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# EXECUTIVE SUMMARY

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## ES.1.0 INTRODUCTION

The Environmental Impact Statement (EIS) for the Theater Missile Defense (TMD) Extended Test Range consists of the Draft EIS released for public review in January 1994, the Supplement to the Draft EIS released in July 1994, and the Final EIS released in November 1994. These documents were prepared in accordance with Council on Environmental Quality (CEQ) and Department of Defense (DOD) regulations implementing the National Environmental Policy Act (NEPA). The U.S. Army Space and Strategic Defense Command is the lead agency for the EIS. Cooperating agencies included the Ballistic Missile Defense Organization, U.S. Air Force, U.S. Navy, and Federal Aviation Administration (FAA).

The Draft EIS analyzes the potential environmental consequences of conducting missile program demonstration and operational test flights and target intercept tests involving both proposed off-range missile flight path extensions and existing test ranges at four candidate test areas: White Sands Missile Range (WSMR), New Mexico; Eglin Air Force Base (AFB), Florida; Western Range, California; and the U.S. Army Kwajalein Atoll (USAKA) in the mid-Pacific.

In order to reduce environmental impacts identified in the Draft EIS resulting from off-range booster drops, the U.S. Army proposed new potential booster drop zones at the WSMR Candidate Test Area based on revised target vehicle flight trajectory analysis, consultation with appropriate government agencies, meetings with the public and environmental groups, contacts with local land owners, and additional technical analysis. The Supplement to the Draft EIS documents the analysis of these additional potential booster drop zones located along the missile flight paths from the Green River Launch Complex (GRLC), Utah, and Fort Wingate Depot Activity (FWDA), New Mexico, to WSMR.

The Final EIS makes additions and revisions to the Draft EIS and Supplement to the Draft EIS and provides responses to all comments documented in public hearing transcripts and written comments received. The two volumes of the Final EIS, the two volumes of the Draft EIS, and the Supplement to the Draft EIS constitute the complete EIS. A Record of Decision will be issued no sooner than 30 days after publication of the Final EIS.

## ES.2.0 RELATED NEPA DOCUMENTATION

The TMD Programmatic Life-Cycle EIS was completed in January 1994. This programmatic EIS is an umbrella or "first-tier" document which provides a description of the potential environmental impacts over the entire life-cycle of the proposed TMD program and alternatives. As such, it addressed in the broad terms that were possible at that time the potential environmental impacts of the proposed research, development, and testing; production; basing (not deployment); and eventual decommissioning activities supporting all of TMD. The Record of Decision for the TMD Programmatic Life-Cycle EIS was signed in August 1994. It necessarily focused on the technologies involved and is neither system- nor site-specific. It also committed to preparation of lower-tier documents to assess site- and program-specific environmental impacts as the TMD program matured and possible locations were identified for the individual actions. Some of those documents have been prepared; others will be.

In order to provide environmental support to the wide range of Army TMD activities, the Army's TMD program has been divided into three basic program efforts:

1. Specific TMD weapons development
2. Extended test range development
3. TMD program development support activities

The current and future environmental documents being prepared in connection with these three efforts are related to each other. However, each effort is being analyzed as a separate element because it requires a separate decision. In order to adequately incorporate environmental considerations into program decisions for TMD, this tiered-document approach is necessary. The environmental documentation for each program effort is described as follows.

### 1. Specific TMD Weapons Development

In the case of specific TMD weapons, the TMD program encompasses the potential for developing and testing several types of ground-based defensive radar and missile interceptor systems. The Army is preparing individual environmental assessments (EAs) for each of these systems as they reach decision points. Consequently, an EA has already been prepared for the Phased Array Tracking to Intercept of Target (PATRIOT), Extended Range Interceptor (ERINT [also known as the PAC-3 missile]), Army Tactical Missile System (ATACMS), Theater High Altitude Area Defense (THAAD), and Ground-Based Radar (GBR). An EA is currently in progress to assess HERA target missile launches from the Firing in Extension area north of WSMR with intercepts by defensive missiles on WSMR with particular emphasis on cumulative impacts. An EA for the Corps Surface-to-Air Missile (Corps SAM) has not yet been started because the weapon system is still in the conceptual stage.

### 2. Extended Test Range Development

The Army needs to identify one or more occasional-use, off-range extensions of existing test ranges where development of ground-based TMD systems can be conducted over longer distances than currently available. Unlike weapons which can be developed individually, the Army must find the right combination of extended test range sites that allow all TMD program testing needs to be met. Consequently, the TMD Extended Test Range EIS addresses all of the potential extended test range alternatives in a single document. This approach will allow decisions to be made that will address all TMD test range needs rather than making the decision on a weapon-by-weapon or site-by-site basis without the benefit of an analysis of cumulative and related impacts. This current EIS represents a second-tier document which is site-specific but takes a broad, programmatic approach in covering types of programs over multiple years. It describes the potential environmental impacts resulting from test site modifications and launch preparation requirements and from multiple missile demonstration and operational flights along extended-range flight paths with intercepts of targets occurring over existing ranges or open sea areas. These tests are in support of developmental and operational requirements for various planned ground-based TMD missile and sensor systems being developed by the DOD.

