

**Table 2-2. Proposed Construction Zones and Projects**

<b>Project</b>	<b>Year</b>	<b>Footprint Size (impervious surface)</b>	<b>Project Description</b>
<b>Zone 1 - Proposed Range Support Facilities and SOF Permanent Exercise Facility (PEF) Compound</b>			
Fire Station	2017	14,943 ft <sup>2</sup>	A new fire station would provide upgraded support for Melrose AFR's missions.
Range Operations Control Facility*	2015	5,300 ft <sup>2</sup>	The range operations control facility would house range control, administrative functions, and communications maintenance. The project includes installation and tie-in of all communications (both secure and non-secure) with the antenna pad' utilities; fire suppression; heating, ventilation, and air conditioning; backup generator with pad; storage tank' improved roads; site improvements; landscaping; and all required facility support.
Range Vehicle Maintenance Facility*	2015	5,000 ft <sup>2</sup>	This facility would support vehicle maintenance operations for the range support fleet.
Target Construction and Storage Facility	2016–2017	3,500 ft <sup>2</sup>	A storage facility would be constructed to house target arrays and materials for repairing and maintaining the HLZs and DZs.
Demilitarization and target prep building and boneyard area	2018–2020	2,000 ft <sup>2</sup>	A new target processing building would include a concrete explosives residue storage pad. This area would include a fenced boneyard and small concrete pads for hazardous materials fluid storage.
Range Operations Vehicle Parking	2018–2020	6,480 ft <sup>2</sup>	Forty parking spaces would be constructed for access to the Range Operations Facility and other facilities within this area. It is assumed the average parking space is 9 feet × 18 feet and this parking area would be paved.
Fuel Storage Tanks	2016	500 ft <sup>2</sup>	New fuel tanks and vehicle fuel station would be constructed in the new range control area on concrete pads. Construction projects include a vehicle fueling station; a 2,000-gallon diesel fuel tank; a 2,000-gallon mobile gasoline fuel tank; and a regular gas 1,000-gallon fuel tank.
Joint Operations Planning Facility*	2015	8,000 ft <sup>2</sup>	A facility would be constructed in the PEF compound with a secure area for all tactical operational equipment, a planning room, a large classroom to support visiting SOF personnel, a drive-through garage for storage and building deployment pallets, and a communications storage room.
Additional Operations and Administrative Planning Facilities	2020	20,000 ft <sup>2</sup>	Construct four additional 5,000-ft <sup>2</sup> operations planning facilities.
SOF PEF Marshalling Yard	2020	10,625 ft <sup>2</sup>	The SOF PEF compound would include a 10,000-ft <sup>2</sup> paved marshalling yard and a 625-ft <sup>2</sup> utility pad.
SOF PEF Vehicle Parking*	2015–2020	3,240 ft <sup>2</sup>	Construct 20 unpaved vehicle parking spaces within the SOF PEF compound for personnel visiting and using the compound. It is assumed the average parking space is 9 feet by 18 feet and would be compacted gravel, and therefore impervious.

Project	Year	Footprint Size (impervious surface)	Project Description
<b>Zone 1 - Proposed Range Support Facilities and SOF Permanent Exercise Facility (PEF) Compound (continued)</b>			
*Denotes project previously analyzed in the <i>Melrose Air Force Range Environmental Assessment for the Comprehensive Range Plan, July 2011</i>			
<b>Zone 1 Total Facility Footprint</b>	<b>66,138 ft<sup>2</sup></b>		
<b>Zone 1 Total Acreage</b>	<b>981 acres</b>		
<b>Zone 2 - Multi-purpose Small Arms Range</b>			
Small Arms Range Control Tower	2018	400 ft <sup>2</sup>	A small tower would be constructed as an observation point for users of the small arms range.
Ammunition Breakdown Building	2018	185 ft <sup>2</sup>	The ammunition breakdown building would be used for munitions sorting and handling before and after small arms range training. This building would not be used for any ammunitions storage.
Range Classroom	2018	3,000 ft <sup>2</sup>	A classroom would be constructed adjacent to the small arms range for briefing before and after training events.
Range Target, Storage, and Repair Building	2018	800 ft <sup>2</sup>	A facility would be constructed adjacent to the small arms range for storage of new targets and target repair materials.
Multi-purpose Small Arms Range	2018	0 ft <sup>2</sup>	The Multi-purpose Small Arms Range would be constructed on the north end of the impact area and would be approximately 60 lanes wide, with each lane being 66 feet (20 meters) wide, and 3,281 feet (1,000) meters long, and would not include any pavement.
Small Arms Range Vehicle Parking	2018	1,620 ft <sup>2</sup>	A paved parking area with 10 spaces would be constructed for users of the small arms range. It is assumed the average parking space is 9 feet x 18 feet.
<b>Zone 2 Total Facility Footprint</b>	<b>6,005 ft<sup>2</sup></b>		
<b>Zone 2 Total Acreage</b>	<b>1,012 acres</b>		
<b>Zone 3 – Mortar Pits</b>			
Mortar Pits*	2020	0 ft <sup>2</sup>	Four mortar pits for 60-millimeter (mm) and 81-mm mortars would be located on the western edge of the existing northern impact area. These pits would not require paving or concrete and would be dirt pits. The mortar pits for 60-mm and 81-mm mortars would be approximately 10 feet wide and a maximum of 5 feet deep. Construction for a heavy mortar pit (greater than 81 mm) is the same, except the pit diameter is 11.5 feet. Therefore, it is assumed the mortar pits would disturb a surface area of approximately 415 ft <sup>2</sup> .
Pit Over Watch Tower	2020	400-ft <sup>2</sup> base	A tower would be erected to provide visibility of the mortar pits. The base of the tower would be approximately 400 ft <sup>2</sup> .

Project	Year	Footprint Size (impervious surface)	Project Description
<b>Zone 3 – Mortar Pits (continued)</b>			
*Denotes project previously analyzed in the <i>Melrose Air Force Range Environmental Assessment for the Comprehensive Range Plan, July 2011</i>			
<b>Zone 3 Total Facility Footprint</b>	<b>400 ft<sup>2</sup></b>		
<b>Zone 3 Total Acreage</b>	<b>57 acres</b>		
<b>Zone 4 – Deck Landing Qualification (DLQ) Pad</b>			
V-22 DLQ Pad	2016–2018	45,000 ft <sup>2</sup>	A landing pad for the V-22 aircraft that simulates a carrier deck and is approximately 300 feet × 150 feet would be located in the land gift area. The total area disturbed for the DLQ pad would be approximately 5,000 square yards, including the overrun base. A total of 5,000 linear feet (LF) of lighting would be installed.
<b>Zone 4 Total Facility Footprint</b>	<b>45,000 ft<sup>2</sup></b>		
<b>Zone 4 Total Acreage</b>	<b>85 acres</b>		
<b>Zone 5 – Off-Road Driving Course</b>			
Off-Road Driving Course	2016	132,000 ft <sup>2</sup>	A dirt driving tract, approximately 3 miles long and 25 feet wide, would be staked in the southern portion of the land gift area. The course would be used for off-road driving training and practice for two-wheel to large four-wheel vehicles. Although the course would not be purposely graded and compacted, it is assumed the course would become compacted over time during use, resulting in a mostly impervious surface. The off-road driving track would be constructed in the land gift area and disturb approximately 621 acres.
<b>Zone 5 Total Facility Footprint</b>	<b>132,000 ft<sup>2</sup></b>		
<b>Zone 5 Total Acreage</b>	<b>621 acres</b>		
<b>Zone 6 – Live-Fire Compound and Shoot House</b>			
Live-Fire Compound and Shoot House	2020	6,000 ft <sup>2</sup>	The live-fire compound area would include a structure of approximately 3,000 ft <sup>2</sup> , with two floors of approximately 1,500 ft <sup>2</sup> each. The area would include a wall surrounding the complex and would disturb approximately 40 acres of land. Included within the live-fire compound area would be a close-quarters combat multi-story shoot house, of approximately 3,000 ft <sup>2</sup> .
<b>Zone 6 Total Facility Footprint</b>	<b>6,000 ft<sup>2</sup></b>		
<b>Zone 6 Total Acreage</b>	<b>40 acres</b>		

Project	Year	Footprint Size (impervious surface)	Project Description
<b>Zone 7 – Special Skills Training Facilities</b>			
Breaching Ranges and Facilities (all)*	2015–2020	180 ft <sup>2</sup>	The construction of the breaching ranges would disturb approximately 100 acres of land due to ground and foot maneuver but would not include the addition of 100 acres of impervious surface. The breaching ranges area would include the construction of the two building facades, approximately 30 feet × 3 feet, for a total of 180 ft <sup>2</sup> of impervious surfaces. The remaining acreage within the breaching range facility would include areas for equipment breaching, including a bulldozer, vehicle, or power plant hulk.
Demolition Range	2018	0 ft <sup>2</sup>	A dirt field within the special skills training zone would be used as a charge course for EOD training. This area would not include the addition of any impervious surface.
Tunnels and Sewers	2020–2025	0 ft <sup>2</sup>	Mock tunnels and sewers would be constructed in the special skills training zone and would include digging and backfill in this area. However, no additional increase in impervious surface is planned.
*Denotes project previously analyzed in the <i>Melrose Air Force Range Environmental Assessment for the Comprehensive Range Plan, July 2011</i>			
<b>Zone 7 Total Facility Footprint</b>	<b>180 ft<sup>2</sup></b>		
<b>Zone 7 Total Acreage</b>	<b>290 acres</b>		
<b>Zone 8 – HLZs</b>			
HLZs	2016	0 ft <sup>2</sup>	Six HLZs would be constructed on the perimeter of the range boundary within the land gift area. Each HLZ would be approximately 1,000 feet in diameter, or an area of approximately 785,000 ft <sup>2</sup> (18 acres) per HLZ. HLZs would not be graded or covered with an impervious surface. However, because helicopters or tiltrotor aircraft could land anywhere within the HLZ, the entire area is considered an area of disturbance.
<b>Zone 8 Total Facility Footprint</b>	<b>0 ft<sup>2</sup></b>		
<b>Zone 8 Total Acreage</b>	<b>108 acres</b>		

**Summary of Demolition and Construction.** Under the Proposed Action, construction of facilities in **Table 2-2** would create an associated increase in impervious surfaces on Melrose AFR of approximately 257,723 ft<sup>2</sup>. However, the total impervious surfaces on Melrose AFR would only be increased by approximately 187,843 ft<sup>2</sup> (4.3 acres), which accounts for both proposed construction and demolition. This increase in impervious surfaces of 4.3 acres is approximately 0.006 percent of Melrose AFR. Additionally, demolition or abandonment of structures in **Table 2-1** and **Figure 2-1**, and construction and maneuver within the zones identified in **Table 2-2** and **Figure 2-2**, would result in a total land disturbance of approximately 3, 297.61 acres. This area of disturbance is approximately 4.6 percent of Melrose AFR. A summary of impervious surface and disturbance increases is provided in **Table 2-3**.

