EA-99-148

DEPARTMENT OF THE ARMY

U.S. ARMY WHITE SANDS MISSILE RANGE
WHITE SANDS MISSILE RANGE, NEW MEXICO 88002-

REPLY TO
National Range Environment and Safety Directorate

September 9, 1999

Environment Services BIA
ATTN: Mr. Leonard Robins
P.O. Box 1060
Gallup, New Mexico 87305

Dear Mr. Robins:

Enclosed for your review and comment is the Draft Ballistic Missile Defense Organization Fort Wingate Launch Complex (FWLC) Environmental Assessment.

The Environmental Assessment addresses the following construction activities at Fort Wingate Launch Complex: Construction of a five-strand barbless boundary fence, creation of a chip-seal surface access road, installation of a single-phase power line parallel to the proposed access road, establishment of a guard station and placement of a communication tower. The proposed construction activities are required to physically delineate the FWLC boundaries and ensure efficient operation of FWLC.

If you have any technical questions or require further information concerning this request, please contact Ms. Karen Hay, White Sands Missile Range, National Range Directorate of Environment and Safety, Customer Support Division (STEWS-NR-ES-C), at (505) 678-8266/2224. Written correspondence to the Range may be directed to Commander, U.S. Army White Sands Missile Range, National Range Directorate of Environment and Safety, STEWS-NR-ES-C (ATTN: Ms. Hay), White Sands Missile Range, New Mexico 88002-5048.

Sincerely,

Thomas A. Ladd

Thomas A. Ladd
Director, National Range Environment and Safety Directorate

Enclosure

U.S. ARMY WHITE SANDS MISSILE RANGE
NEW MEXICO
FINDING OF NO SIGNIFICANT IMPACT

NAME OF PROPOSED ACTION: Ballistic Missile Defense Organization (BMDO) Fort Wingate Launch Complex Environmental Assessment

DESCRIPTION OF PROPOSED ACTION: This Environmental Assessment (EA) addresses the following construction activities at Fort Wingate Launch Complex (FWLC): construction of a five strand barbless boundary fence, creation of a chip-seal surface access road, installation of a single phase power line parallel to the proposed access road, establishment of a guard station, and placement of a communication tower. The proposed construction activities are required to physically delineate the FWLC boundaries and ensure efficient operation of FWLC.

ALTERNATIVES CONSIDERED: Alternatives considered in the Ballistic Missile Defense Organization (BMDO) Fort Wingate Launch Complex EA, in addition to the proposed action, included alternative types of fencing; methods of fencing; upgrading an existing road; using a gravel road surface; building a narrower bituminous access road; alternative locations for power line placement; use of generators instead of firm power; and alternate locations for the guard station and communication tower. The No Action Alternative would be the continued use of FWLC for launching tactical and target missiles without the proposed construction activities. The No Action Alternative, though viable, conflicts with objectives of the BMDO Program and would inhibit the progress and development of an improved Theater Missile Defense system.

ENVIRONMENTAL CONSEQUENCES: Eleven broad environmental issues were evaluated to determine the potential effects of the proposed construction activities at FWLC and to provide a basis for assessing the significance of potential impacts. The eleven areas of environmental consideration are land use, topography, air quality, soils, ground and surface water, biological resources, cultural resources, noise, economics, infrastructure, and safety and radiation. Of the eleven areas considered, land use, soils, biological resources, and cultural resources were considered to have the greatest potential for environmental impacts.

In the area of land use, the construction of the access road, power line, and guard station will occur within an area that is presently utilized as a buffer between the Fort Wingate Depot Activity (FWDA) and the interior security fence. Proposed construction activities will change the use of the corridor necessary to accommodate the actions, therefore the corridor has been limited to a width of 30 m (100 ft).

In the area soils, the construction of the access road and guard station requires heavy equipment which will remove vegetation present in the corridor increasing the potential for soil erosion. Application of water and soil stabilizers on denuded areas will minimize the potential of soil erosion during construction activities. The chip-seal surface on the road and allowing revegetation to occur will reduce potential soil erosion after construction of the access road. Contouring required for the western end of the access road will be conducted to impact an area as small as possible. Additionally, equipment and construction vehicles will be inspected daily to insure proper working condition to minimize on-site maintenance, thus reducing the potential for soil contamination. Drip pans will be used when refueling, conducting on-site maintenance, and under vehicles parked overnight.

In the area of biological resources, mitigation measures have been proposed to minimize the potential effects to the flora and fauna of the area. These mitigation measures include minimizing the area affected by the proposed construction; incorporating existing fence wherever possible into the new boundary fence; restricting off road travel to all-terrain-vehicles; no blading or mowing of vegetation along the fence; conducting the construction activities (specifically the boundary fence) during non-breeding or nesting periods; marking the fence posts to alert wildlife of its presence; spacing wire stays along the fence to keep top wires from twisting around the legs of deer and elk; placing the bottom strand of wire no lower than 0.45 m (1.5 ft) from the ground; and leaving woody debris from cutting and trimming shrubs and trees along the proposed fence for nutrient cycling and wildlife habitat. A biological survey was conducted to ensure no species considered threatened, endangered, or sensitive by the United States Fish and Wildlife Service (USFWS) or the state of New Mexico will be affected by the proposed construction. Loggerhead shrikes (*Lanius ludovicianus*) and burrowing owls (*Athene cunicularia*) were observed in the general area during the survey and are considered a species of concern by the USFWS and sensitive by the NMDGF. The Gunnison's prairie dog (*Cynomys gunnisoni*), a state sensitive species, was also observed in the vicinity of the construction areas. Potential impacts to these species will result from increased human activity in the areas of construction causing the loggerhead shrike and burrowing owl to temporarily vacate the general area. Gunnison's prairie dogs within the vicinity of the proposed construction sites will temporarily retreat to burrows during localized construction disturbance. Therefore, the potential impact on the loggerhead shrike, burrowing owl, and Gunnison's prairie dog will not be significant.

In the area of cultural resources, construction of the access road, power line, and guard station will occur within an area that has a high density of archeological sites. No construction activities will be initiated prior to receipt by the Albuquerque Office of the U.S. Army Corps of Engineers (ACOE) of written concurrence of New Mexico State Historic Preservation Officer (SHPO) for all proposed cultural resource mitigation.

CONCLUSIONS: Evaluation of the eleven areas of environmental consideration for potential significant impacts posed has shown that no significant impacts would occur from the proposed construction activities at FWLC. Any potential threats have been mitigated.

Based on the considerations herein and the foregoing conclusions, an Environmental Impact Statement is not required. This Finding of No Significant Impact is hereby submitted for the proposed action.

POINT OF CONTACT: An environmental assessment that supports a "Finding of No Significant Impact" is available for public reading at the following locations: WSMR Customer Support Office, Building 163, WSMR; WSMR Visitor Center (Public Affairs), Building 122, WSMR; and the Public Library where this notice was published. All are invited to submit written comments for consideration by the Commander, WSMR, within 30 days of the notice. Address all correspondence to:

Commander
U.S. Army White Sands Missile Range
Attn: STEWS-NR-ES-C
Building 163
White Sands Missile Range, NM, 88002
Phone: (505) 678-8266

EXECUTIVE SUMMARY

This Environmental Assessment (EA) addresses the following construction activities at Fort Wingate Launch Complex (FWLC): construction of a five strand barbless boundary fence, creation of a chip-seal surface access road, installation of a single phase power line parallel to the proposed access road, establishment of a guard station, and placement of a communication tower. The proposed construction activities are required to physically delineate the FWLC boundaries and ensure efficient operation of FWLC.

Alternatives considered, in addition to the proposed action, included alternative types of fencing; methods of fencing; upgrading an existing road; using a gravel road surface; building a narrower bituminous access road; alternative locations for power line placement; use of generators instead of firm power; and alternate locations for the guard station and communication tower. The No Action Alternative would be the continued use of FWLC for launching tactical and target missiles without the proposed construction activities. The No Action Alternative, though viable, conflicts with objectives of the Ballistic Missile Defense Organization (BMDO) Program and would inhibit the progress and development of an improved Theater Missile Defense system.

Eleven broad environmental issues were evaluated to determine the potential effects of the proposed construction activities at FWLC and to provide a basis for assessing the significance of potential impacts. The eleven areas of environmental consideration are land use, topography, air quality, soils, ground and surface water, biological resources, cultural resources, noise, economics, infrastructure, and safety and radiation. Of the eleven areas considered, land use, soils, biological resources, and cultural resources were considered to have the greatest potential for environmental impacts.

In the area of land use, the construction of the access road, power line, and guard station will occur within an area that is presently utilized as a buffer between the Fort Wingate Depot Activity (FWDA) and the interior security fence. Proposed construction activities will change the use of the corridor necessary to accommodate the actions, therefore the corridor has been limited to a width of 30 m (100 ft).

In the area soils, the construction of the access road and guard station requires heavy equipment which will remove vegetation present in the corridor increasing the potential for soil erosion. Application of water and soil stabilizers on denuded areas will minimize the potential of soil erosion during construction activities. The chip-seal surface on the road and allowing revegetation to occur will reduce potential soil erosion after construction of the access road. Contouring required for the western end of the access road will be conducted to impact an area as small as possible. Additionally, equipment and construction vehicles will be inspected daily to insure proper working condition to minimize on-site maintenance, thus reducing the potential for soil contamination. Drip pans will be used when refueling, conducting on-site maintenance, and under vehicles parked

overnight.

In the area of biological resources, mitigation measures have been proposed to minimize the potential effects to the flora and fauna of the area. These mitigation measures include minimizing the area affected by the proposed construction; incorporating existing fence wherever possible into the new boundary fence; restricting off road travel to all-terrain-vehicles; no blading or mowing of vegetation along the fence; conducting the construction activities (specifically the boundary fence) during non-breeding or nesting periods; marking the fence posts to alert wildlife of its presence; spacing wire stays along the fence to keep top wires from twisting around the legs of deer and elk; placing the bottom strand of wire no lower than 0.45 m (1.5 ft) from the ground; and leaving woody debris from cutting and trimming shrubs and trees along the proposed fence for nutrient cycling and wildlife habitat. A biological survey was conducted to ensure no species considered threatened, endangered, or sensitive by the United States Fish and Wildlife Service (USFWS) or the state of New Mexico will be affected by the proposed construction. Loggerhead shrikes (*Lanius ludovicianus*) and burrowing owls (*Athene cunicularia*) were observed in the general area during the survey and are considered a species of concern by the USFWS and sensitive by the NMDGF. The Gunnison's prairie dog (*Cynomys gunnisoni*), a state sensitive species, was also observed in the vicinity of the construction areas. Potential impacts to these species will result from increased human activity in the areas of construction causing the loggerhead shrike and burrowing owl to temporarily vacate the general area. Gunnison's prairie dogs within the vicinity of the proposed construction sites will temporarily retreat to burrows during localized construction disturbance. Therefore, the potential impact on the loggerhead shrike, burrowing owl, and Gunnison's prairie dog will not be significant.

In the area of cultural resources, construction of the access road, power line, and guard station will occur within an area that has a high density of archeological sites. Prior to construction, the U.S. Army Corps of Engineers (Albuquerque Office) will be consulted to review the road construction plan and determine what mitigation measures are necessary.

Evaluation of the eleven areas of environmental consideration for potential significant impacts posed has shown that no significant impacts would occur from the proposed construction activities at FWLC. Any potential threats have been mitigated.

Based on the considerations herein and the foregoing conclusions, an Environmental Impact Statement is not required.

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1.0 INTRODUCTION

1.1 LOCATION

The Ballistic Missile Defense Organization (BMDO) Fort Wingate Missile Launch Complex (FWLC) is located 13 km (8 mi) east of Gallup, in McKinley County of western New Mexico. The FWLC property was previously part of Fort Wingate Depot Activity (FWDA), which was closed and partitioned in the mid-1990s (Figure 1).

1.2 BACKGROUND

The FWLC/FWDA locality originally assumed a military role in the 1860's, and became a U.S. Army ordnance depot in 1918. Many of the storage bunkers dominating the facility were built in the early 1940s in support of its mission to renovate, repack, and ship ammunition. FWDA covered an area of 8,903 ha (22,000 acres) when the Secretary of Defense's Commision on Base Realignment and Closure (BRAC) recommended its closure in 1988. It ceased operations in 1993, and FWDA real property was placed under the administration of Tooele Army Depot (TEAD) for clean up and disposal activities.

During the BRAC disposal process, BMDO identified the installation as a potential location to launch tactical and target missiles under the Theater Missile Defense (TMD) Program. An agreement for FWLC was formalized between BMDO and United States Department of the Army in 1995. Necessary infrastructure to support TMD activities was established within FWLC, including construction of launch and instrumentation facilities. White Sands Missile Range (WSMR) acts as Executive Agent for BMDO management and FWLC operations.

The FWLC property covers 2,636 ha (6,515 ac) comprising two parcels: 79 ha (196 ac) in Parcel A and 2,557 ha (6,319 ac) in Parcel B (Figure 2). Parcel A is used for instrumentation and communication facilities, and has guaranteed access from Navajo Boulevard along the North Patrol Road. The main launch complex is located in Parcel B, which must be currently accessed across FWDA property via the main cantonment area.

1.3 RELATED ENVIRONMENTAL DOCUMENTATION

The environment of FWDA and expected impacts resulting from its closure were described in the *Final Base Realignment and Closure Environmental Impact Statement (BRAC EIS)* (1991). This document provides a reference of the general environment for the areas subsequently partitioned as FWLC.

The *Final Theater Missile Defense Extended Test Range Environmental Impact Statement (TMD ETR EIS)* (1995) considered the inclusion of FWDA as a launch site for tactical and target missiles under the TMD Program. Proposed actions in the analysis included launch activities and the

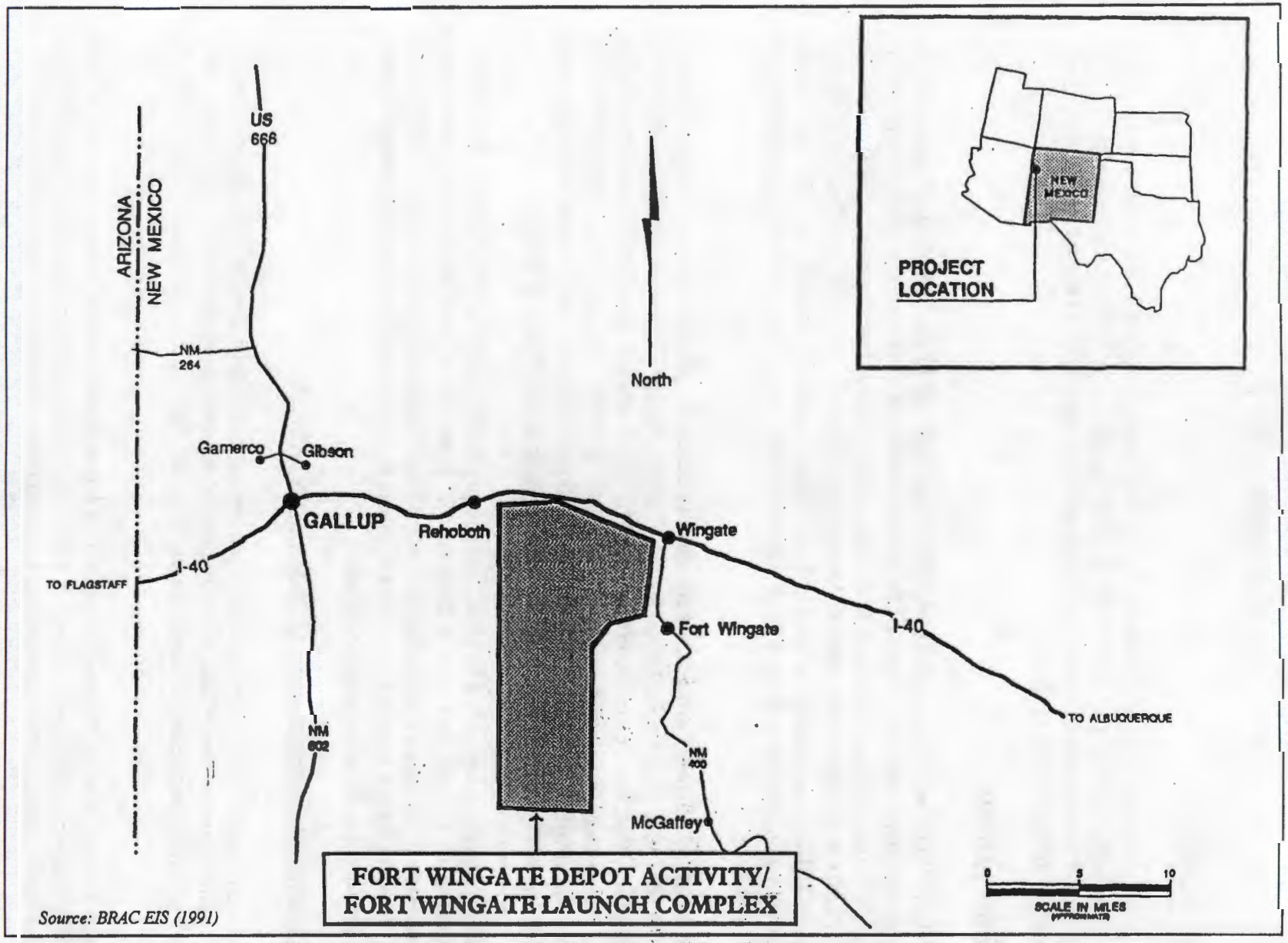

Figure 1. Location of Fort Wingate Depot Activity and Fort Wingate Launch Complex in western New Mexico.

