

For incidental releases, absorbents are used to completely pick up free liquids. The contaminated absorbents are then containerized and a waste profile completed by the generating group. The transport, storage, and disposal of wastes generated from a spill cleanup are managed by the ES&H staff.

Solids and liquids exhibiting the characteristics of corrosivity (acids or bases) and/or flammability are of primary concern because of the threat to human health during and after an uncontrolled release. Toxic and/or flammable gases will be dealt with by the ESHPM on a case-by-case basis at the time of the incident.

These types of releases should be considered extremely hazardous by all personnel involved. Initiate the following procedures immediately upon learning of an uncontrolled release or any suspected release of a hazardous material.

If unfamiliar with the hazardous properties of the material(s) involved in the release, follow the steps outlined under Gases; otherwise, follow the appropriate steps outlined under Gases, Liquids, or Solids.

1. GASES (Note: Steps a. and b. are performed concurrently):

a. Without risk of personal exposure, move any victims to fresh air and apply first-aid, if necessary. When appropriate, remove contaminated clothing and flush contaminated skin with copious amounts of water for approximately five minutes.

b. Concurrently with step "a" above, initiate the evacuation of the immediate area.

c. Contact any adjoining operations that may be in danger of coming in contact with the suspect gas.

d. Call the Emergency Operator (see Attachment 2), and provide the information identified in Part 1 of the Hazardous Materials Release Report Form (Attachment 1).

e. The ESHPM will provide the support identified in section 5, ESHPM responsibilities.

2. LIQUIDS:

a. If the spill is greater than 10 gallons, follow the procedure for gases.

b. If the spill is 10 gallons or less, proceed as follows:

(1) Without risk of personal exposure, move any victim to fresh air and apply firstaid, if necessary. When appropriate, remove contaminated clothing and flush contaminated skin with copious amounts of water for approximately five minutes.

(2) If possible, obtain appropriate Material Safety Data Sheet (MSDS) and extract necessary information.

(3) Using appropriate personal protective equipment, stop the leak, if possible. Avoid unnecessary exposure/contact with the fume or liquid.

(4) If the release is a known/suspected flammable material, attempt to extinguish sources of ignition in the immediate area. These may include sources of flames, sparks, arc, and/or electricity.

(5) Using readily available spill control media and available personal protective equipment, attempt to contain the spill. Avoid unnecessary exposure/contact with the fumes or liquid.

(6) Call the Emergency Operator (see Attachment 2), and provide the information identified in Part 1 of the Hazardous Material Release Report Form (Attachment 1).

(7) The ESHPM will provide the support identified in section 5, as deemed appropriate.

(8) Absorb the remaining liquid with approved absorbent. Obtain a compatible container from ES&H personnel and handle the spill residues as hazardous waste.

3. SOLIDS:

a. If possible, obtain appropriate MSDS and extract necessary information.

b. If the material is known to present no vapor or fume hazard, proceed to step c of the section; otherwise, follow the steps for gases.

c. Using appropriate personal protective equipment, stop the leak, if possible. Use gloves and goggles when handling suspected corrosives or toxic materials. If material is suspected of being flammable, avoid spark or friction-generating actions.

d. If the solid is flammable, extinguish sources of ignition in the immediate area. These may include flames, sparks, arcs and/or electricity.

e. Return the spilled material to its original container if the container is still intact and if the material is not contaminated beyond use; otherwise obtain a compatible container from the ES&H personnel and handle the spill residues as hazardous waste.

f. Call the Emergency Operator (see Attachment 2), and provide the

information identified in Part 1 of the Hazardous Materials Release Report Form (Attachment 1).

g. Using readily available spill control media and appropriate personal protective equipment, attempt to contain the spill. Avoid unnecessary exposure/contact with fumes or liquid.

4. INITIAL SPILL REPORTING INFORMATION

The information identified in Part 1 of the Hazardous Materials Release Report Form (Attachment 1) is needed for initial reporting purposes.

5. ENVIRONMENT, SAFETY & HEALTH PROGRAM MANAGER

a. Arrange for emergency medical assistance, as needed.

b. Record the information provided by the person who reported the release and complete parts 1 and 2 of the Hazardous Materials Release Report Form (Attachment 1).

c. Provide technical support and coordinate any remaining clean-up.

d. Provide direction and assistance on proper waste management.

e. Notify the appropriate Department of Energy personnel. Determine, with these personnel, whether notification to other emergency response and governmental agencies is required.

