Continental United States (CONUS) Interceptor Site

SECTIONS 1.0, 2.0, 3.0, 3.1, and 3.2

Environmental Impact Statement Draft

Department of Defense
Missile Defense Agency
5700 18th Street
For Belvoir, VA 22060-557

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Table of Contents

Appendices

List of Tables

List of Figures

1.0 Purpose and Need for Potential Continental United States Interceptor Site Deployment

1.1 Introduction

As required by the 2013 National Defense Authorization Act (NDAA) and in compliance with the National Environmental Policy Act of 1969 (NEPA) and the Council on Environmental Quality (CEQ) Regulations for Implementing the Procedural Provisions of NEPA and, the Missile Defense Agency (MDA) is preparing an Environmental Impact Statement (EIS). This EIS evaluates the possible environmental impacts from the potential deployment of a Continental United States (CONUS) Interceptor Site (CIS) capable of protecting the homeland against threats from nations, such as North Korea and Iran. If deployed, the CIS would extend the existing Ground-based Midcourse Defense (GMD) element of the Ballistic Missile Defense System (BMDS). The existing Ground-Based Interceptor (GBI) sites at Fort Greely, Alaska, and Vandenberg Air Force Base, California, provide the capability to protect the United States (U.S.) from the current and projected North Korean intercontinental ballistic missile (ICBM) threat, as well as a future Iranian ICBM threat should it emerge. Deployment of an additional interceptor site would provide the U.S. system operator additional battle space (reaction time) and interceptor capacity.

CIS deployment candidate locations initially evaluated in the EIS, included sites at the following four locations: Fort Custer Training Center (FCTC) - Michigan Army National Guard (MIARNG), Augusta, Michigan; Camp Ravenna Joint Military Training Center (CRJMTC) - Ohio Army National Guard (OHARNG), Portage and Trumbull Counties, Ohio; Fort Drum (FTD), Fort Drum, New York; and Center for Security Forces Detachment Kittery Survival, Evasion, Resistance, and Escape Facility (SERE East), Redington Township, Maine. Following extensive surveys, conducted in coordination with federal and state agencies, MDA determined that the SERE East site was no longer a reasonable alternative because it presented irreversible environmental impacts, significant constructability concerns, and extensive costs associated with developing infrastructure in a remote area, and in January 2016, designated it as an Alternative Considered, but Not Carried Forward (MDA, 2016b). Consideration of FTD and SERE East fulfilled the NDAA of considering two east coast locations.

1.2 Background

The MDA is a research, development, and acquisition agency within the Department of Defense (DoD). Its mission is to develop and deploy a layered BMDS to defend the U.S., its deployed forces, allies, and friends from ballistic missile attacks of all ranges in all phases of flight.

The MDA traces its roots to the Strategic Defense Initiative (SDI) program. President Reagan launched this initiative in 1983 to develop non-nuclear missile defenses. The SDI consolidated missile defense programs scattered among several government offices and molded them into a coherent program under the management of the Strategic Defense Initiative Organization (SDIO).

As the technologies under the original initiative evolved, so did the organization responsible for their management. In 1994, the SDIO was officially renamed the Ballistic Missile Defense Organization (BMDO).The National Missile Defense Act of 1999 defined the mission of the BMDO. The U.S. withdrawal from the Anti-Ballistic Missile Treaty in 2002 lessened the restrictions to develop and test these technologies.

In 2002, the BMDO became the MDA. The newly renamed MDA continued to research and develop hit-to-kill technologies (direct collision), test, and field elements of the BMDS.

1.2.1 Threats

Countries invest in ballistic missiles because they project power in regional and strategic contexts, and provide attack capability from a distance.

According to information received from the intelligence community, current trends indicate proliferation of ballistic missile systems, using advanced liquid- or solid-propellant propulsion technologies, is becoming more mobile, survivable, reliable, accurate, and capable of striking targets over longer distances. These weapons could be used to reduce military options for combatant commanders and decrease the survivability of regional military assets.

Missile defense technology being developed, tested, and deployed by the U.S. is designed to counter ballistic missiles of all ranges—short, medium, intermediate, and intercontinental.

1.2.2 Ballistic Missile Defense System

Because ballistic missiles have different ranges, speeds, sizes, and performance characteristics, the BMDS is an integrated, "layered" architecture as shown in Figure 1.2-1 providing multiple opportunities to destroy missiles and their warheads before their targets are reached. The system's architecture includes:

- Networked sensors (including space-based) and ground- and sea-based radars for target detection and tracking.
- Ground- and sea-based interceptor missiles for destroying a ballistic missile using the force of a direct collision, called "hit-to-kill" technology.
- Command, control, battle management, and communications network providing the operational commanders with the needed links between the sensors and interceptor missiles.

Missile defense elements are operated by U.S. military personnel from the U.S. Combatant Commands.

Ballistic missile trajectories are commonly divided into three phases of flight: boost, midcourse, and terminal.

- Boost Phase - The boost phase defenses can defeat ballistic missiles of all ICBMs, but it is the most difficult phase in which to engage a missile. The intercept "window" is only from 1 to 5 minutes. Although the missile is easiest to detect and track in the boost phase because its exhaust is bright and hot, missile defense interceptors and sensors must be in close proximity to the missile launch. Early detection in the boost phase allows for a rapid response and intercept early in its flight, possibly before any countermeasures can be deployed.
- Midcourse Phase - The midcourse phase begins when the enemy missile's booster burns out and it begins coasting in space towards its target. This phase can last as long as 20 minutes, allowing several opportunities to destroy the incoming ballistic missile outside the earth's atmosphere. Any debris remaining after the intercept will burn up as it enters the atmosphere. The GMD element is now deployed in Alaska and California to defend the U.S. homeland against a limited attack from countries like North Korea and Iran. This system can only defend against intermediate and long-range ballistic missiles. The Aegis sea-based missile defense element uses existing Aegis cruisers and destroyers armed with interceptor missiles designed to defend against short- to medium-range ballistic missiles, and has been successfully tested against an intermediate range missile. A network of advanced sensors, radars and command, control, battle management, and communication components provide target detection, tracking, and discrimination of countermeasures to assist the interceptor missile in placing itself in the path of the hostile missile, destroying with hit-to-kill technology. These sensors and radars include transportable X-band radars, as well as advanced radars aboard Aegis cruisers and destroyers capable of operating in the world's oceans. The largest X-band radar in the world is the Sea-Based X-band, which is mounted on a floating platform allowing it to traverse the world's oceans. This radar provides precise tracking of target missiles of all ranges and discriminates between actual missiles and countermeasures that could be deployed with a hostile missile.
- Terminal Phase - The terminal phase is very short and begins once the missile reenters the atmosphere. It is the last opportunity to make an intercept before the warhead reaches its target. Intercepting a warhead during this phase is difficult and the least desirable of the phases because there is little margin for error and the intercept will occur close to the intended target. Terminal phase interceptor elements include the Terminal High Altitude Area Defense now being delivered to the U.S. Army, the Aegis BMD near-term Sea-Based Terminal Defense capability using the SM-2 Block IV missile, and the U.S. Army's PATRIOT Advanced Capability-3 now deployed worldwide. These mobile systems defend against short- to medium-range missiles.

A CIS would focus on defending against intermediate long-range (greater than 1,800 mile range) ballistic missiles in the midcourse phase.

1.3 Purpose and Need

The 2013 NDAA requires the MDA to prepare this EIS to evaluate locations in the U.S. best suited for a potential future deployment of an interceptor site capable of protecting the homeland against threats from nations such as North Korea and Iran. Section 227 of the 2013 NDAA states the following:

> "(a) Not later than December 31, 2013, the Secretary of Defense shall conduct a study to evaluate at least three possible additional locations in the United States, selected by the Director of the Missile Defense Agency, that would be best suited for future deployment of an interceptor capable of protecting the homeland against threats from nations such as North Korea and Iran. At least two of such locations shall be on the East Coast of the United States.
>
> (b) Environmental Impact Statement Required.--Except as provided by subsection (c), the Secretary shall prepare an environmental impact statement in accordance with the National Environmental Policy Act of 1969 (42 U.S.C. et seq.) for the locations the Secretary evaluates under subsection (a)."

Per the NDAA, at least two of the locations considered shall be on the East Coast of the U.S. MDA proceeded with the understanding that East Coast meant any state which a portion of its boundary touches the Atlantic Ocean.

An additional site located within CONUS would add enhanced capability by increasing battle space (reaction time) and interceptor capacity; however, it would come at substantial material development and service sustainment costs. DoD does not currently propose to deploy and has not made a decision to deploy or construct an additional interceptor site.

1.4 Decisions to be Made

The decisions to be made are whether and where to deploy a CIS. This EIS considers and evaluates a No Action Alternative (no CIS deployment) and three deployment alternative locations in Michigan, Ohio, and New York. A deployment decision, if made, would be based on the analysis of the ballistic missile threat to the U.S., system performance and operational effectiveness, site constructability, affordability, and potential environmental impacts.

1.5 Scope of the Environmental Impact Statement

This EIS assesses environmental impacts associated with potential deployment of GBIs and associated support equipment comprising a CIS at each of the sites, to include potential impacts to land use, water resources, air quality, transportation, socioeconomics, and other resources. The environmental analysis addresses construction and operation of the potential CIS deployment.

The MDA conducted a Siting Study evaluating more than 450 DoD owned sites in 28 states. All of the sites analyzed in this EIS meet the Siting Study criteria for potential deployment of a CIS. Further discussion of the Siting Study process is discussed in Section 2.11. The MDA does not propose to deploy a CIS and has not identified a preferred alternative at this time.

This EIS analyzes the candidate locations for a potential CIS deployment, for up to 60 GBIs total, distributed in up to three GBI fields, with silos, construction of mission facilities, mission support facilities, non-mission facilities including life support facilities (i.e., housing, dining, morale, welfare, and recreation), onsite and offsite utilities, transportation of silos, silo interface vaults (SIV), and GBIs. The GBIs would not be launched from the deployment site except in the event on an actual attack. No test firing would be conducted at a potential CIS. Testing would only be conducted at established test ranges.

1.6 Cooperating Agencies

In accordance with 40 Code of Federal Regulations (CFR) Part 1501.6, an invitation for cooperating agency status was extended to the U.S. Departments of the Army and Navy, National Guard Bureau, MIARNG, and OHARNG for consultation, review, and comment on the EIS. Each agency accepted its respective invitation. The cooperating agencies and respective candidate sites are summarized in Table 1.6-1.

Table 1.6-1 Cooperative Agencies and Initial Candidate Site Locations

Cooperating Agency	Candidate Site Location
Michigan Army National Guard	FCTC, MI
Ohio Army National Guard	CRJMTC, OH
U.S. Department of the Army	FTD, NY
U.S. Department of the Navy	SERE East, near Rangeley, ME (designated an Alternative Consideration but Not Carried Forward).

1.7 Summary of Public Participation

CEQ implementing regulations for NEPA describe the public involvement requirements for agencies (40 CFR Part 1506.6). Public participation in the NEPA process not only provides for and means open communication between the MDA and the public, but also promotes better decision-making. Several opportunities and means for public involvement during scoping and throughout the preparation of the EIS have been provided in coordination with the candidate installations and the MDA. Throughout the preparation and review of the Draft EIS, the MDA obtained meaningful input concerning the issues that should be addressed.

1.7.1 Scoping Process

The purpose of the scoping process is to identify public and agency concerns and determine the significant environmental issues related to the proposed action so that preparation of the EIS document can be effectively managed (CEQ, 1983).

As the lead agency, the MDA began the scoping process by coordinating with the environmental staff at each of the four candidate CIS locations in early 2014 in order to leverage local knowledge, site expertise, and relationships with environmental regulatory and resource agencies. The MDA conducted site visits at each candidate CIS location in April and May 2014 to discuss project details with site environmental staff and meet with federal and state regulatory and resource agencies having jurisdiction or interest/expertise with the candidate locations. In informal meetings with the U.S. Fish and Wildlife Service (USFWS), U.S. Army Corps of Engineers (USACE), State Historic Preservation Offices (SHPOs), state wildlife, natural resource, and environmental quality representatives, the MDA discussed the proposed project, current data, and additional surveys needed. These meetings assisted the MDA in better defining the aspects of the project that may have potential significant effects or involve controversy, and determining data gaps.

1.7.2 Notice of Intent

The Notice of Intent (NOI) was published in the *Federal Register* (FR) (FR Doc. 2014-16629) on July 16, 2014. The NOI described the purpose and need for the CIS deployment, identified the alternatives to be analyzed in the EIS including the No-Action Alternative, listed environmental resource categories for which impacts would be assessed, invited written comments, and identified local communities where public scoping meetings would be held. See Appendix B for a copy of the NOI. During scoping, the MDA invited the participation of federal, state, and local agencies, Native American tribes, environmental groups, organizations, citizens, and other interested parties to assist in determining the scope and significant issues to be evaluated in the CIS EIS.

1.7.3 Public Scoping Period and Meetings

The CIS EIS Public Scoping occurred during a 60-day period beginning with publication of the NOI in the FR. Comments were received from July 17, 2014 through September 15, 2014. The MDA developed a public webpage with information about the CIS EIS at: http://www.mda.mil. The MDA also provided an email address, facsimile number, and U.S. mailing address for submittal of public comments and questions.

In July 2014, MDA sent letters describing the potential CIS deployment to the Governors, U.S. Senators, U.S. Representatives, and Adjutant Generals in the states of the four candidate locations. These letters notified the government officials of MDA's intent to prepare an EIS and to hold public scoping meetings in the local communities of Ravenna, Ohio; Rangeley and

Farmington, Maine, Carthage, New York; and Augusta and Battle Creek, Michigan. The MDA sent over 190 letters to key stakeholders in July and August 2014 to inform interested parties about the CIS EIS, solicit comments, and provide dates, times, and locations of upcoming scoping meetings in their area.

Additionally, in accordance with Executive Order (EO) 12372, Intergovernmental Review of Federal Programs, and the CEQ Regulations implementing NEPA, the MDA mailed over 65 letters to regulatory agencies on September 25, 2014, requesting input from federal, state, and local agencies and Native American tribes on the potential CIS deployment. A copy of the Draft Sections 1 and 2 (Purpose and Need for Potential CIS and Description of CIS Deployment Concept and Alternatives Considered) was enclosed with these letters to provide more detail for agency review. Agency responses and comments received as part of this coordinating activity have become part of the administrative record and were considered when preparing this EIS. Copies of the agency responses are provided in the Scoping Report (BVSPC, 2015b).

The MDA held eight public scoping meetings in accordance with CEQ regulations (40 CFR Part 1501.7). Meetings were held in Ravenna, Ohio on August 5, 2014; Rangeley, Maine on August 12, 2014 (two meetings); Farmington, Maine on August 14 (two meetings); Carthage, New York on August 19, 2014; Battle Creek, Michigan on August 26, 2014; and Augusta, Michigan on August 28, 2014.

The purpose of the scoping meetings was to request input from the public on concerns regarding the proposed activities, as well as gather information and knowledge of issues relevant to analyzing the environmental impacts of the potential CIS. The public scoping meetings also provided the public with an opportunity to learn more about the MDA's proposed action and alternatives.

Notices and advertisements were placed in at least four publications for each location, including both daily and weekly print publications to inform the public about the potential CIS and upcoming public scoping meetings. For all daily publications, the same advertisement ran twice prior to the scoping meeting, including one approximately two weeks prior and a second on the Sunday before the meeting. For weekly publications, one advertisement ran between one to two weeks before the scoping meeting, depending on the deadlines and run dates for the publication.

The MDA Public Affairs Office issued press releases to local media outlets (e.g. news and radio stations) at each potential candidate CIS deployment location informing the public about the scoping meetings including the open comment period and opportunities for potential stakeholders to provide input.

A summary of the dates, times, estimated number of attendees, and locations for the public scoping meetings conducted near the candidate CIS locations is provided in Table 1.7-1.

The MDA selected an open house format for the scoping meetings, with various information stations positioned around the room designed to address various aspects of the CIS system and siting process, NEPA and the EIS process, the proposed action, and site-specific features including a notional CIS layout, and environmental issues. This format allowed members of the community the opportunity to learn about the aspects of the program and project most important to them.