### 3. TMD Program Development Support Activities

In addition to weapon and test range development, there are other TMD program experiments and tests that must be conducted in order to develop the tools and criteria by which the Army can evaluate whether a proposed TMD weapon is effective or not. Program activities include the development of target missiles for flight testing the TMD weapons and tests to determine what constitutes sufficient damage ("lethality") to a theater missile or its warhead to remove it as a

threat. To date, these program development support activities have generated the need for several environmental documents, including the TMD Bulk Chemical Experiment EA (April 1991), the TMD Lethality Program EA (August 1993), and the TMD HERA Target Systems EA (January 1994).

**Installation Environmental Documents**--Various military installations are also in the process of preparing environmental documents that examine their continuing use and potential changes or additions to their present missions. These include WSMR (an EIS), Eglin AFB (an EIS), the USAKA (a Supplemental EIS), and Wake Island (an EA). The potential addition of a TMD program activity at a particular installation would be one of the items that an installation-wide EA or EIS would typically address. These subsequent installation-wide environmental documents may use the research and analysis found in TMD program environmental documents when assessing those aspects of the TMD program that are proposed for possible siting at their installation. This is an accepted procedure under the CEQ regulations implementing the NEPA and is referred to as "incorporated by reference."

As the TMD program continues to develop and mature into subsequent stages of production, basing, and decommissioning, the U.S. Government will undoubtedly identify other environmental analyses that need to be conducted to support the decision-making process. The timing of these analyses will be determined by the progression of the programs through the various stages that require decisions.

### **ES.3.0 PURPOSE AND NEED**

In the Missile Defense Act of 1991 Congress called for the provision of a highly effective TMD program to defend forward deployed and expeditionary elements of the armed forces of the United States and U.S. friends and allies. Additional Congressional guidance in the fall of 1992 directed that all "theater and tactical missile defense activities of the Department of Defense . . . be carried out under the Theater Missile Defense Initiative" which will be established as the responsibility of an office within the DOD (Strategic Defense Initiative Organization, 1993). The Ballistic Missile Defense Organization (BMDO) (previously known as the Strategic Defense Initiative Organization [SDIO]) has been designated as the management office, with various elements of the TMD program being delegated to the Army, Air Force, Navy and Marine Corps. Each service will participate in the defense acquisition process in developing and acquiring its respective TMD program elements.

The purpose of conducting TMD extended-range tests is to provide realistic test situations for TMD missile systems within a simulated theater of operations, which includes defense against threat-representative target missiles. This requires conducting target and other missile system flights over medium-range distances (i.e., up to approximately 1,207 kilometers [750 miles]). These missile flight tests are needed to fully validate system design and operational effectiveness of ground-based TMD missile and sensor systems. Currently, there are no operational overland ranges and few over-water ranges operated by the United States that provide realistic distances for defense testing within such a simulated theater of operations.

### **ES.4.0 PROPOSED ACTION AND ALTERNATIVES**

Under the proposed action it is anticipated that approximately 100 missile flight tests would be conducted between 1995 and approximately 2000 from more than one off-range location and potentially at more than one test range. A maximum of four tests per month was used for purposes

of environmental analysis; however, for overland testing at WSMR only 6 to 10 tests per year would be anticipated.

For the purpose of this document, a "flight test" or "test event" is defined as either a target missile flight, a defensive missile flight, or a defensive missile intercept of a target missile. Some test events proposed for later in the program may require multiple target and/or defensive missile flights to validate specific defensive missile performance. If multiple flights require additional analyses, because of additional or different hazard areas, booster drop zones, access to public lands, etc., those analyses will be performed at a later date. Tests involving intercepts of targets would be conducted at a variety of altitudes, with missile intercepts occurring over existing ranges or open sea areas. Surface-to-surface missile tests are also proposed.

The NEPA requires the consideration of reasonable alternatives to a proposed action. This EIS considered the use of four alternative test range areas and a no-action alternative. Eleven candidate test range areas, both within and outside the United States, were originally evaluated for TMD extended-range tests. Following the applications of various selection criteria (e.g., scheduling, range safety, and range instrumentation) it was determined that four test ranges could potentially satisfy some or all of the extended-range (medium distance) test requirements.