Make the required notifications as directed. Log the notifications in Part 3 of the Hazardous Materials Release Report Form (Attachment 1).

Retain the completed Hazardous Materials Release Report Form. It will serve as the working document for preparing any required follow-up reports and function as a record of the release.

f. Follow-up oral notifications to DOE, State of New Mexico Environmental

Improvement Division, and any other appropriate agencies with written notification of release. The written notifications should provide any appropriate additions or corrections to the prior oral notification along with the corrective actions taken or to be taken.

6. HAZARDOUS WASTE SPILL EQUIPMENT

Because the CTA is a training facility, as opposed to a production or research facility, there are few hazardous materials or waste concerns. Typically, hazardous materials stored at the hazardous material storage area are small quantities of flammables and combustibles, and the likelihood of a spill occurring is minimal. Nevertheless, spill containment equipment is available at the CTA LFR hazardous material storage area. The hazardous material storage area is an outdoor, covered, spill control pallet that offers protection from weather conditions and secondary containment in the unlikely event of a spill. The spill kit includes absorbents, clean-up and packaging equipment, and personal protective equipment.

ATTACHMENT 1 HAZARDOUS MATERIALS RELEASE REPORT FORM

PART I - Information to be reported to the ESHPM

Name of person reporting the release	Location of release
Date of release	Time of release
Chemical name/Trade name	Manufacturer
Number of injuries, if known	Types of injuries, if known
Duration of the release	Status of the release (is it

continuing or has it been stopped)

Quantity of material released (approximate number of gallons or pounds)

Identify adjacent areas threatened by the release

Medium or media (air, soil, storm drain, sewer, water) into which the release occurred.

Description of actions taken to respond to the release, minimizing its impact on health, safety and the environment.

Any other pertinent information (i.e., has an evacuation been initiated, etc.)

Part II - Additional information to be provided by the ESHPM

Facility name

Telephone number

Facility address

Facility owner

Facility operator

Facility manager

ES&H program manager

Date Time

Location

Number of injuries

Type of injuries

Emergency medical response required Emergency medical responder

Any known or anticipated acute or chronic health risks associated with the release

Type of medical attention received

Duration of release (estimated or final) Quantity of release (estimated or final)

Source of release Cause of release

Description of release

Chemical composition (include chemical name and trade name)

Chemical manufacturer Manufacturer emergency telephone number

Proper precautions to take in response to the release

Description of actions taken to respond to the release, minimizing the impact on the environment, safety, health & property.

Adjacent areas threatened by release

Hemedial action for environmental restoration

Name and telephone number of person(s) to be contacted for further information.

Part III - Record of Notifications

Date	Time	Agency Contacted	Contact Person	Type of Notification (Oral or Written)

ATTACHMENT 2 Emergency Spill Response Numbers

CTA Management/Emergency Responders

Emergency Operator (Receptionist)	845-5170 x 399 or ""0""
Environment, Safety & Health Program Manager	845-5170 x 160
Environmental, Safety & Health Assistant Program Manager	845-5170 x 606
General Manager	845-5170 x 110
DOE Assistant Director	845-4077

Kirtland Air Force Base Emergency Personnel

HAFB Fire Department (FIRE)	117 or 844-0903
HAFB Fire Department (NON-FIRE)	844-4098
Sandia Emergency Medical Assistance/Ambulance -	
Sandia Security Dispatch (Area 5,24-Hour)	144 or 844-4657
HAFB Security Police	112 or 844-4618
HAFB Ambulance	110
HAFB Hospital Emergency	846-3730
Kirtland Air Force Base (HAFB) Environmental Coordinator	844-6183
Department of Energy Environmental Protection Division (DOE/EPD)	
.....	845-6660 or
.....	845-4428

Off-Base Medical Services/Facilities

Albuquerque Ambulance Services (Non-emergency)	761-8205
Lovelace Medical Center Emergency	262-7222
Presbyterian Emergency Department	841-1111
Poison Control and Drug Information Center	843-2551
Center for Occupational Medicine and Orthopaedic Surgery	243-2276
Lifeguard Helicopter (Medical Emergency)	9-1-800-633-5438
or	9-1-800-MED-LIFT

Off-Base Emergency Responders

State of New Mexico Environmental improvement Division	1-827-2926
Rinchem Company, Inc	345-3655