**Table 2-3. Proposed Construction and Demolition Summary**

	<b>Impervious Surfaces (ft<sup>2</sup>)</b>	<b>Area of Disturbance (acres)</b>
Demolition/Abandonment	-69,880 ft <sup>2</sup>	+1.61
Construction	+257,723 ft <sup>2</sup>	+3,296
<b>Total</b>	<b>+187,843 ft<sup>2</sup></b>	<b>+3,297.61</b>
<b>Total Increase in Impervious Surfaces as Percentage of Melrose AFR Area</b>	0.006%	4.6%

### 2.1.2 Utilities and Fencing

To support the reconfiguration of range support facilities, additional utilities and fencing would be installed on the range. It is assumed a 30-foot-wide corridor would be required for the installation of each linear utility and fencing. All underground utilities would be installed approximately 4 feet below the surface. A description of these projects is provided in **Table 2-4** and proposed locations are provided in **Figure 2-3**, with the exception of the land gift area fencing. Land gift fencing would take place on the outside perimeter of the land gift area shown in **Figure 2-4**. Where appropriate, existing fencing would be removed where it is no longer needed or to allow for the installation of new fencing.

### 2.1.3 Land Gift Area

#### 2.1.3.1 SUBLEASE NON-RENEWAL

As described in **Section 1.3**, the 10,968-acre area known as the land gift area is currently administered by the USAF under a lease agreement with the State of New Mexico. The land gift area is subleased by the USAF to ranchers or ranching companies with clauses for restricted training. Under the Proposed Action, all four subleases would not be renewed in September 2015. Non-renewal of the subleases would allow the USAF to locate several range features identified in **Section 2.1.1** and **Table 2-2**, such as the HLZs, on the perimeter of the range. Moving numerous operations from the center of the range to the perimeter would reduce training congestion and prevent interference between these operations and explosive munitions training.

During the implementation of the lease agreement with the State of New Mexico, the USAF stipulated any proposed change in current land use would be analyzed for potential environmental impacts. This EA satisfies that requirement.

**Table 2-4. Proposed Utilities and Fencing Projects**

<b>Project</b>	<b>Year</b>	<b>Area of Disturbance</b>	<b>Description</b>
<b>Non-Potable Water</b>	2016–2017	430,750ft <sup>2</sup>	Approximately 14,350 LF of non-potable water lines would be installed underground and could be used for fire suppression purposes. Non-potable water supply would include construction of a 250-ft <sup>2</sup> water treatment package facility and a well. Non-potable water lines would run between the treatment facility and the well, and to the SOF PEF facility and range support facilities (see <b>Table 2-2</b> ).
<b>Potable Water</b>	2016–2017	208,200ft <sup>2</sup>	Approximately 6,940 LF of potable water lines would be installed underground for personnel use. Potable water lines would run to the SOF PEF facility and range support facilities (see <b>Table 2-2</b> ).
<b>Sewer</b>	2016–2017	7,200ft <sup>2</sup>	Approximately 2,400 LF of sewer lines would be installed underground to support sanitation. Sewer lines would be run from SOF PEF and range support facilities (see <b>Table 2-2</b> ) to existing and new septic fields.
<b>Power</b>	2016–2017	196,200ft <sup>2</sup>	Approximately 6,540 LF of overhead power lines would be installed for the new SOF PEF and range support facilities (see <b>Table 2-2</b> ).
<b>Communications</b>	2016–2017	187,500ft <sup>2</sup>	Approximately 6,250 LF of underground communications conduit and fiberlink would be installed for the new SOF PEF and range support facilities (see <b>Table 2-2</b> ).
<b>Land Gift Fencing</b>	2016	2,490,000 ft <sup>2</sup>	After the land gift subleases are not renewed, a fence would be erected around the perimeter of the land gift area. The fence would be metal, wire, or wood, or a combination of these materials. The fence would be approximately 83,000 LF.
<b>SOF PEF Fencing</b>	2014–2016	243,600 ft <sup>2</sup>	The SOF PEF compound would include 8,120-LF of fencing topped with three-strand barbed wire and containing two keyless entry access gates.
<b>Total Disturbance</b>		<b>3,376,450 ft<sup>2</sup> (77.5 acres)</b>	

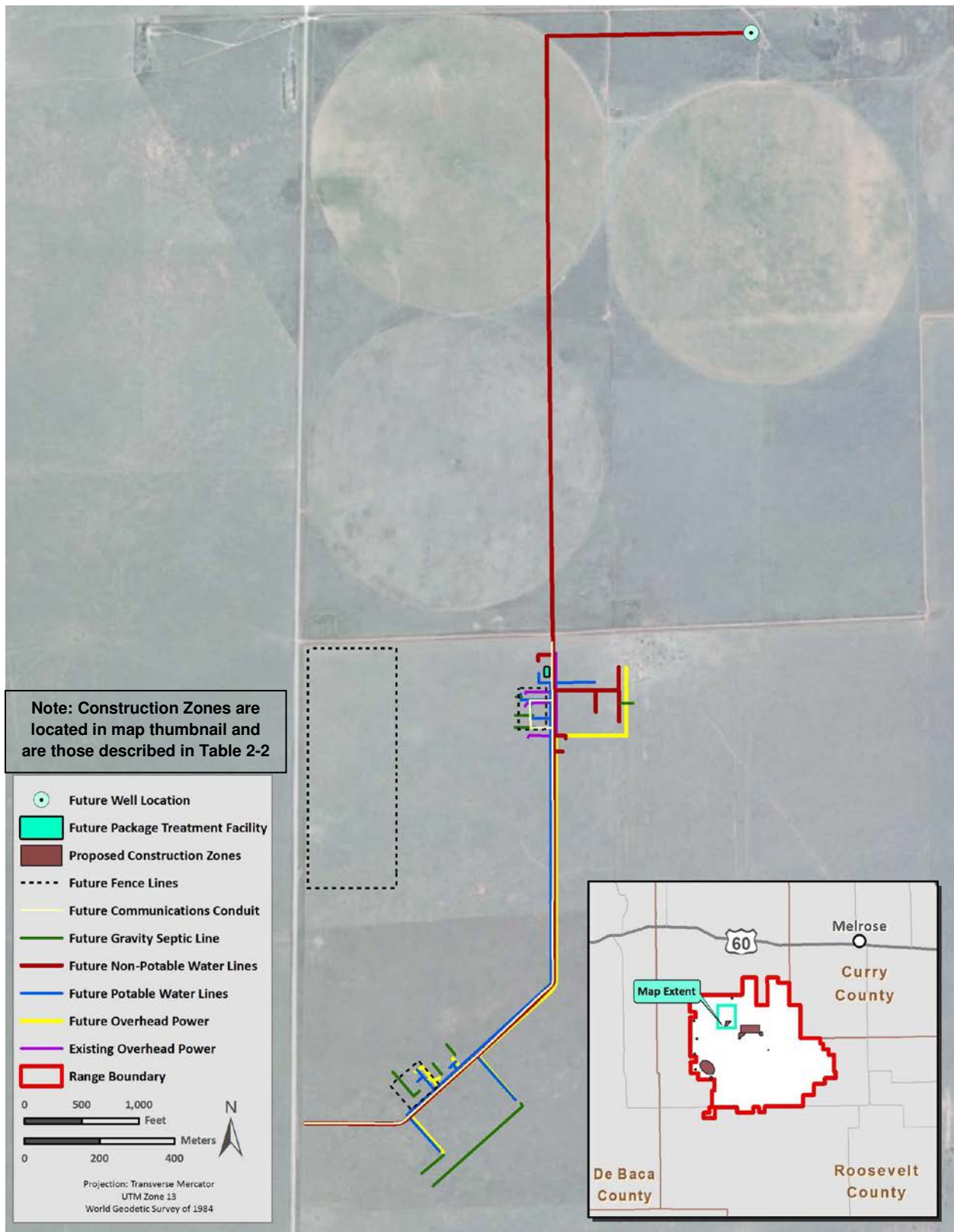
**2.1.3.2 TRAINING**

Following non-renewal of the agricultural subleases on the land gift area and completion of appropriate construction as described in **Section 2.1.1**, the USAF would begin using the area for training purposes. Specific details regarding each type of training proposed within the land gift area are provided in the following subsections, and training features are shown in **Figure 2-4**.