The candidate test area alternatives analyzed in the EIS are shown in figure ES-1 and are discussed as follows:

- **WSMR, New Mexico** – This alternative includes missile launches and sensor testing at WSMR and Fort Bliss, Texas, with off-range missile launches from FWDA, New Mexico, and the GRLC, Utah.
- **Eglin AFB, Florida** – This alternative includes missile launches and sensor testing at Eglin AFB on Santa Rosa Island and at Cape San Blas with off-range missile launches from a sea-based platform in the Gulf of Mexico.
- **Western Range, California** – This alternative includes missile launches and sensor testing at Vandenberg AFB, San Nicolas Island of the Naval Air Warfare Center-Weapons Division, and San Clemente Island of the Naval Air Station North Island with off-range missile launches from a sea-based platform in the Pacific Ocean.
- **Kwajalein Missile Range, USAKA, Republic of the Marshall Islands** – This alternative includes missile launches and sensor testing at Kwajalein Missile Range and Wake Island with off-range missile launches from a sea-based platform in the Pacific Ocean.

To fully validate the effectiveness of intercepts and surface-to-surface missile systems, it is desirable to use an overland test range for some tests to allow for the recovery and analysis of missile debris following an actual intercept or ground impact. The overland test range must be large enough to safely and effectively conduct these types of tests and have appropriate equipment (e.g., radars, telemetry equipment, and optical instruments) in place.

No single test range area is expected to satisfy all test objectives, consequently some combination of test range areas would likely be required. As individual TMD system programs mature to the point of defining specific flight/intercept test requirements, the most appropriate test range area(s) capable of meeting test requirements can then be identified.

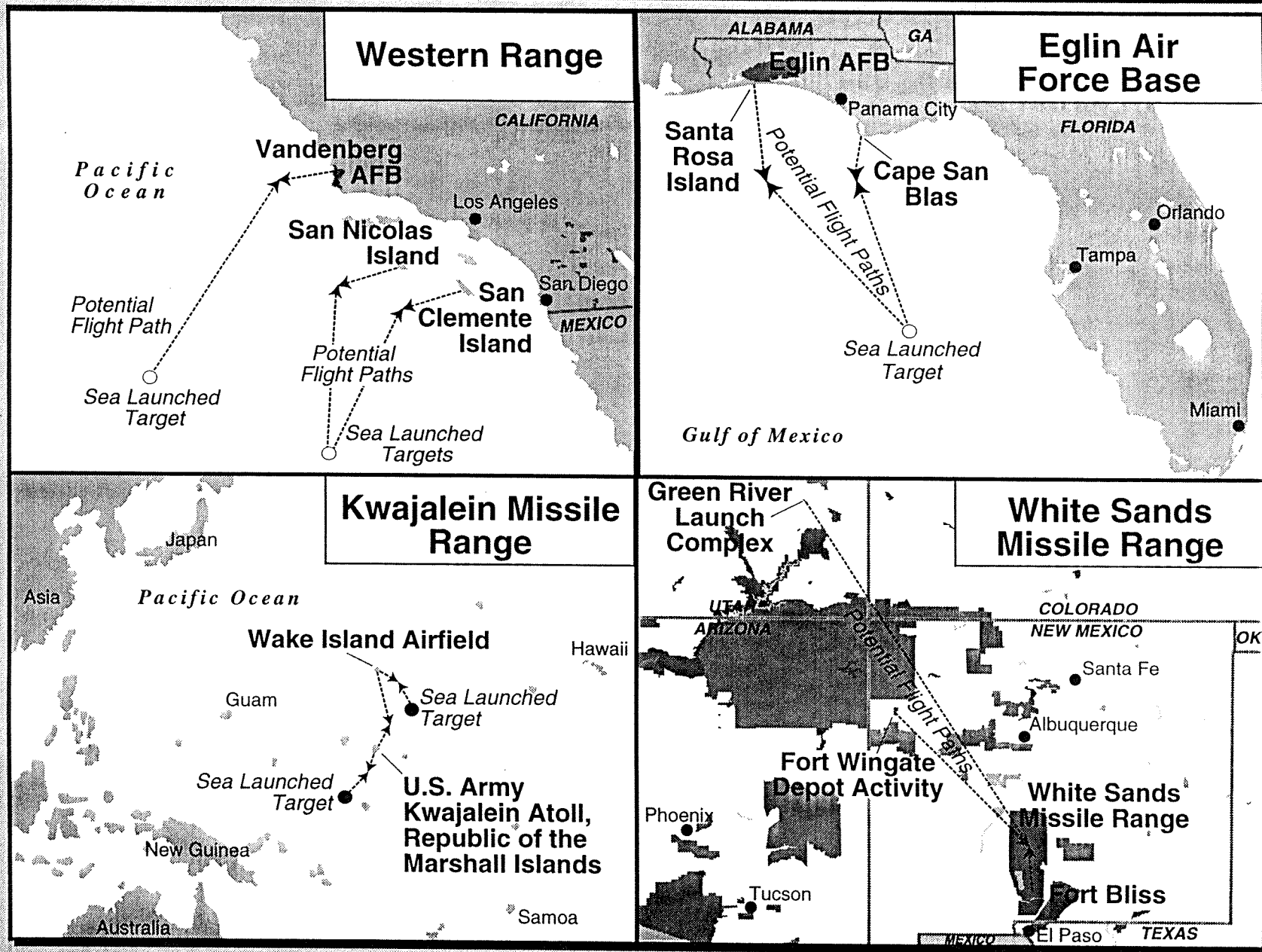


Figure ES-1 - Alternative Test Ranges

If the no-action alternative is selected, ongoing activities and operations would continue to be performed within existing ranges. The development of ground-based TMD missile and sensor systems would continue, with missile flight tests and target intercepts being conducted utilizing existing test ranges.