Table 1.7-1 Summary of Continental United States Interceptor Site Environmental Impact Statement Public Scoping Meetings

Site	Date	Time	Sign-Ins	Others	Total Attendees	Location
CRJMTC	08/05/2014	6-9 pm	109	15	124	Ravenna High School gym, Ravenna, Ohio
SERE East	08/12/2014	6-9 pm	46	3	49	Rangeley Lakes Regional School gym, Rangeley, Maine
	08/13/2014	9 am-Noon	54	2	56	Rangeley Lakes Regional School gym, Rangeley, Maine
	08/14/2014	9 am – Noon	29	2	31	University of Maine at Farmington, Farmington, Maine
	08/14/2014	6-9 pm	25	2	27	University of Maine at Farmington, Farmington, Maine
FTD	08/19/2014	6-9 pm	92	5	97	Carthage High School cafeteria, Carthage, New York
FCTC	08/26/2014	6-9 pm	74	5	79	McCamly Plaza Hotel Branson Ballroom, Battle Creek, Michigan
	08/28/2014	6-9 pm	46	17	63	Sherman Lake YMCA, The Great Hall, Augusta, Michigan
TOTAL			**475**	**51**	**526**	

Verbal and written comments provided at the public participation meetings, letters received via U.S. Postal Service (USPS), email, and fax submissions raised a variety of issues to be addressed in the CIS EIS.

A Scoping Report was prepared by MDA's contractor, Black & Veatch, which described the scoping process, outreach, and engagement, meeting format, interactions, and public comments received for the CIS EIS. The final Scoping Report is available on the MDA public website at: http://www.mda.mil/.

1.7.4 Summary of Scoping

During scoping, the MDA received 539 specific comments and 30 agency letters. Overall, as summarized in the scoping report, the dominant general theme from the public comments and concerns included the following (BVSPC, 2015b):

- Socioeconomic impacts – especially employment and income to the community, population growth and associated impacts, and health and education resources.
- Land use impacts – including recreational, visual, and aesthetic resources.
- Purpose and need for the potential CIS.
- Transportation, biological, and water resources impacts.

Several issues, questions, and/or concerns outside the scope of the EIS were also raised and include the following general categories - interceptor launch, security risk, system performance, fiscal responsibility/budget allocation, and miscellaneous. These issues are not evaluated in this EIS.

1.7.4.1 Fort Custer Training Center, Fort Custer, Augusta, Michigan

There were 145 public comments received specific to FCTC. The distribution of comments received across the resource areas is summarized in Table 1.7-2.

Table 1.7-2 FCTC Comments by Subject Matter and Resource Area

Category	Number of Comments
Purpose and Need	7
Air Quality	0
Airspace	4
Biological Resources	4
Cultural Resources	2
Environmental Justice	0
Geology and Soils	0
Hazardous Materials and Hazardous Waste Management	0
Health and Safety	1
Land Use (Visual/Aesthetics)	12
Noise	4
Socioeconomics	70
Transportation	11
Utilities	1
Water Resources	3
Wetlands	2
Out of Scope	24
TOTAL	**145**

A detailed evaluation of the comments received for FCTC is available in the final scoping report (BVSPC, 2015b).

1.7.4.2 Camp Ravenna Joint Military Training Center, Portage and Trumbull Counties, Ohio

There were 146 public comments received specific to CRJMTC. The distribution across the resource areas is summarized in Table 1.7-3.

Table 1.7-3 CRJMTC Comments by Subject Matter and Resource Area

Category	**Number of Comments**
Purpose and Need	8
Air Quality	1
Airspace	2
Biological Resources	4
Cultural Resources	0
Environmental Justice	0
Geology and Soils	2
Hazardous Materials and Hazardous Waste Management	11
Health and Safety	14
Land Use (Visual/Aesthetics)	7
Noise	4
Socioeconomics	25
Transportation	2
Utilities	3
Water Resources	9
Wetlands	0
Out of Scope	54
TOTAL	**146**

A detailed evaluation of the comments received for CRJMTC is available in the final scoping report (BVSPC, 2015b).

1.7.4.3 Fort Drum, Fort Drum, New York

There were 32 comments that were received specific to FTD. The distribution of comments received across the resource areas is summarized in Table 1.7-4.

Table 1.7-4 FTD Comments by Subject Matter and Resource Area

Category	Number of Comments
Purpose and Need	3
Air Quality	0
Airspace	0
Biological Resources	0
Cultural Resources	0
Environmental Justice	0
Geology and Soils	0
Hazardous Materials and Hazardous Waste Management	0
Health and Safety	0
Land Use (Visual/Aesthetics)	1
Noise	0
Socioeconomics	13
Transportation	4
Utilities	0
Water Resources	0
Wetlands	0
Out of Scope	11
TOTAL	**32**

A detailed evaluation of the comments received for FTD is available in the final scoping report (BVSPC, 2015b).

1.7.4.4 Center for Security Forces Detachment Kittery Survival, Evasion, Resistance and Escape Training Facility, Redington Township, Maine

There were 216 public comments that were received specific to SERE East. The distribution of comments across the resource areas is summarized in Table 1.7-5.

Table 1.7-5 SERE East Comments by Subject Matter and Resource Area

Category	**Number of Comments**
Purpose and Need	18
Air Quality	2
Airspace	0
Biological Resources	13
Cultural Resources	2
Environmental Justice	0
Geology and Soils	4
Hazardous Materials and Hazardous Waste Management	5
Health and Safety	3
Land Use (Visual/Aesthetics)	46
Noise	3
Socioeconomics	56
Transportation	16
Utilities	2
Water Resources	9
Wetlands	3
Out of Scope	34
TOTAL	**216**

A detailed evaluation of the comments received for SERE East is available in the final scoping report (BVSPC, 2015b).

1.7.5 Coordination with Regulatory Agencies

Agency participation was solicited throughout the EIS process. On April 23, 2015, the MDA hosted a federal interagency meeting/teleconference with the USEPA, National Park Service, USFWS, and USACE to provide an update on the status of the CIS EIS and discuss comments received on the drafts of Sections 1 and 2. Although no formal consultations were conducted, informal status meetings and solicitation of input were conducted as follows:

- FCTC Sites (FCTC Site 1 and FCTC Site 2): April 30, 2014 at FCTC and October 14, 2014, at Lansing, MI.
- CRJMTC Site: April 24, 2014, and October 16, 2015, at Columbus, OH.
- FTD Site: April 4, 2014, and November 3, 2015, at Fort Drum, NY.
- SERE East Site: May 15, 2014, at Augusta, ME; August 19, 2015, at Augusta, ME, with the Maine Historic Preservation Commission and the National Parks Services; and November 5, 2015, at Augusta, ME.

- Federal Agencies (Boston, MA): April 23, 2015, and November 4, 2015.

1.7.6 Public Review of Draft Environmental Impact Statement

[Reserved for 2016 once Draft EIS is submitted]

1.7.7 Public Comment Period

[Reserved for 2016 once Draft EIS is submitted]

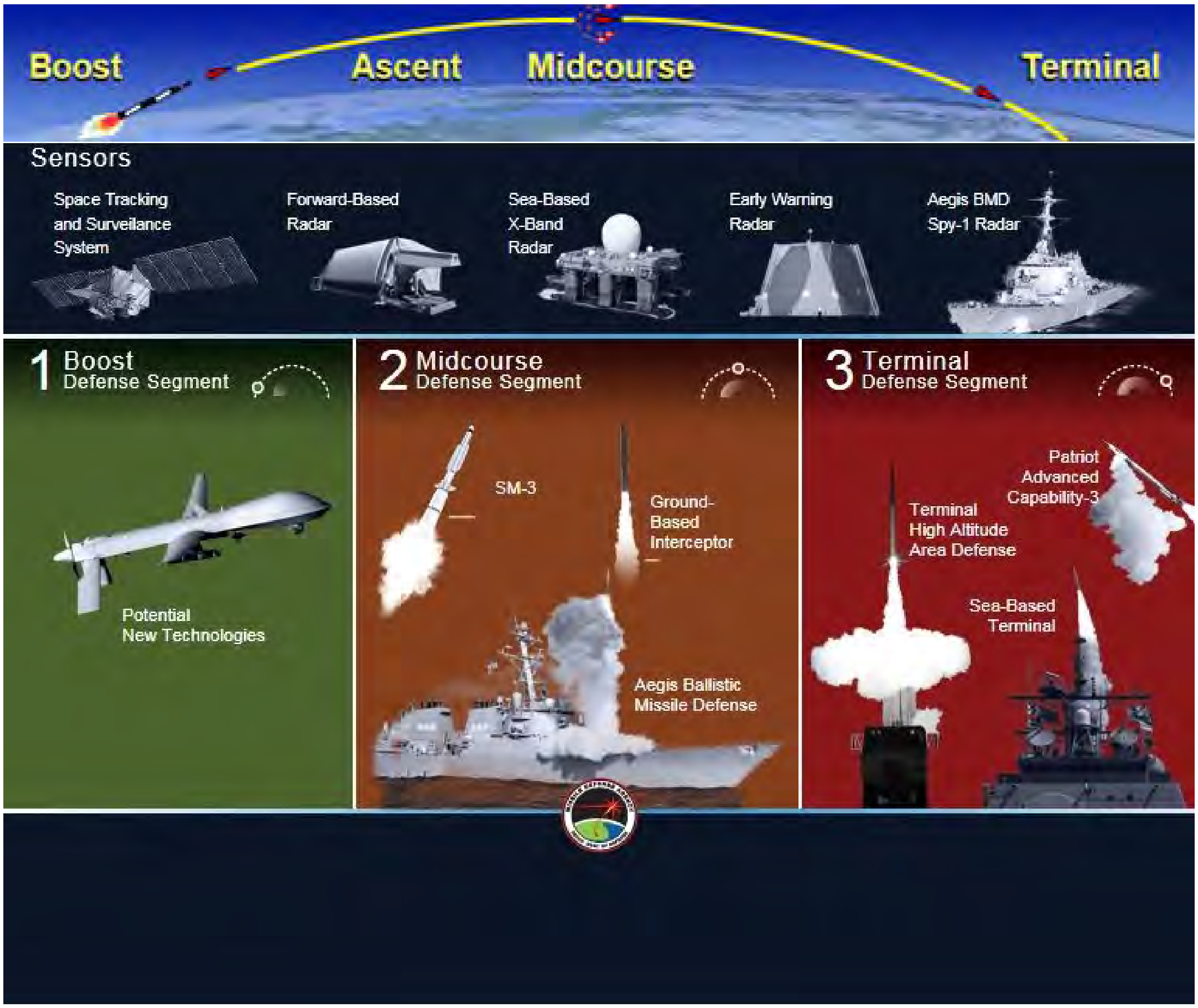
1.8 Related Environmental Documentation

Following is a summary of related environmental documents:

- SMDC, 2000. *National Missile Defense Deployment Final Environmental Impact Statement,* U.S. Army Space and Missile Defense Command (SMDC), January 2000.
- SMDC, 2002. *Ground-based Midcourse Defense Validation of Operational Concept Environmental Assessment*, U.S. Army Space and Missile Defense Command (SMDC), March 2002.
- MDA, 2003. *Ground-based Midcourse Defense Initial Defensive Operations Capability at Vandenberg AFB Environmental Assessment*, Missile Defense Agency (MDA), July 2003.
- DoD, 2007. *Ballistic Missile Defense System (BMDS) Programmatic Environmental Impact Statement*, Department of Defense (DoD) Missile Defense Agency (MDA), January 2007.

A complete list of reference documents used to prepare this EIS is provided in Section 6.0.

Figure 1.2-1 Ballistic Missile Defense System



2.0 Description of the Continental United States Interceptor Site Deployment Concept and Alternatives Considered

2.1 Introduction

This section of the EIS provides a description of the overall approach to the deployment of a potential CIS; a description of a CIS deployment concept; an overview description of the potential life cycle activities associated with the potential CIS (construction, operations, and decommissioning and disposal activities); an overview of the potential candidate sites and deployment alternatives; and a description of deployment alternatives that were considered but not carried forward.

2.2 Objectives

As required by the 2013 NDAA, the MDA is preparing this EIS to evaluate locations in the CONUS best suited for a potential future deployment of an additional GBI site capable of protecting the homeland against threats from nations such as North Korea and Iran. Per the NDAA, at least two of these locations considered are on the East Coast of the U.S.

A CIS, if deployed, could extend the existing GMD element of the BMDS. Potential CIS deployment would be at one of the three following locations: FCTC – MIARNG, Augusta, Michigan; CRJMTC – OHARNG, Portage and Trumbull Counties, Ohio; and FTD, Fort Drum, New York. SERE East, Redington Township, Maine, has been designated an Alternative Considered but not Carried Forward as discussed in Section 1.1. SERE East has been eliminated from further consideration in the EIS. More discussion on SERE East is provided in Section 2.11.2 and Appendix C.

2.3 Ground–Based Midcourse Defense System

The GMD element of the BMDS provides the capability to engage and destroy limited intermediate- and long-range ballistic missile threats in space. GMD is composed of GBIs and ground support and fire control systems (GS&FCS) components.

GMD employs integrated communications networks, fire control systems, globally deployed sensors, and GBIs capable of detecting, tracking, and destroying a limited number of ballistic missile threats.

The kill vehicle (KV) is a sensor/propulsion package on the GBI using the kinetic energy from a direct hit to destroy by kinetic force. A simple analogy is a “bullet hitting a bullet.” The KV does not have an explosive warhead.

The GBI is a multi-stage, solid fuel booster with a KV payload (Figure 2.3-1). When launched, the booster carries the KV toward the target’s predicted location in space. Once released from the booster, the KV uses guidance data transmitted from GS&FCS components and on-board sensors to close with and destroy the target warhead. The KV does not have an explosive warhead.

GS&FCS consist of redundant fire control nodes, interceptor launch facilities, and a communications network. GMD fire control (GFC) receives data from ground-based sensors via satellites and then uses that data to task and support the intercept and destruction of target warheads. The GFC also provides the command and control, battle management and communications element of the BMDS with data for situational awareness.

2.3.1 Ground-Based Interceptors

The function of the GBI is to intercept incoming threat missiles outside the Earth's atmosphere and destroy them by force of impact. Interceptors are composed of two primary parts - a booster and KV (Figure 2.3-1). The KV is the portion of the interceptor that performs the intercept and destroys the threat missile. During flight, the GBI receives information from in-flight interceptor communications system (IFICS) data terminals (IDT) to update the location of the incoming threat missile. For the CIS, the GBIs would be maintained in a state of readiness to intercept a missile launched against the U.S. The GBIs would not be launched from their deployment site except in the Nation's defense. No test firing would be conducted at a CIS.

The GBI weighs 22.5 to 27 tons. Each GBI booster contains a solid propellant. Although the design of GBIs may change as technology develops, for this EIS it has been assumed that the interceptor boosters contain approximately 21 tons of solid Class 1.3 propellant. Each KV contains less than 5 gallons of liquid fuel (e.g., hydrazine) and less than 5 gallons of liquid oxidizer (e.g., nitrogen tetroxide). The KV system may also contain other light weight material such as beryllium. For the KV, the fuel and oxidizer mix to ignite the engine without requiring an external ignition source. The KV does not have an explosive warhead and relies on high velocity impact to destroy the incoming enemy missile.

The liquid fuel and liquid oxidizer tanks would arrive at the site fully filled but separate from the integrated boost vehicle (IBV). This configuration consists of an IBV and KV. The fuel and oxidizer tanks are installed on the IBV in the MAB. Once verified and inspected, the Interceptor would be transported to the missile field site and inserted into the silo by crane or other handling equipment. The GBI may also be stored for a period of time in an interceptor storage facility (ISF) without liquid fuel and oxidizer tanks attached.

2.4 Continental Interceptor Site Deployment Concept

This section provides a general description of the CIS deployment concept, primary and secondary support components required for operation, personnel requirements, and operational activities.

The deployment of a GBI System at a CIS would be (as much as topography and environmental conditions allow) a contiguous missile defense complex (herein referred to as the CIS footprint) similar to that found at Fort Greely, Alaska.