**2.1.3.2.1 HLZs and DLQ Pad**

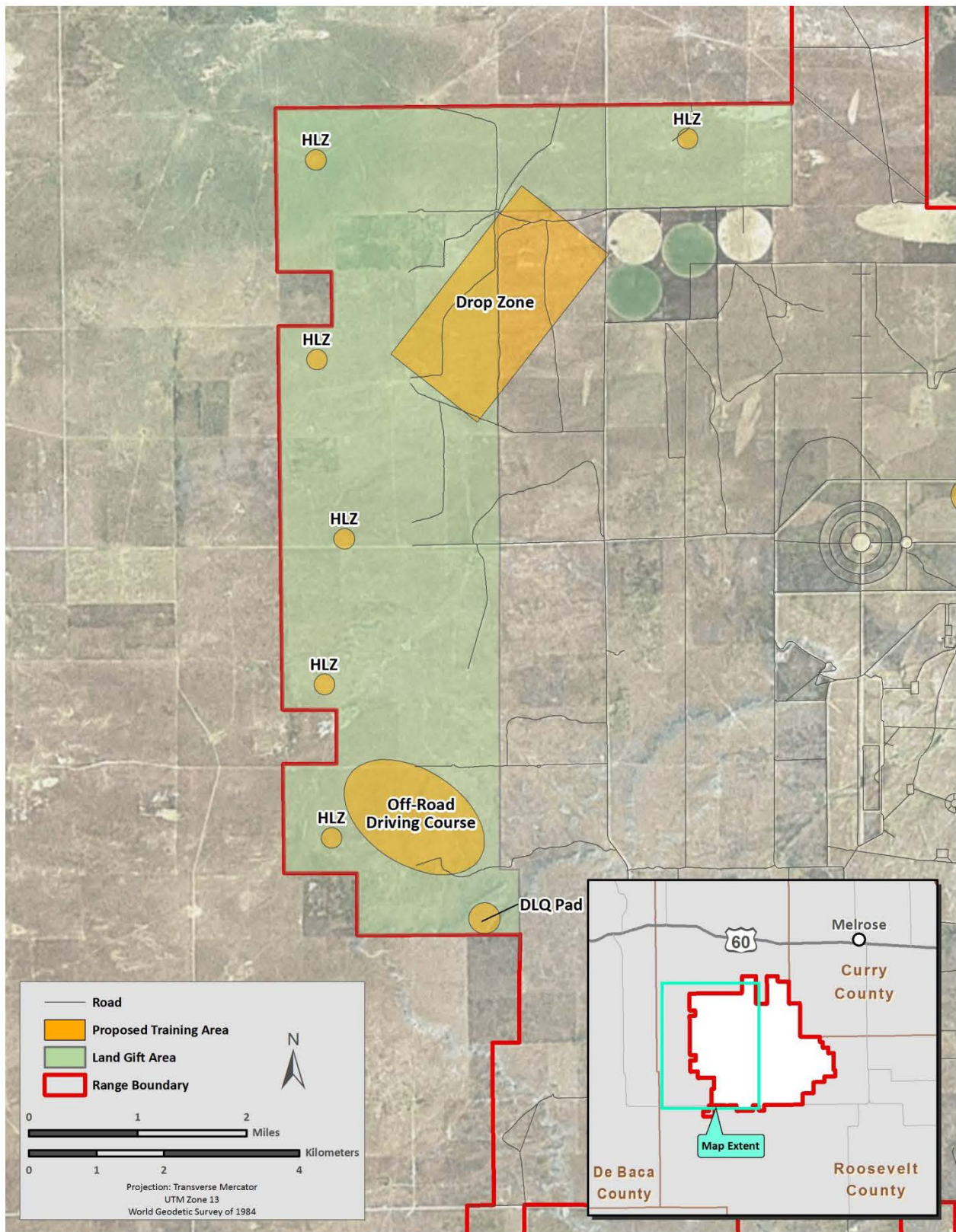
Six HLZs would be located on the perimeter of the land gift area, and a DLQ pad would be constructed in the southeastern corner of the area. Construction details for these features are provided in **Section 2.1.1** and specifically, **Table 2-2**. It is assumed there would be no increase in helicopter or tiltrotor (e.g., CV-22) flights and landings on the range beyond current levels. Under the Proposed Action, the majority of current helicopter and tiltrotor training would occur at the HLZs, DLQ pad, and DZ in the land gift area rather than within the center of Melrose AFR.





Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Figure 2-3. Utilities and Fencing Proposed within the Range Boundary



Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Figure 2-4. Proposed Land Gift Area Training



**Table 2-5** provides information on the types of training that could occur at the HLZs and DLQ pad in the land gift area, including training by CV-22s. This is not an exhaustive list of the helicopter or tiltrotor training operations but provides a representation of training types.

**Table 2-5. Proposed HLZ and DLQ Pad Training Summary**

<b>Training Type</b>	<b>Description</b>
Approach and Landing Procedures	Training in conversion to helicopter mode, traffic pattern, go-around, vertical and rolling landings, steep approach, and heavyweight operation
Formation	Training for flying, take-off, and landing with other aircraft, usually in a two-ship group
Night Vision Goggle Sortie	Conduct low-altitude flight, landing, and departing operations at night; for CV-22 training in both airplane and helicopter modes
Alternate Insertion and Extraction	Training in techniques for inserting/extracting troops; insertion activities could include fast rope or rope ladder over a precise spot
Remote Operations	Landings conducted in undeveloped areas
Lift/Hoist Operations	Operating equipment for transport of personnel, cargo, and equipment

In total, the seven helicopter and tiltrotor landing areas (i.e., six HLZs and one DLQ pad) could be used for up to 6 hours per day; or approximately 50 minutes per landing area per day. Helicopters and tiltrotor aircraft would participate in minimal hover time when approaching the landing areas, and dwell time on the ground per landing would be approximately 5 minutes. During this dwell time, the majority of the helicopters or tiltrotor aircraft would remain running. Upon landing during each training operation, only minor foot or wheeled ground maneuver would occur in the land gift area.

All helicopter and tiltrotor activity over Melrose AFR would take place within current USAF-operated and Federal Aviation Administration (FAA)-approved airspace. No modifications to flight procedures or airspace would be needed. SUAs immediately adjacent to and surrounding Melrose AFR that would allow for helicopter and tiltrotor landings in the land gift area includes Restricted Area R-5104A, Restricted Area R-5105, Pecos North High MOA, Taiban MOA, and Pecos South MOA.

**2.1.3.2.2 Off-Road Driving Course**

An off-road driving course would be staked (not graded) in the southern portion of the land gift area. Course development details are provided in **Section 2.1.1**. The course would be used for off-road driving training and practice for two-wheel to large four-wheel vehicles, including, but not limited to: High Mobility Multipurpose Wheeled Vehicles also known as Humvees, all-terrain vehicles, motorcycles, and mine-resistant ambush protected vehicles (MRAPs). Approximately two vehicles would each drive the 3-mile course at 20 miles per hour, three times each per day, 5 days per week. Vehicles would practice maneuvering through the natural terrain, including through ditches and on slopes of approximately 21 degrees.

**2.1.3.2.3 Drop Zones**

One DZ would be designated in the northwest portion of the land gift area, but would not require grading, staking, construction, or additional road access. For DZ training, there would be no increase in helicopter, tiltrotor, or aircraft flights beyond current levels, as described in **Section**

**2.1.3.2.1.** The DZ would be used by helicopters, tiltrotor, and cargo aircraft (e.g., CV-22, C-130, C-7) for the aerial delivery of people and supplies (e.g., water barrels). The DZ would not be used for landings by any aircraft. The DZ would be used for approximately 1 hour at a time or 10 hours per week. There would be no aircraft hover associated with the use of the DZ.

As described in **Section 2.1.3.2.1**, all aircraft activity associated with DZ use would take place within current USAF-operated and FAA-approved airspace. No modifications to flight procedures or airspace would be needed.

#### **2.1.4 Western Target Area**

Currently, only non-explosive munitions training occurs in the western target area of the Melrose AFR impact area. Under the Proposed Action, the range reconfiguration would include the reintroduction of air- and ground-to-ground direct fire explosive munitions training in the western target area (see **Figure 2-5**). Direct fire explosive munitions' training does not include the launch of explosive bombs. Reintroduction of explosive munitions in the western target area would support efficient training on the range by centralizing multiple SDZs and WDZs so simultaneous training activities could occur without disrupting other range operations.

The reintroduction of explosive munitions in the western target area would not alter the current ground or airspace boundaries of the range, and non-explosive munitions training would continue to occur.

Although the overall acreage of target areas within the Melrose AFR impact area designated for explosive munitions would increase under this element of the Proposed Action, munitions expenditures would not change from current levels with the exception of those described in **Section 2.1.5**. The western target area would be managed consistent with the management of Jockey and Spirit live target areas.

#### **2.1.5 Munitions Expenditures**

Reconfiguration of Melrose AFR under the Proposed Action would create a change in training capabilities and effectiveness; therefore, an associated increase or decrease in some munitions expenditures is projected. Projected changes in munitions expenditures accounts for all explosives and non-explosives munitions training that would occur on Melrose AFR under the Proposed Action, including within the Melrose AFR impact area.

**Table 2-6** compares the proposed expenditures to the existing expenditures per year on Melrose AFR. Changes in munitions expenditures under the Proposed Action would not result in an increase of net explosive weight (NEW) beyond levels currently expended on Melrose AFR. With the exception of these proposed munitions expenditures changes provided in **Table 2-6**, all other munitions expenditures would remain the same as those documented in **Appendix B** of this document and the *2011 Environmental Assessment for the Comprehensive Range Plan, Melrose AFR*.