Such restrictions of test areas by increasing reliance on shorter-range missile flights conducted at WSMR would place artificial limits on system test capabilities. This would make it impossible to fully validate system design and operational effectiveness in a variety of realistic theater environments.

## **ES.5.0        DECISION TO BE MADE**

The decision to be made is to determine which candidate test range(s) and range extensions may be used to conduct ground-based TMD extended-range missile and sensor tests.

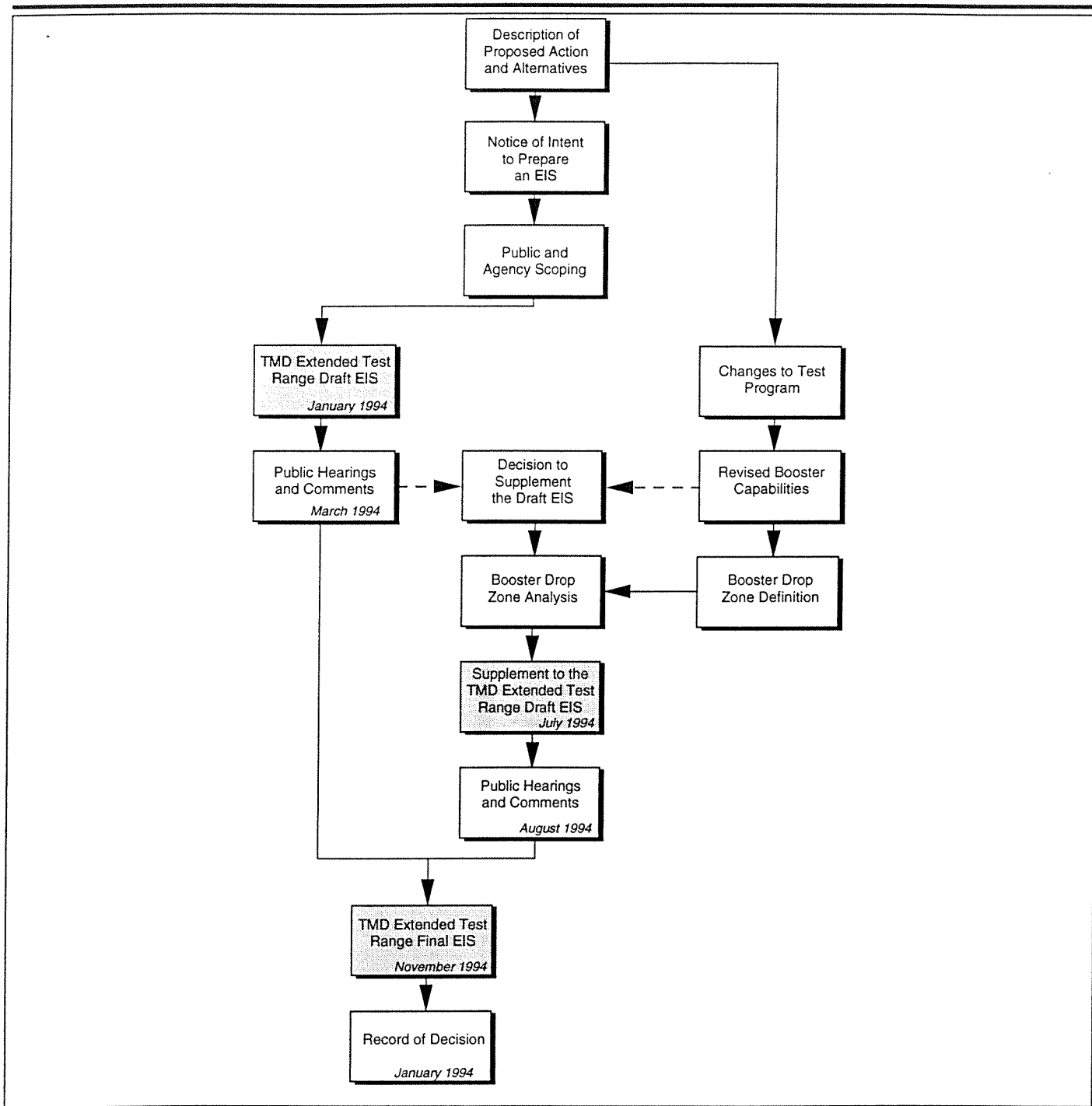
## **ES.6.0        SCOPE OF THIS EIS**

This EIS discusses the potential environmental impacts associated with implementing the proposed action at each of the four alternative test range areas and with the no-action alternative. To provide the context for understanding the potential environmental impacts, the affected environment for each environmental resource and its principal attributes was described. The following environmental resources are covered in this document: air quality, airspace, biological resources, cultural resources, geology and soils, hazardous materials and waste, health and safety, land use, noise, socioeconomics, infrastructure and transportation, and water resources.