The overall system architecture and baseline set of requirements for a CIS include, but are not limited to, the GBI fields, readiness and communications facilities (R&CF), IDT, GMD Communication Network, and supporting facilities and infrastructure.

Several adjustments to the CIS deployment concept have occurred since the end of the public scoping period (July 16 – September 15, 2014). The MDA completed an in-depth, detailed analysis of the generic conceptual site layout for a typical GBI missile field, revised the deployment concept to expand from 20 to up to a total of 60 GBIs; clarified required safety and hazard standoff distances from perimeter, as well as safety arc overlaps; and completed a geotechnical and geophysical investigation at each candidate site location. These factors have resulted in adjusted notional CIS layouts from what were presented during scoping for each of the candidate installations.

2.4.1 Continental Interceptor Site Facilities

The CIS facilities would be located within the boundaries of the selected installation and would comprise three main categories of facilities – mission facilities, mission support, and non-mission facilities, including life support facilities. All mission facilities would be housed within a perimeter security fence. A majority of mission-support facilities may be located within the perimeter security fence. Non-mission facilities may be outside the perimeter security fencing, but still in the CIS footprint. Figure 2.4-1 shows a notional generic CIS layout for the CIS facilities.

The notional footprint on Figure 2.4-1 incorporates all safety and security distances, as well as the estimated useable land/space required. Depending on topography, geology, and environmental requirements, each location could require additional acreage for a final site design. The final facilities design, interceptor configuration, and site layout has not been completed. Changes to final facility requirements and site layout are possible, but would be within the scope of this EIS because the study area at each candidate location was considerably larger than the notional footprint to accommodate any changes. Final plans would be reviewed and compared to those analyzed in this EIS prior to issuing a notice to proceed with construction.

2.4.1.1 Mission Facilities

Mission facilities (Table 2.4-1) are those hosting launch essential/mission critical (LE/MC) equipment or facilities required to operate the system. Mission critical facilities would be within a secure boundary with an entry control facility (ECF). The following sections briefly describe each of the mission facilities.

Table 2.4-1 Continental United States Interceptor Site Mission Facilities Summary

Facility	Facility Requirements[1]
Ground-Based Interceptor (GBI) field	Up to 60 GBIs total in up to 3 GBI fields.
Mechanical/Electrical Building (MEB)	One 11,800-square foot (sq. ft.) structure for each GBI Field
Readiness & Communication Facility (R&CF) (Primary and Backup)	28,500 sq. ft. primary; 21,000 sq. ft. secondary; each with SATCOM antenna dish and terminal equipment
Satellite Communication (SATCOM) System	One SATCOM antennae with climate-controlled radome co-located to each R&CF (2 antennas)
In-flight Interceptor Communication System Data Terminal (IDT)	Two 4,200 sq. ft. structures expandable up to three IDTs; includes radome, 20 ft. anemometer tower, equipment and mechanical room
Power Plant[2]	24,000 sq. ft. structure for diesel generators
Critical Infrastructure	Communication duct bank, electrical duct bank, potable water, fire protection water, and sanitary sewer
1. Facility size is approximate. Facilities would be separated in accordance with DoD safety and security requirements. 2. Facilities may vary by installation. Size is approximate.	

2.4.1.1.1 Ground-Based Interceptor Fields

The GBI field accommodates the launch site components consisting of launch silos, SIVs, silo closure mechanisms (SCMs), and silo headworks; the mechanical/electrical building (MEB); silo access roadways; underground interconnecting communications and utilities; and other support equipment necessary for LE/MC functions.

Up to 60 GBIs total in up to three GBI fields could be provided for the CIS. A security fence would encompass the public traffic safety arc surrounding the GBI fields. The area between the security fence and outer launch hazard zone (LHZ) boundary (the keep out area) would not be required to have vegetation removed (see Figure 2.4-1).

The layout and design of the actual GBI fields would accommodate the selected site and its natural features. A GBI field would be designed as a raised structure or terrace to minimize the accumulation of precipitation on its surface. The GBI field would be level enough to support missile support vehicles and maneuverability for inserting and removing interceptors into/from the launch silo(s). The surface of the raised structure would be paved to support vehicle operations. Interceptor fields would include a perimeter security fence to provide security and restrict access to the fields and MEB (see Figure 2.4-1).

The launch silo excavation would be approximately 15 feet (ft) in diameter with an approximate minimum depth of 75 ft. The excavation depth could change depending on the silo foundation thickness determined for the deployed site. A construction liner or casing would be installed to support the sides of the excavation and for any loads imposed by the launch silo, SIV, and headworks. The launch silo, SIV, and SCMs are prefabricated pieces of equipment transported to the CIS deployment site.

The SIV would be located below grade next to each launch silo. It houses the silo intelligence, air handling units (AHUs), silo interface connections, and provides access to the launch silo. Silo headworks serve as the foundation for SCMs and missile installation and crane operations, and are the final concrete grade for each launch silo.

2.4.1.1.2 Mechanical / Electrical Building

The MEB would consist of an approximately 11,800-square foot (sq. ft.) facility to house the auxiliary mechanical and electrical for support of the launch site components.

2.4.1.1.3 Readiness and Communications Facility

The R&CF would consist of a primary facility of approximately 28,500 sq. ft. and a secondary backup facility of approximately 21,100 sq. ft.

A satellite communication (SATCOM) antenna with climate-controlled radome would be physically co-located adjacent to each of the two R&CFs (two antennas required). A concrete pad of approximately 6,000 sq. ft. would be constructed for emplacement of the SATCOM antenna, radome, and condenser foundations.

2.4.1.1.4 In-Flight Interceptor Communication System Data Terminal

Two approximately 4,200-sq. ft. IDT facilities would provide in-flight communication with the KV by transmitting target updates and receiving missile health and status. The CIS configuration would require two IDT facilities, expandable to support an additional IDT for future growth (up to three IDTs). Each IDT would contain a radome mounted on one end of the facility. A minimum clear line-of-sight above buildings and surrounding terrain would be required for each IDT.

2.4.1.1.5 Power Plant

Commercial electrical power would be the primary source of power. For backup power, an approximately 24,000-sq. ft. power plant would be constructed to support the mission. It would consist of diesel generators, switchgear, operations room, and maintenance area housed inside the building. It has been estimated that four 3-megawatt (MW) generators, with capabilities to support the expansion up to a total of 60 GBIs in up to three fields, would be needed. Each generator would have dedicated aboveground storage tanks (ASTs) for fuel ranging in capacity from approximately 300 to 1,500 gallons. Additional larger fuel storage tanks would be located nearby as discussed in Section 2.4.1.2.13.

2.4.1.2 Mission Support Facilities

Mission support facilities host equipment or systems not required to operate the system, but required for sustainment, training, safety, or security. Table 2.4-2 summarizes the mission-support facilities.

Table 2.4-2 Continental United States Interceptor Site Mission-Support Facilities Summary

Facility	Facility Requirements (Approximate Size)[1]
Missile Assembly Building (MAB)	40,000 sq. ft.; would include required explosive safety arcs
Interceptor Storage Facility (ISF)	Up to six structures at 4,000 sq. ft.; would include required explosive safety arcs
KV Fuel/Oxidizer Storage Facilities	Two structures at 1000 sq. ft. each
CIS Explosive Storage Component Facility	2,000 sq. ft.
Security Control Facility (SCF)	18,000 sq. ft.
High Explosive Storage Magazine	200 sq. ft.
Ammunition and Explosive Storage Facility	300 sq. ft.
Entry Control Facility (ECF)	5,000 sq. ft.
Maintenance Support Facility (MSF)	25,000 sq. ft.
IDT Support Facility (ISFAC)	4,000 sq. ft. structure
Power Substation Building and Complex	Size would be determined during design process
Fuel Storage	Three 30,000-gallon ASTs on a 2,500 sq. ft. concrete pad
Fuel Unloading Facility	2,500 sq. ft.
Wastewater Treatment	Dependent on existing infrastructure
Water Supply Building	Sized to support approximately 300 personnel
Administrative and Logistics Facility (A&LF)	50,000 sq. ft.
Infrastructure	Water, sewer, electrical, communications
[1]Facility size is approximate. Facilities would be separated in accordance with DoD safety and security requirements.	

2.4.1.2.1 Missile Assembly Building

An approximately 40,000-sq. ft. MAB would provide assembly and test space for interceptors, receiving area for interceptor components (including KVs), observation and control area, technical library/break room, measurement laboratories, hazardous material cleanup operations, and parts storage area. The MAB would have the capability to perform repairs and upgrades to interceptors. General outside vehicle parking would be provided for approximately 30 vehicles.

2.4.1.2.2 Interceptor Storage Facility

The ISF would provide a secure space and controlled environment to temporarily store interceptors as either components or assembled vehicles. Two approximately 4,000-sq. ft. ISFs, with an approximately 1,000 sq. ft. vehicle delivery weather vestibule would be required for 20 silos with expansion capabilities of up to six ISFs. Each ISF would have the capacity to store up to two interceptors. The ISF would consist of earthen-covered, arch-type magazines. A parking/operating apron to accommodate the interceptor transport vehicle and allow adequate maneuvering room for vehicles to back up to the deliver vestibule would be provided. General outside parking would be provided to accommodate approximately six vehicles.

2.4.1.2.3 Kill Vehicle Fuel Tank Storage Facility

The approximately 1,000-sq. ft. KV fuel tank storage facility would provide a secure space and controlled environment in which to store loaded KV fuel tanks. Adequate space would be provided to maneuver the KV fuel tanks transport vehicle in the receipt and delivery area. The KV fuel storage facility would be located near the MAB.

2.4.1.2.4 Kill Vehicle Oxidizer Tank Storage Facility

To store the KV oxidizer discussed in Section 2.3.1, an approximately 1,000 sq. ft. KV oxidizer tank storage facility would provide secure space and controlled environment for loaded KV oxidizer tanks. The KV oxidizer tank storage facility would be similar in structure as the KV fuel storage facility. Adequate space would be provided to maneuver the KV fuel tanks transport vehicle in the receipt and delivery area.

2.4.1.2.5 Continental United States Interceptor Site Explosive Storage Component Facility

An approximately 2,000-sq. ft. CIS explosive storage component facility (sized to maintain required physical separation of individual explosive components to assure safety of adjacent components, personnel, and the facility) would provide a secure space and controlled environment to store small explosive components temporarily removed from interceptors, ground system small explosive components removed during silo maintenance, incoming small explosive components awaiting installation, and small explosive components removed and awaiting evacuation. While the KV would not have an explosive warhead, small explosive components would be used during silo opening and in-flight booster separation. The facility would be a similar version of the KV fuel and oxidizer storage buildings.

2.4.1.2.6 Security Control Facility

An approximately 18,000-sq. ft. security control facility (SCF) would serve as the overall security command and control center for the MDC. The facility would also provide space for breaks/meals, briefings, specialty equipment storage, and emergency sleeping accommodations.

2.4.1.2.7 High Explosive Storage Magazine

An approximately 200-sq. ft. high explosive storage magazine would provide storage for ammunition (grenades, other high explosive weapons, and ammunition) for security forces that operate out of the SCF. This facility would be located within the MDC in close proximity to the SCF.

2.4.1.2.8 Ammunition and Explosive Storage Facility

An approximately 300-sq. ft. ammunition and explosive storage facility would provide storage for ammunition for security forces that operate out of the SCF. This facility would be located within the MDC in close proximity to the SCF.

2.4.1.2.9 Entry Control Facility

An approximately 5,000-sq. ft. ECF and inspection area would provide the potential CIS entry checkpoint for passage of personnel and vehicles into the site. It would contain an administration area, vehicle inspection, and personnel waiting areas. The vehicle inspection area would consist of a series of gates and enclosures (often referred to as a "sally port"). The inspection area size has been based on similar facilities that contained adequate space required to accommodate processing of personnel and vehicles during peak traffic times.

2.4.1.2.10 Maintenance Support Facility

An approximately 25,000-sq. ft. maintenance support facility (MSF) would serve as the GBI and ground systems maintenance support center, providing storage space for vehicles and equipment. The MSF would consist of a large, heated storage area for interceptor support vehicles, other maintenance vehicles and equipment, general public works-type shops (e.g., carpenter, electrical, mechanical), tool and maintenance equipment storage, spares, hazardous material (HazMat) response storage, offices, and a break/lunch room.

2.4.1.2.11 In-flight Interceptor Communication System Data Terminal Support Facility

A single approximately 4,000-sq. ft. IDT support facility (ISFAC) would be required in close proximity to the IDTs for storage and administrative areas to support the IDT operations.

2.4.1.2.12 Power Substation Building

A power substation building on the substation complex would provide the site electrical service interface with the commercial power provider and potential CIS power plant. It would contain a switchyard and control house to serve the potential CIS power requirements. It would not be located near any fuel hazard, radio frequency (RF) emitter, or intrinsically-unsafe areas and most likely would be located within the restricted area fence of the CIS footprint. The power substation would have underground, path-diverse distribution routes and have capacity for up to 60 GBIs total in up to three GBI fields. The size of the power substation building and substation complex would be determined during the design process.

2.4.1.2.13 Fuel Storage Facility

An approximately 2,500-sq. ft. fuel storage facility would have three 30,000-gallon ASTs to provide long-term fuel storage to support continuous emergency backup power plant operations. The fuel storage facility would be provided with a spill containment system.

2.4.1.2.14 Fuel Unloading Station

An approximately 2,500-sq. ft. fuel unloading station would provide a safe area where fuel transportation vehicles would transfer fuel from the fuel transportation vehicle to the fuel storage tanks. The fuel unloading station would be located outside the restricted area fence to facilitate unloading fuel. A single lane (approximately 12 ft) paved road with turnaround would be constructed outside the perimeter fence for delivery trucks to access the off-loading connections.

2.4.1.2.15 Wastewater Treatment Facility

A wastewater treatment facility to support the potential CIS would be designed based on the proximity and available capacity of existing wastewater treatment facilities. The facility size required would be based on the unique site requirement for the specific CIS location.

If existing wastewater treatment facilities are available, piping would be buried below the frost line and would be placed along existing easements and utility corridors, where possible.

2.4.1.2.16 Water Supply Facility

The potential CIS would have a water supply and distribution system to provide all necessary capabilities to operate in an autonomous mode for a period should conditions warrant. A CIS water supply facility would be capable of operating with commercial and CIS emergency backup power plant feeds. The proximity and available capacity of an existing municipal or installation potable water supply for a configuration of up to 60 GBIs total would be a consideration in siting this facility. The water supply facility would be sized to support a steady state of 300 personnel working at any one time. As a general approach, the CIS would have a water supply facility for enclosure of wells, water treatment equipment, pumps, and storage tanks to distribute potable water to the site facilities. The water supply and distribution system design would take into account the needs of all existing and planned future facilities. A typical water supply system would contain two 500-gallon per minute (gpm) capacity water wells installed onsite. The site domestic water demand is based on water allowances of 110 gallons per capita per day (GPCD) for 24-hour occupants and 30 GPCD for 8-hour occupants as required by the Unified Facilities Criteria (UFC) (UFC 3-201-01 and UFC 3-230-3). The water distribution system design would be based on UFC. Potable water and fire protection water for the site would be distributed separately through freeze-protected pipes. Separate storage tanks for fire protection and domestic supplies would be required.

2.4.1.2.17 Administrative and Logistics Facility

An approximate 50,000-sq. ft. Administrative and Logistics Facility (A&LF) would include the logistics warehouse and administration. The administration section of the A&LF would house the GMD administrative and technical support staff. The Logistics Warehouse would provide workspace for logistic support system material and equipment, storage for general facilities materials, MAB spare and repair parts, and other spare parts for the maintenance of the mission system and facilities.

2.4.1.3 Non-Mission Facilities

Non-mission facilities, including life support facilities, are those that host equipment or systems not required to operate or sustain the system but enhance site operations. Non-mission facilities could include warehouse and bulk storage, vehicle storage and maintenance, hazardous materials/waste storage, and roads and parking. Life support facilities could include barracks, unaccompanied officers' quarters, dining facility, fire station, recreation facility, administrative offices, vehicle maintenance, and fueling, and general warehouse storage. If the CIS is located at an active military installation with a support infrastructure in place, only minor new non-mission facilities could be required. If the CIS is located at a remote location, new non-mission facilities for personnel and GBI operation would be required. Details about the support facilities are discussed under the potential CIS deployment location alternatives.