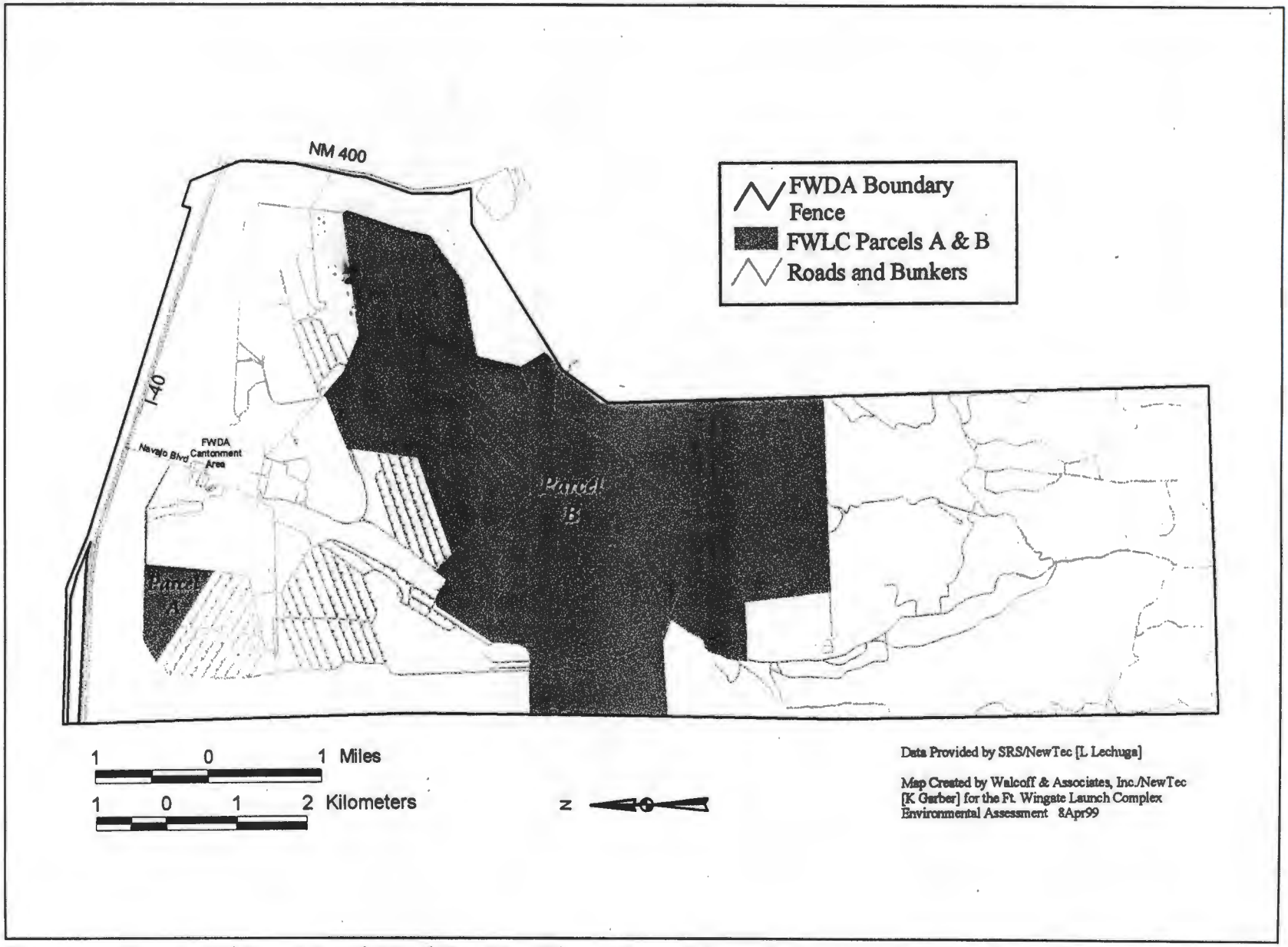

Figure 2. Location of Parcel A and Parcel B at Fort Wingate Launch Complex.

establishment of supporting infrastructure involving:

- construction of new launch pads and moveable environmental shelters,
- conversion of existing bunkers for the blockhouse, missile assembly building, and storage,
- upgrade of radar, optics and instrumentation sites,
- installation of communication and power lines along existing roads,
- placement of generators and portable toilets where needed.

The *TMD ETR EIS* (1995) concluded that no significant environmental impacts would result from the creation and use of FWDA as a Launch Complex for the TMD Program. This conclusion was based on mitigation requiring pre-construction biological surveys in areas where supporting infrastructure was to be established, including:

- *A Report on a Biological Survey for a Power Line on Fort Wingate*. Cortez III Service Corporation, White Sands Missile Range, NM. 28 September 1995.
- *Results of the Biological Survey at Fort Wingate for the Altered Power Line Route*. Cortez III Service Corporation, White Sands Missile Range, NM. 11 April 1996.
- *Survey at Fort Wingate for Road Construction Associated with the HERA Project*. Cortez III Service Corporation, White Sands Missile Range, NM. 18 June 1996.
- *Report on a Biological Survey of J-Area Latrine Facility, Fort Wingate, New Mexico*. Cortez III Service Corporation, White Sands Missile Range, NM. 2 October 1996.

The *Land Use Plan for the Ballistic Missile Defense Organization Fort Wingate Launch Complex* (*LUP FWLC*) (1998) outlines the current status of BMDO occupancy at FWLC. It provides a detailed description of currently recognized real estate boundaries, planned infrastructure improvements, and testing operations in association with the Program.

This Environmental Assessment (EA) reviews and assesses planned infrastructure improvements presented in *LUP FWLC*. It considers the proposed construction of an access road (and associated guard station and power line) to provide a dedicated BMDO route to the eastern boundary of Parcel B. It also addresses other proposed additions to infrastructure, including boundary fences to fully enclose FWLC property and a microwave tower to improve communication facilities.

2.0 PURPOSE AND NEED

The purpose of these proposed actions is to enhance the usability of the Fort Wingate Launch Complex (FWLC) for tactical and target missile launch activities conducted by the Ballistic Missile Defense Organization (BMDO).

2.1 BOUNDARY FENCE

The proposed fence is required to separate the property and operations of FWLC from activities at Fort Wingate Depot Activity (FWDA). It will serve as a physical boundary delineating FWLC.

2.2 ACCESS ROAD

The proposed access road is required to provide a direct route to the BMDO Launch Area in Parcel B. An agreement concerning the right-of-way associated with access from New Mexico State Route 400 (NM400) will be formally established between FWLC and the New Mexico Highway Department, which guarantees future access to the area and eliminates the need to pass through property controlled by other entities. The new access road will also facilitate the transport of range support equipment to the launch facility, which is currently restricted by height dimensions of the Interstate 40 underpass on Navajo Boulevard.

2.3 POWER LINE

The proposed power line will provide electrical power to the guard station for heating, cooling, lighting and communications. It will serve as a dedicated power source for any future electrical requirements.

2.4 GUARD STATION

The proposed guard station is required to monitor vehicular access to the BMDO Launch Area in Parcel B. It will be manned only during the preparation and launch of target missiles.

2.5 COMMUNICATION TOWER

The proposed communication tower within the Instrumentation Support Area of Parcel A is required to provide a redundant path for data transfer during missile launches. The site provides line-of-sight communications between BMDO launch facilities and Mt Taylor. Current arrangements rely on the telephone network.

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3.0 PROPOSED ACTION

The proposed construction activities described in this Environmental Assessment (EA) are required to delineate property boundaries and ensure efficient operation of the Fort Wingate Launch Complex (FWLC) with minimum impact to current and future adjacent landowners. Actions included in the planned construction are:

- construction of a boundary fence,
- creation of an access road,
- installation of a power line,
- establishment of a guard station, and
- placement of a communication tower and support equipment.

3.1 BOUNDARY FENCE

Construction of a proposed boundary fence around FWLC will consists of six separate sections designed to connect to the existing Fort Wingate Depot Activity (FWDA) boundary or security fences (Figure 3). The six new sections will extend a total of 20.6 km (12.7 mi). Section 1 consists of 3.9 km (2.4 mi) to fully enclose Parcel A. Section 2 will delineate 9.3 km (5.8 mi) of the northern boundary of Parcel B from remaining FWDA property. Section 3 runs for 1.1 km (0.7 mi) along Fenced-Up Horse Valley, joining the existing western boundary fence to the western security fence of FWDA. Section 4 consists of 2.8 km (1.7 mi) to exclude Parcel B from the FWDA Open Burn/Open Detonation (OB/OD) area. Section 5 represents the southern boundary of Parcel B, extending 2.8 km (1.7 mi). Section 6, 0.7 km (0.4 mi), will join two existing fences to complete the eastern boundary of Parcel B.

The new fences will be typically placed within 7.6 m - 15.2 m (25 ft - 50 ft) of existing roadsides, power lines, or firebreaks. However, portions of Section 2, Section 3, Section 4, and Section 5 traverse undisturbed sagebrush or woodland vegetation, and will require the use of chainsaws, fire rakes, and axes to trim or remove impeding bushes and trees along a 1.8 m (6 ft) wide fence corridor. No blading or mowing of vegetation will be practiced along any fence section. The western end of Section 2 traverses a steep and rocky hogback, where fences will be interrupted at the base of cliffs before resuming again from the upper ledges. Jackhammers powered by portable generators will be used to make postholes into the rocky substrate along this area. All-terrain-vehicles (ATVs) will be used to deliver equipment and materials to fence sections where existing road access is not available.

All boundary fences will be 1.5 m (5 ft) high, comprising 5-strand twisted barbless wire with the bottom strand no lower than 0.45 m (1.5 ft) from the ground. Steel T-posts will be spaced an average of 5.0 m (16.5 ft) apart, and incorporate a minimum of five vertical stays between each post. H-posts will be cemented in place approximately every 150 m (500 ft) along the fence. A total of five 7.3 m (24 ft) and one 3.7 m (12 ft) vehicular gates will be placed at appropriate locations where

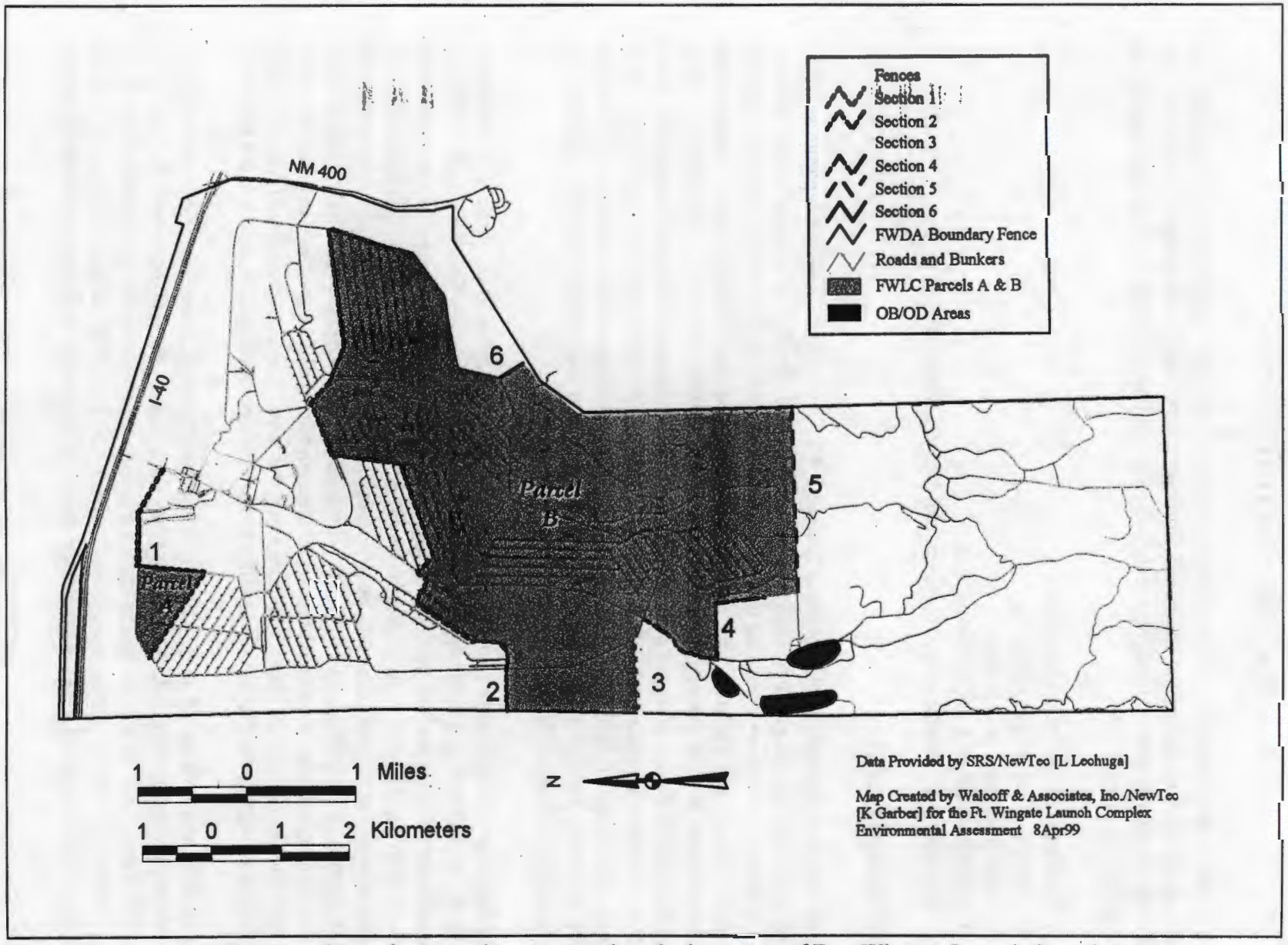

Figure 3. Location of proposed new fence sections to complete the boundary of Fort Wingate Launch Complex.

the new fence intersects existing roads, to provide locked access to the remaining FWDA property. Each side of the vehicular gates will include 15 m (50 ft) of cyclone fencing.

Signs indicating FWLC property will be attached at 300 m (1,000 ft) intervals along the boundary fence. Each sign will measure approximately 0.45 m x 0.60 m (1.5 ft x 2 ft), and be written in English, Navajo, and international symbols.

3.2 ACCESS ROAD

Construction of an eastern access road is proposed from New Mexico State Route 400 (NM 400), through the boundary of Parcel B to the intersection of Fort Wingate East Patrol Road and Road G1 (Figure 4). This corridor will be incorporated into a 30 m (100 ft) wide right-of-way, passing through previously undisturbed vegetation. A swing-arm gate placed across the eastern end of the road will control access from NM 400. Another more secure gate will be placed where the access road bisects the existing FWDA security fence of Parcel B.

The road will be approximately 1.2 km (0.75 mi) in length and 7.3 m (24 ft) wide, and consist of a double chip and sealed surface with 1.2 m (4 ft) shoulders. Culverts will be placed where needed to maintain current drainage patterns. The access road will require cutting and filling to maintain a suitable grade when connecting to the existing FWLC internal road system and NM 400. Most fill material will be obtained from on-site redistribution of soil, with supplementary requirements met by transporting fill from local existing and active burrow pits.

3.3 POWER LINE

Installation of a high voltage power line is proposed to link the new guard station inside the eastern boundary of Parcel B to an existing City of Gallup Electric Power Company line which runs to the west of NM 400 (Figure 4). The power line will extend for approximately 0.8 km (0.5 mi), following a path approximately 14 m (45 ft) south and parallel to the new access road center line (within the right-of-way). It will consist of poles spaced a maximum of 92 m (300 ft) apart, and carry a single phase line with 8 KV capacity. The phase wire will be located on the top of the pole and the ground wire 2.4 m (8 ft) below.

3.4 GUARD STATION

Establishment of a guard station is proposed within Parcel B, adjacent to the entrance and gate for the new access road (Figure 4). An area measuring approximately 29 m x 30 m (95 ft x 100 ft) will be leveled, compacted and paved before a portable 3.7 x 4.6 m (12 ft x 15 ft) building is placed at the site. A transformer will provide the guard station with electricity from the proposed new power line. A communications line to provide telephone service to the guard station will be installed along the northern G-1 road easement extending from an existing line servicing the Control and Instrumentation Area in Parcel B (Figure 4). A tractor-mounted trencher will be used to bury the extended communications line.

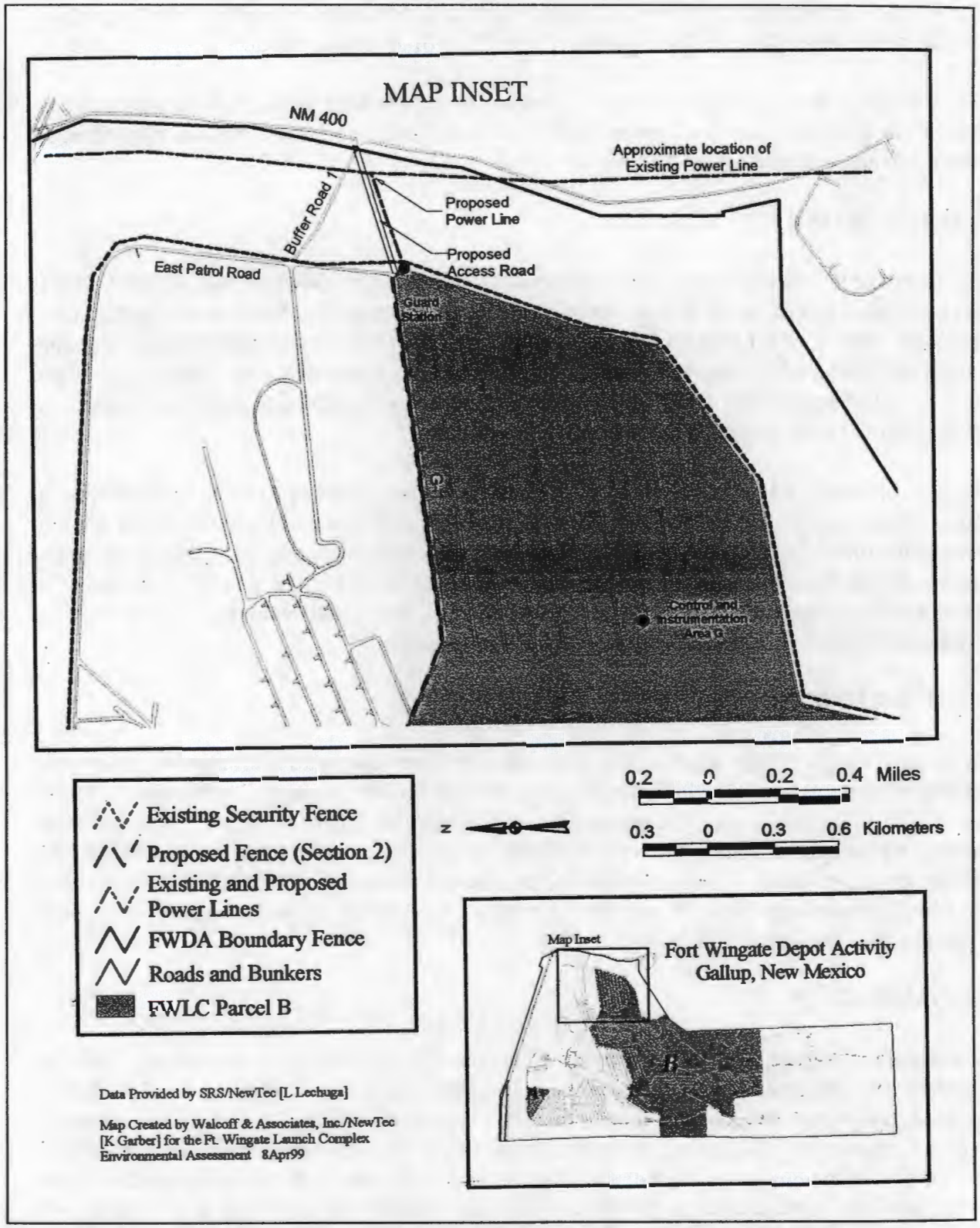

Figure 4. Location of proposed access road, power line, and guard station at Fort Wingate Launch Complex.

3.5 COMMUNICATION TOWER

Placement of a communication tower, consisting of a microwave dish mounted on a 33 m (100 ft) tower, is proposed behind the communication bunker (Building A-1000) within the Instrumentation Support Area of Parcel A (Figure 5). The tower will be a semi-permanent structure, designed to remain for the duration of BMDO activities at FWLC. Each of its four legs will be secured to a 0.45 m x 0.45 m (1.5 ft x 1.5 ft) concrete footing, with additional support from four guide-wires. The tower will include a 5 W transmitter, using 7 GH frequency.