## **ES.7.0        OUTLINE OF THE EIS PROCESS**

The key milestones in the preparation of the TMD Extended Test Range EIS are graphically depicted in figure ES-2. This Final EIS is the culmination of a process begun with preparation of a description of the proposed action and alternatives and publication of a Notice of Intent to prepare an EIS in the *Federal Register*, local community newspapers, and other media on April 7, 1993. In accordance with CEQ regulations for implementing the procedural provision of the NEPA, public scoping meetings were held in April and May 1993, in Green River, Salt Lake City, and Moab, Utah; Gallup and Albuquerque, New Mexico; Fort Walton Beach and Port St. Joe, Florida; and Oxnard and Lompoc, California. Additional meetings were held in Window Rock, Arizona, during June and July 1993 and in Crownpoint, New Mexico, in October 1993.

The environmental issues and concerns identified during the scoping process were addressed in the Draft EIS, released in January 1994. Public hearings on the Draft EIS were held in March 1994 in Moab and Salt Lake City, Utah; Crownpoint, Gallup, Ramah, and Shiprock, New Mexico; Fort Walton Beach and Port St. Joe, Florida; and in Lompoc and Oxnard, California, to obtain the public's comments. Due to the selection of a new booster and a desire to reduce environmental impact resulting from booster drops that were identified in the Draft EIS, new additional booster drop zones were identified in Utah and New Mexico. A Supplement to the Draft EIS, addressing the environmental consequences of including the new booster drop zones, was prepared and released in July 1994. Public hearings on the Supplement were held in August 1994 in Monticello and Salt Lake City, Utah, and in Grants and Magdalena, New Mexico. This Final EIS incorporates the public



## EXPLANATION

 Documents that comprise the Extended Test Range Documentation

## TMD Extended Test Range Environmental Documentation

Figure ES-2

and agency comments and concerns identified in both the Draft EIS and Supplement to the Draft EIS public hearings.

## **ES.8.0 SUMMARY OF ENVIRONMENTAL CONSEQUENCES**

Table ES-1 provides a summary of the environmental consequences associated with the implementation of the proposed action at each candidate test area by individual environmental resource. The information presented in the table is based on the environmental impact analysis presented in Section 4.0 of the Draft EIS and Supplement to the Draft EIS.

The following sections summarize the principal impacts of implementing the proposed action by alternative candidate test area. Section ES.8.1 discusses the impacts deemed to be significant, using the significance criteria outlined in 40 CFR 1508.27. Section ES.8.2 summarizes the consequences identified as either a not significant impact or having no impact predicted.

Section 3.0 of the Final EIS provides detailed responses to all of the comments received during the public comment period on the Draft EIS and Supplement to the Draft EIS. The breadth and depth of comments on the Draft EIS and its Supplement mirror the breadth and depth of issues identified during the scoping period.

Appendix A of the Final EIS addresses key issues associated with potential cumulative impacts resulting from proposed TMD testing activities on extended ranges.

### **ES.8.1 SIGNIFICANT IMPACTS**

#### **White Sands Missile Range Candidate Test Area**

Significant impacts were identified with respect to launch hazard areas and booster drop zones.

##### ***Infrastructure***

Impact: Interstate Highway 70 in Utah would be temporarily closed during any proposed launches from the GRLC utilizing either Booster Drop Zone A or B.

Mitigation: This impact could be partially mitigated by scheduling launches in the early morning hours when traffic is light both on Interstate 70 and through the town of Green River. Use of the preferred Booster Drop Zone C1 or C2 would not require closure of Interstate 70.

##### ***Land Use***

Impact: The use of GRLC's Booster Drop Zone A would result in a significant land use impact by restricting public access to the Island in the Sky District of Canyonlands National Park and Dead Horse State Park in Utah.

Mitigation: The impacts on recreational uses can be partially mitigated by providing sufficient notice to travelers on all roads into the affected areas, particularly on Highway 313 to the Island in the Sky district of Canyonlands National Park and to Dead Horse State Park and the Needles/Anticline Overlook Road including all off-road trails, well in advance of the planned road closures and impact-area evacuations.