2.4.1.4 Infrastructure

The utility systems would provide the critical infrastructure necessary to support the mission. Communications and utilities include mission and mission support communication services and interfaces, buried in communication duct banks. Electrical duct bank would also be buried.

The traffic circulation network would be designed to best suit the site. Parking capacity, traffic circulation patterns, security, and turning radius to accommodate the design vehicle would be addressed in the design of the site. Table 2.4-3 lists the types of roads, their location, and use that could be required.

Table 2.4-3 Road Criteria

Facility	Width and Type	Function and Use
Main Access Road	24 ft. Asphalt Pavement	Main access from Cantonment Area to ECF. Used by personal vehicles, delivery trucks, maintenance vehicles, large trucks, and cranes.
Central Core Road	20 ft. Aggregate Surface	Serves Central Core Area facilities from ECF, includes: R&CF, Emergency Backup Power Plant Building, Water Supply Building, and IDTs. Used by delivery trucks, maintenance vehicles, and security vehicles.
Missile Field Service Road	14 ft. Aggregate Surface	Serves MAB, ISFs, and Missile Fields from Central Core. Used by maintenance vehicles, large trucks, cranes, and security vehicles.
Perimeter and Interior Patrol Road	10 ft. Aggregate Surface (with 2-ft shoulders)	Serves GMD site. Used by security vehicles.

The fiber optic communication (FOC) network would be installed between support facilities and silos. FOC would be installed in existing conduits, where available. If existing conduits are not available, FOC would be installed in new conduits placed in previously disturbed soils, where possible. The FOC would be buried a minimum 3 feet from the surface. Manholes and covers would allow access to the cables for maintenance and for future cable installations.

2.5 Construction

The CIS, if deployed, would be achieved by constructing mission, mission support, and non-mission facilities as described in Section 2.4 for up to 60 GBIs total in up to three missile fields. Types of construction activities and associated construction schedules are described in this section.

For the assessment of Alternative resources from the potential deployment of the CIS, two construction schedule scenarios were developed and evaluated: a baseline (5-year) construction schedule and an expedited (3-year) construction schedule.

2.5.1 Baseline Construction Schedule

Construction activities under the baseline schedule would take approximately 5 years. The 5-year baseline schedule is an accelerated schedule over a normal schedule of 7 plus years that would be typical for this type of effort. Table 2.5-1 provides a summary of activities and timelines for construction under the baseline schedule. The baseline construction schedule shown is a summary schedule that identifies the primary focus of effort during each period; however, some construction activities may not be confined to a specific period.

Table 2.5-1 Baseline Summary Level 5-Year Construction Schedule

Primary Activities	Year	Duration	Workers/Day[1]
Design, Permitting, and Tree Clearing	Year 1	12 months	100
Site Preparation (site clearing, cut and fill, site grading, etc.)	Year 2	12 months	400
Heavy/Intrusive (Foundations, concrete, buildings, silo installations, etc.)	Year 3-4	24 months	600
Site Build-out	Year 5	12 months	400
(1) Assumes one 10-hour shift, 6 days per week.			

The baseline 5-year construction schedule would include the following tentatively planned activities for the Years 1 through 5:

- Year 1: Design, permitting and tree clearing. During this period it has been assumed that tree clearing would be completed following typical timing restrictions such as for tree clearing during certain months only. Timing restrictions are discussed in detail the site resource evaluations in Section 3.
- Year 2: Site preparation activities include, but would not be limited to, additional site clearing and grubbing, cut and fill excavation work, and site grading.
- Years 3 and 4: Heavy and intrusive construction work includes, but would not be limited to, installation of silos, installation of foundations, concrete work, building erection, and exterior building work.
- Year 5: Site build-out includes interior finishing of buildings, equipment installation, and equipment start-up and testing.

As part of the design activities a detailed construction schedule would be prepared to provide further definition of implementation of specific construction activities.

The number of estimated workers that may be onsite during each of the projected periods is listed in Table 2.5-1. In general, it has been assumed the construction crews would work 6 days per week, 10 hours per day.

Additional schedule and worker related assumptions pertinent to the specific Alternative resource evaluations/assessments (Section 3.0) may be provided on a resource-by-resource basis, as applicable.

2.5.2 Expedited Construction Schedule

As part of the 2016 NDAA, Congress includes a requirement to develop a plan to expedite the potential CIS deployment by at least 2 years. Therefore, in addition to the baseline construction schedule of 5 years, an expedited construction schedule of 3 years has been evaluated in this EIS. The expedited 3-year construction schedule would include the same activities as those described for the baseline 5-year construction schedule: design, permitting, and tree cutting; site preparation work; heavy and intrusive construction work; and site build-out. However, as shown in Table 2.5-2, each activity would occur in a shorter time period under the expedited 3-year construction plan. Although the activities have been shown in sequenced format, it is anticipated that more overlapping of activities could occur under the expedited construction schedule.

Table 2.5-2 Expedited Summary Level 3-Year Construction Schedule

Primary Activities	Months	Duration	Worker/Shift[(1)]	Workers/Day[(1)]
Design, Permitting, and Site and Tree Clearing	Months 1-7	7 months	100	200
Site Preparation (site clearing, cut and fill, site grading, etc.)	Months 8-14	7 months	400	800
Heavy/Intrusive (foundations, concrete, buildings, silo installations, etc.)	Months 15-29	15 months	600	1200
Site Build-out	Months 30-36	7 months	400	800
(1) Assumes two 10-hour shifts, 7 days per week. A 2-hour transition period between shifts assumed for traffic flow considerations.				

Although it has been assumed that two shifts of workers, working 10 hours per shift, 7 days a week, could be required, some periods of 24-hour per 7 day shifts construction work could occur on an as needed basis.

2.6 Ground-Based Interceptor Transportation, Assembly, and Integration Activities (Construction and Operation)

This section provides a brief overview of GBI transportation, assembly, and integration activities that may occur during both construction activities (initial delivery of SIV/silos and GBIs) and operation activities (removing and re-installation of inceptors related to operations and maintenance) and other associated activities. The information provided in this section is based on previous NEPA documents. Additional details and analyses of these activities are provided in applicable site-specific alternatives resource sections in Section 3.0.

2.6.1 Silo Interface Vault/Silo Transport

SIV/silos would be transported from the Point of Debarkation (normally a port) to the deployment site. SIV/silos would be transported over interstate highways or state highways to the nearest two-lane road network capable of transporting the SIV/silos to the deployment site. Coordination with each of the candidate sites state Department of Transportation (DOT) would determine the most appropriate routes. Table 2.6-1 lists the relevant load information for transportation requirements.

Table 2.6-1 Silo Interface Vaults/Silo Transportation Requirements

Total Gross Vehicle Weight	Approximately 350,000 lbs.
Overall Load Width	Approximately 14 ft.
Overall Load Length	Approximately 214 ft.
Overall Load Height	Approximately 17 ft.
Max Axle Weight	Approximately 28,500 lbs.

Additional details regarding SIV/silo transportation and the analysis of the site-specific impacts are provided in each of the Alternative site-specific transportation resource sections in Section 3.

2.6.2 Ground-Based Interceptor Component Transport and Integration

GBI boosters and unfueled KV, payloads, and support equipment would be transported separately by air to the nearest C-17 airplane compatible airport and then transported by over-the-road common carrier truck to the potential CIS. All shipping would be conducted in accordance with applicable U.S. Air Force, U.S. Army, Federal Aviation Administration (FAA), and DOT regulations. Transportation of hazardous materials would be in accordance with DOT regulations for interstate shipment of hazardous materials found in 49 CFR Parts 100-199.

The GBI components would be placed in the MAB for assembly, integration, and check-out or ISF for storage prior to assembly or emplacement. The KV bi-propellant tanks would be stored in the KV fuel and oxidizer storage facilities until mounted onto the KV subassembly. From storage, the GBI and KV components are brought separately to the MAB to be assembled. Once assembled the GBI with the KV would be transported to the launch silo and emplaced into the silo. Figure 2.6-1 shows an overview of the transportation and deployment process for the GBI. Additional descriptions of safety related analyses for the health and safety aspects related to GBI component transportation and integration are presented in the site-specific alternative health and safety resource evaluation sections presented in Section 3.

2.7 CONUS Interceptor Site Day-to-Day Operations

The GBI operations at the potential CIS would include missile assembly and checkout; installation of the KV bi-propellant tanks onto the KV; inspection of the tanks after installation; integration of the KV with the booster; and final inspections, testing, and checkout of the integrated interceptor assembly. Once verified and checked out, the interceptor would be transported to the GBI field site and inserted into the silo by crane. Figure 2.6-1 shows the GBI deployment process from the time a missile arrives at the potential CIS to being emplaced in a missile silo.

The interceptor would remain in the underground launch silo until launch or periodic refurbishment/upgrades. Launches would occur only in defense of the Nation. There would be no flight testing of the GBIs at the potential CIS; however, the system could participate in ground tests and system simulation exercises. The technical status of each GBI would be monitored. Any required maintenance would be conducted onsite and/or at the interceptor contractor's offsite integration facility. Any GBIs or components that are sent to offsite maintenance facilities would be transported back by similar transportation methods that were previously discussed (see Section 2.6). Interceptors in storage would be used to replace missiles requiring repair or selectively removed for reliability testing.

Should a deployment decision be made, the total site related employment based on similar sites would be 650 to 850 military, civilian and contractor support and maintenance personnel. Operations at the potential CIS would include maintenance of facilities, equipment, and missiles to ensure system operational readiness. Once deployed, the GBI system would be essentially dormant, requiring utilities for silos environmental control, GBI storage, and readiness activities.

2.7.1 Hazardous Materials and Hazardous Waste Management

In addition to the propellants, small amounts of hazardous materials usage would be associated with the GBI system activities. These materials would include protective coatings, lubricants and oils, motor and generator fuels, coolants, cleaning agents (isopropyl alcohol), backup power batteries, adhesives, and sealants used in periodic inspection and preventative maintenance for interceptor support systems (such as power supplies, environmental control systems, communications systems, and security systems). These items would be stored in approved hazardous materials, flammable and corrosive storage cabinets. Presently, there are no plans to store liquid propellants onsite other than the small amounts that would be present in preloaded fuel and oxidizer tanks in the KV fuel and oxidizer storage facilities or installed on the KV at the potential CIS MAB prior to emplacement of the GBI in a silo. These materials would be contained within the KV and would not be released at the deployment site except in the unlikely event of a system leak. A fully trained hazardous materials response team would be onsite to respond to such an event. Applicable safety regulations would be followed in the transport, receipt, storage, and handling of hazardous materials. Use and management of hazardous materials and generation of hazardous waste and resource specific evaluations and analyses are presented in detail in the site-specific alternative assessment in Section 3.

2.7.2 Safety Systems

Specific safety plans would be developed to ensure each operation is in compliance with applicable regulations. General safety measures would be developed by the facility user to ensure site personnel and the general public is provided an acceptable level of safety. The main safety requirements for the potential CIS are listed in the following sections.

2.7.2.1 Explosive Safety Quantity-Distances

DoD explosive safety quantity-distance (ESQD) criteria would be used to establish safe distances from explosive hazard areas (GBIs and ordnance) to non-related facilities and roadways in accordance with DoD Directive 6055.9, *DoD Ammunition and Explosives Safety Standards*. All ESQDs would be approved by the DoD Explosive Safety Board.

In addition to interceptor storage, ordnance storage would be required. Small quantities of ordnance, similar to blasting caps, are used for the rapid opening of the closure mechanism on the silo cover. This ordnance would be used in the silos and stored as required. Also, security forces would require ammunition storage. These small amounts of ordnance would be stored in an International Organization for Standardization container.

2.7.2.2 Electromagnetic Radiation Safety Distances

Based on electromagnetic compatibility modeling, restricted areas could be established around the IDT and SATCOM sites. This would include the airspace a certain distance within, around and above the IDTs and above the SATCOM site. A ground safety zone would not be required around the sites as the electromagnetic energy is transmitted upward, above any structures at the IDTs and SATCOM sites.

2.7.2.3 Fire Protection

Fire protection, alarm, and suppression systems would be provided at the potential CIS. Emergency response infrastructure would be augmented to the extent necessary to ensure a prompt emergency response. Additional site-specific information at alternative site locations is provided in the health and safety resource discussions in Section 3.

2.7.3 Security

Security requirements are an integral component of program safety. U.S. Strategic Command (U.S. STRATCOM) Instruction 538-02 – *Ballistic Missile Defense System (BMDS) Physical Security Program* - would be used to establish security requirements. Security measures would be incorporated within the project design and operational procedures. Elements of site security would include security fencing (four types of fences as shown on Figure 2.4-1), clear zone, security lighting, emergency backup power, intrusion detection system, and security patrol roads. A clear zone of at least 30 to 100 ft would be cleared of obstructions and tall vegetation on either side of the security perimeter fence. Within the restricted boundaries, all possible dips, ridges, ditches, and objects that could conceal an intruder or obstruct vision would be removed. The vegetation would be trimmed back to the best extent possible to maximize visibility and would not exceed 8 inches in height.

2.7.4 Snow Removal

Due to the location of the potential deployment sites, snow removal operations would need to be considered for the potential CIS as part of facility operations. In general, the following are snow removal guidelines that would be required for the potential CIS, if deployed (MDA, 2016c):

- Snow would not be piled inside the restricted area fences or within 30 feet outside the clear zone of the restricted area fences.
- The maximum height for a snow pile in designated areas should not exceed 4 ft.
- Snow would not be piled within 100 ft of the perimeter fences.
- Snow removal would be required in the GBI field at and within 5 feet of the SIV/silo.
- Care would be taken in clear zone areas to ensure no damage occurs to security equipment.
- Snow removal would be required on paved interior patrol roads inside the restricted area fence.
- No snow would be stockpiled between the ECF and the Egress Gates.
- Snow removal could occur anytime if mission requirements dictate.

The quantities of potential snowfall at each of the potential CIS deployment sites varies from site to site and is further defined in the climate data provided in the Air Quality sections in Section 3.

2.8 Decommissioning and Disposal

This section provides an overview of decommissioning and disposal activities that would be associated with a potential CIS. Decommissioning and disposal, when implemented, would be completed in accordance with all applicable environmental laws and regulations. Decommissioning would involve planning for the final demilitarization and disposal of the BMDS components and support assets no longer needed for the BMDS. In general, decommissioning and disposal activities for a potential CIS would occur when the components reach the end of their effective service life, when technological advances render them obsolete, or when changes to the threat environment render them unnecessary at a location. Because the specific details of service time for decommission and disposal activities are unknown or not well defined at the time of this EIS, specific activities related decommissioning and disposal would be addressed in detail in supplemental NEPA documents (e.g., Environmental Assessment [EA] and or EIS) when the specific need for decommissioning and disposal of the potential CIS is determined. The remainder of this section provides a brief explanation of activities that may be involved with decommissioning and disposal activities.

Decommissioning could involve complete termination of operations and disposal of the system or its replacement with a new or upgraded system. Prior to decommissioning components, the system components would be evaluated for continued use by other U.S. Government agencies (e.g., U.S. Customs, U.S. Department of the Treasury) or as candidates for Foreign Military Sales. Various adaptive reuses would be analyzed and implemented if appropriate. If no adaptive reuses were identified, the units would be demilitarized and disposed as excess to the needs of the Government.

Demilitarization is the act of destroying a system's offensive and defensive capabilities to prevent the equipment from being used for its intended military purpose. Demilitarization of the components would be performed in accordance with the DoD Directive 4160.21-M, *Defense Reutilization and Disposal*; DoD Directive 4160.21-M-1 Rev. 1, *Defense Demilitarization Manual*; procedures developed by MDA or the responsible military service; and applicable federal, state, and local regulations and procedures.

Disposal is the process of redistributing, transferring, donating, selling, abandoning, destroying, or any other appropriate means for the disposition of the property. Disposal of GBI components would involve establishing the availability of disposal facilities and then shipping hardware and materials to the disposal site. Disposal of materials would conform to DoD directives, joint service regulations, and comply with all applicable federal and state laws.