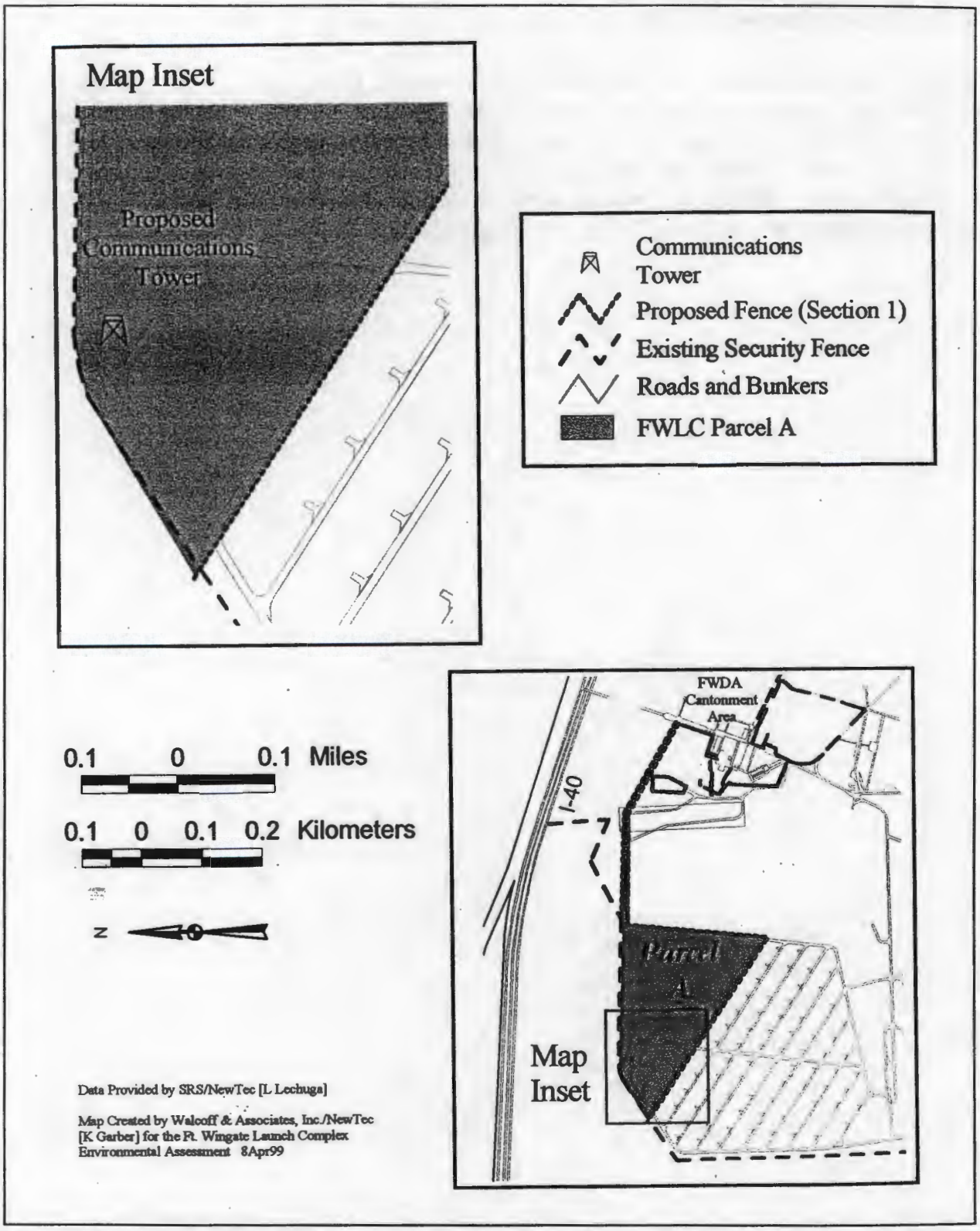

Figure 5. Location of proposed communication tower in Parcel A at Fort Wingate Launch Complex.

3.5 COMMUNICATION TOWER

Placement of a communication tower, consisting of a microwave dish mounted on a 33 m (100 ft) tower, is proposed behind the communication bunker (Building A-1000) within the Instrumentation Support Area of Parcel A (Figure 5). The tower will be a semi-permanent structure, designed to remain for the duration of BMDO activities at FWLC. Each of its four legs will be secured to a 0.45 m x 0.45 m (1.5 ft x 1.5 ft) concrete footing, with additional support from four guide-wires. The tower will include a 5 W transmitter, using 7 GH frequency.

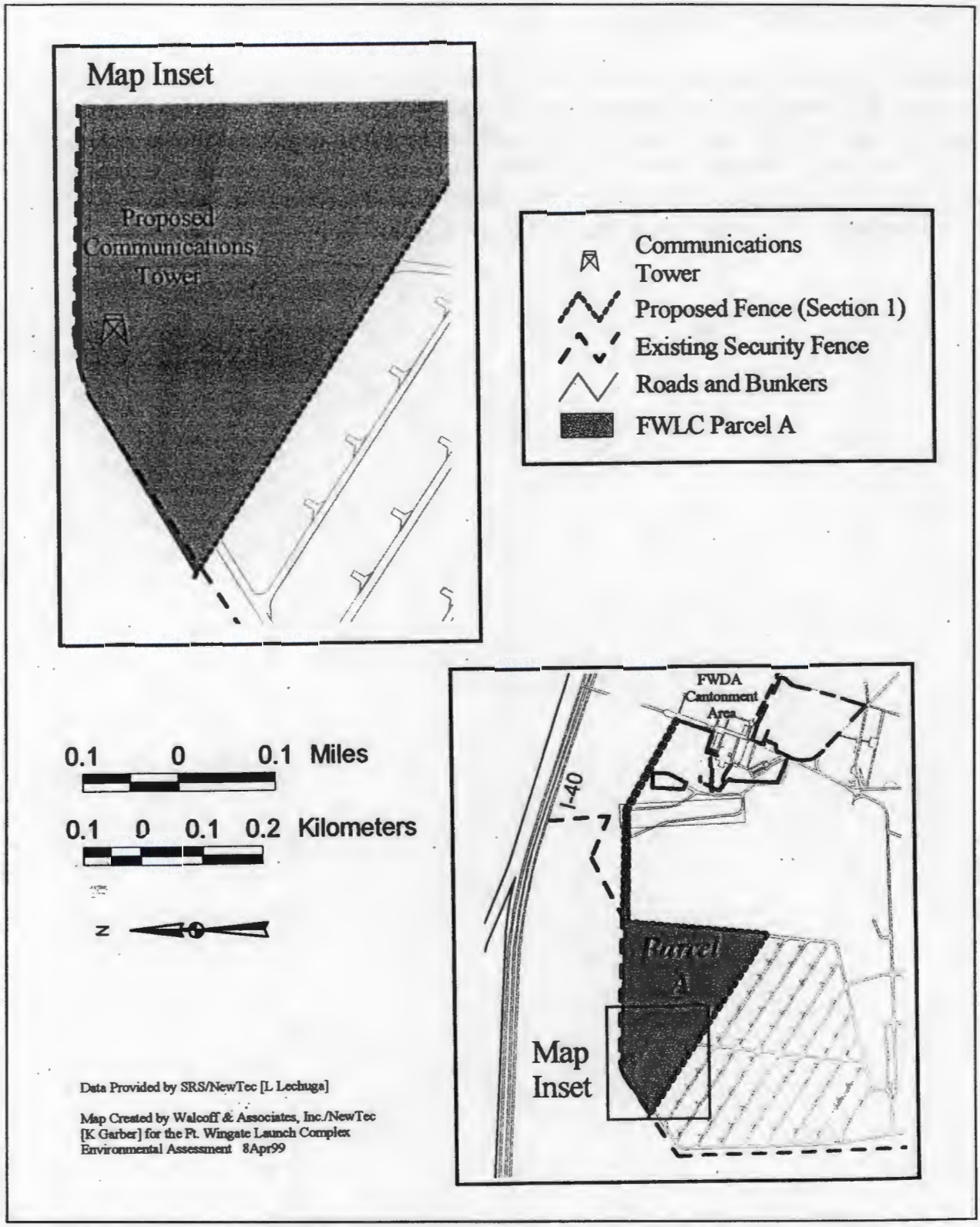

Figure 5. Location of proposed communication tower in Parcel A at Fort Wingate Launch Complex.

4.0 ALTERNATIVES

4.1 BOUNDARY FENCE

4.1.1 Fence Location

The fence location is dependent upon the definition of the FWLC boundary. The proposed fence is designed to physically define the boundary separating the Ballistic Missile Defense Organization (BMDO) Fort Wingate Launch Complex (FWLC) from the remaining Fort Wingate Depot Activity (FWDA) property, incorporating existing fences wherever possible. New sections of fence evaluated in this Environmental Assessment (EA) generally follow alongside existing roads, power lines, or firebreaks to facilitate construction and minimize impacts.

4.1.2 Fence Type

Two alternative types of fence delineating the boundary of FWLC were considered, both following a similar path to the proposed 5-strand twisted wire 1.5 m (5 ft) high fence evaluated in this EA. Construction of a chain link security fence 1.8 m (6 ft) high and topped with three strands of barbed wire was eliminated from further consideration because of high costs and undesirable restrictions on wildlife movement. The second design involved a 5-wire 1.5 m (5 ft) high fence with four openings at off-road locations to permit passage of resident bison (*Bison bison*) throughout the area. This option was rejected when all bison were removed by New Mexico Department of Game and Fish (NMDGF) in February 1999, and an uninterrupted boundary to completely enclose FWLC property was desired.

4.1.3 Fence Methods

Using heavy construction equipment to clear a fence corridor was considered, but rejected because of undesirable environmental impacts from vegetation disturbance and potential erosion. All-terrain-vehicles (ATVs) were regarded more suitable than heavier wheeled vehicles to gain access to fence sections in timbered, steep, or rocky terrain.

4.1.4 Boundary Fence - No Construction

No construction would eliminate the proposed boundary fence around FWLC property. This option would hinder the effectiveness of BMDO management and security activities within FWLC. Uncontrolled access to the area would present a potential safety hazard and could expose the Department of Defense (DoD) to liability for personal injury and property damage.

4.2 ACCESS ROAD

4.2.1 Road Location

Upgrading and using Buffer Road 1 as an access route to Parcel B was considered. This alternative was rejected because of cost and functionality of Buffer Road 1.

4.2.2 Road Design

Constructing a road with a gravel surface was rejected because all-weather access is required to the main launch area within Parcel B. A narrower bituminous road providing single-lane access was considered unsuited to the wide loads and traffic flow that the route will experience during BMDO target missile launches.

4.2.3 Access Road - No Construction

No construction would eliminate the proposed access road, removing a direct route to the BMDO facilities within Parcel B and forcing personnel to reach the area through the main gate and cantonment of FWDA. This alternative route would pass through property controlled by other entities, without a formally guaranteed right-of-way. Additionally, it is difficult for range support equipment to travel via the main gate because of height restrictions imposed by the Interstate 40 underpass on Navajo Boulevard.

4.3 POWER LINE

4.3.1 Power Line Location

Various alternative locations for power line placement were considered, but all were rejected. The proposed power line alignment represents the shortest distance between the source line along New Mexico State Route 400 (NM 400) and the guard station it will supply. The proposed route is included within the right-of-way of the access road, and confined to areas that will be already disturbed during road construction.

Linking the proposed power line to an existing line supplying Fort Wingate township that runs along the eastern side of NM 400 remains a possible alternative, but depends on establishing an agreement between BMDO and City of Gallup Electric Power Company. Environmental impacts similar to those evaluated in this EA are expected if this option is adopted.

Obtaining electricity from existing power lines on FWDA was rejected because of uncertainty regarding future activities and electrical demands within that area.

4.3.2 Generators

Using generators to meet power demands for the guard station was considered. This option was rejected because of environmental risks from spills, exhaust pollutants, and noise.

4.3.3 Power Line - No Construction

No construction would eliminate the proposed power line. However, facilities and communication equipment at the guard station require an electrical source.

4.4 GUARD STATION

4.4.1 Guard Station Location

Placing the guard station outside the boundary fence would not provide an adequate monitor of vehicular access to FWLC facilities in Parcel B. Other nearby locations immediately inside the boundary fence would have an environmental impact similar to the proposed site evaluated in this EA.

4.4.2 Guard Station - No Construction

No construction would eliminate the proposed guard station at the eastern boundary of Parcel B. This alternative would jeopardize security measures required to control access and ensure safe operation of the BMDO facility, particularly during missile launches.

4.5 COMMUNICATION TOWER

4.5.1 Communication Tower Location

An alternative system of communication towers involved placing one behind the communications bunker in Area J and another on U.S. Forest Service (USFS) property southwest of FWLC. This option was rejected because of higher costs of installing and maintaining two towers, when the single tower in Parcel A is sufficient to achieve communication objectives. Additional environmental analysis conducted by USFS would be required to erect the tower on their property.

4.5.2 Communication Tower - No Construction

No construction would eliminate the proposed communication tower in Parcel A. Currently, data acquisition is achieved with the use of ground communications (phone lines) which is a slow process. The area where the communication tower is proposed to be installed has been modified from its natural state through its use as an instrumentation location area, therefore the condition of the site would not change if the communication tower was not installed.

4.6 NO ACTION ALTERNATIVE - PROPOSED CONSTRUCTION

The No Action Alternative would be the continued use of FWLC for launching tactical and target missiles without the proposed construction activities. If these construction activities did not occur, BMDO activities at FWLC would be affected in several ways including, but not limited to:

- lack of boundary definition leading to encroachment, damage to equipment, and loss of

access control,

- BMDO would retain Buffer Road 1, but would continue access along Navajo Boulevard,
- potential for damage to missiles during transfer due to lack of new access road, and
- loss of reliable controlled electrical power.

This alternative would not preclude current operations at FWLC. The No Action Alternative, though viable, conflicts with objectives of the BMDO Program and would inhibit the progress and development of an improved TMD system.

5.0 AFFECTED ENVIRONMENT

This section describes the environment that will be affected by the proposed actions delineated in the **PROPOSED ACTION** chapter, incorporating:

- construction of a Fort Wingate Missile Launch Complex (FWLC) boundary fence,
- creation of an access road to Parcel B,
- installation of a power line parallel to proposed access road,
- establishment of a guard station in Parcel B, and
- placement of a communication tower and support equipment in Parcel A.

This chapter will describe the natural (physical and biological), human, and human created (infrastructure and socioeconomics) environments at FWLC. Refer to the Base Realignment and Closure Environmental Impact Statement (*BRAC EIS* 1991) for more detail regarding the environment throughout the Fort Wingate Depot Activity (FWDA) and McKinley County.

5.1 LAND USE

Land use of the area delineated as FWLC is to launch Ballistic Missile Defense Organization (BMDO) tactical and target missiles. FWLC is composed of two non-contiguous land areas delineated as Parcel A and Parcel B. Parcel A is located in the northwest corner of FWDA and is used to position BMDO launch support equipment and instrumentation. Parcel B contains the launch area with associated facilities and a control area utilized by BMDO.

5.2 CLIMATE

The climate at FWLC is semiarid, characterized by spring and fall droughts. Mean annual precipitation is 28 cm (11 in) with the majority of precipitation (approximately 60 percent) occurring during summer monsoons. Winter precipitation is highly variable and usually in the form of snow with a mean annual snowfall of 83 cm (33 in).

Average temperatures range from a mean high of 18^0 C (60^0 F) to a mean low of 2.2^0 C (36^0 F), with an average diurnal variation of 19^0 C (30^0 F). Extreme temperatures range from over 38^0 C (100^0 F) in summer to -18^0 C (0^0 F) in winter.

Approximately 151 days are frost-free. Wind direction is generally from the southwest, averaging 15.4 kph (6.4 mph), with maximum average wind speeds occurring in spring.

5.3 TOPOGRAPHY AND GEOLOGY

Three principal geologic formations ranging in age from Permian (248-286 million years ago, (mya)) to Cretaceous (65-144 mya) are exposed within FWLC and its vicinity, including the Glorieta

sandstone/San Andres limestone, the Chinle claystone, and surface alluvium at lower elevations. The subsurface strata along southwestern and western boundaries of FWLC contain a complete stratigraphic column, with exposed Cretaceous rocks overlying Jurassic (144-208 mya), Triassic (208-248 mya), and Permian rocks.

Parcel B, is bound on the west by a hogback ridge of steeply dipping sedimentary rocks; on the south by upland hills composed of alluvium and eolian soils overlying sedimentary rock formations; on the east by a small valley terminating at the base of the Zuni Mountains; and on the north by the south fork of the Puerco River. Elevations range from 2,067 m (6,800 ft) at the northern boundary to 2,280 m (7,500 ft) at the southern boundary (Figure 6).

Parcel A lies entirely within an alluvial valley with parent material derived from sedimentary rock. Parcel A is bound on the north by the Puerco River. Elevation is approximately 2030 m (6680 ft) (Figure 6).

5.4 SOILS

FWLC contains 14 different soil types ranging from badlands which are areas consisting of exposed raw shale that is essentially denuded of vegetation, to loamy fine sand, and silty clay loams. Parcel B contains all 14 soil series while Parcel A only contains 2 soil series; the Ojacal-Venadito complex and Ojacal silt loam. A detailed description of each soil series represented at FWLC is provided in Table 1.

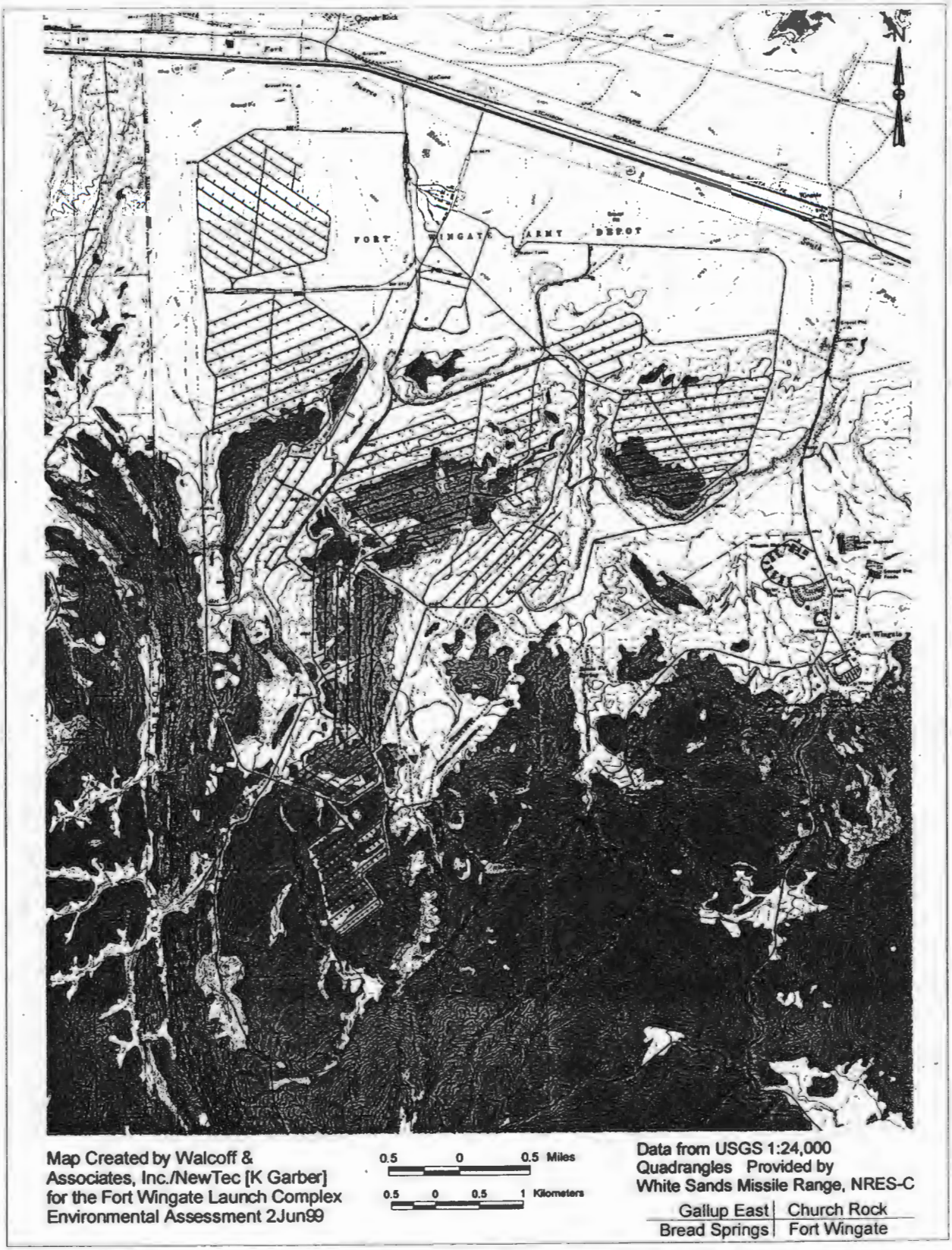

Figure 6. Topography at Fort Wingate Launch Complex.