Environmental Resource  Candidate Test Areas	Table ES-1. Comparison of the Environmental Consequences of the Alternatives											
	Air Quality	Air- space	Biological Resources	Cultural Resources	Geology/ Soils	Hazardous Mat/Waste	Health & Safety	Land Use	Noise	Socio- economics	Infrastructure/ Transportation	Water Resources
<b>WSMR/Fort Bliss</b>	○	○	○	○	○	○	○	○	○	○	○	○
<b>GRLC Launch Site/LHA</b>												
Launch Site <sup>1</sup> /LHA for BDZ A	○	○	○	○	○	○	○	○	○	○	●	○
Launch Site/LHA for BDZ B	○	○	○	○	○	○	○	○	○	○	●	○
Launch Site/LHA for BDZ C1	○	○	○	○	○	○	○	○	○	○	○	○
Launch Site/LHA for BDZ C2	○	○	○	○	○	○	○	○	○	○	○	○
<b>FWDA Launch Site/LHA</b>												
Launch Site <sup>2</sup> /LHA for BDZ A	○	○	○	○	○	○	○	○	○	○	○	○
Launch Site/LHA for BDZ B	○	○	○	○	○	○	○	○	○	○	○	○
Launch Site/LHA for BDZ C	○	○	○	○	○	○	○	○	○	○	○	○
<b>GRLC Flight Corridor</b>												
BDZ A	○	○	○	○	○	○	○	●	○	○	○	○
BDZ B	○	○	○	○	○	○	○	○	○	○	○	○
BDZ C1	○	○	○	○	○	○	○	○	○	○	○	○
BDZ C2	○	○	○	○	○	○	○	○	○	○	○	○
<b>FWDA Flight Corridor</b>												
BDZ A	○	○	○	○	○	○	○	○	○	○	○	○
BDZ B	○	○	○	○	○	○	○	●	○	○	○	○
BDZ C	○	○	○	○	○	○	○	○	○	○	○	○



No Impact



Not Significant Impact



Significant Impact

Note: 1 - GRLC Launch Site remains unchanged while the location and size of Launch Hazard Areas (LHAs) change depending on the location of the respective Booster Drop Zones (BDZs).

2 - FWDA Launch Site remains unchanged while the location and size of Launch Hazard Areas (LHAs) change depending on the location of the respective Booster Drop Zones (BDZs).

<div> <div>Environmental Resource</div> <div>Candidate Test Areas</div> </div>	<div>Table ES-1. Comparison of the Environmental Consequences of the Alternatives (Continued)</div>											
	Air Quality	Air-space	Biological Resources	Cultural Resources	Geology/ Soils	Hazardous Mat/Waste	Health & Safety	Land Use	Noise	Socio-economics	Infrastructure/ Transportation	Water Resources
Eglin AFB												
Santa Rosa Island	○		○		○	○	○	○	○	○	○	○
Cape San Blas	○	○	○	○	○	○	○	○	○	○	○	○
Sea Launch	○	○	○				○					○
Flight Corridor		○	○			○	○					○
Western Range												
San Nicolas Island	○	○	○	○	○	○	○	○	○	○		○
Vandenberg AFB	○	○	○	○	○	○	○	○	○	○	○	○
San Clemente Island	○	○	○	○	○	○	○	○	○		○	○
Sea Launch	○	○	○				○					○
Flight Corridor		○	○			○	○					○
Kwajalein Missile Range												
USAKA	○	○		○	○	○	○	○	○	○	○	○
Wake Island	○	○	○	○	○	○	○		○	○		○
Sea Launch	○	○	○				○					○
Flight Corridor						○	○					○
<div> <div>No Impact</div> <div>○ Not Significant Impact</div> <div>● Significant Impact</div> </div>												

In addition to clearly posting such closures on the entrances to highways, access roads, and off-road trails, other notification is advisable. The following should be notified: all hotels, motels, and campgrounds in the area; visitor centers; National Park Headquarters; Ranger Stations; BLM and U.S. Forest Service offices; and tour operators and outfitters. In this way, travelers and recreational users could anticipate and plan for the closure and area evacuations. This would go a long way to ameliorate the unavoidable impacts on recreational use of the affected areas.

**Impact:** The use of GRLC's booster drop zones C1 and C2 could have potentially significant impacts on the Bridger Jack Mesa and Fish Creek Canyon Wilderness Study Areas if the booster impact areas were allowed to overlap the wilderness study area lands.

**Mitigation:** The booster impact area can be located outside the Wilderness Study Areas, thus mitigating the potentially significant impact.

**Impact:** The use of FWDA Booster Drop Zone B which includes portions of the El Malpais National Monument and the El Malpais National Conservation Area, which includes Wilderness Areas and Wilderness Study Areas, would be considered a significant impact on land use. These lands have been set aside in order to protect the resources within the area.

**Mitigation:** For FWDA Booster Drop Zone B, there were no mitigation measures identified for the use of El Malpais National Monument for a booster drop zone because it would conflict with both the intent of the laws that established the areas as well as the El Malpais National Monument General Management Plan (National Park Service, 1990) and the El Malpais National Conservation Area General Management Plan (Bureau of Land Management, 1991). The use of wilderness study areas for booster drop zones is also restricted by the Bureau of Land Management's (BLM's) nonimpairment standard which protects lands under wilderness review in order to not impair their suitability for preservation as wilderness.