2.9 CIS Deployment Alternatives

This section provides a brief overview of the candidate site locations, also referred to as alternatives, for the potential deployment of a CIS. The process used for the selection of these sites and the determination of sites considered but not carried forward is presented in Section 2.11. A more detailed assessment of specific conditions of the alternatives carried forward for detailed site analysis is provided in the Affected Environment sections of the alternative resource assessments in Section 3.

Based on determinations defined further in Section 2.11, the candidate locations considered for a potential future CIS are: FCTC, CRJMTC, and FTD. Based on topography, the notional generic layout shown in Figure 2.4-1 could be modified in shape and size to fit the parameters at each individual candidate location.

For consistency in referring to the potential CIS deployment at the alternative sites, the following areas have been defined and used throughout this EIS and are shown on the figures:

- CIS footprint: The CIS footprint includes the area within the candidate site locations where the CIS facilities defined in Section 2.4 (includes mission, mission support, and non-mission facilities, unless otherwise specified) would be located. With the exception of the "keep out area", it has been assumed that the areas within the CIS footprint shown would be completely cleared of vegetation and graded to provide a level surface for the

CIS facilities and required infrastructure. Total acreages for the CIS footprint, including the "keep out area", are shown for reference throughout the EIS document.

- Keep Out Area: The keep out area is an area designated within the CIS footprint that would be used to as a safety buffer zone during a period immediately before and during an actual GBI launch. Because this area would serve as a safety zone primarily during potential launch events and would be posted/signed as such, and the keep out areas indicated would not be required to be cleared of vegetation. The acreages for the keep out areas are the difference between the total CIS footprint and the total acreages to be cleared. Additional details for areas to be cleared of vegetation (e.g., specific acreages of forest to be removed, etc.) are defined in the potential candidate site-specific resource assessments provided in Section 3.

2.9.1 Fort Custer Training Center, Augusta, Michigan

FCTC is a U.S. Army National Guard (ARNG) training installation (Figure 2.9-2) located in portions of Kalamazoo and Calhoun Counties in the southwest portion of Michigan's Lower Peninsula. There are two potential sites for CIS deployment: FCTC Site 1 and FCTC Site 2 (see Figures 2.9-3A and 2.9-3B, respectively). If deployed, either FCTC site would contain all the facilities required for a CIS (e.g., mission facilities, mission support facilities, and non-mission facilities), as described in Section 2.4. For the potential CIS deployment at FCTC, it is anticipated that the surrounding cities and local community would provide support requirements such as housing, childcare, and MWR activities. No onsite workers camp for construction activities has been assumed for the potential CIS deployment at the FCTC sites.

FCTC Site 1 is located in the southeastern portion of the installation and FCTC Site 2 is located in the western portion of the installation adjacent to the Fort Custer Recreation Area (FCRA).

As shown on Figure 2.9-3A, the FCTC Site 1 CIS footprint would require up to 1,008 acres with an estimated 805 acres needing to be cleared. If FCTC Site 1 were selected for deployment of the CIS, discussions with the MIARNG indicate that an acceptable mitigation would be required to close FCTC's 7.62-millimeter (mm) rifle firing range and relocate the activity to another MIARNG installation with adequate capacity.

As shown on Figure 2.9-3B, the FCTC Site 2 CIS footprint would require up to 1,040 acres with an estimated 830 acres needing to be cleared. No current facilities would need to be relocated if the CIS were to be deployed at FCTC Site 2.

In conjunction with FCTC Sites 1 and 2, the MDA would consider the reuse and/or repurposing of existing facilities at W.K. Kellogg Air National Guard Base (ANGB) to satisfy mission and non-mission facility requirements to the maximum extent practicable at FCTC (see Figure 2.9.2 for location of W.K. Kellogg ANGB).

For the FCTC potential CIS deployment, SIV/silos would be transported from a nearby port (discussed further in Section 3.3.12), over a road network capable of transporting the SIV/silos, to the deployment site. A new construction gate for SIV/silo access would be established at Interstate 94 exits 88 or 92. If this site is selected, the exact route would be coordinated with the state DOT and could include interstate highways, state highways, and county roads. Preliminary discussions with the DOT have occurred to support this EIS analysis. The proposed route is discussed in the transportation section of the site-specific analyses for FCTC Site 1 and Site 2 in Section 3.3.12.

The nearest C-17 compatible airfield would be W.K. Kellogg ANGB, which would be used for equipment delivery to the potential CIS.

Additional information on the current status of the affected environment of site-specific resource for the FCTC potential deployment CISs are presented in Section 3.3.

2.9.2 Camp Ravenna Joint Military Training Center – Ohio Army National Guard, Portage and Trumbull Counties, Ohio

CRJMTC (Figure 2.9-4) serves as the OHARNG training area and is located approximately 30 miles south of Cleveland and 20 miles northeast of Akron, Ohio.

One potential CIS deployment site was identified at CRJMTC and is located in the south central portion of the installation near a former cantonment area. Figure 2.9-5 shows the CIS footprint at CRJMTC. If deployed, the CIS would contain all the facilities required for the CIS (e.g., mission facilities, mission support facilities, and non-mission facilities), as described in Section 2.4. For the potential CIS deployment at CRJMTC, it is anticipated that the surrounding cities and local community would provide the support requirements such as housing, childcare, and MWR activities. No onsite workers camp for construction activities has been assumed for the potential CIS deployment at the CRJMTC potential deployment site.

As shown on Figure 2.9-5, the CIS footprint at CRJMTC would require up to 1,070 acres with an estimated 941 acres needing to be cleared. It should be noted that during the CIS EIS, a larger study area of 2,080 acres around the CIS footprint was analyzed in order to provide flexibility in locating the CIS layout within the larger area designated by the installation.

Several facilities within the CRJMTC CIS footprint at CRJMTC would need to be relocated on the installation including the shoot house, regional training institute (RTI) training building, hand grenade and demolition range, and gas chamber training building. The areas designated for relocation of these facilities are shown on Figure 2.9-6. In addition, several World War II era facilities would also be demolished. Additional details regarding the relocation and demolition of these facilities are discussed in the land use and cultural resource sections of the site-specific analysis conducted for CRJMTC in Section 3.4.

For the CRJMTC potential deployment CIS, the SIV/silos would be transported, from a nearby port (discussed further in Section 3.4.12), over a road network capable of transporting the SIV/silos to the deployment site. If this site is selected, the exact route would be coordinated with the state DOT and could include interstate highways, state highways, and county roads. Preliminary discussions with the DOT have occurred to support this EIS analysis. The proposed route is discussed in the transportation section of the site-specific analyses conducted for the potential CRJMTC CIS in Section 3.4.12.

The nearest C-17 capable airfields, which would be required for equipment delivery to the potential CIS, are the Akron-Canton Regional Airport, located approximately 15 miles from CRJMTC; and Youngstown Air Reserve Station located approximately 23 miles from CRJMTC,.

Additional information on the current status of the affected environment of site-specific resource for the CRJMTC potential deployment CIS is presented in Section 3.4.

2.9.3 Fort Drum, New York

FTD is located in Jefferson and Lewis Counties, New York, approximately 10 miles northeast of the City of Watertown in northern New York State within the Great Lakes drainage basin (Figure 2.9-7). The mission of FTD is to provide base operations support for multi-forces training, mobilization, and deployment and to provide installation services for military and civilians.

Since the end of the Scoping Period, several adjustments were made to the CIS deployment concept at FTD to refine facility requirements and obtain additional site layout fidelity. One of the major changes was the consolidation of two potential CIS deployment site options into one CIS option. The primary reason for the consolidation of the two sites into one was due to constraints imposed by wetlands and streams and useable land within the two options previously designated. The consolidated CIS option for FTD is designated FTD Training Range Site 7 because the consolidated site falls within several Training Range 7 sub-training areas within FTD. In this EIS, however, it is also commonly referred to as just the FTD CIS footprint. The consolidated area for FTD Training Site 7 or FTD CIS footprint is shown on Figure 2.9-8. The new FTD CIS footprint attempts to reduce impacts to streams, wetlands and other environmental resources. If a deployment decision were made, the notional layout would require the closure of Highway 3A with traffic rerouted to the south to Highway 3. Additional discussion of this specific impact is presented in the transportation section of the site-specific analysis for FTD Training Range Site 7 in Section 3.5.12.

As shown on Figure 2.9-8, the FTD Training Range Site 7 CIS footprint would require up to 1,219 acres with an estimated 996 acres needing to be cleared. If deployed, the potential FTD CIS would contain all the facilities required for the CIS (e.g., mission facilities, mission support facilities, and non-mission facilities), as described in Section 2.4. Although most of the necessary basic life support facilities to support requirements such as housing, childcare, and MWR activities are available at FTD; if needed for the CIS, additional life support or non-mission facilities could be constructed within the one of the three existing FTD cantonment areas. No onsite worker camp for construction activities has been assumed for the CIS at the FTD.

For the FTD CIS, the SIV/silos would be transported from a nearby port (discussed further in Section 3.5.12), over a road network capable of transporting the SIV/silos to the deployment site. If this site is selected, the exact route would be coordinated with the state DOT and could include interstate highways, state highways, and county roads. Preliminary discussions with the DOT have occurred to support this EIS analysis. The proposed route is discussed in the transportation section of the site-specific analyses for FTD Training Range 7 Site in Section 3.5.12.

Wheeler-Sack Army Airfield is located on the installation and is capable of supporting C-17 aircraft, which would be required for equipment delivery to the potential CIS.

Additional information on the current status of the affected environment of site-specific resource for the FTD CIS footprint is presented in Section 3.4.

2.10 No Action Alternative

Under the No Action Alternative, the MDA would not deploy or construct an additional CIS. The analysis of the No Action Alternative is provided in Section 3.2.

2.11 Siting Study and Alternatives Considered But Not Carried Forward

This section briefly describes the methodology used to determine alternative potential deployment sites for the CIS. It also provides brief descriptions of how certain sites were eliminated from further consideration.

2.11.1 Siting Study

The MDA initiated a Siting Study in accordance with MDA policies and processes to determine candidate locations for deployment of a CIS (MDA, 2014b). The siting process entails sequential completion of five phases: requirements definition, area narrowing, screening (desktop evaluation), location evaluation, and documentation of the siting analysis. MDA Subject Matter Experts, in conjunction with the system operators [representatives from USSTRATOM, U.S. Northern Command (USNORTHCOM), U.S. SMDC/Army Strategic Command, and the Joint Functional Component Command for Integrated Missile Defense defined the system architecture, performance region, and major system requirements for a CIS deployment. Starting with an initial 28-State Area of Consideration (Figure 2.11-1), the performance region to achieve optimal system performance against threats from nations such as North Korea and Iran was refined through comprehensive analyses.

The siting process initially identified 457 properties listed in the *2012 [DoD] Base Structure Report*, located within the 28-State Area of Consideration. An area narrowing process then excluded unsuitable sites from further consideration by applying five exclusionary criteria resulted in 29 candidate locations (DoD, 2012).

Table 2.11-1 lists the area narrowing exclusionary criteria in the order they were applied and summarizes the results.

Table 2.11-1 Area Narrowing Summary Results

DoD Properties in 28-State Area of Consideration		**457**
Exclusionary Criteria (EC) Application	**Failed**	**Passed**
EC #1: Location within Performance Region	218	239
EC #2: DoD-Controlled Land	6	233
EC #3: Special Use Land (set aside for special purposes)	0	233
EC #4: Parcel Size (min. 1,093 acres)	184	49
EC #5: Useable Land (min 747 acres)	20	29

Screening criteria were then applied to the sites remaining after area narrowing to further reduce the number of candidate locations. Table 2.11-2 lists the screening criteria.

Table 2.11-2 Screening Criteria

Screening Criteria	
1.0	Quality of Life: Infrastructure, Services Support
2.0	Maximize Separation Distances to Urban Areas
3.0	Separation Distances to Airports (Air Corridors)
4.0	SIVs/Silo Transportability
5.0	Interceptor Transportability (Airport to Site)
6.0	Mission Incompatibility/Special Use Land
7.0	Usable Land/Space
8.0	Constructability
9.0	Booster Drop Zone Risk
10.0	System Performance

After application of the screening criteria, 16 of the 29 locations were eliminated from further consideration. MDA rank-ordered the remaining 13 locations based on performance against the threat priorities.

After consultation with Office of the Secretary of Defense (Policy), MDA selected the top five candidate locations (installations), based on performance, for comprehensive ‘onsite’ evaluations and inclusion in the CIS EIS: FCTC, Michigan; CRJMTC, Ohio; FTD, New York; SERE East, Maine; and Ethan Allen Training Site, Vermont.

Ethan Allen Training site was subsequently eliminated from further consideration and evaluation as part of the EIS during the comprehensive onsite evaluations due to mission incompatibility (insufficient useable land/space to accommodate the CIS and continue its training mission).

2.11.2 SERE East Site

The SERE East site initially met all the screening criteria based on information available during the Siting Study. Therefore, it was carried forward as an initial candidate site for evaluation in the EIS. After the screening process, extensive field studies and surveys were completed for the four remaining candidate site locations, including the SERE East site, in support of the EIS. Following completion and review of the field studies and surveys, the MDA designated the SERE East site as an "Alternative Considered, but Not Carried Forward" (MDA, 2016b). The SERE East site presented irreversible resource impacts, significant constructability concerns, and extensive costs associated with developing infrastructure in a remote area. Therefore, this alternative is not considered reasonable within the meaning of 40 CFR Part 1502.14 and was eliminated from further consideration.

The preliminary evaluation of impacts for the SERE East site conducted following the field surveys and identification of the affected environment indicated that 7 of the 16 resources (biological resources, cultural resources, geology and soils, transportation, water resources, wetlands, and visual/esthetics) would have major and irreversible impacts if a decision were made to deploy a CIS at the SERE East Site. The following is a brief summary of the major impacts that were identified:

- Geology and Soils.
  - To accommodate an operationally effective CIS layout, there would be substantial removal of soil and rock required at the SERE East site within the CIS footprint (estimated at over 150 million cubic yards [MCY]) based on engineering analyses and minimal locations available to place the excess soil (fill). The excess material would be required to be transported offsite for disposal.
  - The required cut and fill at the SERE East site would result in major impacts to transportation, biological, cultural, water, wetlands, geology and soils, and visual/aesthetic resource areas.

- Transportation.
  - There would be a major impact to some regional roads due to the volume of truck traffic that would be required to transport the excess excavated material (soil and rock) to offsite locations.
  - Two-way truck volume of several thousand trucks per hour for an extended period of time would greatly exceed the capacity of existing two-lane highways, requiring

upgrades, constant maintenance, and construction of additional lanes in each direction of traffic.

- Biological Resources.
  - Major adverse impacts to biological resources identified from the potential construction of the CIS at the SERE East site would include loss of forested bat habitat and destruction of important aquatic habitat through filling of significant amounts of wetlands, streams, and vernal pools.
- Cultural Resources.
  - Construction of the CIS at the SERE East site would destroy the portions of a historic district that fall within the CIS footprint.
  - Construction would result in major visual and noise impacts to the Appalachian Trail, adjacent to the CIS footprint.
- Visual/Aesthetics.
  - There would be major, potentially unmitigatable impacts to visual and aesthetic resources from construction and operation of the CIS at the SERE East site including visibility of proposed CIS buildings and clearing from several key observation points (KOPs) including Saddleback Jr., The Horn, Mt. Abraham, Crocker Mountain, and Quill Hill. Several of these KOPs are located along the Appalachian Trail.
  - There would be a major increase in nighttime lighting and sky glow during construction and operation.
- Water Resources and Wetlands.
  - Cut and fill activities along with clearing and grading at the site would result in significant, irreversible effects to the hydrology of hundreds of streams and destroy several vernal pools and approximately 20 acres of ponds and seeps. There would be direct impacts to approximately 117 acres of wetlands, which would likely not be mitigatable.

Based on these identified impacts along with the associated cost and constructability issues, the SERE East site alternative will not be evaluated further in this EIS as a viable option for potential deployment of the CIS. An expanded, preliminary discussion of all resource areas analyzed at the SERE East site is included in Appendix C.