Table 1. Soil series occurring in Parcel A and Parcel B at FWLC.

Soil Series	Depth from Surface	Texture	Shrink-swell Potential	Hazard of Water and Wind Erosion
Badland		Badland 90% Contrasting inclusions 10%		Water: Severe Wind: Severe
Aquima-Hawaikuh silt loams	0-65 inches	Aquima silt loam 40% Hawaikuh silt loam 40% Contrasting inclusions 20%	Low	Water: Mod. Wind: Mod.
Ojocal-Venadito complex	0-65 inches	Ojocal silt loam and similar soils 45% Venadito clay 35% Contrasting inclusions 20%	High	Water: Mod. Wind: Severe
Ojocal silt loam	0-65 inches	Ojocal silt loam and similar soils 90% Contrasting inclusions 10%	High	Water: Slight Wind: Severe
Rehobeth silty clay loam	0-80 inches	Rehobeth and similar soils 90% Contrasting inclusions 10%	High	Water: Slight Wind: Severe
Flugle-Plumasano association	0-65	Flugle fine sandy loam and similar soils 50% Plumasano sandy loam and similar soils 40% Contrasting inclusions 10%	Low	Water: Slight Wind: Severe
Evpark-Arabrab complex	0-36 inches	Evpark fine sandy loam and similar soils 50% Arabrab gravelly fine sandy loam and similar soils 40% Contrasting inclusions 10%	Mod.	Water: Mod. Wind: Severe
Rock outcrop-Rizno-Tekapo complex	0-8 inches	Rock outcrop 35% Rizno sandy loam and similar soils 30% Tekapo channery silty clay loam and similar soils 20% Contrasting inclusions 15%	Low	Water: Severe Wind: Severe
Celavar-Atarque complex	0-31 inches	Celavar loam and similar soils 50% Atarque sandy loam and similar soils 35% contrasting inclusions 15%	Mod.	Water: Mod. Wind: Severe
Toldohn-Vessilla-Rock Outcrop complex	0-11 inches	Rock outcrop 35% Toldohn gravelly clay loam and similar soil 25% Vessilla fine sandy loam and similar soils 20% Contrasting inclusions 20%	High	Water: Severe Wind: Severe
Monpark silty clay	0-27 inches	Monpark silty clay and similar soils 80% Contrasting inclusions 20%	High	Water: Severe Wind: Severe
Knifehill Loam	0-65 inches	Knifehill loam and similar soils 80% Contrasting inclusions 20%	High	Water: Mod Wind: Slight

Soil Series	Depth from Surface	Texture	Shrink-swell Potential	Hazard of Water and Wind Erosion
Mido loamy fine sand	0-65 inches	Mido loamy fine sand and similar soils 90% Contrasting inclusions 10%	Low	Water: None Wind: Severe
Rock outcrop-Vessilla complex	0-5	Rock outcrop 60% Vessilla fine sandy loam and similar soils 30% Contrasting inclusions 10%		Water: Severe Wind: Severe

5.5 AIR QUALITY

Air quality of FWLC is affected by daily weather conditions, the overall climate of the region, and individual and collective sources of air pollutants. Climate at FWLC has been generally described in **CLIMATE** and in greater detail in the BRAC EIS (1991).

FWLC does not operate any facility that constantly emits pollutants into the atmosphere. The greatest constant contributor of emissions associated with FWLC is a result of limited vehicle traffic for mission support. Discharges in the vicinity of FWLC that affect air quality include vehicle emissions originating from Interstate 40 traffic, plant heating from a small refinery located about 2 km (1.2 mi) northeast of FWLC, and destruction of unexploded ordinance by the Army on FWDA.

5.6 GROUND AND SURFACE WATER

The region around FWLC was declared an underground water basin in 1980 by the State of New Mexico, which prohibits any major new groundwater withdrawals without approval of the New Mexico State Engineer. The Glorieta sandstone/San Andres limestone forms the major aquifer of the region. Water usage on FWLC is derived from this aquifer and is non-potable. Non-drinking water on FWLC comes from an artesian well located by the Depot Fire Station, and can be accessed through the main post fire hydrant. Bottled drinking water is transported to FWLC for human consumption.

Surface water at FWLC consists of two small impoundments located in the northern end of Parcel B. Both impoundments support a variety of plant life and may attract avian or amphibian species to the area. Fenced Up Horse Valley composes the main drainage within FWLC with lesser drainage occurring throughout FWLC in the form of arroyos (Figure 6).

5.7 BIOLOGICAL RESOURCES

5.7.1 Flora

Two major vegetation types occur within the FWLC boundaries according to Dick-Peddie (1993): Lower Montane Coniferous Forest and Desert Grasslands. FWLC contains five vegetation series

assoicated with these two vegetation types (Table 2). Figure 7 delineates the approximate locations of these vegetation series at FWLC based on the soil map for that county.

Table 2. Major vegetation types and series occurring within FWLC.

Vegetation Type	Series Present at FWLC
Lower Montane Coniferous Forest	Ponderosa pine-piñon pine gambel oak series
Desert Grassland	Shrub-blue grama series Shrub-indian ricegrass series Shrub-western wheatgrass series Shrub-alkali sacaton series

The Lower Montane Coniferous Forest is represented at FWLC by the Ponderosa Pine-Piñon Pine Gambel Oak Series. The principal tree species of this series is the ponderosa pine (*Pinus ponderosa*), with common associated evergreens consisting of piñon pine (*Pinus edulis*), one-seed juniper (*Juniperus monosperma*), Rocky mountain juniper (*Juniperus scopulorum*), and alligator juniper (*Juniperus deppeana*). This series has a deciduous broad-leafed shrub component, including Gambel and wavy-leaved oaks (*Quercus gambelii, Q. undulata*), snowberry (*Symphoricarpos oerophyila*), and skunkbush sumac (*Rhus tribolata*). The understory of this series is mainly composed of grasses with an occasional herb, including grama grasses (*Bouetloua* spp.), little bluestem (*Andropogon gerardii*), mutton grass (*Poa fendleriana*), mountain muhly (*Muhlenbergia montana*), pine dropseed (*Blepharoneuron tricholepis*) and deervetch (*Lotus wrightii*).

The Desert Grassland at FWLC is represented by of four series, including Shrub-Blue Grama Series, Shrub-Indian Ricegrass Series, Shrub-Western Wheatgrass Series, and Shrub-Alkali Sacaton Series. Desert Grasslands are described as being an ecotone (Dick-Peddie 1993), thus a wealth of species are considered to be Desert Grassland vegetation in New Mexico due to the transitional nature of this vegetation type. Table 3 presents the co-dominant shrub and grass species associated with each of the four series identified at FWLC.

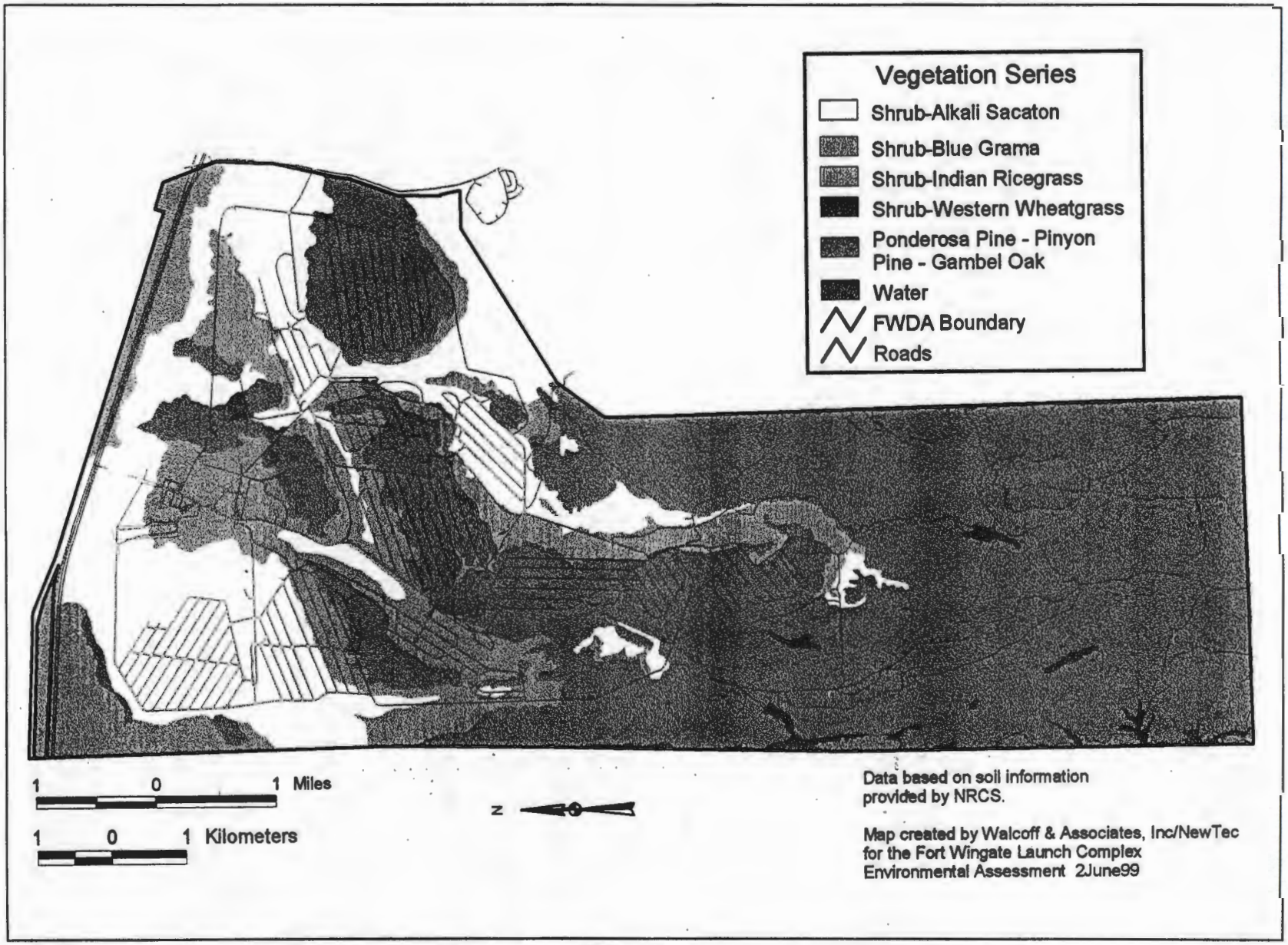

Figure 7. Vegetation series located at Fort Wingate Launch Complex.

Table 3. Co-dominate species associated with Desert Grassland vegetation type.

Desert Grassland Series Name	Co-Dominant Species
Shrub-blue grama	Fringed sagebrush/blue grama grass (*Artemisia frigida/Bouteloua gracilis*)
Shrub-indian ricegrass	Big sagebrush/indian ricegrass (*Artemisia tridentata/Oryzopsis hymenoides*) Fourwing saltbush-shadscale/indian ricegrass (*Atriplex. canescens-A.confertifolia/Oryzopsis hymenoides*) Broom snakeweed/indian ricegrass (*Gutierrezia sarothrae/Oryzopsis hymenoides*)
Shrub-western wheatgrass	Big sagebrush/western wheatgrass *(Artemisia tridentata/Agropyron smithii*)
Shrub-alkali sacaton	Fourwing saltbush/alkali sacaton *(Atriplex canescens/Sporobolus airoides*) Shadscale/alkali sacaton (*Atriplex confertifolia/Sporobolus airoides*) Fourwing saltbush-shadscale/alkali sacaton (*Atriplex canescens-A.conferifolia/ Sporobolus airoides*)

5.7.2 Fauna

Wildlife on FWLC consists of transient and resident species which occupy one or more vegetation types. Common faunal species include megafauna (large mammals), small mammals (mostly rodents), avifauna (birds), and herpetofauna (reptiles and amphibians).

Common megafauna include mule deer (*Odocoileus hemionus*), pronghorn antelope (*Antelocapra americana*), foxes (Family Canidae), coyote (*Canis latrans*), cottontail rabbit (*Sylvilagus* spp.), black-tailed jackrabbit (*Lepus californicus*), and porcupine *(Erethizon dorsatum*).

Common small mammals include the tassel-eared squirrel (*Sciurus aberti*), chipmunks (*Eutamius* spp), shrews (*Sorex* spp); spotted, thirteen-lined ground squirrel, and rock squirrel (*Spermophilus spilosoma, S. tridecemlineatus, S. veriegatus*), kangaroo rats (*Dipodomys* spp), voles (*Microtus* spp), piñon mouse (*Peromyscus truei*), and bushy-tailed woodrat *(Neotoma cinerea*).

Common avifauna species include sparrows and warblers (Family Emberizidae); ravens, piñon and stellar jay (Family Corvidae); orioles (*Icterus* spp), owls (Families Strigidae and Tytonidae), broad-tailed hummingbird (*Selasphorus playtcercus*), flycatchers (*Empidonax* spp.), woodpeckers (Family Picidae), and Gambel's quail (*Callipepla gambelii*).

Common herpetofauna include the whiptails (*Cnemidophorus* spp), garter snakes (*Thamnophis* spp), side-blotched lizard (*Uta stansburiana*), sagebrush lizard (*Sceloporus graciosus*), and prairie rattlesnake (*Crotalis viridis*).

Definitions for status abbreviations:
BISON-M - Biota Information System of New Mexico (http://nmnhp.unm.edu/bisonm.dbm)
E - Listed as endangered by the USFWS under ESA or the NM Dept of Game and Fish under Wildlife Conservation Act (WCA).
T - Listed as threatened by the USFWS under ESA or NM Dept. of Game and Fish under WCA.
SC- Listed as a species of concern by the USFWS under ESA.
S - Listed as sensitive by the NM Dept. of Game and Fish under WCA.
N - None

Several TES mammal species and one amphibian have the potential to occur at FWLC on permanent basis. Bats have the potential to occur on FWLC as full or part-time residents and as transients during spring and fall migrations.

Table 6. Potentially occurring Threatened, Endangered or Sensitive mammal and amphibian species at FWLC.

Species	Status* (Source: BISON-M 12/98)		Habitat
	Federal	State	
Spotted Bat *Euderma maculatum*	SC	S	riparian and piñon-juniper woodlands to ponderosa pine and spruce fir forests
Myotis Bats *Myotis* spp	SC	S	range from desert scrub to montane habitat
Gunnison's Prairie Dog *Cynomys gunnisoni*	N	S	open or slightly brushy country, scattered junipers and pines
Navajo Mogollon Vole *Microtus mogollonensis navaho*	SC	N	typically inhabits riparian, which are limited at FWLC
Northern Leopard Frog *Rana pipiens*	SC (FS R3)	N	associated with water, riparian areas

Definitions for status abbreviations:
BISON - M - Biota Information System of New Mexico (http://nmnhp.unm.edu/bisonm.dbm)
E - Listed as endangered by the USFWS under ESA or the NM Dept of Game and Fish under Wildlife Conservation Act (WCA).
T - Listed as threatened by the USFWS under ESA or NM Dept. of Game and Fish under WCA.
SC- Listed as a species of concern by the USFWS under ESA.
FS R3 - United States Forest Service Region 3
S - Listed as sensitive by the NM Dept. of Game and Fish under WCA.
N - None

5.8 CULTURAL RESOURCES

Prehistoric occupation of the region represents an almost complete occupational sequence, spanning the period from 10,000 B.C. to A.D. 1540. Numerous Anasazi ruins related to the Cibola Anasazi Chacoan development occur in the immediate FWLC region.

Eight archeological projects have occurred at FWDA over a 50-year period; 55 sites have been recorded, including one Archaic, two unknown, 21 Pueblo, and 31 Navajo period sites. Most sites (49) were recorded during a 1978 survey of ammunition storage areas slated for renovation (Stucky and Smith 1978). Four sites have been excavated including portions of the large Pueblo III Fenced-Up Horse Valley community complex, formerly thought to be a Chacoan outlier.

A comprehensive four year study (1991-1995) of FWDA conducted by the Office of Contract Archeology, University of New Mexico identified 1,962 isolated occurrences and 759 prehistoric and historical archaeological sites consisting of 1,001 cultural/temporal components. Components are defined as cultural and/or temporally discreet occupations within a site. The majority of these are scatters of stone tools and manufacturing debris that are most probably prehistoric (Schutt and Chapman, 1997). Archaeological sites and components occur throughout FWLC with the majority of sites located in Parcel B.

5.9 NOISE

As defined by the U.S. Army, a high noise area is an area where the sound pressure level exceeds 85 decibels (dBA), regardless of its duration, or where the peak sound pressure level exceeds 140 dBA. The Army has in place an official policy/program for noise levels known as an Installation Compatible Use Zone (ICUZ). The program provides for land use in such a manner as to preclude the placement of noise producing operations in proximity to noise-sensitive populations. It also establishes mitigation measures to ensure that noise above certain thresholds does not impact public areas.

Background noises at FWLC are typically generated by activity at launch complexes and ground vehicle traffic. Noise sources associated with launch complexes include ground vehicles, instrumentation operation, generators, and missile launches. Ground vehicle noise results from personnel vehicles, and mission support vehicles.

The main source of background noise at FWLC originates from traffic on Interstate 40, approximately 1 km (0.6 mi) away from FWLC. Traffic from NM 400, located along the eastern boundary of FWLC also contributes to noise in the area to a lesser degree. Noise sources at FWLC are generally infrequent and of short duration.

5.10 ECONOMICS

Most personnel supporting BMDO operations at FWLC are employed (government/ contractor) through WSMR, and reside in the Las Cruces, Alamogordo, El Paso or the greater Gallup area. There is one full time NewTec employee at FWLC who resides in the greater Gallup area.

Gallup experiences a short term economic benefit during missile firing missions when support personnel utilize local accommodations and shops. Small local contracts such as waste disposal and short term construction contracts contribute the Gallup economy.