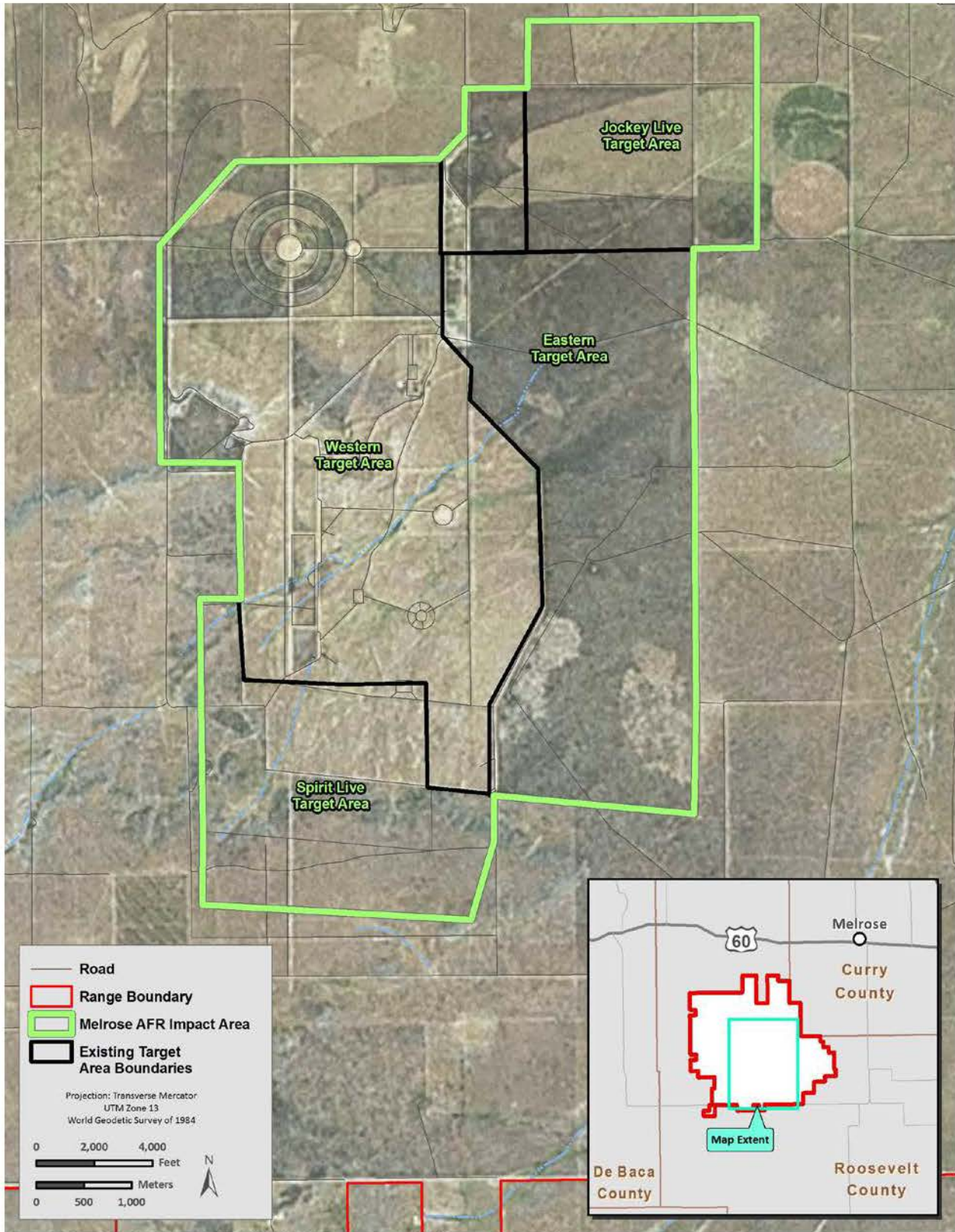


Figure 2-5. Western Target Area Location



**Table 2-6. Proposed Munitions Expenditures and NEW**

Munitions	Existing Expenditures	Proposed Expenditures	Change in Amount	Change in NEW (pounds)
Bomb Dummy Unit (BDU)50 Low Drag*	50	205	+155	0
30-mm Training Practice*	50,000	65,000	+15,000	0
30-mm High Explosive Incendiary	90,000	165,000	+75,000	+7,110
40-mm High Explosive Incendiary /Armor Piercing Incendiary	40,000	15,000	-25,000	-600
40-mm Armor Piercing Tracer	40,000	10,000	-30,000	-9,094

\*non-explosive

## 2.1.6 Elements of the Proposed Action Dismissed from Further Environmental Analysis

### 2.1.6.1 NON-EXPLOSIVE MUNITIONS TRAINING IN THE EASTERN TARGET AREA

Reconfiguration of Melrose AFR under the Proposed Action would include non-explosive munitions training in the eastern target area, in addition to the ground maneuvers currently occurring, to allow units to retreat from an area, and return fire on that area. This training was previously conducted in the western target area but can no longer be executed there due to the mandate described in **Section 1.4.2.3** as well as the proposal to reintroduce explosive munitions into the western target area as described in **Section 2.1.4**.

Under this element of the Proposed Action, the eastern target area would contain simulated targets including non-permanent structures, enemy tactical vehicles, and weapons emplacements. Non-explosive munitions would be fired in the eastern target area from aircraft and weapons that currently utilize or are operated on Melrose AFR. Non-explosive munitions expenditures on Melrose AFR would not change from current levels, with the exception of those described in **Section 2.1.5**.

Types and levels of munitions expenditures, both explosive and non-explosive, authorized for use on Melrose AFR are described in the *2011 Environmental Assessment for the Comprehensive Range Plan, Melrose AFR* (27 SOW 2011). Additionally, the eastern target area was previously analyzed for the use of non-explosive munitions, specifically white phosphorous rockets, as part of Alternative A in the *2003 Environmental Assessment for the Use of White Phosphorus Rockets at Melrose Air Force Range, New Mexico* (ACC 2003).

Potential environmental impacts in the eastern target area from the proposed non-explosive munitions expenditures described above would be the same or less than those impacts described in the 2003 EA. White phosphorous rockets consist of a charge that emits smoke and heat upon impact, whereas some munitions proposed for use in the eastern target area do not (ACC 2003). Additionally, proposed non-explosive munitions expenditures in the eastern target area would be consistent with the types and levels of non-explosive munitions currently expended on Melrose AFR as previously analyzed in the 2011 EA and provided in **Appendix B** of this document. Any changes in munitions expenditures, including those non-explosive munitions that would occur in the eastern target area, are described in **Section 2.1.5** of this



document. Therefore, additional environmental analysis of non-explosive munitions training in the eastern target area is not provided in this document. Analysis for non-explosive munitions training in the eastern target area is hereby incorporated by reference from the 2003 and 2011 EAs (27 SOW 2011, ACC 2003).

### 2.1.6.2 PROJECTS WITH NO POTENTIAL FOR EFFECTS

Several projects being proposed on Melrose AFR as part of the range reconfiguration would not, individually or cumulatively, have the potential for significant effects on human health and the environment due to the nature of the action.

**Table 2-7** provides a list of these activities as part of the Proposed Action, but they will not be analyzed further in this document.

**Table 2-7. Elements of the Proposed Action Dismissed from Further Environmental Analysis**

Action	Year	Reason for Dismissal
Install Render-Safe Mockups	2015–2020	Render-safe mockups are pieces of equipment that do not require a paved or hardened surface for installation and use.
Install Convoy Live Fire Course	2015–2020	A convoy live-fire course would include the installation of existing targets along an existing road on the range and would not substantially alter the land use.
Repair Existing Capabilities of Electronic Countermeasures Equipment	Present–2020	Repairing existing electronic countermeasures equipment would not require the installation of any new equipment or facilities.
Configure Denied Access Areas	Present–2020	Configuring denied access areas would not require the installation of any new equipment or facilities.
Complete Integrated Air Defense Systems Tactics, Techniques and Procedures/Profiles	Present–2020	Completing Integrated Air Defense Systems Tactics, Techniques and Procedures/Profiles is an equipment/technology-based activity and would not alter the land use.
Issue an Opposing Forces (OPFOR) Indefinite Delivery/Indefinite Quantity Contract	Present–2020	Issuing an Opposing Forces Indefinite Delivery/Indefinite Quantity contract would be considered the routine procurement of services.
Obtain and Install Joint Threat Emitter and Advanced Radar Threat System	2019–Future	Joint Threat Emitter and Advanced Radar Threat System are pieces of equipment that do not require a paved or hardened surface for installation and use.
Implement Use of Jammer Authorities	Present–2020	Implementing use of jammer authorities is an equipment/technology-based activity and would not alter the land use.
Complete Miniature-Multiple Threat Emitter System (Mini-MUTES) Upgrade	Present	Upgrading the mini-MUTES equipment is an ongoing equipment/technology-based activity and would not alter the land use.
Obtain Excess Equipment from other Ranges	Present–2020	Obtaining excess training equipment from other ranges would be considered the routine procurement of goods and services.

These types of activities include the following:

- Routine procurement of goods and services
- Installing equipment that does not substantially alter land use on previously developed land
- Repairing and replacing real property installed equipment
- Installing, operating, modifying, and routinely repairing and replacing utility and communications systems, data processing cables, and similar electronic equipment that use existing rights-of-way, easements, distribution systems, or facilities.

## 2.2 Selection of Alternatives to the Proposed Action

Considering alternatives helps to avoid unnecessary impacts and allows for an analysis of reasonable ways to achieve a purpose. To warrant detailed evaluation, an alternative must be reasonable. To be considered reasonable, an alternative must be suitable for decision making, capable of implementation, and sufficiently satisfactory with respect to meeting the purpose of and need for the action. NEPA regulations define reasonable alternatives as economically and technically feasible, and showing evidence of common sense.

Certain facility, operational, and mission requirements must be present or reasonably attainable to meet the purpose of and need for the Proposed Action. As described in **Section 1.6**, the purpose and need of the Proposed Action is focused on Melrose AFR. The following selection standards were developed based on operational training considerations for Melrose AFR. The selection standards were applied to range design alternatives identified by 27 Special Operations Civil Engineer Squadron (SOCES), 27 SOW/Staff Judge Advocate (JA), and 27 SOAOS/RMO to select alternatives considered reasonable and to be carried forward for analysis in the EA.

The following selection standards were used in developing the Proposed Action and alternatives:

- **General.**
  - Non-hazardous activities should be located on the perimeter of the range to prevent overlap of SDZs and WDZs on these training activities and allow simultaneous training by multiple users.
  - Siting considerations should support development where infrastructure/utilities and water are currently located.
  - Siting considerations should minimize impacts on existing roads and firebreaks.
  - SDZs, WDZs, and impact areas must be overlapped to the extent possible to provide the most efficient and safe operation of the range.
- **HLZ.** HLZ siting requires sufficient airspace to allow training approaches into the wind. Wind patterns in the Cannon AFB and Melrose AFR region are predominantly from the southwest to the northeast; therefore, the majority of approaches to HLZs are required to occur from the northeast. HLZ training requires helicopters or tiltrotor aircraft to

approach simultaneously; therefore, at least two HLZs need to be adjacent and allow for approaches into the wind.

- **Off-Road Driving Course.** The off-road driving course must be in an area with varied, un-level terrain.
- **Mortar Pits.** The mortar pits must be adjacent to the impact area due to range clearance requirements.
- **DLQ Pad.** The V-22 DLQ pad is required to be elevated to simulate the “in-ground effect” of landing the V-22 on an aircraft carrier. Therefore, the pad must be located near or on a cliff.
- **Small Arms Range.** The small arms range must be on fairly level ground to provide line-of-sight to the targets. The berm for the small arms range must not be located within the impact area because of range clearance requirements.
- **Special Skills Facilities.** The special skills training facilities must be in close proximity to the SOF PEF compound to minimize driving time and traffic on the range. The location of the special skills facilities must also simulate real-world scenarios in which landing zones are located adjacent to mission objectives.
- **DZ Training.** DZ training requires a 10-mile approach to the DZ; therefore, airspace needs to be cleared and uncongested for this approach.

## 2.3 Alternatives Carried Forward for Analysis

Possible alternatives identified by 27 SOCES, 27 SOW/JA, and 27 SOAOS/RMO personnel were evaluated by applying the selection standards described in **Section 2.2** to potential alternatives. Two alternatives to the Proposed Action meet the operational and technical selection standards as described in **Section 2.2** and will be carried forward for the analysis in the EA.