Figure 2.3-1 Notional Interceptor Schematic

Figure 2.4-1 Notional Generic Continental United States Interceptor Site Layout

ID	Description
3.2	Interceptor Field
3.8	Readiness and Communications Facility
3.9	Mechanical & Electrical Building
3.10	Maintenance Support Faciltiy
3.11	Flight Interceptor Communications System Data Terminal
3.12	IDT Support Facility
3.13	Power Plant
3.14	Power Substation Building
3.15	Fuel Storage
3.16	Fuel Unloading Facility
3.17	Entry Control Facility
3.18	Security Control Facility
3.19	Ammunition and Explosive Storage
3.21	Water Supply Facility
3.23	Administrative and Maintenance Facility
3.24	Interceptor Storage Facility
3.25	Missile Assembly Building
3.26	KV Fuel Storage Faciltiy
3.27	KV Oxidizer Storage Facility

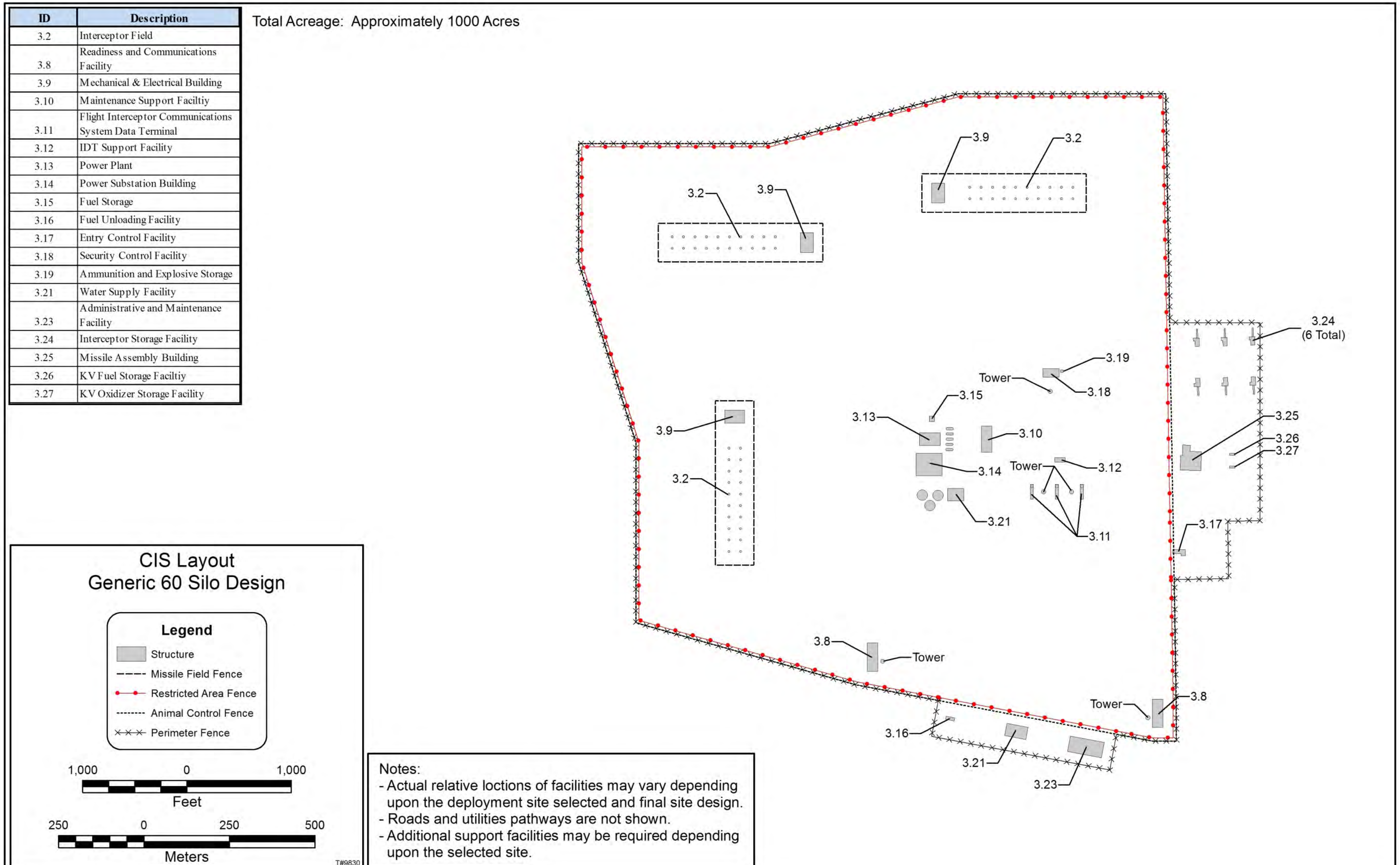


Figure 2.6-1 Ground-Based Interceptor Deployment Process

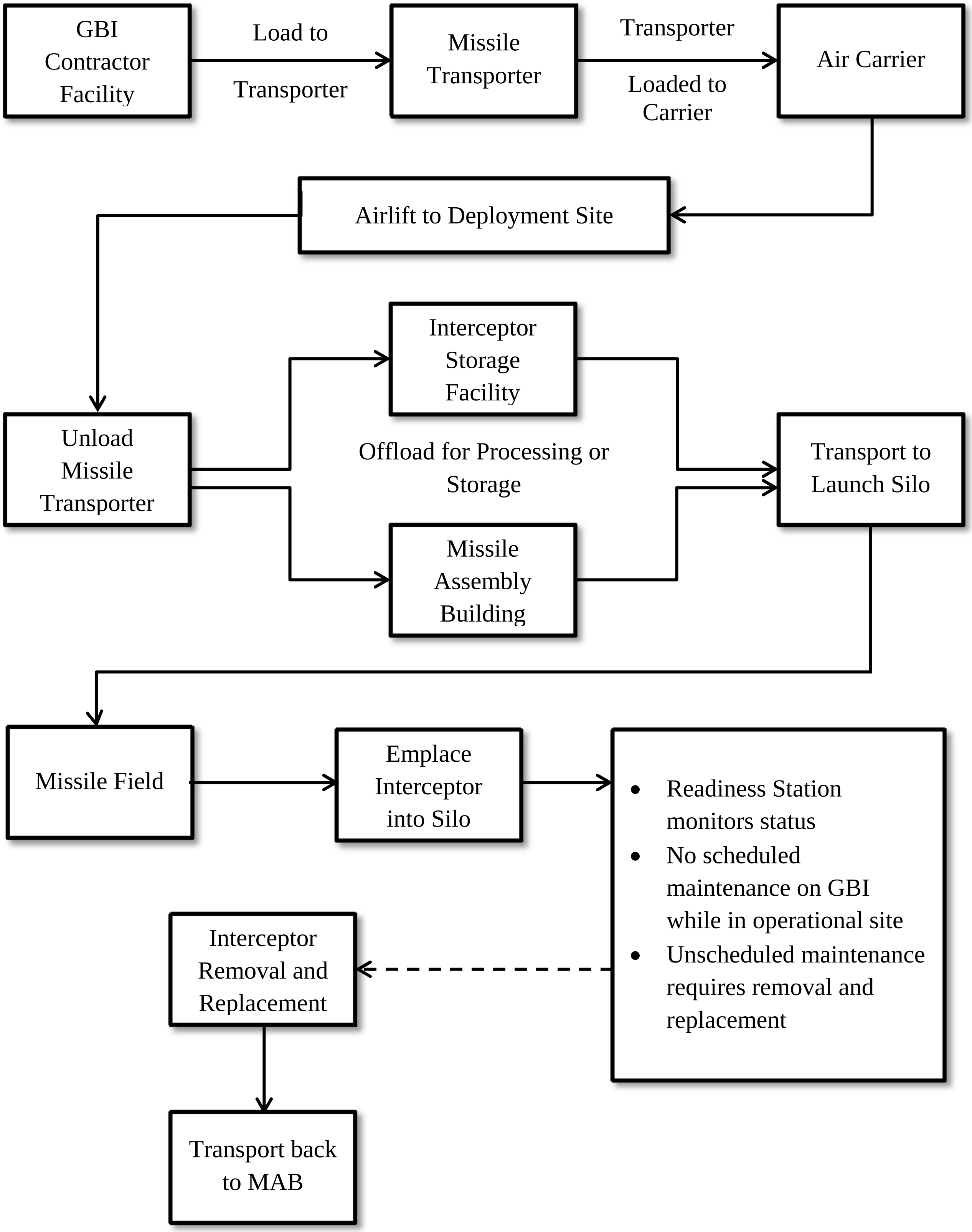


Figure 2.9-1 Continental United States Interceptor Site Candidate Site Locations

Figure 2.9-2 Fort Custer Training Center Installation Map

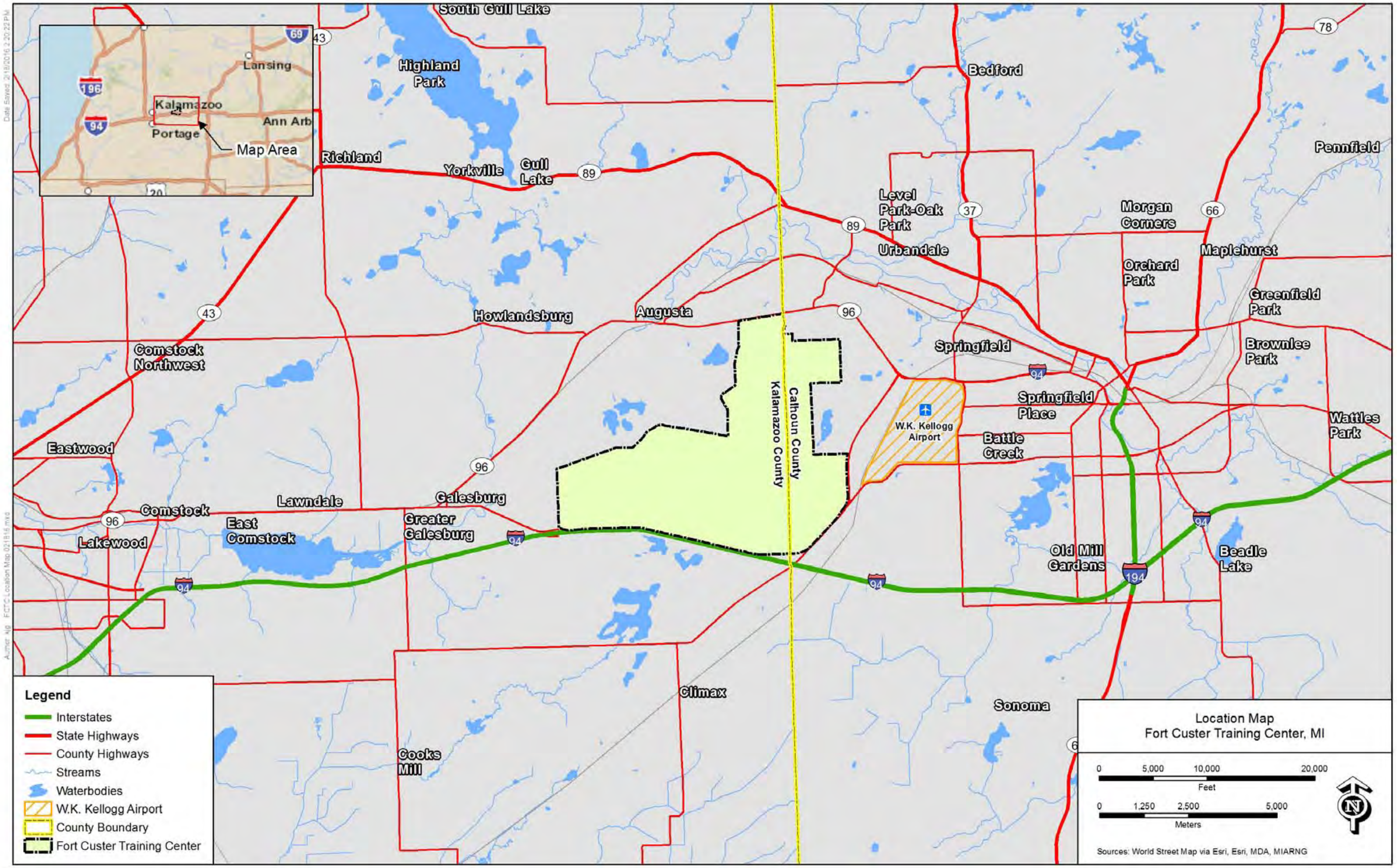


Figure 2.9-3A Fort Custer Training Center Site 1 Potential Continental United States Interceptor Site Footprint

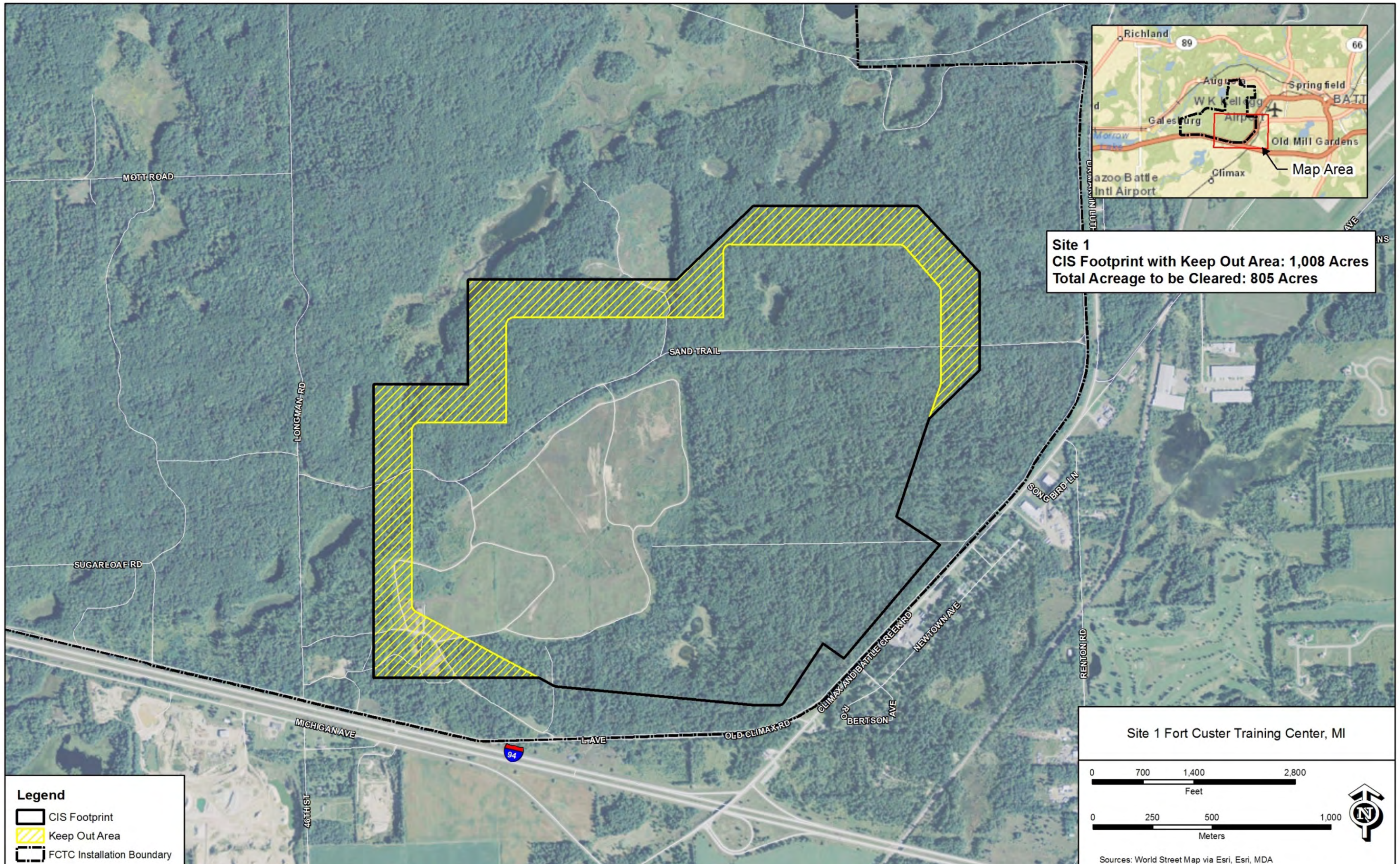


Figure 2.9-3B Fort Custer Training Center Site 2 Potential Continental United States Interceptor Site Footprint