5.11 INFRASTRUCTURE

5.11.1 Transportation

FWLC is accessed by Interstate 40 and Navajo Boulevard. The primary roads within FWLC (asphaltic concrete or low bituminous surface; 18-22 feet wide) form an arterial system to provide access to various activity areas and igloo clusters. Most roads on FWLC are in poor to fair condition.

5.11.2 Fences and Structures

FWLC is composed of three areas; the Launch Area, Control Area and Instrumentation Area. The Launch Area located in the southwest corner of FWLC in Parcel B, consist of a Missile Assembly Building (MAB), an Environmental Shelter, and two Remote Data Acquisition Systems (RDAS X and RDAS Y). The Control Area located in the northeast corner of FWLC in Parcel B, houses semi-trailers with instrumentation for data gathering during missile launch. The Instrumentation Area located in Parcel A houses launch support, communication, and radar equipment (Figure 7).

Storage igloos exist throughout FWLC and several have been modified to accommodate BMDO needs. There is an existing FWDA boundary fence, composed of 5-strand barbed wire fence and interior chain link security fence (2 m (6 ft)) topped with barbed wire. Portions of these fences occur along the FWLC boundaries and will be incorporated into the FWLC boundary fence. Additional security fence surrounds the Functional Test Range within FWLC, and the cantonment area outside FLWC (Figure 7).

5.11.3 Communication

Telephone communication at FWLC is provided by U.S. West Telecommunications via underground fiber optic cables.

5.11.4 Electrical Services

Electricity is supplied by the City of Gallup Electric Power Company to Parcel A and Parcel B via existing above ground power lines. Above ground power lines equipped with raptor protection occur throughout FWLC to supply remote locations with power. There are two above ground power lines parallel to NM 400, one of which is not powered.

5.11.5 Hazardous and Solid Waste

Two Hazardous Waste Satellite Accumulation Points are maintained and inspected weekly by an on-site employee of NewTec, in accordance with the WSMR Hazardous Waste Management Plan. The Satellite Accumulation Points are located in the missile assembly Building (MAB) #1626 and Bunker #1606. Solid waste is removed from FWLC by a local solid waste contractor.

5.12 SAFETY AND RADIATION

Personnel safety issues for BMDO employees at FWLC are addressed in multiple Federal, State, and WSMR guidelines, rules, and regulations. Two comprehensive programs established to address safety issues specifically for the Army and WSMR are the U.S. Army

Regulation 385-100 and WSMR Regulation 385-18. WSMR is the executive agent of FWLC, thus all WSMR guidelines, rules, and regulations extend to FWLC. FWLC is not equipped with health and safety resources, therefore emergency support for fire or accidents, will be provided by existing Gallup facilities.

FWLC maintains safety zones around missile launch activities and hazardous areas. The Launch Hazard Area is a large triangular area located in the center of FWDA extending outside the FWDA area. No boundary fence delineates this area, however attempts are made to evacuate humans from this area during missile firings.

The Functional Test Range is a hazardous area with a perimeter safety fence to restrict access. The Open Burn/Open Detonation (OB/OD) area is a historic waste burn and ordinance detonation site maintained by the Army outside FWLC, and separated by a boundary fence. Unexploded ordinance are currently being cleared from this area.

Hanta virus is a safety concern at FWLC. Deer mice (*Peromyscus maniculatus*) are the primary carriers of the virus and live throughout FWLC. Hanta virus is contracted through contact with mouse droppings and urine. Mice may nest in igloos, buildings and vehicles creating a hanta virus hazard at FWLC.

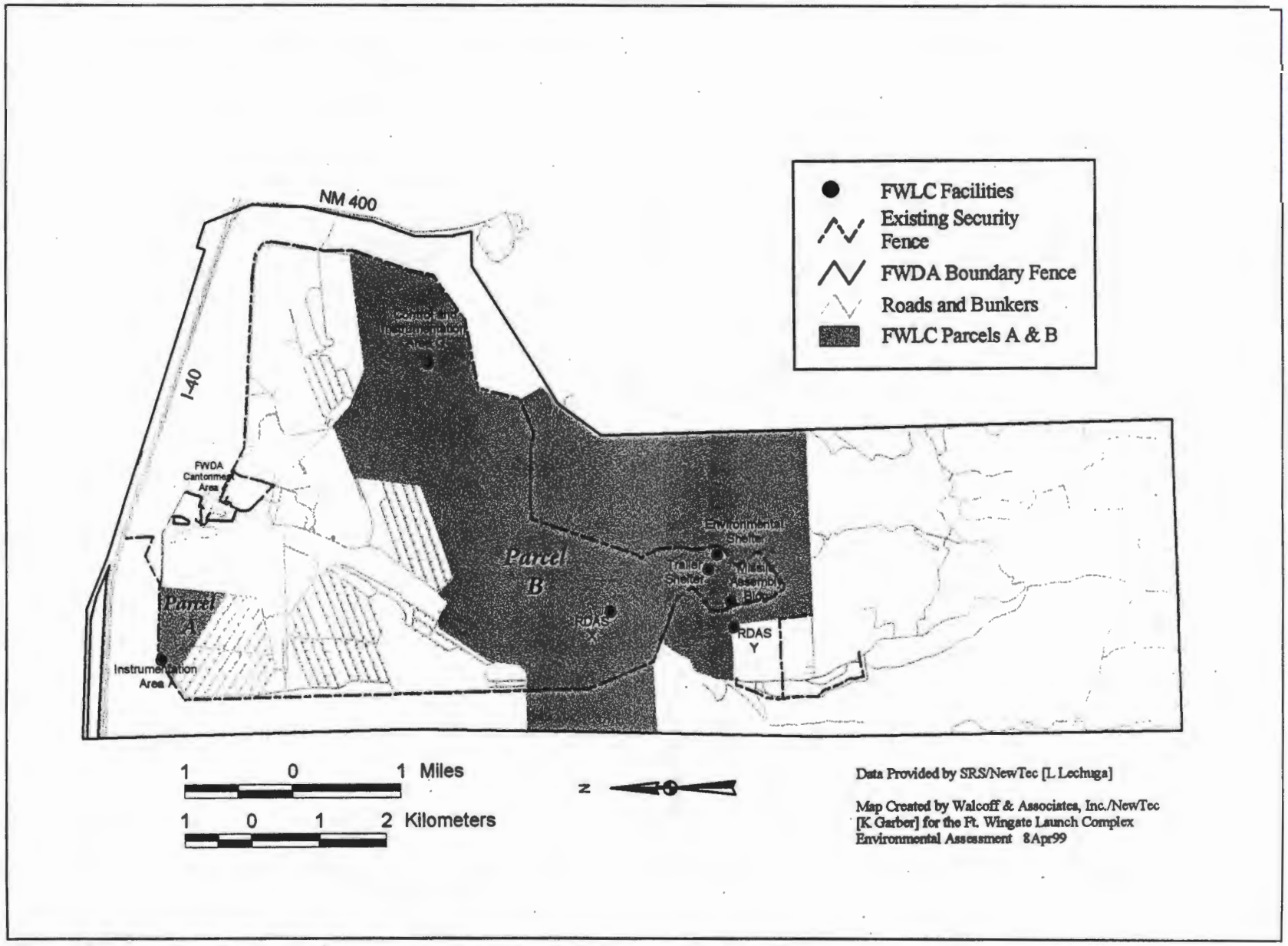

Figure 8. Location of existing fences and structures at Fort Wingate Launch Complex.

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6.0 ENVIRONMENTAL CONSEQUENCES

This chapter of the Environmental Assessment (EA) evaluates environmental consequences of activities described in the **PROPOSED ACTION** chapter, incorporating

- construction of a Fort Wingate Missile Launch Complex (FWLC) boundary fence,
- creation of an access road to Parcel B,
- installation of a power line parallel to proposed access road,
- establishment of a guard station in Parcel B, and
- placement of a communication tower and support equipment in Parcel A.

The proposed actions are evaluated in terms of expected impacts on the natural (physical and biological), human, and human created (infrastructure and socioeconomics) environments described in the **AFFECTED ENVIRONMENT** chapter. Ground disturbance associated with the described activities will be the primary source of potential impacts.

6.1 LAND USE

Construction activities proposed for FWLC will have land use impacts resulting from constructing the access road, power line, and guard station. Construction of the FWLC boundary fence and the placement of a communication tower in Parcel A will not significantly impact the land use of the area.

The corridor associated with the access road, power line, and guard station will be changed from its present land use due to the proposed construction activities. Currently, this area provides a buffer between New Mexico State Route 400 (NM 400) and the East Patrol Road and exists in a natural state, however after the proposed construction, use of this corridor will be to provide controlled access and power to FWLC. The size of the corridor was minimized to impact as small of an area as possible. Therefore, the potential impact on the land use will not be significant.

Although the boundary fence will not alter the present land use of FWLC, it will provide a physical boundary between the land managed by Tooele Army Depot (TEAD) and the Ballistic Missile Defense Organization (BMDO). Construction of the FWLC boundary fence will separate FWLC from the Fort Wingate Depot Activity (FWDA) cantonment area where access is presently regulated. The proposed boundary fence will be equipped with locked gates and a guard station to continue the controlled access. BMDO will manage the leased land in accordance with the *Land Use Plan for the Ballistic Missile Defense Organization Fort Wingate Launch Complex* (1998) (LUP).

The placement of a communication tower within the Instrumentation Support Area in Parcel A will not change the use of this area. The Instrumentation Support Area was created for the purpose of locating BMDO launch support equipment, thus the addition of a communication tower in this area will be within the present land use. The addition of the communication tower will ultimately enhance the capabilities of the area.

6.2 TOPOGRAPHY

Construction activities proposed for FWLC will have topographical impacts resulting from the access road and guard station construction. Construction of the FWLC boundary fence, power line, and the placement of a communication tower in Parcel A will result in minor impacts to the microtopography of the area.

Construction of the access road and guard station will alter the topography in the immediate area of construction. The access road will follow the natural topography, however where culverts are required to maintain the natural flow of surface water the road bed will be built up. Additionally, at the western end of the road a steep, narrow arroyo exists which will require some contouring to obtain a suitable grade. The contouring will be conducted to impact as small an area as possible, yet meeting the needs of the road construction. Guard station construction will require an area to be leveled and compacted modifying the natural topography. The size of the area affected has been calculated to accommodate the guard station building and an associated parking area to minimize the impact. The impacts to the topography discussed will be localized and the total area affected is relatively small, therefore the potential impact on the topography will not be significant.

Microtopography modifications are expected to occur along the boundary fence and power line routes, and at the location for the communication tower. These effects will result primarily from vehicle traffic and can not be avoided, however upon completion of construction vehicle traffic is restricted to maintenance needs and security checks to minimize the impact. Therefore, the potential impact on the microtopography will not be significant.

6.3 AIR QUALITY

Construction activities proposed for FWLC will have air quality impacts resulting from engine emissions from construction equipment; fugitive dust resulting from construction site preparation; and organic vapors and other gaseous emissions from paving materials.

These sources have an insignificant environmental effect because the heavy construction equipment to establish the access road, power line, and guard station area will continue for only a short duration (1 or 2 months). Suppression of fugitive dust is discussed in further detail in the **SOILS** section, with mitigation measures including the maintenance of suitable soil moisture levels and use of soil stabilizers. Emissions from engines and paving materials will not compromise air quality because the disturbance is short term, localized, and prevailing climatic conditions will promote rapid dispersal. Therefore, the region including FWLC will remain in attainment of the Environmental Protection Agency (EPA) air quality standards in response to these construction activities and will not have a significant effect.

6.4 SOILS

Construction activities proposed for FWLC will have soil impacts resulting from wind erosion and

contamination.

In terms of wind erosion, construction activities for the access road and power line will be restricted to a 30.5 m (100 ft) corridor and the guard station to an area 29 x 30 m (95 x 100 ft) to minimize the area disturbed. Standard construction practices such as watering and applications of soil stabilizers (such as EMC Squared®) will reduce the potential for wind erosion on bare areas created during the construction activities. The chip-seal road surface will provide protection against wind erosion across much of the area after construction is completed. Gradual revegetation of disturbed but unpaved areas, such as road shoulders, will further reduce impacts from wind erosion. Therefore, the potential impact on the soil from wind erosion will not be significant.

Few contaminants will be produced during construction; petroleum, oil and lubricants (POL) will be managed using appropriate containment and daily inspections of the equipment to ensure proper working condition, and laboratory results indicate the soil stabilizer EMC Squared® is benign to the environment (Soil Stabilization Products Company, Inc., 1998 a,b). Therefore, the potential impact from soil contamination will not be significant.

Minor sources for potential impacts to the soil resources include; vehicle traffic, fill material, trenching, and placement of the communication tower. These potential impacts will not result in a significant effects.

Soil along the route of the boundary fence will be slightly compacted by the use of all-terrain-vehicles (ATVs) and posthole digging, but is not expected to have significant ramifications. After the fence is constructed, travel along the fence will be limited to ATVs for occasional maintenance needs and security checks.

Fill material to maintain a suitable grade in the road and insertion of culverts will primarily be from redistribution of soil during construction activities. However, if additional fill material is required it will be brought in from existing borrow pits.

The upper two horizons of the soil profile will be temporarily disturbed along the route of the communications line due to the trenching activities. The route follows existing roads and the trenching will occur in the associated road easements, which have previously been disturbed. No long term affects are expected as natural settling allows the trenched area to return to its present state.

The area selected for the communication tower is disturbed from previous vehicle and foot traffic associated with the placement, maintenance, and use of BMDO equipment. The addition of a communication tower will not significantly alter the current state of the area.

6.5 GROUND AND SURFACE WATER

Construction activities proposed for FWLC will not have a significant impact on the ground water

resources. Construction activities will have surface water impacts resulting from the construction of the access road.

Water required for site preparation, dust control, and sealing of the access road and guard station will be obtained from the cantonment area of FWDA (fire hydrant #14 or the cistern tap adjacent for B-34). BMDO has been granted the use of 25,000 gallons of water in any 30 day period to be used for latrines, road maintenance, construction, and if needed fire control. Therefore, the ground water quantity will not be affected by the use of water for the construction activities.

General factors protecting ground water resources from contamination during the proposed construction activities include a deep aquifer (412 m (1350 ft)) and relatively low rainfall. Additionally, limited contaminants will be generated and appropriate mitigation measures applied (refer to **SOILS**). Therefore, the ground water quality will not be affected by the construction activities.

Patterns of surface water flow will be slightly modified by the proposed access road construction, however culverts will be installed to maintain the general surface water flow. A *Nationwide Permit Number 14, Road Crossings* was granted by the U.S. Army Corps of Engineers to support the conclusion that construction of the access road would not significantly affect water resources in the area (Appendix A). ***(Current Status: The permit has been prepared with Dave Anderson (WSMR Land Manger) and he will submit it to U.S. Army Corps.)***

6.6 BIOLOGICAL RESOURCES

6.6.1 Flora

Construction activities proposed for FWLC will have floral impacts resulting from heavy equipment and activities associated with access road and guard station construction; cutting and trimming of trees and shrubs along the boundary fence; and off road vehicle traffic.

A flora survey reviewing all areas affected by construction activities was conducted by Walcoff and Associates, Inc. (WALCOFF) in June 1999 (Appendix B). Construction activities will occur in several vegetation series within the Lower Montane Coniferous Forest and Desert Grassland vegetation types (refer to **AFFECTED ENVIRONMENT**) (Figure 7).

Construction activities associated with the proposed access road and guard station will transform existing vegetation by blading, compacting, and paving resulting in the loss of 2.5 ha (6.1 ac) of Desert Grassland vegetation type. This vegetation type is not unique to FWLC, and occurs in extensive areas throughout the southwestern and intermountain states. Therefore, a loss of 2.5 ha (6.1 ac) will not be significant. However, after construction is complete, natural recolonization of denuded areas will gradually return vegetation to its current status. All construction materials will be removed from the site to facilitate revegetation. Additionally, construction personnel will be instructed not to collect any flora in the area. Therefore, the potential impact resulting from the blading, compacting and paving will not be significant.

Construction and maintenance of the boundary fence will impact trees and shrubs occurring within 1 m (3 ft) on either side of the fence alignment through cutting and pruning. The resulting woody debris will remain in the area to provide habitat for wildlife and permit the natural decay cycle to ensue. However, vegetation types at FWLC are common in northern New Mexico and the health of the affected vegetation types will not be compromised. Therefore, the cutting and pruning the trees and shrubs will not significantly affect the local flora.

Vehicle traffic associated with the construction of the boundary fence will have a minimal affect on the herbaceous component of the vegetation types. ATVs will be utilized to access and transport supplies to the construction sites of the boundary fence to minimize the crushing and up rooting of vegetation. Therefore, the vehicle traffic will not significantly affect the flora.

The communications line extension for the guard station and communication tower placement will occur in areas which have previously been disturbed, which is reflected in the present species composition. These activities will not significantly alter the current condition of these areas.

6.6.2 Fauna

Construction activities proposed at FWLC will have faunal impacts resulting from direct habitat destruction resulting from the access road and guard station construction; cutting and pruning of trees; off road vehicle use, and the existence of a fence and communication tower . Effects resulting from the increase noise levels associated with the proposed construction are addressed in **NOISE**.

The access road and guard station construction will destroy a total of 2.5 ha (6.1 ac) of the Desert Grassland vegetation type. It is possible that individuals of smaller, less motile, ground dwelling species (specifically reptiles and invertebrates) will be directly injured by equipment, vehicle traffic, and soil disturbance. This prospect is minimized by the random distribution and low density of individuals within the area of construction and the widespread occurrence of this vegetation type in the southwestern and intermountain states. Therefore, faunal populations within this vegetation series will not be significantly affected from the construction of the access road and guard station.

Cutting and pruning activities may directly destroy faunal habitat, specifically for nesting species. However, the action is limited to a narrow corridor along the fence and will not impact the overall Ponderosa Pine-Piñon Pine-Gambel Oak Series at FWLC. Additionally, construction activities will occur during the non-breeding/nesting season in order to avoid direct destruction of fauna. Therefore, the potential impact on fauna resulting from the cutting and pruning activities will not be significant.

Fauna may temporarily depart from habitat with off road vehicle use and may deter normal animal behavior. However, off road vehicle use will be restricted to ATVs in small area and have a short duration. Motile fauna will depart from the disrupted environment, while smaller animals will escape to underground burrows. Therefore, the potential impact from off road vehicle use will not be significant.

Fence design will have pronghorn, deer, and elk protection/safe passage mitigation. Pronghorns react to fences differently than do deer or elk. Pronghorns usually crawl under a wire fence rather than jump over or negotiate their way through, whereas deer and elk tend to jump over fences. Fence mitigation will include a minimum bottom strand distance from the ground of 46 cm (18 inches) to allow pronghorn passage under the fence and wire stays will be placed at a maximum of 2.5 m (8.2 ft) apart between posts to keep the top wires from twisting around the legs of deer and elk (Kie et al.1994). Fence posts will be marked with white flagging or paint to alert animals of its existence. Therefore, the potential impact on pronghorn, deer, and elk from the existence of the fence will not be significant.