## **ES.8.2 NOT SIGNIFICANT IMPACT AND NO IMPACT PREDICTED**

### **ES.8.2.1 Impacts Common to All Candidate Test Areas**

#### **Air Quality**

Emissions from flight preparation and flight support activities fall below the minimal levels of the applicable Federal and state regulations. Gasoline and diesel-powered generators would only run intermittently. Application of Environmental Protection Agency (EPA) screening models and more detailed dispersion models revealed that emissions from target and defensive missile launches and on-pad failures are quickly dispersed, and emissions along the flight corridor occur largely at altitudes that allow dilution of the pollutants before they reach the ground.

#### **Airspace**

Airspace use impacts within existing or new restricted areas is a scheduling matter, not an environmental issue. The scheduling and rerouting of aircraft outside the existing and new restricted areas to avoid the flight tests would be directed and coordinated by the FAA.

## **Biological Resources**

For the most part no ground-disturbing activities would be involved. Launch activities would take place in previously disturbed areas. Where new ground disturbance is proposed, preconstruction surveys would be undertaken, and if the presence of sensitive species is confirmed, appropriate mitigation measures would be implemented. The probability of early flight termination impacting plant or animal species through fire is low, and activity and noise associated with launch activities would have cleared the area of most wildlife before launch anyway. Missile launch noise quickly attenuates, and no noise-sensitive species are known to exist near the proposed launch sites. In terms of flight termination or intercept debris, critical species of wildlife are widely scattered, and the probability of them being hit by a single piece of debris is on the order of less than 1 in a million.

Debris-recovery operations are likely to have larger impacts, but a qualified wildlife biologist would monitor debris-recovery activities to reduce impacts.

## **Cultural Resources**

For the most part no new ground-disturbing activities would be involved. Where new ground disturbance is proposed, preconstruction surveys would be undertaken, and if the presence of cultural resources is confirmed, appropriate mitigation measures would be implemented. Noise-induced vibration impacts to historic structures is highly unlikely, due to the low overpressures predicted from sonic booms. In terms of flight termination or intercept debris, archaeological deposits are scattered, and the probability of them being hit by a single piece of debris is extremely remote. Debris-recovery activities have a greater potential to damage archaeological deposits, but ground disturbance would be minimized through the use of helicopters and monitoring by a qualified archaeologist in areas requiring use of wheeled vehicles. Illegal collection of artifacts by program personnel is possible but, with the proper briefing, considered unlikely.

## **Geology and Soils**

Accidental spills of toxic materials during launch preparation are highly unlikely with the implementation of standard spill prevention, containment, and control measures. Deposition of missile exhaust products, particularly  $\text{Al}_2\text{O}_3$  and  $\text{HCl}$ , is a possibility, but deposits would be dispersed by the time they reached the ground and would be further neutralized by the buffering capability of the relatively alkaline soils in arid regions or diluted by rainfall in coastal areas. The amount of soil disturbance from direct physical impacts of early termination or intercept debris would be minimal. Debris-recovery efforts would have minor impacts on soil.

## **Hazardous Materials and Waste**

Some hazardous materials, such as cleaning solvents, hydraulic fluids, lubricants, radioactive materials (such as Nickel-63 in on-board electrical devices), solid fuel, and small quantities of pre-packaged liquid propellants, would be used. However, all would be handled in accordance with strict regulatory guidelines that would either totally avoid or minimize program personnel exposure. Fuel and propellants would be consumed during missile launch and flight. Proper handling, packaging, and disposal of any hazardous waste ensure that both program personnel and the public are not exposed to undue hazards.

## **Health and Safety**

Standard handling and disposal procedures ensure that both program personnel and the public would not be affected by any hazardous materials used or waste generated. The risks from the transportation of rocket boosters and other system components are minimal. The probability of an

accident, regardless of transportation mode, is extremely low, and only a small fraction of accidents would actually affect missile system transportation because of the use of specialized shipping containers. The careful designation of launch hazard areas and booster drop zones, from which all nonessential personnel and the public would be excluded, and the containment of all intercept debris either within Government property (which is off-limits to the public) or verified clear open-water areas ensure the safety of program personnel and the public. Potential electromagnetic radiation (EMR) exposure from the various sensors and tracking radars is not an issue due to the establishment of EMR hazard safety zones and the exclusion of personnel from them.

### **Land Use**

Flight test programs conducted on existing military installations do not present a conflict with either current land use or land use plans, policies, and controls.

### **Noise**

Program personnel and the public's exposure to launch noise and sonic boom overpressures is minimized by the exclusion of nonessential personnel and the public from launch hazard areas and the absence of noise-sensitive receptors.