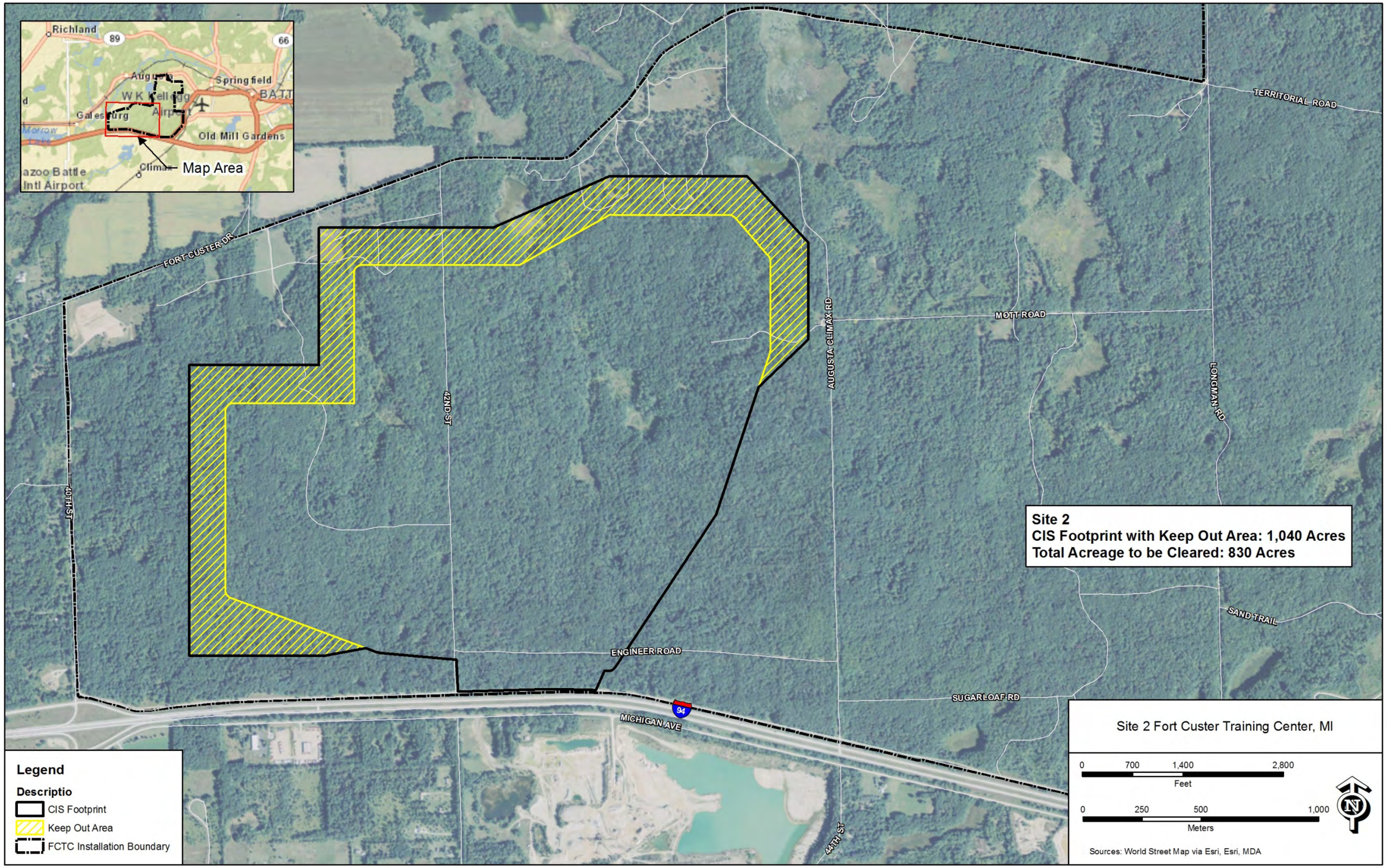


Figure 2.9-4 Camp Ravenna Joint Military Training Center Installation Map

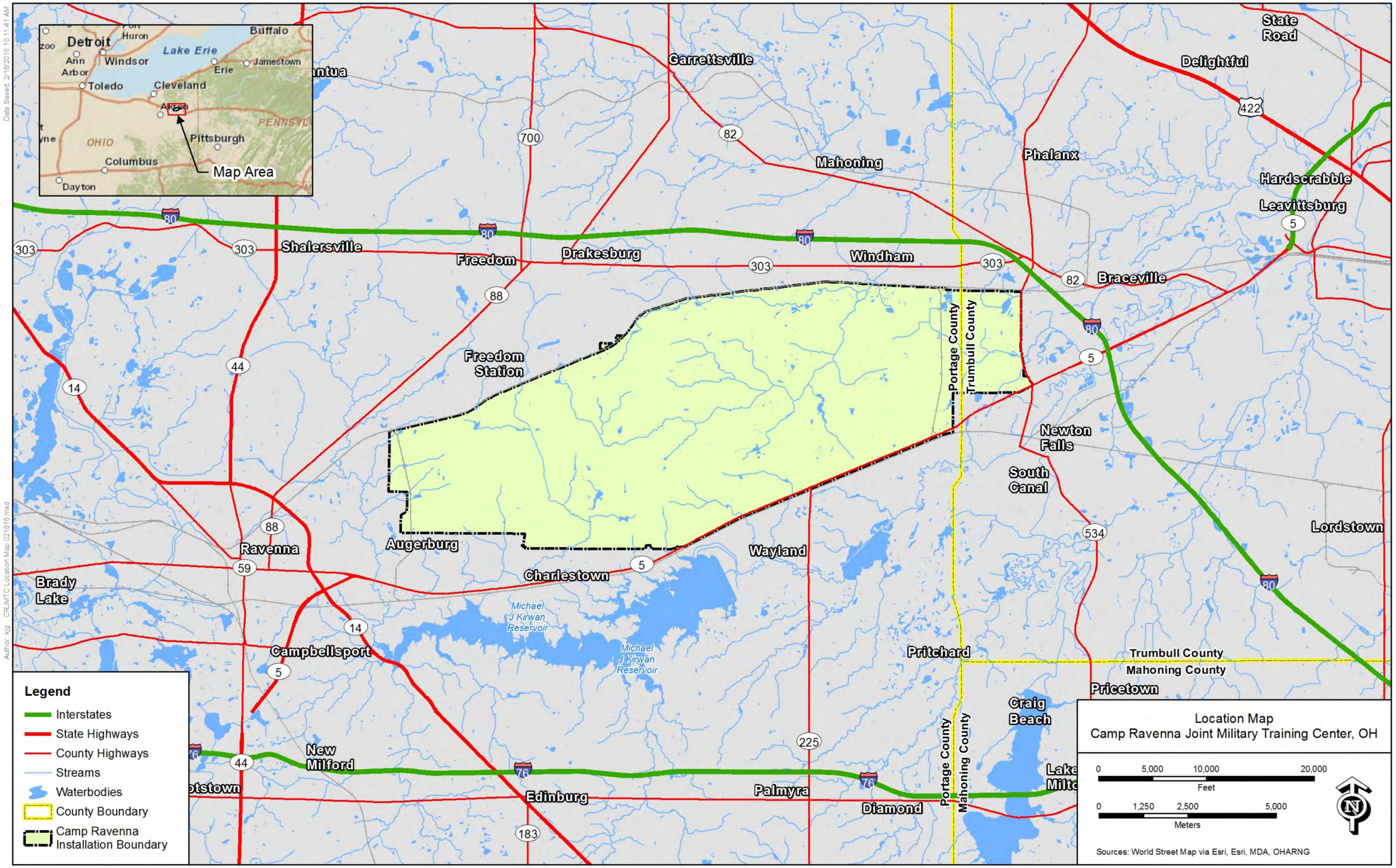


Figure 2.9-5 Camp Ravenna Joint Military Training Center Continental United States Interceptor Site Potential Footprint

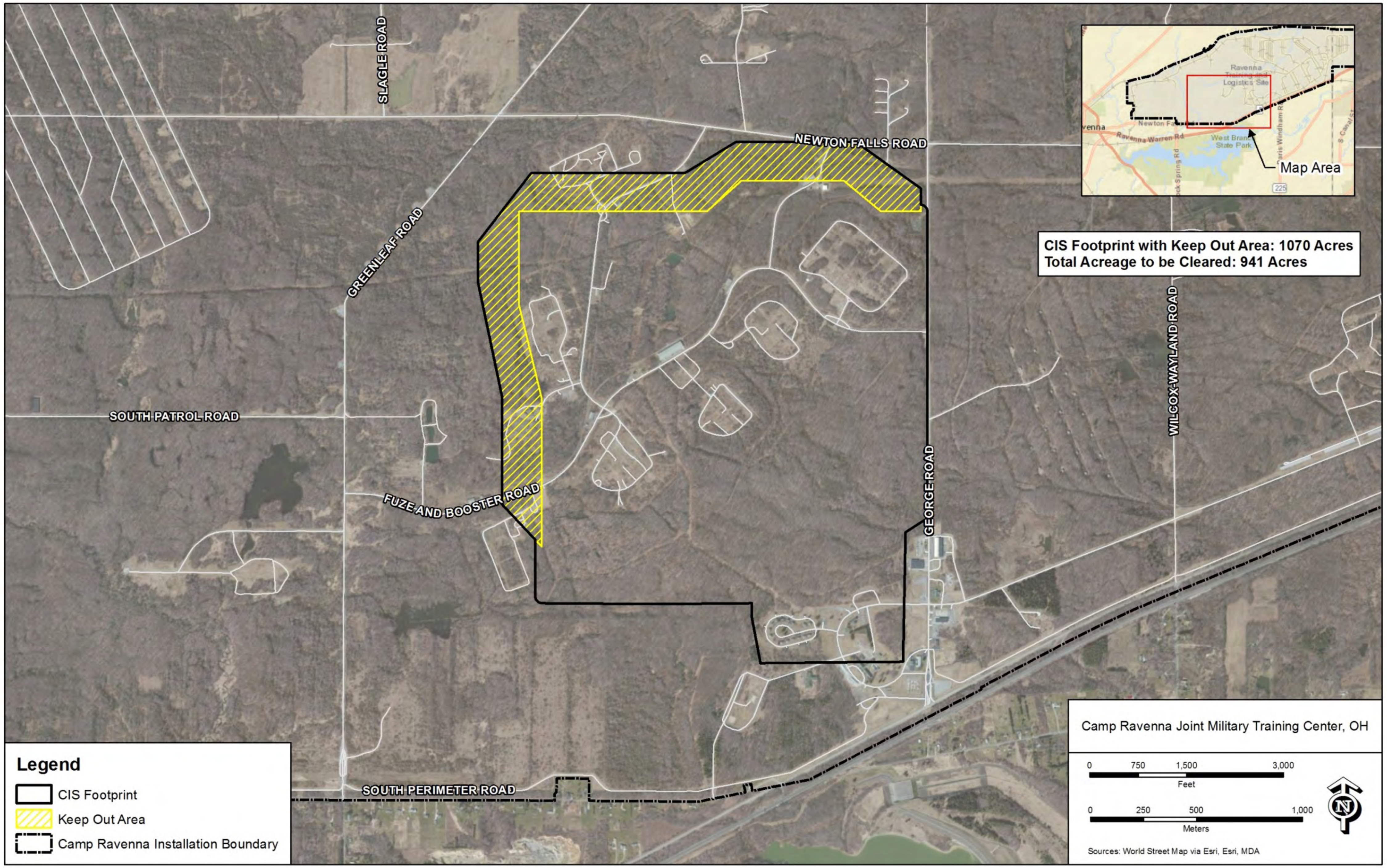


Figure 2.9-6 Camp Ravenna Joint Military Training Center Potential Continental United States Interceptor Site Footprint and Areas for Relocated Facilities