The greatest potential impact to fauna relating to the proposed communication tower is bird tower collisions. It has been documented (Avery et al. 1977) that birds migrating at night are attracted by light associated with towers and circle towers striking supporting guy wires. Additionally, when visibility is low due to climatic conditions collisions increase (Avery et al. 1977). However, the majority of bird collisions are from towers 61 m (200 ft) and taller, and the FWLC tower will be approximately 30.5 m (100 ft) and will not be lighted. The tower will be located in Parcel A which is a disturbed open area with no vegetation obscuring tower visibility. The potential for bird strikes is remote due to the location and height of the tower, additionally, the tower may provide a perching structure for avifauna. Therefore, the potential impact to birds from the existence of the communication tower will not be significant.

The proposed power line construction will be single strand phase wire on the top of the pole with a ground wire located 2.4 m (8 ft) below, therefore no raptor protection devices are required.

6.6.3 Threatened, Endangered, or Sensitive Species

6.6.3.1 Flora

No floral species included on Federal or State Threatened, Endangered, or Sensitive (TES) lists are known to occur in areas affected by the proposed construction. Surveys with the objective of locating listed plant species were conducted during June 1999 by WALCOFF (Appendix B). Based on vegetation types present in the affected areas, potentially occurring listed species were determined and field surveys were designed to locate listed species. These surveys failed to detect any listed plant species, leading to the conclusion that the proposed construction activities will not affect any listed plant species.

6.6.3.2 Fauna

The loggerhead shrike (*Lanius ludovicianus*), burrowing owl (*Athene cunicularia*), and Gunnison's prairie dog (*Cynomys gunnisoni*) are known to occur in the general area affected by the proposed construction. Surveys conducted by WALCOFF during June 1999 (Appendix B) located these three species in the surrounding area of the proposed construction sites, but detected no nests or burrows within the construction sites. The loggerhead shrike and burrowing owl are considered Species of Concern by the USFWS and Sensitive by the NMDGF, whereas the Gunnison's prairie dog is only listed by NMDGF as Sensitive. The increased human activity in the areas of construction will cause

the loggerhead shrike and burrowing owl to temporarily vacate the general area. Gunnison's prairie dogs within the vicinity of the proposed construction sites will temporarily retreat to burrows during localized construction disturbance. Therefore, the potential impact on the loggerhead shrike, burrowing owl, and Gunnison's prairie dog will not be significant.

No other potentially occurring listed species (Table 5 and 6) were detected during the survey efforts. Based on the type of construction activities, conducting construction activities during the winter months, and lack of habitat for amphibians in the construction sites, it was determined that no listed faunal species will be affected by the proposed construction activities.

6.7 CULTURAL RESOURCES

Construction activities proposed for FWLC will have cultural resource impacts resulting from ground disturbing activities associated primarily with the construction of the access road and guard station. Boundary fence construction and placement of the communication tower will not result in significant impacts to cultural resources. However, no construction activities will be initiated prior to receipt by the Albuquerque Office of the U.S. Army Corps of Engineers (ACOE) of written concurrence of New Mexico State Historic Preservation Officer (SHPO) for all proposed cultural resource mitigation.

Construction of the access road, power line, and guard station will occur within an area that has a high density of archeological sites. Prior to construction, the ACOE (Albuquerque Office) and New Mexico State (SHPO) will be consulted to review the road construction plan and determine what mitigation measures are necessary. The consultation will result in the construction activities not having a significant affect on cultural resources.

Boundary fence construction will not result in a significant level of ground disturbance, therefore no significant impact on artifacts will occur. ATVs will be utilized to access and transport materials to the site of the fence construction to minimize ground disturbance. Chainsaws, fire rakes, and axes will be used to cut and prune woody material along the fence line as opposed to heavy equipment blading a path, thus reducing the amount of ground disturbance. Woody debris will not be dragged out of the area eliminating the potential effect on artifacts in the area. Therefore, the potential impact on cultural resources resulting from the boundary fence construction activities will not be significant.

Placement of the communication tower and extension of the communications line will occur in previously disturbed areas, thus no artifacts will be disturbed. Additionally, all personnel involved in any of the construction activities will be instructed to leave all artifacts in place.

6.8 NOISE

Construction activities proposed for FWLC will have noise impacts resulting from the operation of associated construction equipment.

Primary sources of noise associated with the proposed construction will be from the use of large, motorized equipment (Table 7). Construction employees exposed to high noise levels will be required to wear hearing protection, according to regulations presented in the Occupational Safety and Health Administration (OSHA) Act . Construction equipment associated with the proposed actions will generate noise levels that are audible to people at a distance of up to 1.6 km (1 mi). The closest population center is the community of Fort Wingate, located approximately 2.8 km (1.75 mi) from the construction site for the access road. Motorists traveling on NM 400 will potentially be able to perceive an increased noise level from the construction, but most vehicles are designed to protect motorists from external noise sources. Therefore, the potential impact on construction personnel and motorists will not be significant.

Table 7. Typical noise levels of construction equipment.

Equipment	Noise Level at 15 m (50 ft) (dBA)
Heavy off-road truck	91
Derrick crane	88
Paver	88
Jackhammer	88
Scraper	88
Loader	88
Winch	88
Bulldozer	87
Backhoe	85
Concrete hauler	85
Compressor	81
Generator	76
	Source: D.N. May (1978)

Wildlife behavior can be disturbed by unnatural noise patterns. Many small mammals will avoid excessive noise by entering burrows, while more motile species such as birds and large mammals will vacate the area until the noise subsides. Reproductive activities of small mammals and birds can be disrupted by increased noise and activity levels. However, construction will only continue for a short duration and will be limited to a restricted area. The localized and temporary nature of increased noise and activity will not have a significant long-term effect on fauna inhabiting the area. Therefore, the potential impact on wildlife due to the increased noise levels will not be significant.

Minor noise sources associated with the proposed action are related to the boundary fence

construction and include a jackhammer, portable generator, ATVs, and chainsaws. No facilities that are regularly occupied by humans occur along the proposed fence, therefore humans will not be effected by this temporary noise increase. Wildlife species will respond as described above. Therefore, the potential impact on wildlife and humans due to the minor noise level increase will not be significant.

Placement of the communication tower and trenching for the communications line will result in an increased noise level generated from vehicles, but will have no significant impact. The increased noise levels will be temporary as these actions will have a short duration. Additionally, these actions will occur in areas where vehicle traffic routinely occurs, therefore wildlife in the area have either become acclimated to the existing noise levels or have already vacated the area. Therefore, the potential impact on wildlife due to the communication tower placement and trenching will not be significant.

6.9 ECONOMICS

Construction activities proposed for FWLC will have a minor impact on the local economy resulting from the use of local contractors and supply stores.

The proposed construction activities will be contracted to local companies providing the local economy with a slight benefit. After the proposed action is complete, no increased employment or business opportunities at FWLC is expected. Therefore, the potential impact on the economy, though positive, will not be significant.

6.10 INFRASTRUCTURE

6.10.1 Transportation

Construction activities proposed for FWLC will have transportation impacts resulting from the increased traffic and the creation of the proposed access road.

Increased traffic on NM 400 and Navajo Boulevard will occur as contractors visit the various construction sites. However, this impact will be temporary and will not exceed the capacity of these routes. Similarly, increased traffic flow is expected to occur on NM 400 following the completion of the access road. The average daily traffic count for NM 400 in 1997 was 1,151 vehicles per day (per com Gene Arites) and it is estimated that the creation of the access road will increase this daily rate by 2-5 vehicles. A greater increase in the average daily traffic flow will occur during missile launches, which is estimated at a maximum increase of 200-225 vehicles twice in a 24 hour period every six to eight weeks (per com Carlos Bustamante). The increased traffic will only occur on the 1.6 km (1 mile) segment of NM 400 between the Interstate 40 and the proposed access road. Prior to construction, the New Mexico State Highway Department will be consulted to determine any necessary mitigation measures associated with the design of the access road. Therefore, the potential impact on the transportation resources will not be significant.

6.10.2 Fences and Structures

Construction activities proposed for FWLC will not have a significant impact on the existing fences or structures.

The proposed sections of FWLC boundary fence will connect to existing FWDA boundary and security fences. Removal or modification of the existing FWDA boundary or security fences will not be necessary for the construction of the FWLC boundary fence. Therefore, the existing fences will not be significantly impacted by this action.

Construction of the access road does require a portion of the FWDA boundary fence and interior security fence to be cut and removed. Removal of these fences will be performed in such a manner to maintain the integrity of the remaining fence lines, thus there will be no significant impact due to this action.

Building 410 has a loading dock that may be used by TEAD in the future. According to the LUP, this building would be contained within the area enclosed by the boundary fence of the FWLC. BMDO will build the fence line to provide access to TEAD.

The guard station building will result in a temporary addition to the current building infrastructure in Parcel B of FWLC. However, the guard station building is a portable building from WSMR, which will be removed if FWLC closes. Therefore, the permanent infrastructure at FWLC will not be significantly affected by the addition of the portable building.

6.10.3 Communication

Construction activities proposed for FWLC will have communication impacts resulting form the addition of the communication tower and the extension of the communications line to the guard station.

The proposed communication tower will be an addition to the existing communication capabilities at FWLC, however the tower will be semi-permanent and will be removed if it becomes obsolete or FWLC closes. Additionally, the extension of the communications line will only service the guard station, which is a temporary building. Therefore, there will be no long term consequence on the current communication facilities at FWLC resulting from the proposed tower or communications line extension. Therefore, the potential impact on the communication will not be significant.

6.10.4 Electrical Service

Construction activities proposed for FWLC will have electrical service impacts resulting from the installation of the power line.

The addition of the power line to the guard station will not place a burden on the existing service to

the local population centers (Fort Wingate and Gallup). However, if power demands of the area increase in the future, the power line installed is capable of being upgraded to carrying a greater load. Therefore, the addition of the power line provides a potential benefit to the utilities of the area and will not significantly impact the current use.

6.10.5 Hazardous and Solid Waste

Construction activities proposed for FWLC will have minimal hazardous waste management impacts resulting from on-site vehicle maintenance and will not affect the solid waste removal system.

On-site vehicle maintenance will be limited during construction, minimizing the production of hazardous waste (e.g., POL). Any other hazardous waste generated by construction activities will be recovered and disposed according to WSMR Hazardous Waste Management Plan, using the two Satellite Accumulation Points serviced by NewTec. Therefore, the potential impact due to the creation of hazardous waste will not be significant.

Removal of all solid waste, trash, hardware, debris, etc., will be the responsibility of the construction contractor. Therefore, the current waste removal system will not affected.

6.11 SAFETY AND RADIATION

Construction activities proposed for FWLC will have personnel safety impacts resulting from the type of work proposed and the environment in which the work will be conducted.

Personnel involved in the proposed construction will face routine risks associated with construction activities. Standard safeguards outlined in OSHA, U.S. Army Regulation 385-100, and WSMR Regulation 385-18 will be strictly applied to protect the safety of construction workers. Therefore, the potential impact on construction personnel will not be significant.

An unexploded ordnance (UXO) survey was conducted to a depth of 1.2 m (4 ft) along the boundary fence that runs adjacent to the area referred to as the Open Burn/Open Detonation (OB/OD) area of FWDA. All UXOs detected during the survey were detonated. Additionally, all personnel conducting any operations in this area will be briefed of the potential dangers of UXOs, and instructed not to pick up, touch, or handle metal pieces or devices they may encounter. Any metal pieces that are located will be reported to the NewTec General Maintenance employee on-site for further investigation. Therefore, the potential impact on construction personnel will not be significant.

Any mishaps, such as a fire or spill, will be immediately reported to WSMR NR-ES-E. BMDO will prepare and submit an accident report to WSMR NR-ES-E, describing measures taken or proposed to decrease the impacts of the incident. Additionally, the report will proposed measures to minimize and/or prevent recurrences of the incident. Therefore, the potential impact to the environment will resulting from a mishap will not be significant.

Currently, bunkers being utilized at FWLC and generators are decontaminated by of the hanta virus on a quarterly basis. The guard station and idle equipment will be inspected periodically for evidence of mice occupancy to determine if there is a need for hanta virus decontamination. Therefore, the potential impact to personnel will not be significant.

Construction activities proposed for FWLC will have radiation impacts resulting from the use of a soil density gauge, the route of the boundary fence, and the placement of a communication tower in Parcel A.

Construction equipment used during construction activities for the boundary fence line and the access road will not contain radioactive materials. A soil density gauge containing fully enclosed radioactive compounds will be used during access road and guard station construction. Its use will be coordinated by WSMR National Range Environment and Safety - Safety Division (NR-ES-S) to ensure compliance with local safety standard operating procedures (SOP), Department of Transportation (DOT) regulations, and requirements associated with the U.S. Nuclear Regulatory Commission (NRC) license. Therefore, the potential impact resulting from the use of a soil density gauge will not be significant.

The route of the boundary fence intercepts an area associated with Remote Data Acquisition System (RDAS) Y that is required to remain free of metal during operation. The fence will be rerouted 15 m (50 ft) from the RDAS Y, as described in the LUP. Therefore, the use of the RDAS Y will not be affected by the construction of the boundary fence.

The 5 W transmitter on the proposed communication tower in Parcel A does not represent a radiation hazard. This level of transmission is similar to cellular telephones and citizen band radios which have widely accepted military and public use. Therefore, the potential impact on humans due to the communication tower will not be significant.

7.0 CUMULATIVE EFFECTS

"Cumulative effects" are those environmental impacts which result from the incremental effects of the proposed action when added to other past, present and reasonably foreseeable future actions (40 CFR §1508.7). Cumulative effects can also result from actions which are individually minor but collectively significant.

Construction activities at Fort Wingate Launch Complex (FWLC) as described in the **PROPOSED ACTION** chapter will have limited cumulative effects. Impacts such as noise, dust, and emissions will be temporary and have no long-term environmental consequences. Most permanent disturbances, such as clearing vegetation and leveling microtopography, are restricted to a small area and will not have large scale cumulative impacts. Additionally, the loss of habitat associated with the construction of the access road and guard station will not have significant effects on flora, fauna, or sensitive species because extensive areas of similar vegetation series are found outside the construction area.

The Ballistic Missile Defense Organization (BMDO) will have management decisions regarding the area that has been physically defined as FWLC. There is a possibility that other missile programs and organizations may identify FWLC as a potential component of their test programs. At this time, however, no new programs have indicated an intent to use FWLC and future predictions would be strictly speculative.

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8.0 ENVIRONMENTAL JUSTICE

The proposed construction activities for FWLC will be conducted in a manner that will not substantially affect human health or the environment. The construction activities will occur on land covered under Base Realignment and Closure (BRAC) process which involves the local Indian Tribes, however the proposed construction activities will not effect the health and environment of the Tribes. The activities will also be conducted in a manner that will not exclude persons from participation in, deny persons the benefit of, or subject persons to discrimination under the construction at FWLC because of their race, color, or national origin.

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9.0 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

The proposed construction activities at FWLC will result in a minor amount of irreversible and irretrievable commitment of resources. The construction of the access road and guard station will occur in a relatively undeveloped area resulting in an insignificant loss of habitat for plants and animals. Additionally, construction materials, energy, and labor required for the construction of the access road and guard station, as well as the fence, power line, and communication tower will be irreversible and irretrievable. However, the proposed construction activities will not commit natural resources in unacceptable quantities.

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10.0 SUMMARY OF MITIGATION

This section summarizes all mitigation efforts pertaining to this Environmental Assessment (EA) for the proposed construction activities at Fort Wingate Launch Complex (FWLC). The Ballistic Missile Defense Organization (BMDO) is required by law to carry out these mitigation efforts related to the proposed activities presented in the **PROPOSED ACTION** and **ENVIRONMENTAL CONSEQUENCES** chapters. Additional environmental documentation will be required if the scope of the project is modified, or the activities on FWLC differ from those described within this document.

10.1 GENERAL

o Any significant modifications to the proposed project will require approval from the WSMR National Range Environment and Safety - Customer Support Office (NR-ES-C) and an amendment to this EA.

o Personnel will be briefed of the potential dangers of unexploded ordnance (UXOs), and instructed not to pick up, touch, or handle metal pieces or devices they may encounter. Any metal pieces that are located will be reported to the NewTec General Maintenance employee on-site for further investigation.

o Personnel will be instructed not to harass, harm, or collect any flora or fauna.

o Personnel will be instructed not to disturb or collect any artifacts.

o Daily inspections of construction equipment will be conducted to insure proper working condition to minimize on-site maintenance needs.

o Drip pans will be used when refueling, conducting maintenance requirements in the field, or under vehicles parked overnight.

o Personnel in direct contact with noise sources will be required to wear hearing protection according to regulations presented in the Occupational Safety and Health Administration (OSHA) Act.

o The guard station and idle equipment will be inspected periodically for evidence of mice occupancy to determine if there is a need for hanta virus decontamination.

o Any mishaps, such as a fire or spill, will be immediately reported to WSMR NR-ES-E. BMDO will prepare and submit an accident report to WSMR NR-ES-E, describing measures taken or proposed to decrease the impacts of the incident. Additionally, the report will proposed measures to minimize and/or prevent recurrences of the incident.

o Any hazardous waste generated by the construction will be recovered and disposed of in the two Satellite Accumulation Points according to WSMR Hazardous Waste Management Plan.

o Removal of all solid waste, trash, hardware, debris, etc., will be the responsibility of the construction contractor.

o Upon completion of construction, vehicle traffic is restricted to ATV use for maintenance needs and security checks in areas where there is no existing road.

o All construction materials will be removed from the construction sites to facilitate revegetation.

10.2 CONSTRUCTION

10.2.1 Boundary Fence

o No blading or mowing of vegetation will be practiced along any fence section.

o All-terrain-vehicles (ATVs) will be used to deliver equipment and materials to fence sections where existing road access is not available.

o The bottom strand of the proposed fence will not be lower than 0.45 m (1.5 ft) from the ground to permit pronghorn to travel under.

o Fence posts will be marked with white flagging or paint to alert deer and elk of the fence line.

o Wire stays in the fence will be placed as most 2.5 m (8.2 ft) apart to keep the top wires from twisting around legs of deer and elk.

o A total of five vehicular gates will be place ap appropriate locations where the new fence intersects existing roads.

o Existing FWDA fences will be incorporated into the FWLC boundary fence wherever possible.

o Signs indicating FWLC property written in English, Navajo, and international symbols will be attached at 300 m (1,000 ft) intervals along the boundary fence.

o The fence line will incorporate building 410 to provide TEAD access to the associated loading dock.

o The route of the boundary fence will be rerouted 15 m (50 ft) from the RDAS Y to ensure

proper operation.

o Woody debris resulting from cutting, trimming, and pruning of trees and shrubs along the proposed fence line will not be removed to provide habitat for wildlife and permit the natural decay cycle to ensue.

o Fence construction will occur during non-breeding/nesting seasons in order to avoid direct destruction from the cutting and pruning activities.