### 2.3.1 Alternative 1 – Alternate Range Configuration

Under Alternative 1, the USAF would implement all projects described under the Proposed Action in **Section 2.1**; however, some projects described in **Section 2.1.1** would be located in alternative locations or would be configured differently than under the Proposed Action. This alternative would allow flexibility in future years as individual projects are approved, funded, and implemented.

Of the proposed construction projects described in **Table 2-2**, only the projects provided in **Table 2-8** would be constructed in alternate locations. **Table 2-8** provides a description of the changes in the proposed project locations under Alternative 1, and **Figure 2-6** depicts the proposed range configuration under Alternative 1. Proposed demolition or abandonment, utilities and fencing, training in the land gift area, reintroduction of explosive munitions in the western target area, and changes in munitions expenditures under Alternative 1 would remain the same as described under the Proposed Action in **Section 2.1**. Additionally, proposed increases in the amount of impervious surfaces and land disturbances would remain the same as described under the Proposed Action in **Table 2-3**.

**Table 2-8. Project Location Changes under Alternative 1**

<b>Project</b>	<b>Proposed Location Change</b>
Off-road Driving Course	Under Alternative 1, the off-road driving course would be located in the southeastern corner of the range, where there is an expanse of open space. However, this location does not provide as varied terrain as the location under the Proposed Action.
Live-Fire Compound and Shoot House	Under Alternative 1, the live-fire compound and shoot house would be moved to the south and not interfere with any other proposed training operations.
DLQ Pad	Under Alternative 1, the DLQ pad would be located adjacent to the range control tower, which is a land area that provides the proper cliff environment to simulate the “in-ground effect” of landing the V-22 on an aircraft carrier. Although viable, this alternative is not preferred because it requires flight patterns to be flown closer to, and within, the SDZs associated with the impact areas.

### 2.3.2 Alternative 2 – Non-explosive Western Target Area

Under Alternative 2, the USAF would implement all actions described under the Proposed Action in **Section 2.1**, except the USAF would not reintroduce explosive munitions into the western target area as described in **Section 2.1.4**. Alternative 2 would include all other projects described in **Section 2.1**, including demolition and construction, utilities and fencing, training in the land gift area, and changes in munitions expenditures. Under Alternative 2, the western target area would continue to be used for non-explosive munitions training.

## 2.4 No Action Alternative

CEQ regulations require consideration of the No Action Alternative. The No Action Alternative serves as a baseline against which the impacts of the Proposed Action and alternatives can be evaluated. Under the No Action Alternative, Melrose AFR would not be reconfigured as shown in **Figures 2-1 and 2-2** to support more efficient training operations. Specifically, the following actions would not occur under the No Action Alternative:

- Demolition or abandonment of infrastructure in the center of the range
- Construction or relocation of new infrastructure including administrative facilities and training features
- Installation of new utilities and fencing
- Non-renewal of the land gift area agricultural subleases and commencement of specific training activities where training has not previously occurred
- Reintroduction of explosive munitions training in the western target area
- An increase or decrease of some explosive and non-explosive munitions currently expended on Melrose AFR.

However, some projects described in this EA and specifically those identified in **Tables 2-2 and 2-4**, and described in **Section 2.1.6.1** have also been analyzed as part of the Proposed Action in other NEPA documentation. Under the No Action Alternative, these projects could still be implemented under the Proposed Action and analysis of other NEPA documents.



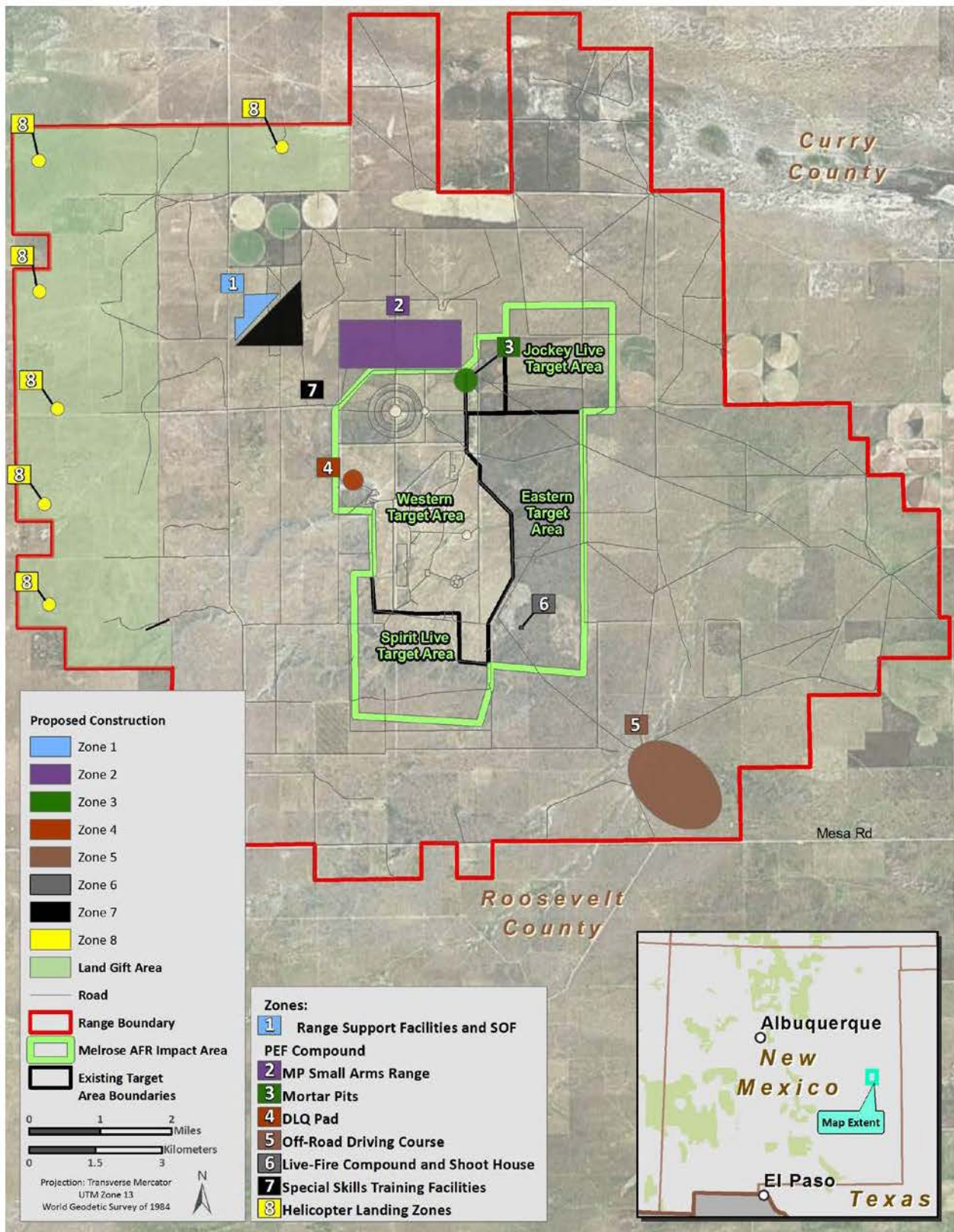


Figure 2-6. Melrose AFR Proposed Configuration under Alternative 1

Under the No Action Alternative, existing training and safety conflicts would continue to occur. The No Action Alternative would not reduce congestion in the center of the range or allow for efficient scheduling of training operations. The alternative would not collocate multiple SDZs and WDZs in a centralized area to support simultaneous training without disrupting other operations on the range. The No Action Alternative would not meet the purpose of and need for the Proposed Action, as described in **Section 1.6**. However, the No Action Alternative is carried forward in detailed analysis in accordance with CEQ NEPA regulations and USAF EIAP requirements.

## 2.5 Alternatives Considered but Eliminated from Detailed Analysis

Training ranges outside of Cannon AFB and 27 SOW control (i.e., DOD ranges other than Melrose AFR) were considered to support Melrose AFR user training. However, training at other locations would not meet the purpose and need to improve training efficiency at Melrose AFR as described in **Section 1.6** and is therefore not described further in this section. The following alternatives would meet the purpose and need of the Proposed Action, but were eliminated from detailed analysis because they do not meet the selection standards described in **Section 2.2**.

### 2.5.1 Renovate Existing Facilities

To increase efficiency of Melrose AFR training capabilities, the USAF considered renovating the existing administrative facilities and training ranges, as applicable, rather than conducting construction and demolition. However, renovation of these facilities would not allow for simultaneous training events because of their location. The current administrative facilities and maneuver areas are located within the center portion of the range in close proximity to the danger area, which is the composite of all weapons safety footprints (e.g., SDZs and WDZs) for the range. This configuration severely limits how the range can be used and does not provide collocation of SDZs, WDZs, and impact areas to the greatest extent possible. These facilities and ranges must be relocated instead of renovated to provide a safer and more efficient training environment on the range. Therefore, this potential alternative was considered but dismissed from further analysis.

### 2.5.2 Extend Sublease of Land Gift Area

The USAF considered an alternative to the Proposed Action in which the land gift area would continue to be subleased to farmers and ranchers. Under this alternative, the subleases would continue in 2015, as described under the Proposed Action in **Section 2.1.3**, and all proposed range design and reconfiguration would occur within the current Melrose AFR operational boundaries. However, this alternative does not meet the selection standard to locate non-hazardous activities on the perimeter of the range to prevent overlap of SDZs on other training areas and allow simultaneous training by multiple users. Therefore, this potential alternative was considered but dismissed from further analysis.

## 2.6 Identification of the Preferred Alternative

The Preferred Alternative of 27 SOW is to implement the Proposed Action, as described in **Section 2.1**.

## 3. Affected Environment and Environmental Consequences

All potentially relevant resource areas were initially considered for analysis in this EA. In compliance with NEPA, CEQ, and EIAP 32 CFR Part 989 guidelines, the following discussion of the affected environment and environmental consequences focuses only on those resource areas considered potentially subject to impacts and with potentially significant environmental issues. This section includes air quality, noise, geology and soils, water resources, biological resources, cultural resources, land use, hazardous materials and wastes, health and safety, socioeconomics and environmental justice, and infrastructure and utilities.

This section presents a description of the environmental resources and baseline conditions that could be affected from implementing the Proposed Action. In addition, this section presents an analysis of the potential environmental consequences of implementing the Proposed Action, and the consequences of selecting the No Action Alternative. Each alternative was evaluated for its potential impacts on physical, biological, and socioeconomics resources in accordance with CEQ guidelines at 40 CFR Part 1508.8.