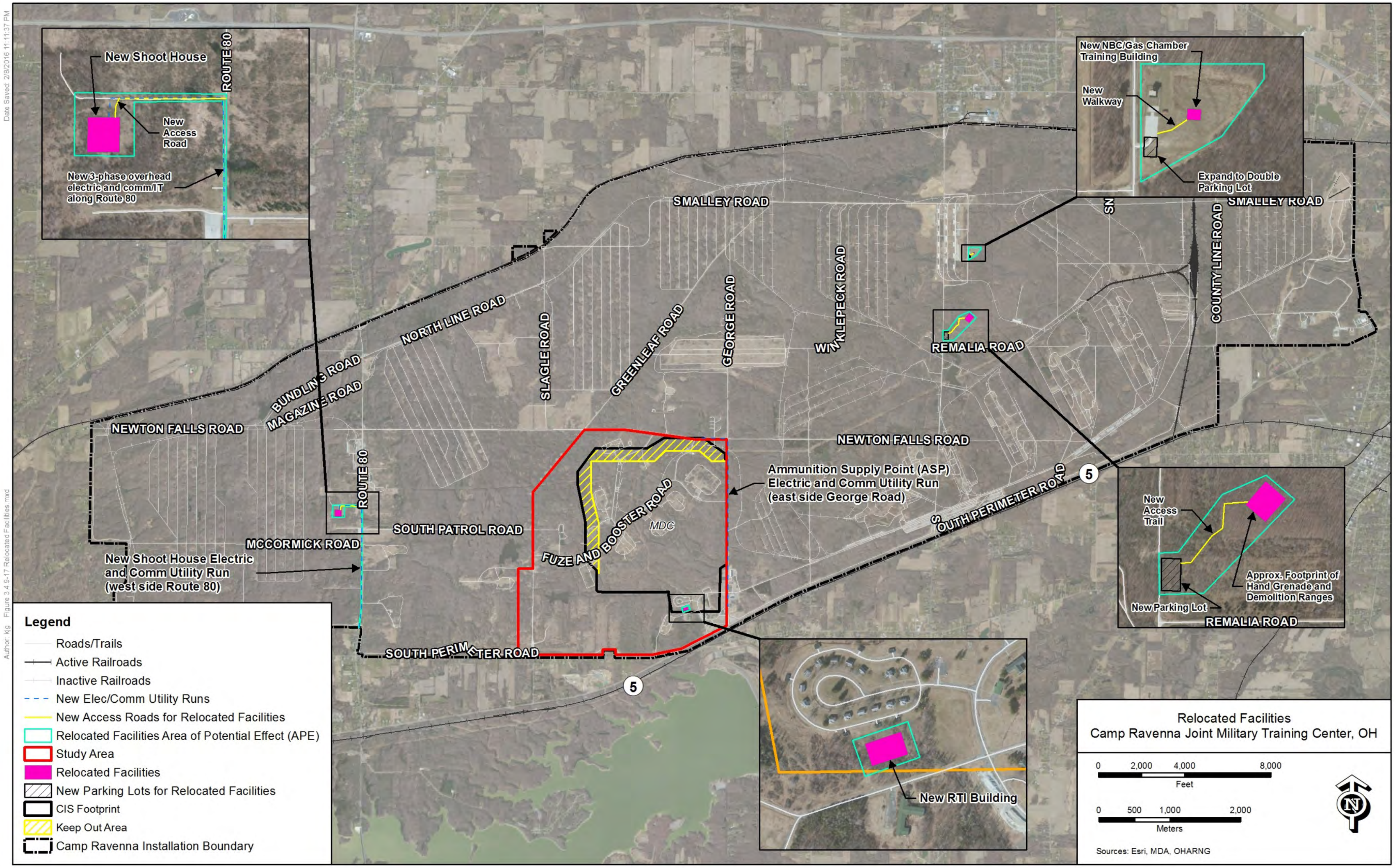


Figure 2.9-7 Fort Drum Installation Map

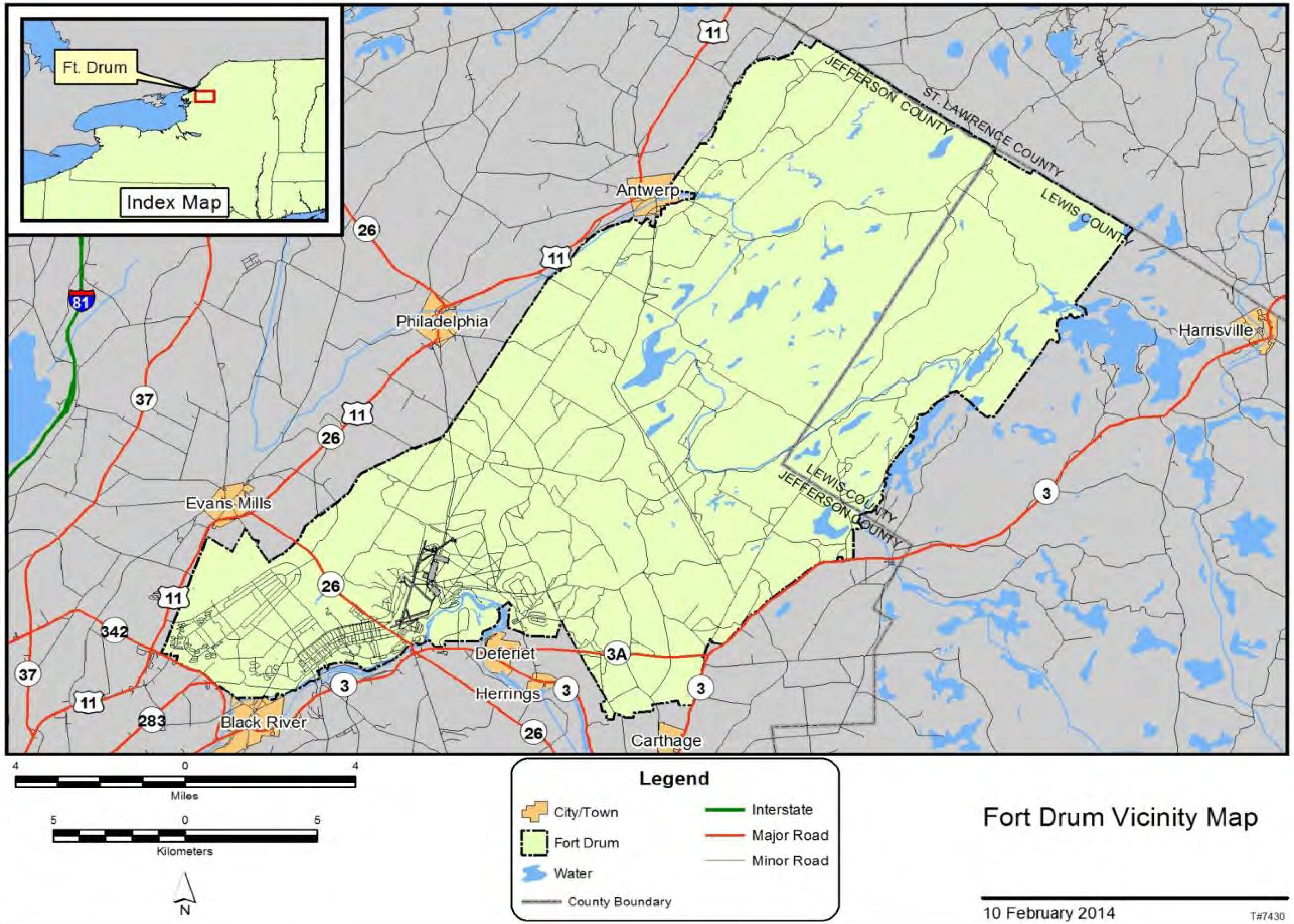


Figure 2.9-8 Fort Drum Training Range Site 7 Potential Continental United States Interceptor Site Footprint

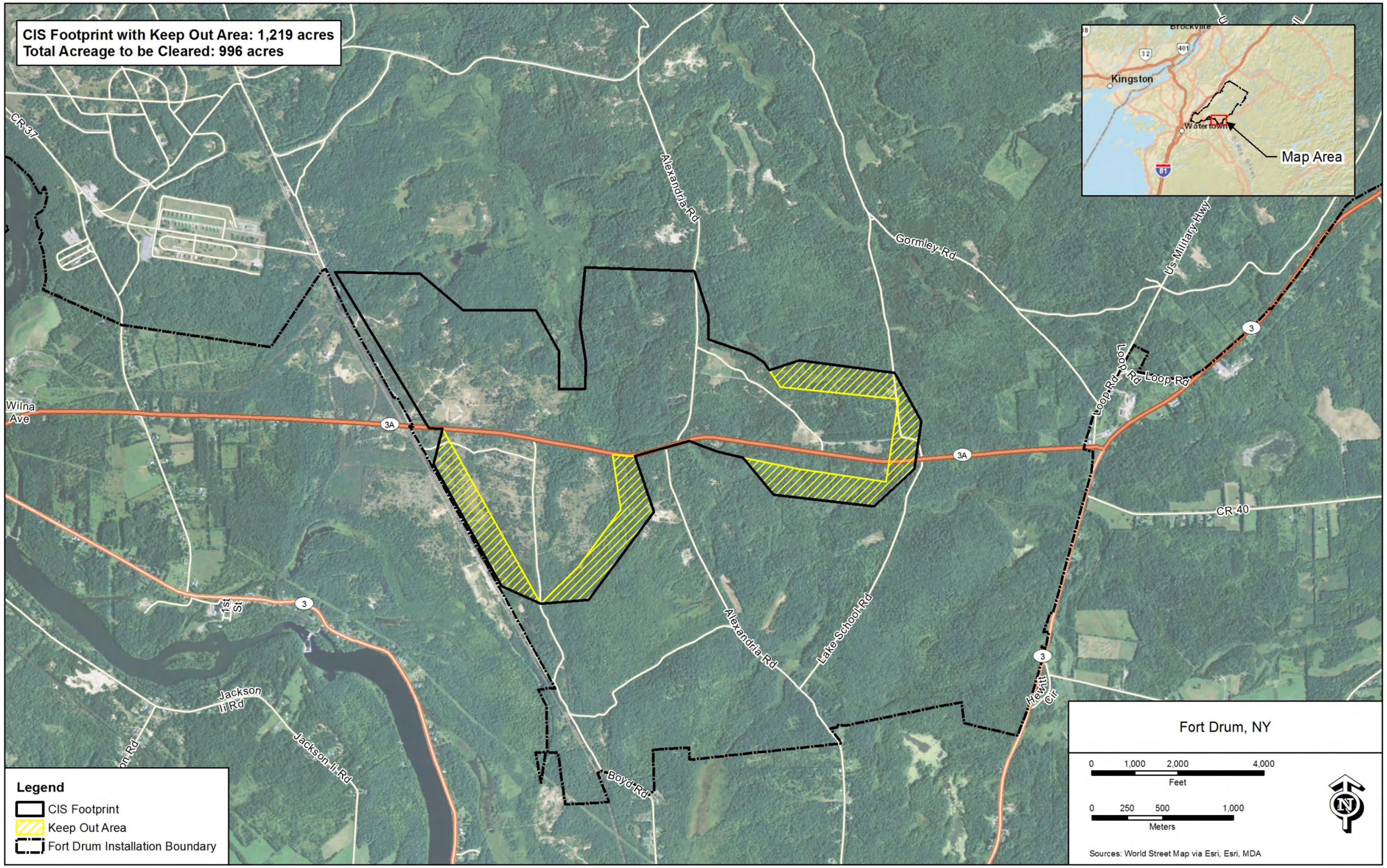


Figure 2.11-1 Continental United States Interceptor Site Area of Consideration

3.0 Affected Environment, Environmental Consequences, and Mitigation

3.1 Introduction

This section describes affected environment, environmental consequences, and mitigation associated with each of the alternatives for the potential CIS deployment. Typically, these assessments are provided by resources and are provided in two separate sections (e.g., Section 3.0 only affected environment and the Section 4.0 environmental consequences, and mitigation). For this EIS, however, to better define the overall complete assessment for each alternative, this section presents the complete assessments for each resource for each alternative including discussion for the existing conditions (affected environment) all the way through impact assessment and, as needed, mitigation options (environmental consequences and mitigation).

The Alternatives for the potential CIS deployment assessed in this section are:

- Section 3.2 No Action.
- Section 3.3 FCTC Sites (FCTC Site 1 and FCTC Site 2), Fort Custer Training Center, Augusta, Michigan.
- Section 3.4 CRJMTC, Camp Ravenna Joint Military Training Center, Portage and Trumbull Counties, Ohio.
- Section 3.5 FTD, Fort Drum Training Range Site 7, New York.

A brief description of background information for each of these potential alternatives was presented in Section 2.9.

The resources assessed in this section for each of the potential alternatives include the following:

1. Air Quality.
2. Airspace.
3. Biological Resources.
4. Cultural Resources.
5. Environmental Justice.
6. Geology and Soils.
7. Hazardous Material and Hazardous Waste.
8. Health and Safety.
9. Land Use.
10. Noise.
11. Socioeconomics.
12. Transportation.
13. Utilities.
14. Water Resources.

15. Wetlands.
16. Visual/Aesthetics.

For each of these resources, site-specific assessments were conducted and documented for the following:

- Affected environment included the assessment of existing site conditions for the potential deployment and an analysis of regulatory requirements that may currently apply.
- Environmental consequences included projecting the potential deployment on the area defined by the affected environment (often referred to in this EIS as the CIS footprint) and assessing the type and magnitude of impacts that may occur (e.g., no impact, minor or limited impact, or major impact). The magnitude of impacts considered three factors:
    - Context – considered physical boundaries (i.e., the project site and the immediate project vicinity, as well as the region) and social/cultural contexts (i.e., affected interests, communities, etc.).
    - Intensity – considered the severity of impact (e.g., small vs large proportion of onsite wetlands filled; small vs large amounts of cut-and-fill; etc.).
    - Duration – considered short-term (i.e., generally the construction and commissioning period) and long-term (permanent for the life of the project).

Based on these factors, impacts were generally characterized as follows:

- No or negligible impacts: Undetectable levels of effect.
- Minor: Effects are detectable but would not noticeably modify, impair, or improve the function, quality, viability, and/or quantity of the resource.
- Moderate: Effects are detectable and would noticeably modify, impair, or improve the function, quality, viability, and/or quantity of the resource.
- Major: Effects would substantially modify, impair, or improve the function, quality, viability, and/or quantity of the resource.
- Significant: Negligible, minor, and moderate impacts would not be considered significant. Some major impacts would be considered significant and are identified in the discussions of specific resources. For those resources for which regulatory thresholds or affects are triggered or exceeded (e.g., air quality, biological resources including considerations of protected species under the Endangered Species Act, and wetlands), impacts will also be characterized per said definitions.

For environmental consequences, impacts were assessed for the potential project activities: construction, operation, and cumulative impacts. For construction assessments, activities were evaluated for both baseline and expedited schedules for each resource. For operations assessment, as defined in Section 2.7, only day-to-day operations and maintenance activities were analyzed for impacts. Operations related to launch situations were not addressed in this EIS because these activities are considered to be an act of war, and outside normal operations. Also as described in Section 2.8, because the specific details of service time or activities for decommission and disposal activities are unknown or not well defined at the time of this EIS, the assessment of decommissioning and disposal activities are not evaluated for the Alternatives. Decommissioning and disposal activities for the CIS would be addressed in detail in supplemental NEPA documents (e.g., EA and or EIS) when the specific need for decommissioning and disposal of the CIS facility is determined.

Mitigation options are provided to address environmental consequences where impacts were identified. In addition to mitigation options, standard practices and best management practices (BMPs) to reduce potential impacts are also discussed. However, it should be noted that only a range of mitigation options and no specific option(s) are provided to address regulatory and or other requirement discussed, because no decision has been made to deploy the CIS and/or no preferred site has been selected for deployment. If a decision is made to deploy and a decision is made for the preferred site; formal consultations with applicable regulatory agencies would be held and specific mitigation options would be developed to address permitting requirements during the design phase of the project.

For each of the site-specific discussions, following the discussions for each resource affected environment, environmental consequences, and mitigation, a summary of cumulative impacts (the impacts on the environment which result from the incremental impact of the action when added to other past, present, or future actions) is provided for each of the candidate site locations. A comparative summary of the direct impacts (caused by the action and occur at the same time and place) and indirect impacts (caused by the action, but could occur later in time or further distance from the action) and mitigation measures is provided in Section 3.6.

3.2 No Action Alternative

The No Action Alternative is not to deploy the CIS as discussed in Section 2.10. For the potential sites considered for the potential CIS deployment, the No Action Alternative analysis evaluates the continuation of ongoing activities at each location.

3.2.1 Air Quality

Under the No Action Alternative, there would be no change in the air quality at any of the potential deployment locations. Because no CIS deployment would occur under the No Action Alternative, no impacts would occur and no mitigation measures would be required.

3.2.2 Airspace

Under the No Action Alternative, there would be no changes in the airspace at any of the potential deployment locations. Because no CIS deployment would occur under the No Action Alternative, no impacts would occur and no mitigation measures would be required.

3.2.3 Biological Resources

Under the No Action Alternative, there would be no changes or additional risks to biological resources at any of the deployment locations. Because no CIS deployment would occur under the No Action Alternative, no impacts would occur and no mitigation measures would be required.

3.2.4 Cultural Resources

Under the No Action Alternative, cultural resources at the potential deployment locations would continue to be managed under current plans to ensure that no effect occur on historic properties. Because no CIS deployment would occur under the No Action Alternative, no impacts would occur and no mitigation measures would be required.

3.2.5 Environmental Justice

Under the No Action Alternative, there would be no disproportionately high and adverse environmental or human health effects on minority or low-income populations at the potential deployment locations. As discussed for the other resources, there would be no environmental, human health, economic, or Native American and Traditional resource impacts from implementation of the No Action Alternative; therefore, no disproportionate minority or low-income populations would be affected and no mitigation measures would be required.

3.2.6 Geology and Soils

Under the No Action Alternative, there would be no impacts on the geology and soils at the potential deployment locations. Because no CIS deployment would occur under the No Action Alternative, no impacts would occur and, therefore, no mitigation measures would be required.

3.2.7 Hazardous Materials and Hazardous Waste Management

Under the No Action Alternative, there would be no change to the hazardous materials and hazardous waste management activities at any of the potential deployment locations. Current hazardous materials and hazardous waste management activities would be followed at each potential deployment location. There would be no impacts to hazardous materials and hazardous waste management and no mitigation measures would be required

3.2.8 Health and Safety

Under the No Action Alternative, there would be no change to the health and safety risks at any of the potential deployment locations. Current health and safety risks would be unchanged and no mitigation measures would be required.

3.2.9 Land Use

Under the No Action Alternative, no change in the current land use status at the potential deployment locations would occur. Therefore, no impacts to land use would occur and no mitigation measures would be required.

3.2.10 Noise

Under the No Action Alternative, there would be no change to the noise environment at any of the potential deployment locations. Therefore, no impacts to noise would occur and no mitigation measures would be required.

3.2.11 Socioeconomics

Under the No Action Alternative, no changes to the socioeconomics at the potential deployment locations would be anticipated. Therefore, no impacts to socioeconomics would occur and no mitigation measures would be required.

3.2.12 Transportation

Under the No Action Alternative, there would be no change to the transportation activities at any of the potential deployment locations. Current transportation activities would continue. Therefore, no impacts to transportation activities and no mitigation measures would be required

3.2.13 Utilities

Under the No Action Alternative, there would be no change to the utility system activities at any of the potential deployment locations. Under the No Action Alternative, production capacities of existing installation and public utility facilities would fulfill demands for both average and peak service requirements. There would be no impacts to utilities if the CIS was not deployed at any of the potential deployment locations and no mitigation measures would be required

3.2.14 Water Resources

Under the No Action Alternative, there would be no effects on water resources at any of the potential deployment locations. Therefore, no impacts to water resources would occur and no mitigation measures would be required.

3.2.15 Wetlands

Under the No Action Alternative, no changes to the wetlands at potential deployment locations would be anticipated. Therefore, no impacts to wetlands would occur and no mitigation measures would be required.

3.2.16 Visual/Aesthetics

Under the No Action Alternative, there would be no changes to the visual or aesthetic environments at any of the potential deployment locations. Therefore, no impacts to visual resources or aesthetics would occur and no mitigation measures would be required.