10.2.2 Access Road, Power Line, and Guard Station

o No construction activities will be initiated prior to receipt by the Albuquerque Office of the U.S. Army Corps of Engineers (ACOE) of written concurrence of New Mexico State Historic Preservation Officer (SHPO) for all proposed cultural resource mitigation.

o Contouring required at the western end of the proposed access road will be conducted to impact an area as small as possible, yet meeting the needs of the road construction.

o Culverts will be installed where needed to maintain current drainage patterns.

o Fill material will be obtained from existing borrow pits and transported to the needed location.

o Soil stabilizers (such as EMC Squared®) or additional water will be used to suppress fugitive dust at the construction site.

o A chip-seal surface on the road and guard station area will provide some protection from erosion after construction.

o Off-road movement of construction vehicles will be restricted to the immediate vicinity of active construction to limit disturbance to soil and vegetation.

o Use of a soil density gauge containing fully enclosed radioactive compounds will be coordinated by National Range Environment and Safety - Safety Division (NR-ES-S) to ensure compliance with local safety standard operating procedures (SOP), Department of Transportation (DoT) regulations, and requirements associated with the U.S. Nuclear Regulatory Commission (NRC) license.

o Removal of portions of the FWDA boundary fence and interior security fence to create the access road will be done in such a manner to maintain the integrity of the remaining fence lines.

o The power line will be installed within the 30 m (100 ft) corridor for the access road.

o The type of power line proposed will be capable of being upgraded if power demands increase requiring a greater load.

o The guard station building is a portable building which will be removed if FWLC closes.

o The communicaitons line for the guard station will be installed along the existing G1 road easement.

o Standard safeguards outlined in OSHA Act, U.S. Army Regulation 385-100, and WSMR Regulation 385-18 will be strictly applied to protect the safety of construction workers.

o Construction employees exposed to high noise levels will be required to wear hearing protection, according to regulations presented in OSHA Act.

10.2.3 Communication Tower

o The communication tower will be placed within the existing Instrumentation Support Area of Parcel A.

o The communication tower will be semi-permanent and will be removed if FWLC closes or it becomes obsolete.

11.0 CONCLUSION

This Environmental Assessment (EA) describes proposed infrastructure improvements presented in the *Land Use Plan for the Ballistic Missile Defense Organization Fort Wingate Launch Complex* (*LUP FWLC*), including:

- construction of a boundary fence,
- creation of an access road,
- installation of a power line,
- establishment of a guard station, and
- placement of a communication tower and support equipment.

These actions have been evaluated to determine potential environmental impacts, and the severity of these impacts. Mitigation measures have been proposed to reduce or eliminate any impacts associated with the proposed actions. As long as the proposed actions described in the **PROPOSED ACTION** chapter of this document do not change, and the mitigation measures are followed, these activities will not have a significant impact on the environment.

Therefore, a Finding of No Significant Impact (FNSI) on the environment has been concluded. The FNSI is included at the front of this EA. Accordingly, the U.S. Army and WSMR have determined that an Environmental Impact Statement (EIS) pursuant to the National Environmental Policy Act (NEPA) is not required for the proposed actions described in this EA.

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LIST OF ACRONYMS AND ABBREVIATIONS

ac	acre
ATV	all terrain vehicle
BISON-M	Biota Information System of New Mexico
BMDO	Ballistic Missile Defense Organization
BRAC	Base Realignment and Closure
BRAC EIS	*Final Base Realignment and Closure Environmental Impact Statement* (1991)
cm	centimeter
DoD	Department of Defense
DOT	Department of Transportation
EA	Environmental Assessment
EIS	Environmental Impact Statement
ESA	Endangered Species Act
ft	feet
FNSI	Finding of No Significant Impact
FWDA	Fort Wingate Depot Activity
FWLC	Fort Wingate Launch Complex
GH	gigahertz
ha	hectare
ICUZ	Installation Compatible Use Zone
in	inches
km	kilometer
kph	kilometers per hour
KV	kilovolt
LUP FWLC	*Land Use Plan for the Ballistic Missile Defense Organization Fort Wingate Launch Complex* (1998)
m	meter
MAB	Missile Assembly Building
mi	mile
mph	miles per hour
mya	million years ago
NewTec	New Mexico Technology Group
NM	New Mexico
NM 400	New Mexico State Route 400
NMDGF	New Mexico Department of Game and Fish
NRC	U.S. Nuclear Regulatory Commission
NR-ES-C	National Range-Environment and Safety-Customer Support
NR-ES-E	National Range-Environment and Safety-Environmental Service
NR-ES-S	National Range-Environment and Safety-Safety
OB/OD	Open Burn/Open Detonation

OSHA	Occupational Safety and Health Administration Act
SOP	Standard Operating Procedures
TEAD	Tooele Army Depot
TMD	Theater Missile Defense
TMD ETR EIS	*Final Theater Missile Defense Extended Test Range Environmental Impact Statement* (1995)
USFS	United States Forest Service
UXO	unexploded ordnance
W	watt
WCA	Wildlife Conservation Act
WSMR	White Sands Missile Range

Appendix A

Copy of *Nationwide Permit Number 14, Road Crossings* Request and Approval

CURRENT STATUS: WSMR Land Manger finalizing the permit to be submitted

APPENDIX B

Biological Inventory of Proposed Construction Areas at Fort Wingate Launch Complex (FWLC)

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FLORAL AND FAUNAL SURVEYS OF PROPOSED CONSTRUCTION AREAS AT FORT WINGATE LAUNCH COMPLEX (FWLC)

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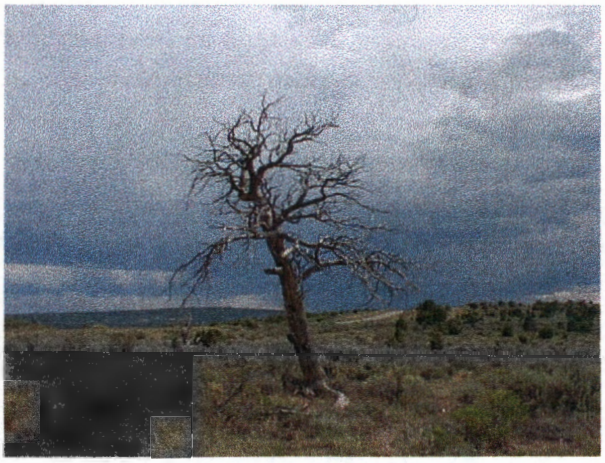

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June 1999

INTRODUCTION

The Ballistic Missile Defense Organization (BMDO) has established a launch complex within Fort Wingate Depot Activity (FWDA) and is identified as Fort Wingate Launch Complex (FWLC). Several construction activities are proposed at FWLC to delineate boundaries and to ensure continued use of the launch complex after FWLC completes the Base Realignment and Closure (BRAC) process. The proposed construction activities include construction of a boundary fence, building an access road, installing a power line, establishing a guard station, and placement of a communication tower. This report presents the results of biological surveys conducted at sites of proposed construction at FWLC. The main objectives were to identify flora and fauna present and locate any species listed as threatened, endangered or sensitive (TES) by State and Federal agencies.

AREA DESCRIPTION

FWLC is located in the foothills of the Zuni Mountains, approximately 54 km (32 mi) east of the Arizona / New Mexico border and 13 km (8 mi) east of Gallup, McKinley County, New Mexico. Interstate 40 is approximately 1 km (0.6 mi) north of FWLC and New Mexico State Route 400 (NM 400)runs along the eastern boundary of FWLC (Figure 1).

Construction activities will occur in eight areas of FWLC including six sections of boundary fence; a 30m (100ft) wide corridor for the access road, power line, and guard station; and the location for the communication tower.

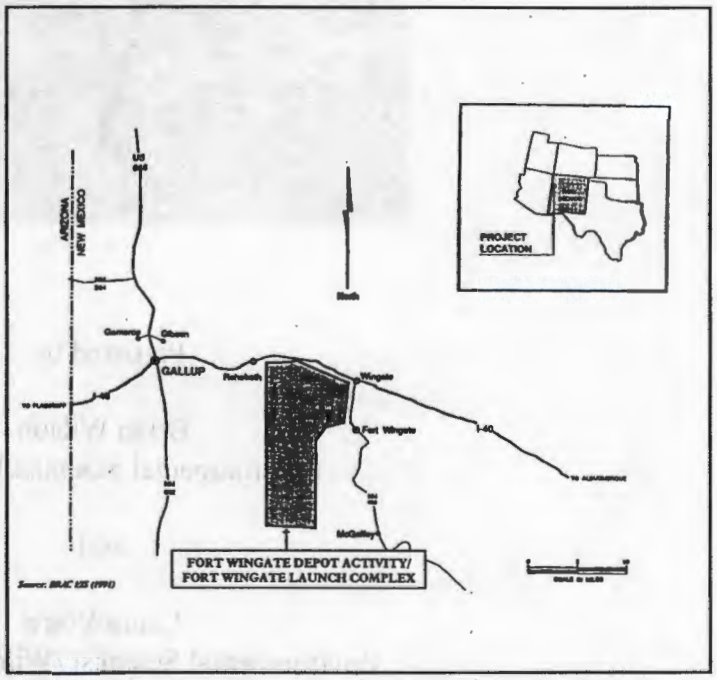

Figure 1. Location of Fort Wingate Depot Activity and Fort Wingate Launch Complex in western New Mexico.

FWLC contains two major vegetation types: Lower Montane Coniferous Forest and Desert Grassland (Dick-Peddie 1993). The Lower Montane Coniferous Forests are common in New Mexico and extend into Colorado and Arizona. Principal trees of the Lower Montane Coniferous Forests are ponderosa pine (*Pinus ponderosa*), piñon pine (*Pinus edulis*), Gambel oak (*Quercus gambellii*), and junipers (*Juniperus spp.*). Common understory vegetation include grama grasses (*Bouteloua spp.*), mutton grass (*Poa fendleriana*), deervetch (*Lotus wrightii*), pine dropseed (*Blepharoneuron tricholepis*), and squirreltail (*Elymus elymoides*).

Desert Grasslands occur in arid and semi-arid areas much of which can be found throughout New Mexico. These grasslands are transitional in nature making them difficult to define and are often considered ecotones. Indicator species for these ecotones are often difficult to define because of their transitional nature. Desert grassland communities can contain a variety of shrub species such as big sagebrush (*Artemisia tridentata*), and four-wing saltbush (*Atriplex canescens*). Common grass species include blue grama (*Bouteloua gracilis*), western wheat grass (*Elymus smithii*), alkali sacaton (*Sporobolus airoides*) and galleta (*Pleuraphis jamesii*).

Faunal species occur in a variety of habitats throughout FWLC including avifauna, small mammals, megafauna, and herpetofauna. The majority of faunal species found at FWLC are transient or migrant with fewer species being permanent residents.

METHODOLOGY

The biological surveys associated with the proposed construction activities at FWLC were conducted by Walcoff and Associates, Inc. (WALCOFF). Protocols for the floral and faunal inventories were developed by WSMR NR-ES-E and WALCOFF for the proposed fence line, access road, guard shack and power line construction, and communication tower installation at the Fort Wingate Launch Complex (FWLC). Field data sheets from faunal sampling efforts are included with this report.

Biological surveys consisted of two phases: research and field survey. The first phase involves reviewing the vegetation types present to determine potentially occurring listed floral and faunal species in the affected areas. The second phase involves field surveys, which included pedestrian transects to compile a species inventory list, efforts to locate listed species, and trapping of small mammals and herpetofauna. The pedestrian transects involve walking the length of affected areas recording all flora and fauna observed. Fauna observations included actual sightings, signs (i.e scat, middens etc.), and vocalizations.

Areas surveyed by pedestrian transects included the six segments of the proposed boundary fence; the access road, power line and guard station; and the communication tower area. Small mammal and herpetofauna pitfall trapping was conducted in the access road corridor only, due to the level of the potential impacts.

The proposed access road and power line construction would directly affect flora and wildlife habitat. Therefore, faunal surveys and small mammal and herpetofauna trapping were conducted on the proposed access road and power line construction corridor to detect the presence of TES species. Pitfall arrays and small mammal traps were placed along the proposed construction corridor and a pedestrian bird survey was conducted to compile a species inventory and detect the presence of TES species.

Pitfall arrays were used to capture herpetofauna for identification along the proposed construction corridor. A pitfall array consisted of 4, 5-gallon buckets sunk level to the soil

surface, arranged in a split "T" formation with 10 meters separating each leg of the "T". The two buckets forming each leg of the "T" were connected by a 7 m drift fence of galvanized flashing, with approximately 20 m separating each array (Figure 2). The pitfall arrays functioned to allure, channel and capture herpetofauna, with the close placement of neighboring arrays creating an effective barrier for most individuals traversing the area. A board placed over the pitfall was propped by rocks or sticks leaving a crevice for entry into the pitfall, while affording captured fauna protection from biotic and abiotic factors. Herpetofauna entered the pitfall trap either seeking shelter for thermoregulation or in pursuit of prey. Four pitfall arrays were placed along the proposed access road corridor.

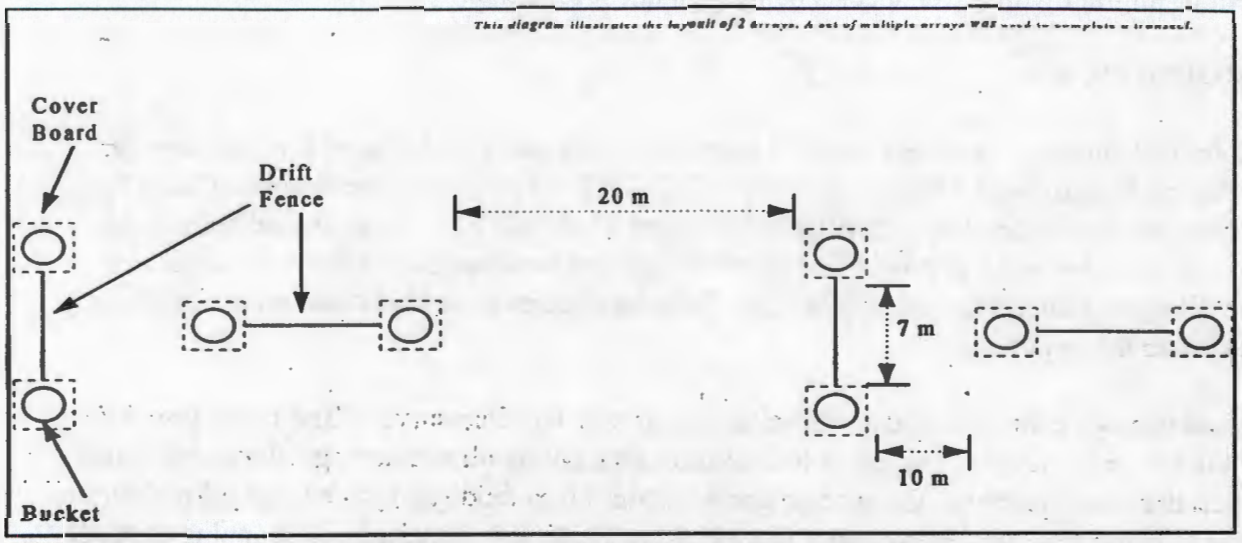

Figure 2. Arrangement of pitfall arrays used for herpetofauna sampling.

Sherman live traps (measuring 23 x 9 x 7.5 cm) were used to capture small mammals for identification. A line transect was established along the proposed construction corridor. Traps were opened and baited with oatmeal in the evening targeting nocturnal and crepuscular small mammal species, and checked early the following morning before daytime temperatures could threaten the survival of captive mammals.

Twenty trap stations located at 20 m intervals were placed along the construction corridor transect from 21-24 June, 1999. Each station consisted of two traps placed 10 m apart and perpendicular to the transect line, giving a total of 40 traps along the transect. Traps were operated 3 consecutive nights constituting 120 trap nights. A trap night consists of one trap being operated for one night. Target trapping methods were adopted to sample slightly larger small mammal species. Four wire traps (measuring 15 x 15 x 41 cm) were placed where signs indicating small mammal activity (e.g., burrows, middens, mounds) was detected in areas adjacent to the small mammal transect.

RESULTS AND DISCUSSION

FLORA

Boundary Fence

A total of 119 floral species were found during survey efforts at FWLC, comprising 95 genera and 34 families (Table 1). Vegetation was typical of the Lower Montane Coniferous Forest and Desert Grassland vegetation types.

WALCOFF (Brian Wilson, Laura Vogel and Gretchen Norman) conducted the biological surveys 21-24 June 1999. No listed plant species were located. Three listed fauna species were identified in the areas surrounding the construction sites: Loggerhead shrike, burrowing owl, and prairie dog.

Section 1 fence enclosing Parcel A will occur entirely within the Desert Grassland vegetation type. Construction in this area will be along the road side were previous disturbance has occurred. Primary plant species in this area include western wheatgrass, kochia (*Kochia scoparia*), fourwing saltbush and greasewood (*Sarcobatus vermiculatus*).

Section 2 fence extends the entire width of FWLC crossing through Desert Grasslands and Lower Montane Coniferous Forest vegetation types. Most of the section 2 fence survey follows existing roads where the plant community has been previously disturbed. The western end of section 2 fence survey crosses the hogback on the western boundary of FWLC. Common plants in the section 2 fence survey include; blue grama, galleta, and fourwing saltbush in the Desert Grasslands and one-seed juniper (*Juniperus monosperma*), piñon pine in the Lower Montane Coniferous Forest vegetation type.

The survey for section 3 fence took place in Fenced-Up Horse Valley beginning in rugged terrain which was comprised of the Lower Montane Coniferous Forest vegetation type and extending to the east where the valley opens up into a Desert Grassland vegetation type. Section 4 fence extends along an existing road and fire break, which are located in the Lower Montane Coniferous Forest vegetation type. Primary species for section 3 and 4 fences include big sagebrush , piñon pine, one-seed juniper, cheatgrass (*Bromus tectorum*), and blue grama.

The section 5 fence follows an old fence line and fire break. The entire length of the fence in section 5 will be contained within the Lower Montane Coniferous Forest vegetation type. Primary plant species include Gamble's oak, piñon pine, one-seed juniper and prairie junegrass (*Koeleria pyramidata*).

The survey for section 6 fence was relatively small occurring in the Desert Grassland vegetation type. Primary species occurring in the section 6 fence include greasewood, fourwing saltbush, western wheatgrass, and alkali sacaton.

Access Road, Power Line and Guard Station

The survey for the proposed access road, power line and guard station was within the Desert Grassland and Lower Montane Coniferous Forest vegetation types. The lower end of the proposed access road starts in the Desert Grassland vegetation type with primary species including big sagebrush and western wheatgrass. The upper end of the proposed access road and the designated area for the proposed guard station are within the Lower Montane Coniferous Forest. Primary species include big sagebrush, piñon pine, one-seed juniper, and blue grama.

Communication Tower

The area surveyed for the proposed communication tower is within a disturbed area of the Desert Grassland vegetation type. Primary species within the area for the proposed communication tower include western wheat grass, cheat grass, and annual sunflower (*Helianthus annuus*).