The impact analyses consider all alternatives discussed in **Section 2** that have been identified as reasonable for meeting the purpose of and need for action. These alternatives include the following:

- The Proposed Action (described in **Section 2.1**)
- The No Action Alternative (described in **Section 2.4**).

**Sections 3.1** through **3.11** discuss potential environmental and socioeconomic impacts on the affected environment.

### 3.1 Air Quality

#### 3.1.1 Definition of the Resource

Air quality is measured by the concentration of criteria pollutants in the atmosphere. The air quality in a region is a result not only of the types and quantities of atmospheric pollutants and pollutant sources in an area, but also surface topography, the size of the topological “air basin,” and the prevailing meteorological conditions in that region.

**National Ambient Air Quality Standards.** The Clean Air Act, as amended, requires the U.S. Environmental Protection Agency (USEPA) to set National Ambient Air Quality Standards (NAAQS) for pollutants considered harmful to public health and the environment. The USEPA characterizes ambient air quality in terms of compliance with the primary and secondary NAAQS. Primary NAAQS provide public health protection, including protecting the health of “sensitive” populations such as asthmatics, children, and the elderly. Secondary NAAQS provide public welfare protection, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings.



The USEPA has established NAAQS for six criteria pollutants:

- Carbon monoxide (CO)
- Lead (Pb)
- Nitrogen dioxide (NO<sub>2</sub>)
- Ozone (O<sub>3</sub>), which results from the presence of nitrogen oxides (NO<sub>x</sub>) and volatile organic compounds (VOC) in the atmosphere
- Sulfur dioxide (SO<sub>2</sub>)
- Particulate matter (with an aerodynamic size less than or equal to 10 microns [PM<sub>10</sub>] and with an aerodynamic size less than or equal to 2.5 microns [PM<sub>2.5</sub>]).

States may either adopt the NAAQS or establish their own, more stringent standards. The State of New Mexico has adopted the NAAQS and promulgated additional State Ambient Air Quality Standards (SAAQS). In some cases, the SAAQS are more stringent than the Federal standards. **Table 3-1** presents the NAAQS and SAAQS for the federally listed criteria pollutants.

**Attainment Versus Nonattainment.** The USEPA classifies the air quality in a region according to whether the concentrations of criteria pollutants in ambient air exceed the NAAQS. Areas are therefore designated as either “attainment,” “nonattainment,” “maintenance,” or “unclassified” for each of the six criteria pollutants. Attainment means that the air quality is better than the NAAQS; nonattainment indicates that criteria pollutant levels exceed NAAQS; maintenance indicates that an area was previously designated nonattainment but is now attainment; and an unclassified air quality designation means that there is not enough information to appropriately classify an area, so the area is considered attainment.

**Greenhouse Gas Emissions.** Greenhouse gases (GHGs) are gaseous emissions that trap heat in the atmosphere. These emissions occur from natural processes and human activities. Human-caused GHGs are produced primarily by the burning of fossil fuels and through industrial and biological processes. The most common GHGs emitted from human activities include carbon dioxide (CO<sub>2</sub>), methane, and nitrous oxide.

### 3.1.2 Affected Environment

Melrose AFR is located in Roosevelt and Curry counties, New Mexico, which are designated by the USEPA and New Mexico Environment Department (NMED) as in attainment for all criteria pollutants (USEPA 2015, NMED 2015). Air emissions are produced at the installation from a variety of functions including motor vehicle operation, aircraft training, and munition expenditures during live fire training (Cannon AFB 2010).

### 3.1.3 Environmental Consequences

The environmental consequences on local and regional air quality conditions from a proposed Federal action are determined based upon the increases or decreases in regulated air pollutant emissions and upon existing conditions and ambient air quality. The evaluation criteria are dependent on whether the proposed action is located in an attainment, nonattainment, or maintenance area for criteria pollutants.



**Table 3-1. National and State Ambient Air Quality Standards**

Pollutant	Averaging Time	Primary Standard		Secondary Standard
		Federal	State	
CO	8-hour <sup>(1)</sup>	9 ppm (10 mg/m <sup>3</sup> )	8.7 ppm	None
	1-hour <sup>(1)</sup>	35 ppm (40 mg/m <sup>3</sup> )	13.1 ppm	None
Pb	Rolling 3-Month Average <sup>(2)</sup>	0.15 µg/m <sup>3</sup> <sup>(3)</sup>	None	Same as Primary
NO <sub>2</sub>	Annual <sup>(4)</sup>	53 ppb <sup>(5)</sup>	50 ppb	Same as Primary
	1-hour <sup>(6)</sup>	100 ppb	Same as Federal	None
PM <sub>10</sub>	24-hour <sup>(7)</sup>	150 µg/m <sup>3</sup>	None	Same as Primary
PM <sub>2.5</sub>	Annual <sup>(8)</sup>	12 µg/m <sup>3</sup>	None	15 µg/m <sup>3</sup>
	24-hour <sup>(6)</sup>	35 µg/m <sup>3</sup>	None	Same as Primary
O <sub>3</sub>	8-hour <sup>(9)</sup>	75 ppb <sup>(10)</sup>	None	Same as Primary
SO <sub>2</sub>	1-hour <sup>(11)</sup>	75 ppb <sup>(12)</sup>	None	None
	Annual <sup>(4)</sup>	None	0.02 ppm	None
	3-hour <sup>(1)</sup>	None	None	0.5 ppm
	24-hour Average	None	0.10 ppm	None

Sources: USEPA 2011, State of New Mexico 2002

Notes: Parenthetical values are approximate equivalent concentrations.

1. Not to be exceeded more than once per year.
2. Not to be exceeded.
3. Final rule signed 15 October 2008. The 1978 standard for Pb (1.5 µg/m<sup>3</sup> as a quarterly average) remains in effect until 1 year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved. The USEPA designated areas for the new 2008 standard on 8 November 2011.
4. Annual mean.
5. The official level of the annual NO<sub>2</sub> standard is 0.053 ppm, equal to 53 ppb, which is shown here for the purpose of cleaner comparison to the 1-hour standard.
6. 98th percentile, averaged over 3 years.
7. Not to be exceeded more than once per year on average over 3 years.
8. Annual mean, averaged over 3 years.
9. Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years.
10. Final rule signed 12 March 2008. The 1997 O<sub>3</sub> standard (0.08 ppm, annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years) and related implementation rules remain in place. In 1997, the USEPA revoked the 1-hour O<sub>3</sub> standard (0.12 ppm, not to be exceeded more than once per year) in all areas, although some areas have continued obligations under that standard (“anti-backsliding”). The 1-hour O<sub>3</sub> standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above 0.12 ppm is less than or equal to 1.
11. 99th percentile of 1-hour daily maximum concentrations, averaged over 3 years.
12. Final rule signed 2 June 2010. The 1971 annual (0.3 ppm) and 24-hour (0.14 ppm) SO<sub>2</sub> standards were revoked in that same rulemaking. However, these standards remain in effect until 1 year after an area is designated for the 2010 standard, except in areas designated nonattainment for the 1971 standards, where the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standard are approved.
13. Not to be above this level more than twice in a consecutive 7-day period.

Key: ppm = parts per million; ppb = parts per billion; mg/m<sup>3</sup> = milligrams per cubic meter; µg/m<sup>3</sup> = micrograms per cubic meter

For attainment areas, a proposed action would be considered significant if the net increases in pollutant emissions would result in any one of the following scenarios:

- Cause or contribute to a violation of any national or state ambient air quality standard
- Expose sensitive receptors to substantially increased pollutant concentrations
- Exceed any evaluation criteria established by a state implementation plan
- Cause an increase of 250 tons per year (tpy) of any attainment criteria pollutant from mobile sources.

Although the fourth bullet above (i.e., cause an increase of 250 tpy of any attainment criteria pollutant from mobile sources) is not a regulatory driven threshold, it is being applied as a conservative measure of significance in attainment areas. The rationale for applying this conservative threshold to mobile sources is that it is consistent with the threshold for a Prevention of Significant Deterioration major source (i.e., stationary source) in attainment areas.

Because the General Conformity Rule applies only to significant Federal actions in nonattainment or maintenance areas, it is not applicable to this air quality analysis. Therefore, neither an applicability analysis nor a conformity determination is required.

There are no regulatory thresholds of significance for GHG emissions; however, the CEQ has released the *Draft NEPA Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas Emissions*, which suggests that 25,000 metric tpy of CO<sub>2</sub>-equivalent is a meaningful reference point for when to consider GHG emissions in NEPA documentation. CO<sub>2</sub> emissions are provided in this EA for information and comparison purposes.

### 3.1.3.1 PROPOSED ACTION

#### 3.1.3.1.1 *Demolition and Construction and Utilities and Fencing*

Short-term, minor, adverse impacts on air quality would occur annually from the proposed demolition and construction activities associated with the projects listed in **Tables 2-1** and **2-2** and the proposed construction activities associated with the utilities and fencing projects listed in **Table 2-4**. Air emissions would be produced during each year (i.e., 2015, 2016, 2017, 2018, 2020, and 2025) that demolition and construction activities are planned. As noted in these tables, some projects are planned over a range of many years. For the purposes of this air quality analysis, all demolition and construction activities are assumed to be compressed into the last year of a project's range.

Air emissions from demolition and construction activities would be generated from site-disturbing activities and the operation of heavy equipment (mobile sources). Demolition and construction activities would also generate particulate matter emissions as fugitive dust from ground-disturbing activities and from the combustion of fuels in construction equipment. The quantity of uncontrolled fugitive dust emissions from a construction site is proportional to the area of land being worked and the level of activity. Demolition and construction workers commuting daily to and from the job site in their personal vehicles would also generate regulated pollutant air emissions. Emissions from demolition and construction activities would be produced only for the duration of demolition and construction activities which, for the

purposes of this air quality analysis, is conservatively assumed to be 12 calendar months or 240 workdays for each project.

Demolition and construction activities would incorporate best management practices (BMPs) to minimize fugitive particulate matter emissions. Work vehicles would be well-maintained and newer vehicles (i.e., model year 2007 and later) would use diesel particulate filters to reduce particulate matter emissions.

Demolition and construction activities would contribute directly to emissions of GHGs from the combustion of fossil fuels. The estimated annual emission of CO<sub>2</sub> from demolition and construction would range between 363 and 1,763 metric tpy, which ranges between approximately 1.5 and 7.1 percent of the CO<sub>2</sub>-equivalent meaningful assessment reference point established by the CEQ. Because CO<sub>2</sub> represents the overwhelming majority of GHGs from motor vehicle fuel combustion, an estimate of other GHG emissions converted to CO<sub>2</sub>-equivalent is unnecessary.