### **Socioeconomics**

Potential adverse socioeconomic impacts are precluded by the relatively low program-related personnel requirements and the fact that personnel would be both temporary and transient.

### **Infrastructure and Transportation**

Use of existing facilities and infrastructure and the relatively low program personnel requirements preclude both Government facility and local community infrastructure impacts. Similarly, the relatively small number of temporary, transient personnel mitigates transportation impacts.

### **Water Resources**

Accidental spills of toxic materials during launch preparation are highly unlikely with the implementation of standard spill prevention, containment, and control measures. Deposition of missile exhaust products, particularly  $\text{Al}_2\text{O}_3$  and  $\text{HCl}$ , is a possibility, but deposits would be dispersed by the time they reached surface water bodies or groundwater and would be further neutralized by the buffering capability of the water bodies or open ocean areas. The amount of surface water disturbance from direct physical impacts of early termination or intercept debris would be minimal. Debris-recovery efforts would have minor impacts on surface water bodies and no impact on groundwater.

## **ES.8.2.2 Impacts Unique to Specific Candidate Test Areas**

### **Airspace**

For both the Eglin AFB and Western Range candidate test areas, impacts within the warning areas off the coasts of Florida and California, respectively, would be avoided by the issuance of Notices to All Mariners and ensuring that the launch, booster drop, and intercept debris impact areas are clear of all air traffic before proceeding with the test flights. For the USAKA Candidate Test Area, which

lies in international airspace, well-removed from regular trans-Pacific airways and jet routes, similar pre-test flight procedures would be implemented.

### **Biological Resources**

For the Western Range Candidate Test Area, San Nicolas Island launch option, the presence of California sea lions, northern elephant seals, and sea otters near the proposed launch sites is of concern. Noise impacts, however, are expected to be minimal because the proposed launches are intermittent and of short duration.

### **Geology and Soils**

Deposition of missile exhaust products, particularly  $\text{Al}_2\text{O}_3$  and  $\text{HCl}$ , is a concern for the Eglin AFB Candidate Test Area. However, deposits would be diluted by the time they reached the ground and would be further diluted by rainfall and neutralized by quick migration to the Gulf of Mexico.

### **Health and Safety**

For the WSMR Candidate Test Area, detailed analysis of the risk to the population under the flight corridors in the event of an in-flight termination indicates that the overall hazard associated with a single flight operation is less than  $1 \times 10^{-6}$  (less than 1 casualty in 1 million flight terminations).

### **Land Use**

For the WSMR Candidate Test Area, program activities would take place on land that has been set aside and devoted to military uses for some time. The current use of private land, co-use public land, or other public land is covered by an existing lease, evacuation, or co-use agreement with the appropriate land owners or stewards. Use of the proposed new booster drop zones would not proceed until similar agreements had been negotiated to the satisfaction of all parties. Denial of access to and evacuation of public recreational areas not identified as significant in Section ES.8.1 would occur only for areas which experience relatively low levels of utilization and/or are not particularly recognized for their recreational value.

Potential conflicts with other proposed uses of FWDA, currently closed and in caretaker status, would be resolved through the Army's Base Realignment and Closure process. As part of this process, the BMDO has identified a potential use for sufficient property to conduct launch activities, establish safety zones, and ensure access. Lands not needed for missile testing activities would be returned to the public domain since the lands comprising FWDA were originally public domain lands. Lands retained for missile testing activities could potentially accommodate compatible additional uses, subject to acceptable security arrangements. Lands returned to the Department of the Interior would be subject to that agency's procedures and priorities in identifying potential uses.

### **Socioeconomics**

For the WSMR Candidate Test Area, intangible economic or social effects that would not have the potential for indirect environmental consequences were not addressed per 40 CFR 1508.14.

## **Infrastructure/Transportation**

For the WSMR and Eglin AFB candidate test areas, road closures not identified as significant in Section ES.8.1 either carry small volumes of traffic or are governed by an existing agreement with the appropriate state Department of Transportation.

### **ES.8.3 ADDITIONAL STUDIES**

Several additional studies were carried out in support of the TMD Extended Test Range Final EIS summarized as follows:

- A separate appendix (Appendix A) was prepared to address key issues associated with potential cumulative impacts resulting from proposed TMD testing activities on extended test ranges.
- The health and safety discussion in Appendix B now includes additional information regarding the flight safety approach for overland testing.
- Consultation with potentially affected American Indian tribes was carried out to identify areas of American Indian significance related to traditional resources such as archaeological sites, water sources, plant habitat or gathering areas, or any other natural area important to a culture for religious or heritage reasons. Results of these consultations were incorporated into the appropriate Cultural Resources sections.
- Additional agency consultation was carried out to ensure compliance with appropriate regulations and to establish a framework for ensuring implementation of the mitigation measures described in this Final EIS and adopted in the Record of Decision. Responses to agency comments are included as Section 5.0 of this Final EIS.