Table 1. Floral inventory for sites selected for proposed FWLC construction

	Fence Section[1]							
SPECIES	**1**	**2**	**3**	**4**	**5**	**6**	**AR[2]**	**CT[3]**
Agavaceae								
Yucca elata (Engelm.) - soaptree yucca		x	x		x		x	
Yucca torreyi Shafer - Torrey's yucca		x	x	x	x			
Apiaceae								
Cymopterus bulbosus A. Nels. - Indian parsley	x							
Lomatium sp. - Biscuit-root								
Asclepiadaceae								
Asclepias asperula (Dcne.) Woodson - Spider antelope horns		x			x			
Asclepias subverticillata (Gray) Vail - Whorled milkweed	x							
Asteraceae								
Achillea lanulosa Nutt. - Western yarrow		x	x		x			
Artemisia dracunulus L. - Tarragon			x					
Artemisia frigida Willd. - Pasture sage	x	x		x			x	
Artemisia tridentata Nutt. - Big sagebrush		x	x	x	x	x	x	
Bahia dissecta (Gray) Britt - Ragleaf bahia	x							
Chaetopappa ericoides (Torr.) Nesom - Sand aster	x	x	x	x	x		x	
Cirsium undulatum (Nutt.) Spring - Wavy leaf thistle	x	x	x		x	x	x	x
Ericameria nauseosa (Pallas ex Pursh) - Rubber rabbitbrush		x			x	x	x	

	Fence Section[1]							
SPECIES	1	2	3	4	5	6	AR[2]	CT[3]
Ericameria viscidiflora (Hook.) - Green rabbitbrush	x	x		x	x		x	x
Erigeron divergens Torr. & Gray - Spreading fleabane	x	x	x		x		x	
Erigeron subtrinervus Rydb. - Showy daisy		x	x	x	x		x	
Grindelia squarrosa (Pursh) Dunal - Gumweed	x	x	x		x	x	x	x
Gutierrezia microcephala - Threadleaf snakeweed	x		x					
Gutierrezia sarothrae (Pursh) Britt. & Rusby - Broom snakeweed	x	x		x	x	x	x	
Helianthus annuus L. - Annual sunflower	x		x	x	x			x
Heterotheca villosa (Pursh.) Shinners - Golden aster	x	x	x	x	x			x
Hymenopappus filifolius Hook. - Threadleaf white ragweed		x			x		x	
Hymenoxys abigens (Blake) Bierner - Perky sue	x	x					x	
Lactuca serriola L. - Prickly lettuce	x	x	x	x				
Machaerantha canescens (Pursh) Gray - Aster	x							
Psilostrophe tagetina (Nutt.) Green - Wooly paperflower		x						
Senecio sp. - Groundsel	x							
Tetradymia canescens DC. - Gray horsebrush		x						
Tragopogon dubius Scop. - Yellow salsify	x	x	x	x	x	x	x	x
Xanthium strumarium I. (Mill.) Torr. & gray - Cocklebur					x			
Brassicaceae								
Corydalis aurea Willd. - Scrambled eggs	x							
Descurainia pinnata (Walt.) Britt. - Western tansy mustard	x	x	x	x				x
Dimorphocarpa wislizenii (Engelm.) Rollins - Spectacle pod		x						
Erysimum asperum (Nutt.) DC. - Rough wallflower	x	x						
Erysimum capitatum (Dougl. EX. Hook) Green - western wallflower	x		x		x			
Lepidium virginicum L. - Longpetal peppergrass		x		x	x		x	
Lesquerella fendleri (Gray.) Wats. - Fendler's bladderpod							x	
Sisymbrium altissimum L. - Tubling mustard	x	x	x	x	x		x	x
Boraginaceae								
Cryptantha sp. Hidden-flower			x					

	Fence Section[1]							
SPECIES	1	2	3	4	5	6	AR[2]	CT[3]
Cryptantha jamesii (Torr.) Payson - White hiddenflower	x	x	x					
Cactaceae								
Coryphantha vivipara (Nutt.) Britt. & Rose - Beehive cactus		x		x		x		
Opuntia polyacantha Haw. - Plains prickly pear		x	x	x			x	
Opuntia spp.	x	x	x	x	x	x		
Chenopodiaceae								
Atriplex canescens (Pursh) Nutt. - Fourwing saltbush	x	x		x	x	x	x	x
Ceratoides lanata (Pursh) J. T. Howell - Winter fat	x	x			x		x	
Chenopodium incanum (Wats) Heller - Gray goosefoot	x							
Kochia scoparia (L.) Roth - Summer cypress	x							x
Salsola kali L. subsp. tragus (L.) Aellen - Russian thistle	x							x
Sarcobatus vermiculatus (Hook.) Torr. - Greasewood	x	x				x		
Convolvulaceae								
Convolvulus arvensis L. - Small bindweed	x	x		x		x	x	
Cupressaceae								
Juniperus monosperma (Engelm.) Sarg. - One-seeded juniper	x	x	x	x	x	x	x	
Elaeagnaceae								
Elaeagnus angustifolia L. - Russian olive		x		x				
Euphorbiaceae								
Chamaesyce albomarginata (Torr. & Gray) Small - Rattlesnake weed		x	x		x		x	
Fabaceae								
Astragalus sp. - Milk-vetch	1				x		x	
Astragalus allochrous Gray - Hassayampa milkvetch				x				
Astragalus mollissimus Torr. - Woolly loco					x		x	
Lotus wrightii (Gray) Greene - deer vetch		x	x	x	x			
Melilotus officinalis (L.) Lam. - White sweet clover	x	x		x	x		x	x
Psoralidium sp. - Scufpea		x		x				
Trifolium sp. - Clover	x				x			
Vicia americana Muhl. - Vetch			x		x			

	Fence Section[1]							
SPECIES	1	2	3	4	5	6	AR[2]	CT[3]
Fagaceae								
Quercus gambelii Nutt. - Gamble's oak		x	x	x	x			
Geraniaceae								
Erodium cicutarium (L.) L'har.Ex Ait. - Filaree	x	x	x	x			x	x
Geranium caespitosum James - Purple geranium			x	x	x			
Grossulariaceae								
Ribes cereum Dougl. - Wax current			x					
Lamiaceae								
Hedeoma sp. - False pennyroyal	x							
Marrubium vulgare L. - Common horehound		x		x				
Monarda sp. - Beebalm	x							
Liliaceae								
Calochortus kennedyi Porter. - Desert mariposa tulip	x		x					
Calochortus macrocarpus - Sagebrush mariposa tulip			x					
Linaceae								
Linum lewisii Pursh. - Blue flax					x			
Malvaceae								
Sphaeralcea coccinea (Nutt.) Tydb. - Common globemallow	x	x	x	x	x	x	x	x
Sphaeralcea subhastata Coult. Globemallow	x	x		x	x			
Nyctaginaceae								
Mirabilis multiflora (Torr.) Gray - Large four o'clock		x					x	
Onagraceae								
Oenothera brachycarpa Gray - Yellow stemless evening primrose	x		x				x	
Oenothera albicaulis Pursh. Prairie evening primrose		x						
Gaura parviflora Doug. - Small flowered gaura	x						x	
Orobanchaceae								
Orobanche multiflora Nutt. - Broomrape	x	x						
Pinaceae								
Pinus edulis Engelm. - Piñon pine	x	x	x	x	x		x	

	Fence Section[1]							
SPECIES	1	2	3	4	5	6	AR[2]	CT[3]
Pinus ponderosa Laws. - Ponderosa pine		x	x					
Pseudotsuga menziesii (Mirbel) Franco - Douglas fir			x		x			
Plantaginaceae								
Plantago patagonica Jacq. - Woolly indianwheat							x	
Poaceae								
Agropyron cristatum (L.) Gaertn. - Crested wheatgrass	x	x						x
Aristida purpurea (Nutt.) - Purple threeawn	x	x	x	x	x		x	
Bouteloua gracilis (Willd. Ex Kunth) - Blue grama	x	x	x	x	x		x	
Bromus hordeaceus L. - Soft brome	x	x		x	x	x	x	x
Bromus tectorum L. - Downy brome	x	x	x	x	x	x	x	x
Buchloe dactyloides (Nutt,) Engelm. - Buffalograss	x							
Elymus elymoides (Raf.) Swezey - Bottlebrush squirreltail	x	x	x	x	x	x	x	x
Elymus smithii (Rydb.) - Western wheatgrass	x	x	x	x	x	x	x	x
Koeleria pyramidata (Lam.) Beauv. - Junegrass		x	x	x	x			
Muhlenbergia torreyi (Kunth) A. S. Hitch. Ex Bush - Ring muhly							x	
Oryzopsis hymenoides (R. & S) Ricker ex Piper - Indian ricegrass	x	x	x	x			x	x
Pleuraphis jamesii Torr. - Galleta		x		x	x		x	
Poa fendleriana (Steud.) Vasey - Mutton bluegrass	x	x			x			
Sporobolus airoides (Torr.) Torr. - Alkali sacaton	x	x				x		
Sporobolus cryptandrus (Torr.) Gray - Sand dropseed	x							
Stipa comata (Trin. & Rupr.) Barkw. - Needle and thread	x	x	x	x	x		x	
Polygonaceae								
Eriogonum abertianum Torr. Abertianum - Albert's buckwheat		x	x					
Eriogonum alatum Torr. - Winged wild buckwheat		x		x			x	
Eriogonum rotundifolium Benth. - Round-leaf buckwheat	x					x		
Eriogonum wrightii Torr. - Wright buckwheat		x	x	x		x		
Ranunculaceae								
Clematis ligusticifolia Nutt. - Western virgin's bower			x					

	Fence Section[1]							
SPECIES	1	2	3	4	5	6	AR[2]	CT[3]
Rosaceae								
Cercocarpus montanus Raf. - Mountain mohogany		x	x	x	x			
Prunus virginiana L. - Chokecherry			x					
Purshia mexicana (D. Don) - Mexican cliffrose		x	x	x	x			
Santalaceae								
Comandra pallida A. DC. - Bastard toadflax					x			
Scrophulariaceae								
Castilleja lanata Gray - Indian paintbrush					x		x	
Orthocarpus sp. - Owl-clover	x							
Penstemon sp. - Penstemon					x			
Penstemon barbatus (Cav.) Roth - Scarlet penstemon			x	x				
Penstemon jamesii Benth. - James penstemon	x							
Penstemon linarioides Gray. Linaria penstemon					x			
Solanaceae								
Chamaesaracha coniodes (Moric.) Britt. - Prostrate groundcherry	x	x			x			
Lycium berlandieri Dunal - Berlandier's wolfberry		x			x		x	
Lycium pallidum Miers. - Pale wolfberry		x			x			
Verbenaceae								
Verbena bracteata Lag. & Rodr. - Prostrate vervain		x	x	x			x	x
Verbena macdougalii Heller- New Mexico vervain		x						

[1] Refer to the EA for fence section locations.
[2] Access road,power line, and guard shack in Parcel-B.
[3] Communication Tower in Parcel-A.

FAUNA

Boundary Fence

A total of 30 bird, 5 mammal and 5 herpetofauna were recorded during faunal surveys along the fence line, proposed guard shack and communication tower location (Table 2). All species recorded were in the general area of the proposed construction activities, but not necessarily directly within the construction zones. The high mobility of animals allows for movement away from potential construction activities. All species recorded were either common or expected in the Lower Montane Coniferous Forest and Desert Grassland Vegetation Types.

Three species were detected that are on State and Federal lists. The Burrowing owl (*Athene cunicularia hypugaea*), and loggerhead shrike (*Lanius ludovicianus*) are both listed as State Sensitive and Federal Species of Concern, and Gunnison's prairie dog (*Cynomys gunnisoni*) is listed as State Sensitive. All species were detected in the area surrounding the proposed construction activities in Parcel-A and Parcel-B and not directly in construction zones, and should not be affected by construction activities.

Table 2. Species observed at FWLC during faunal surveys along the proposed fence line.

		Fence Section[1]							
Common Name	**Scientific Name**	**1**	**2**	**3**	**4**	**5**	**6**	**GS[2]**	**CT[3]**
Birds									
American Robin	*Turdus migratorius*		x						
American Kestral	*Falco sparverius*		x		x				
Black-headed Grosbeak	*Pheucticus melanocephalus*						x		
Black-throated Sparrow	*Amphispiza bilineata*								
Brewer's Sparrow	*Spizella breweri*		x						
Broad-tailed Hummingbird	*Selasphorus platycercus*		x						
Burrowing Owl	*Athene cunicularia*	x							
Canyon Wren	*Catherpes mexicanus*		x						
Chipping Sparrow	*Spizella passerina*						x		
Common Nighthawk	*Chordeiles minor*								
Common Raven	*Corvus corax*		x						
Gambel's Quail	*Callipepla gambelii*		x						
Horned Lark	*Eremophila alpestris*	x							
House Finch	*Carpodacus mexicanus*	x	x				x		x
Lark Sparrow	*Chondestes grammacus*	x	x		x		x		
Loggerhead Shrike	*Lanius ludovicianus*								
Mourning Dove	*Zenaida macroura*						x		
Northern Mockingbird	*Mimus polyglottos*	x	x						x
Northern Harrier	*Circus cyaneus*		x						
Northern Flicker	*Colaptes auratus*			x			x		
Piñon Jay	*Cymnorhinus cyanocephalus*		x				x		
Red-tailed Hawk	*Buteo jamaicensis*		x						
Rufus-sided Towhee	*Pipilo erythrophthalmus*		x						

		Fence Section[1]							
Common Name	Scientific Name	1	2	3	4	5	6	GS[2]	CT[3]
Say's Phoebe	*Sayornis saya*		x		x				x
Scrub Jay	*Aphelocoma coerulescens*		x				x		
Turkey Vulture	*Cathartes aura*		x	x					
Violet-green Swallow	*Tachycineta thalassina*						x		
Western Meadowlark	*Sturnella neglecta*	x	x		x				x
White-throated Swift	*Aeronautes saxatalis*		x						
Wild Turkey	*Meleagris gallopavo*				x				
Mammals									
Black-tailed Jackrabbit	*Lepus californicus*		x						
Desert Cottontail	*Sylvilagus auduboni*		x						
Gunnison's Prairie Dog	*Cynomys gunnisoni*	x							
Pronghorn Antelope	*Antilocapra americana*	x	x						
Rock Squirrel	*Spermophilus variegatus*			x					
Herpetofauna									
Tree Lizard	*Urosaurus ornatus*		x						
Collared Lizard	*Crotaphytus collaris*		x	x					
Prairie Lizard	*Sceloporus undulatus*								
Gopher Snake	*Pituophis melanoleucus*	x	x						
Plateau Striped Whiptail	*Cnemidophorus velox*		x						

[1] Refer to the EA for fence section locations.
[2] Guard Shack in Parcel-B.
[3] Communication Tower in Parcel-A.

Evidence or sign of several species were recorded during surveys without the animal being observed. Furthermore, wildlife species have been observed by the FWLC NEWTEC employee in residence which were not observed during faunal surveys. Evidence or sightings of mule deer (*Odocoileus hemionus*), elk (*Cervus canadensis*), mountain lion (*Felis concolor*), bobcat *(Lynx rufus)*, bear (*Ursus americanus*), coyote (*Canis latrans*), striped skunk (*Mephitis mephitis*), rattlesnakes (*Crotalus viridis*) and packrat (*Neotoma* spp.) middens and pocket gopher (*Thomomys* spp.) mounds have been recorded at FWLC.

Access Road, Power Line and Guard Shack

A total of two lizard species were recorded during pitfall trapping (Table 3). All species recorded in herpetofauna surveys were either common or expected in the Lower Montane

Coniferous Forest and Desert Grassland Vegetation Types . There were no species recorded during herpetofauna surveys which are included on Federal or State lists.

Table 3. Herpetofauna recorded in pitfall arrays along the proposed access road.

Common Name	Scientific Name	Number
Prairie Lizard	*Sceloporus undulatus*	3
Short-horned Lizard	*Phrynosoma douglasii*	1
	TOTAL	4

Three species of rodents were captured during small mammal trapping (Table 4). All species recorded were either common or expected in the Lower Montane Coniferous Forest and Desert Grassland Vegetation Types. There were no species recorded during small mammal trapping which are included on Federal or State lists.

Table 4. Small mammals recorded during trapping efforts along the proposed access road.

Common Name	Scientific Name	Number
Deer Mouse	*Peromyscus maniculatus*	14
Piñon Mouse	*Peromyscus truei*	14
White-throated Woodrat	*Neotoma albigula*	1
	TOTAL	29

A total of seven bird species were recorded during the bird survey conducted along the access road (Table 5). All species recorded were either common or expected in the Lower Montane Coniferous Forest and Desert Grassland Vegetation Types. The loggerhead shrike, a State Sensitive and Federal Species of Concern was detected in the area surrounding the proposed access road construction. The high mobility of this bird allows for movement away from potentially harmful construction activities.

Table 5. Avifauna recorded during surveys along the proposed access road.

Common Name	Scientific Name	Number
Black-throated Sparrow	*Amphispiza bilineata*	2
Common Raven	*Corvus corax*	1
Piñon Jay	*Cymnorhinus cyanocephalus*	4
Lark Sparrow	*Chondestes grammacus*	4
Loggerhead Shrike	*Lanius ludovicianus*	1
Northern Mockingbird	*Mimus polyglottos*	2
Western Meadowlark	*Sturnella neglecta*	6
	TOTAL	20

CONCLUSION

A total of 119 floral species were found while conducting the biological survey. Vegetation occurring in the survey areas was typical of the Lower Montane Coniferous Forest and Desert Grassland vegetation types. Due to passed disturbances, fire restrictions, variations in topography and elevation, FWLC exhibits a wide range of vegetative diversity within these vegetation types. The vegetation types contain mosaics, many which are characteristic of ecotones and are in various stages of secondary succession. No Federal or State listed floral species were observed at the survey sites at FWLC.

A total of 44 faunal species were either captured or observed at the proposed FWLC construction areas, including 30 birds, 8 mammals, and 6 herpetofauna. Fence section 2 had the highest number of species observed at 26 and section 5 and the proposed guard shack location had the least at zero. All fauna encountered during the surveys were expected to occur in the Lower Montane Coniferous Forest and Desert Grassland Vegetation Types, including two Federally listed Species of Concern and three State listed Sensitive species: burrowing owl, loggerhead shrike, and Gunnison's prairie dog. Listed species are not expected to be affected by the proposed construction activities at FWLC.

APPENDIX C

Distribution List

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FEDERAL AGENCIES

Ballistic Missile Defense Organization
BMDO/DET
Attn: Brenda Ellis
7100 Defense Pentagon
Washington D.C. 20301-7100

U.S. Army Tooele Army Depot
SDSTE-CO-EO
Attn: Larry Fisher
Tooele, UT 84074-5000

U.S. Army White Sands Missile Range
STEWS-NRO-CR
Attn: William Smith
White Sands Missile Range, NM 88002

U.S. Army White Sands Missile Range
STEWS-NR-ES-C
Attn: Karen Hay
White Sands Missile Range, NM 88002

U.S. Army White Sands Missile Range
STEWS-GC-PA
Attn: Larry Furrow
White Sands Missile Range, NM 88002

U.S. Fish and Wildlife Service
Ecological Services Division
Attn: Jennifer Fowler-Propst
3530 Pan American Hwy NE
Albuquerque, NM 87107

STATE AGENCIES

State Historic Preservation Office
Attn: (Staff Archeologist)
Villa Rivera Building, Room 101
228 East Palace Avenue
Santa Fe, NM 8703

New Mexico Energy, Mineral, and Natural Resources Department
Attn: Karen Lightfoot
408 Gallistro Street
State Capitol, Villagra Building
Santa Fe, NM 87504-1948

State of New Mexico
Department of Game and Fish
Attn: Bob Wilson
Villagra Building
P.O. Box 25112
Santa Fe, NM 87504

CONTRACTORS

New Mexico Technology Group
Attn: William Smith
P.O. Box 398
White Sands Missile Range, NM 88002

LIBRARIES

Las Cruces Public Library
200 East Picacho
Las Cruces, NM 88001

Gallup Public Library
115 W. Hill Ave
Gallup, NM 87301

INDIVIDUALS

As requested