An air emissions analysis containing detailed calculations and assumptions was prepared for the proposed demolition and construction activities associated with the projects listed in **Tables 2-1** and **2-2** and the proposed construction activities associated with the utilities and fencing projects listed in **Table 2-4**. **Table 3-2** summarizes the annual demolition and construction air emissions and the applicable significance criteria. In summary, the yearly increase in air emissions from the demolition and construction activities is below applicable significance criteria. Air emissions from the operation of the facilities proposed for construction would not differ greatly or increase from the air emissions currently generated at the existing facilities on Melrose AFR; therefore, a quantitative estimate of operational air emissions is unnecessary.

**Table 3-2. Summary of Annual Demolition and Construction Air Emissions and Applicable Significance Criteria**

Year	NO <sub>x</sub> (tpy)	VOC (tpy)	CO (tpy)	SO <sub>2</sub> (tpy)	PM <sub>10</sub> (tpy)	PM <sub>2.5</sub> (tpy)	CO <sub>2</sub> (metric tpy)
<b>Annual Air Emissions</b>							
2015	5.157	0.786	4.915	0.382	0.858	0.405	872.982
2016	6.148	1.471	11.490	0.411	24.723	2.847	1,762.874
2017	5.830	1.394	11.343	0.398	8.734	1.236	1,706.717
2018	5.933	1.406	11.394	0.403	3.274	0.694	1,724.811
2020	5.710	1.031	6.915	0.405	2.591	0.606	1,168.053
2025	0.306	0.288	2.767	0.006	0.206	0.039	363.235
<b>Significance Criteria Threshold</b>							
Significance Criteria	250	250	250	250	250	250	25,000

**3.1.3.1.2 Land Gift Area**

No impacts on air quality would occur from the administrative action of not renewing the land gift area leases. No stationary air emission sources would be removed from the land gift area when the private ranchers and ranching companies withdraw from the area. Livestock grazing on the

land gift area would be relocated to other locations, resulting in no net change in GHG emissions.

Long-term, negligible, adverse impacts on air quality would occur from the proposed military training on the land gift area. Most training proposed on the land gift area would not be new training to Melrose AFR, but rather training that has relocated from within the center of Melrose AFR to the land gift area. Examples of relocated training include the use of HLZs, a DLQ pad, and a DZ. As a result, no new air emissions would be produced from the use of these features on the land gift area. The only training proposed on the land gift area that would be new to Melrose AFR is the use of an off-road driving course, and air emissions would be produced from the operation of vehicles on the course. Approximately 2 vehicles (e.g., Humvees, all-terrain vehicles, motorcycles, and MRAPs) would drive the 3-mile course 3 times per day for 5 days per week. This equates to approximately 4,680 total vehicle miles per year. **Table 3-3** provides the estimated annual air emissions from the use of the off-road driving course conservatively assuming all vehicles on the course are light-duty gasoline trucks. The annual air emissions from the off-road driving course are below applicable significance criteria.

**Table 3-3. Annual Air Emissions from the Use of the Off-road Driving Course**

NO <sub>x</sub> (tpy)	VOC (tpy)	CO (tpy)	SO <sub>2</sub> (tpy)	PM <sub>10</sub> (tpy)	PM <sub>2.5</sub> (tpy)	CO <sub>2</sub> (metric tpy)
0.003	0.004	0.054	<0.001	0.218	0.022	2.415

**3.1.3.1.3 Western Target Area**

No impacts on air quality would occur from reintroducing explosive munitions training on the western target area. Air emissions from munitions expenditures on the western target area are discussed in the munitions expenditures subsection.

**3.1.3.1.4 Munitions Expenditures**

Long-term, negligible, beneficial impacts on air quality would occur from the proposed changes in munitions expenditures on Melrose AFR. The proposed changes would slightly reduce annual air emissions from munitions expenditures. **Table 3-4** provides the estimated overall net change in annual air emissions from the proposed changes in munitions expenditures.

**Table 3-4. Net Change in Air Emissions from the Proposed Changes in Munitions Expenditures**

	NO <sub>x</sub> (tpy)	CO (tpy)	Pb (tpy)	PM <sub>10</sub> (tpy)	PM <sub>2.5</sub> (tpy)	CO <sub>2</sub> (metric tpy)
<b>Net Change</b>	-0.049	-0.133	-0.003	-0.071	-0.011	-2.098

**3.1.3.2 ALTERNATIVE 1**

The impacts on air quality from Alternative 1 would be the same as those described under the Proposed Action. Identical quantities of criteria and GHG pollutants would be produced from the various alternate range configurations as the Proposed Action. The region of impact for air quality is regional to global in scale; therefore, different configurations of the range would not result in different air quality impacts on local receptors.



### 3.1.3.3 ALTERNATIVE 2

The impacts on air quality from Alternative 2 would be the same as those described under the Proposed Action. No impacts on air quality would occur from not reintroducing explosive munitions training on the western target area.

### 3.1.3.4 NO ACTION ALTERNATIVE

Under the No Action Alternative, the activities associated with the Proposed Action would not occur. Therefore, the air emissions in **Table 3-2** would not be produced. No new air emissions would be produced if training does not occur on the land gift area and no changes in existing air emissions would occur if the proposed changes to munitions expenditures do not occur. Therefore, no new impacts on air quality would be expected to occur.

## 3.2 Noise

### 3.2.1 Definition of the Resource

Sound is a physical phenomenon consisting of vibrations that travel through a medium, such as air, and are sensed by the human ear. Noise is defined as any sound that is undesirable because it interferes with communication, is intense enough to damage hearing, or is otherwise intrusive. Human response to noise varies depending on the type and characteristics of the noise distance between the noise source and the receptor, receptor sensitivity, and time of day. Noise is often generated by activities essential to a community's *quality of life*, such as construction or vehicular traffic.

Sound varies by both intensity and frequency. Sound pressure level, described in decibels (dB), is used to quantify sound intensity. The dB is a logarithmic unit that expresses the ratio of a sound pressure level to a standard reference level. Hertz are used to quantify sound frequency. The human ear responds differently to different frequencies. "A-weighting", measured in A-weighted decibels (dBA), approximates a frequency response expressing the perception of sound by humans for normal sounds. "C-weighting", measured in C-weighted decibels (dBC), approximates a frequency response expressing the perception of sound by humans for very loud or impulsive noises. Sounds encountered in daily life and their levels are provided in **Table 3-5**.

**Table 3-5. Common Sounds and Their Levels**

Outdoor	Sound Level (dBA)	Indoor
Motorcycle	100	Subway train
Tractor	90	Garbage disposal
Noisy restaurant	85	Blender
Downtown (large city)	80	Ringling telephone
Freeway traffic	70	TV audio
Normal conversation	60	Sewing machine
Rainfall	50	Refrigerator
Quiet residential area	40	Library

Source: Harris 1998

The sound pressure level noise metric describes steady noise levels, although very few noises are, in fact, constant; therefore, additional noise metrics have been developed to describe noise including:

- **Equivalent Sound Level ( $L_{eq}$ )** -  $L_{eq}$  is the average sound level in dBA.
- **Sound Exposure Level (SEL)** - SEL is the total energy associated with an acoustic event, as though it was compressed into one second. For sound events that last longer than one second, the SEL value will be higher than other noise metrics.
- **Day-night Sound Level (DNL)** - DNL is the average sound energy in a 24-hour period with a 10-dB penalty added to the nighttime levels (10:00 p.m. to 7:00 a.m.). DNL is a useful descriptor for noise because: (1) it averages ongoing yet intermittent noise, and (2) it measures total sound energy over a 24-hour period. A-weighted DNL is used to assess aircraft noise, C-weighted DNL is use for demolition and heavy artillery noise, and Onset-Rate Adjusted DNL is used for noise from restricted airspace.

The USAF's land use guidelines for noise exposure are essentially the same as those published by the Federal Interagency Committee on Urban Noise in the June 1980 publication, *Guidelines for Considering Noise in Land-Use Planning and Control*. These guidelines stem from the USEPA 1974 "Levels Document" which suggested continuous and long-term noise in excess of DNL 65 dBA are normally unacceptable for noise-sensitive land uses such as residences, schools, churches, and hospitals. **Table 3-6** outlines recommended noise limits for land use planning purposes. Roosevelt County, Curry County, and the Village of Melrose do not maintain noise ordinances; however, the Joint Land Use Study for Cannon AFB and Melrose AFR is consistent with the Air Force's land use guidelines (Curry County NM 2011).

**Table 3-6. Recommended Noise Limits for Land Use Planning**

General Level of Noise	Heavy Artillery and Demolition Noise (CDNL)	Aircraft Noise (ADNL)	Recommended Uses
Low	< 62 dBC	< 65 dBA	noise-sensitive land uses acceptable
Moderate	62–70 dBC	65–75 dBA	noise-sensitive land uses normally not recommended
High	> 70 dBC	> 75 dBA	noise-sensitive land uses not recommended

Source: USAF 2002

dBC = C-Weighted Decibels

dBA = A-Weighted Decibels

CDNL = C-Weighted Day Night Level

ADNL= A-Weighted Day Night Level

### 3.2.2 Affected Environment

Melrose AFR is an active military training range used for both air and ground unit training. Dominant military training noise sources include aircraft maneuvers and air-to-ground and ground-to-ground munitions use. The Region of Influence (ROI) for this analysis includes Melrose AFR and its vicinity, as well as the area beneath SUA Restricted Areas R-5104 and R-5105.

Operations at Melrose are currently in a state of flux as AFSOC assets continue to beddown at Cannon AFB and operations tempo has not reached the level analyzed in the AFSOC Beddown Environmental Impact Statement (EIS). The 2007 EIS included 108 aircraft, but as of 2010, only 45 aircraft were assigned to Cannon AFB. Additional aircraft will continue to beddown at Cannon AFB over the next several years, and the addition of these aircraft will result in steadily increasing operations tempo at Melrose AFR. The 2011 Comprehensive Range Plan incorporated several new Landing Zones and small arms training activities within the range in addition to the activities outlined in the 2007 EIS. This EA considers the end-state conditions as analyzed in the noise sections of the 2011 *Melrose AFR Environmental Assessment for the Comprehensive Range Plan* to be baseline conditions and is hereby incorporated by reference (USAF 2011).

The area surrounding Melrose AFR is characterized by wide, open spaces and relatively low human population density. The predominant land use in the areas surrounding the range is livestock grazing. Noise levels when military training is not underway are typically low, and the sound environment is dominated by natural sounds such as the wind and birds with occasional anthropogenic sounds such as ground vehicle noise. Widely scattered residences and other structures are located in the area adjacent to the range. Noise complaints about training operations at Melrose AFR are relatively infrequent.

**Heavy Artillery.** Wide varieties of air-to-ground and ground-to-ground munitions are currently used at Melrose AFR. A dominant and distinctive noise source at Melrose AFR is munitions fire from the C-130 gunship. The gunship fires 30 mm, 40 mm, and 105 mm ammunition while orbiting at a constant bank angle above the impact areas. The existing 62 dBC DNL noise contour extends approximately five miles from the center of these impact areas - extending approximate 1 mile south, 1 mile west, and 2 miles northeast of the existing range boundary. There are no residences exposed to noise levels greater than 62 dBC DNL (USAF 2011).

**Aircraft and Restricted Airspace.** The most frequent aircraft used at the range are the C-130 (H, W, and J models), CV-22, remotely piloted aircraft, and non-standard aircraft based at Cannon AFB. USAF CV-22 aircraft and certain C-130 variants frequently conduct training activities at low altitudes including landing at existing HLZs and DZs. C-130 gunships and RPA aircraft typically conduct training at relatively high altitudes. Areas beneath R-5104A/B are currently exposed to approximately 56 dBA DNL and areas beneath R-5105 are exposed to approximately 58 dBA DNL. These DNL metrics have been onset-rate adjusted to account for the startle effect of rapidly moving aircraft (USAF 2011). In addition, the 65 dBA ADNL noise contours for existing HLZs extend approximately two miles from the center of the HLZ within the range, and approximately 1 mile off-range along the flight paths for those near the northern boundary of the range. There are no residences exposed to noise levels greater than 65 dBA DNL from existing restricted airspace or HLZs (USAF 2011).

**Land Gift Area.** As outlined above, individuals within and adjacent to the land gift area are currently exposed to multiple sources of noise including military training activities, aircraft operations, vegetation noise, and animal vocalizations. Heavy artillery noise and aircraft overflights would be audible, but distant most of the time, with occasional louder events. These areas would be considered rural or remote, and very quiet during periods without any military training activities. Background noise levels ( $L_{eq}$  and DNL) were estimated for the surrounding

areas using the techniques specified in the American National Standard *Quantities and Procedures for Description and Measurement of Environmental Sound Part 3: Short-term measurements with an observer present*. **Table 3-7** outlines as the closest receptors to the proposed HLZs in the land gift area and estimated background noise levels. There are no noise sensitive areas within the range boundary including the land gift area.

**Table 3-7. Estimated Background Sound Levels (dBA)**

Location	Distance [ft (m)]	Direction	Type	Land Use Category	ADNL	L <sub>eq</sub> Daytime	L <sub>eq</sub> Nighttime
HLZ 1	7,385 (2,251)	Northwest	Residential	Rural/Remote	40	38	32
HLZ 1	13,143 (4,006)	Northwest					
HLZ 3	21,066 (6,421)	West					
Pad	13,402 (4,085)	Southwest					

Source: ANSI 2013

### 3.2.3 Environmental Consequences

This EA evaluates changes to existing noise environments that would result from the Proposed Action. Specifically, construction and operational noise associated with the reconfiguration of the range will be addressed. Changes in noise would be considered significant if they were to lead to a violation of any Federal, state or local noise ordinance, or would substantially increase areas of incompatible land use outside the range boundary.

#### 3.2.3.1 PROPOSED ACTION

##### 3.2.3.1.1 Demolition and Construction

Short-term, minor, adverse impacts would be expected. The Proposed Action would require the demolition of existing structures and the construction of new facilities at the Melrose AFR. Individual pieces of construction equipment typically generate noise levels of 80 to 90 dBA at a distance of 50 feet. With multiple items of equipment operating concurrently, noise levels can be relatively high during daytime periods at locations within several hundred feet of active demolition and construction sites. **Table 3-8** presents typical noise levels (dBA at 50 feet) that the USEPA has estimated for the main phases of outdoor construction. The zone of relatively high construction noise levels typically extends to distances of 400 to 800 feet from the site of major equipment operations. The proposed demolition and construction sites are located well within the range boundary, and noise generated during these activities would not typically be audible off-range. Given the temporary nature of proposed demolition and construction activities and the distance to any noise sensitive areas, these effects would be minor.

**Table 3-8. Noise Levels Associated with Outdoor Construction**

Construction Phase	Sound Level (dBA) at 50 feet
Ground Clearing	84
Excavation, Grading	89
Foundations	78
Structural	85
Finishing	89

Source: USEPA 1971



Although construction-related noise impacts would be minor, the following BMPs would be performed to further reduce any realized noise impacts:

- Construction would occur primarily during normal weekday business hours
- Construction equipment mufflers would be properly maintained and in good working order.

#### **3.2.3.1.2 Utilities and Fencing**

Short-term, minor, adverse impacts would be expected from utilities and fencing projects. Noise would be similar to that described under **Section 3.2.3.1.1 Demolition and Construction**. The Proposed Action would require the demolition of existing structures and the construction of new facilities at the Melrose AFR. Individual pieces of construction equipment typically generate noise levels of 80 to 90 dBA at a distance of 50 feet.

#### **3.2.3.1.3 Land Gift Area**

Long-term, minor, adverse impacts would be expected from the establishment of new HLZs, DLQ pad, off-road driving course, and DZ within the land gift area. Areas along the land gift area boundary would be exposed to a substantially greater number of low altitude aircraft overflights and associated noise when compared to existing conditions. Noise levels associated with high-tempo training conditions would exceed 65 dBA DNL along the flight paths approaching and departing the proposed HLZs and extend beyond range boundaries; however, there are no existing residences within these areas. Noise from the proposed off-road driving course and DZ would be distant, but audible, during times of relative quiet. The changes in noise would not lead to a violation of any Federal, state or local noise ordinance, and would not substantially increase areas of incompatible land use outside the range boundary.

**HLZs and DLQ Pad.** Under the Proposed Action, several HLZs and a single DLQ pad would be established within the land gift area. Sources of noise at the HLZs would be consistent with existing activities at Melrose AFR. In the immediate area surrounding HLZs the noise would be dominated by intermittent helicopter and rotorcraft takeoff and landing activities. In total, the seven helicopters and tiltrotor landing areas (i.e., six HLZs and one DLQ pad) could be used for up to six hours per day; or approximately 50 minutes per landing area per day. Helicopters and tiltrotor aircraft would participate in minimal hover time when approaching the landing areas, and dwell time on the ground per landing would be approximately 5 minutes. During this dwell time, the majority of the helicopters or tiltrotor aircraft would remain running.

The NOISEMAP program was used to model noise generated by aircraft operations at the proposed HLZs for a high-tempo “reasonable upper bound” training scenario. This training scenario assumes 20 operations per day at any [or all] of the proposed HLZs and the DLQ pad, with 40 percent of the operations occurring between the hours of 10:00 p.m. and 7:00 a.m. DNL Noise contours associated with this level of aircraft operations are shown **Figure 4-2**. Noise levels exceeding 65 dBA DNL would be along the flight paths approaching and departing the proposed landing areas, and extend approximately two miles beyond range boundaries. There are no existing residences that would be within the 65 dBA DNL contours. These impacts would be considered minor.

Noise levels outlined in **Figure 3-1** represent a reasonable upper bound of impacts, and the actual DNL levels would likely be lower than those shown. Under normal training conditions, the rotorcraft noise would not be sufficient to generate areas of incompatible land use near the proposed HLZs; however, aircraft operations can be loud to individuals under the flight path. The SEL for select aircraft and the number of flyovers at 500 feet above ground level (AGL) that would be required to achieve 65 dBA DNL are outlined in **Table 3-9**. If a single CV-22 flew directly over a noise-sensitive area once per day at 500 feet AGL, the annual DNL would be approximately 41.6 dBA. This would be well below the 65 dBA threshold and would be fully compatible with noise sensitive land uses. It would take 5,814 CV-22 overflights per year (approximately 16 per day) 500 feet directly over an individual receptor to generate an overall sound level of 65 dBA DNL. Given the proposed operational tempo and associated noise at the proposed HLZs and DLQ pad, these impacts would be less than significant.

**Table 3-9. Noise Levels Associated with Individual CV-22 Overflights**

Aircraft	SEL Single Flyover @ 500 Feet AGL	DNL Single Flyover @ 500 Feet AGL	Number of Flyovers to Achieve 65 dBA DNL
CV-22 2	91.0	41.6	5,814

Source: USAF 2013

Note: SEL is the total energy associated with an acoustic event, as though it was compressed into one second, and would be appreciably higher than even the maximum sound level.

Some off-range areas affected by noise levels greater than 65 dBA DNL are used for livestock grazing. Low-altitude overflights could potentially result in behavioral reactions in nearby livestock; however, cattle typically become accustomed to repeated events and show less vigorous reactions with increased repetitions. With the exception of young animals and animals rotated in from other grazing areas, many of the animals in the area should have been exposed to military aircraft overflight noise for several years. These impacts would be considered minor.

**Off-Road Driving Course.** Ground-based vehicles that would be used at the off-road driving course are substantially quieter than other sources of military noise at Melrose AFR including heavy artillery, aircraft, and small arms. Vehicles would consist mainly of HMMWVs, MRAPs, ATVs and motorcycles which would produce noise levels comparable to on-road heavy trucks and motorcycles. Estimated sound level for these vehicles at the closest point to the range boundary and the nearest residence are outlined in **Table 3-10**.

**Table 3-10. Sound Levels for Vehicles Using the Off-Road Driving Course**

Vehicle Type	Estimated Sound Level (dBA)				
	164 feet (50 meters)	Alternative 1		Alternative 2	
		Range Boundary	Nearest Residence	Range Boundary	Nearest Residence
HMMWVs	64.2	41.6	26.1	51.0	23.4
MRAP	63.1	40.5	25.0	49.9	22.3
ATV/Motorcycle	56.2	33.6	18.1	43.0	15.4

Sources: US Army 2008, US Army 2010, SAE 2008