2 Proposed Action and Alternatives

This section describes the Proposed Action, discusses the methodology used to identify candidate ranges and alternatives that meet the purpose and need, and presents alternatives that were considered, but did not meet the purpose and need, and thus were not carried forward for analysis. This section also describes and compares the alternatives for modernizing and expanding TBR, including the No Action Alternative.

2.1 Range Identification Process

To ensure that the USMC has done its due diligence and that TBR has the greatest potential to meet the purpose of and need for the Proposed Action, the USMC conducted a multi-step screening process. To achieve this, the USMC: 1) developed range evaluation criteria by identifying key physical and operational attributes required to support training with PGMs (Section 2.1.1); 2) identified existing candidate DOD ranges in the Southeastern United States (Section 2.1.2); and 3) evaluated the candidate ranges against the range evaluation criteria (Section 2.1.2). The analysis that was conducted during the range identification process reaffirmed the MROC decision to further analyze the ability of TBR to meet the purpose of and need for the Proposed Action.

2.1.1 Range Evaluation Criteria

As detailed below, the USMC developed range evaluation criteria that optimally support training using PGMs:

1. ***Proximity.*** The range must be within 165 NM of MCAS Beaufort. This distance is the maximum distance that an F/A-18 can travel, complete its mission, and return to base without refueling or landing.

   Using Weapons and Stores Planning (WASP) software, an F/A-18 loaded with external fuel tanks and four 1,000-pound PGMs represents the flight configuration with the greatest drag. To calculate fuel requirements and the distance able to travel to the training site without refueling under this high-drag condition, Portable Flight Planning Software (PFPS) was used with the following inputs:

   - Utilization of enhanced performance engines,
   - Spending 30 minutes for start, taxi, and take-off procedures,
   - Flying at 19,000 feet mean sea level (MSL) and 420 knots (normal cruising airspeed), and
   - Carrying 12,000 pounds of fuel.

   Current MAG-31 standard operating procedures require that F/A-18s land with no less than 2,000 pounds of fuel. Under the conditions listed above, an F/A-18 would burn 9,643 pounds of fuel while completing a training event, allowing the aircraft to return to base with 2,357 pounds of fuel. Given the combination of drag index, fuel load, airspeed, and training time, the maximum range for an F/A-18 is approximately 165 NM.

2. ***Adequate Airspace.*** The range must be under or adjacent to an existing restricted area with enough airspace to support the current training activities completed by MAG-31 at TBR, as well as the required PGM delivery training as currently charted.

Per the June 1, 2010, joint letter from II Marine Expeditionary Force (MEF) and Marine Corps Installations East (MCIEAST) to the Marine Corps Combat Development Command, in order to meet the minimum threshold training requirements, the airspace must provide for a minimum of two l5-degree cones for final attack heading (one of which allows for tactical run-ins), with release of weapons at airspeeds from 360 to 540 knots (414 to 621 miles per hour) and at 24,000 feet MSL (USMC 2010a). Additionally, to meet this requirement, the airspace must allow for delivery of guided bomb unit (GBU)-31, GBU-32, and GBU-38 (joint direct attack munitions [JDAMs]); and GBU-10, GBU-12, and GBU-16 (laser-guided bombs [LGBs]). However, if a range has the aeronautical feasibility to reasonably permit restricted-area expansion to meet the above-listed requirements, then that range could be considered further in this analysis.

3. ***Does Not Host Conflicting Military Operations.*** The range must not currently host conflicting uses, such as ground-based training activities or airfield operations, that would potentially limit the training opportunities for MAG-31 aviators. In other words, the range must have the ability to resolve any conflicts between the training that is currently conducted and the training that would be necessary to meet the purpose of and need for the Proposed Action.

2.1.2 Comparison of Candidate Ranges

The USMC began the process of comparing DOD ranges that could potentially meet the purpose of and need for the Proposed Action through the application of the range evaluation criteria. By applying the first evaluation criterion, Proximity (please refer to Section 2.1.1), the USMC identified seven candidate ranges located within 165 NM of MCAS Beaufort: Fort Stewart, Georgia; Townsend Bombing Range, Georgia; Poinsett Range, South Carolina; Fort Jackson, South Carolina; Fort Gordon, Georgia; Grand Bay Range, Georgia; and Camp Blanding, Florida (see Figure 2-1). Each of these seven DOD ranges is within 165 NM of MCAS Beaufort and, therefore, meets the condition laid out under the first evaluation criterion.

To gather information to assess these ranges against the remaining two evaluation criteria, each range was then sent a survey asking about its capability to absorb the USMC training needs. The responses to those surveys and other collected information were the basis for the analysis that is summarized in the description of each range below. The seven candidate ranges, including TBR, are listed in order from shortest to greatest distance from MCAS Beaufort. Table 2-1 provides a summary comparison of the seven candidate ranges using the range evaluation criteria.

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MCAS Beaufort 165-Nautical Mile Radius

AFB = Air Force Base
MCAS = Marine Corps Air Station

Figure 2-1
Candidate Ranges
Townsend Bombing Range
McIntosh and Long Counties, Georgia

0 50 100 Miles

Source: Esri 2008

Table 2-1
Comparison of Ranges Based on Range Evaluation Criteria

	1. Proximity	2. Adequate Airspace	3. Does Not Host Conflicting Military Operations
Fort Stewart (Georgia)	45 NM	Yes	No
Townsend Bombing Range (Georgia)	70 NM	Yes	Yes
Poinsett Range (South Carolina)	75 NM	No	Yes
Fort Jackson (South Carolina)	90 NM	No	No
Fort Gordon (Georgia)	96 NM	No	Yes [(a)]
Grand Bay Range (Georgia)	146 NM	No	No
Camp Blanding (Florida)	160 NM	No	No

Note: (a) Impact Area restrictions exist.
Key: NM = nautical miles.

Fort Stewart, Georgia, is located 45 NM southwest of MCAS Beaufort. The range's airspace consists of Restricted Areas R-3005A, B, C, D, and E that extend from ground surface to 29,000 feet MSL. The restricted airspace is adjacent to the Coastal MOA and Fort Stewart MOA complexes. Generally, the MOAs combine to create an MOA complex that extends from 300 feet above ground level (AGL) to 18,000 MSL. Coastal 8 MOA, to the west, begins at 10,001 feet MSL and extends to 18,000 feet MSL. The SUA would be adequate for containing MAG-31's current and minimum threshold training requirements (USMC 2010a).

Due to noise abatement restrictions, Fort Stewart only authorizes the delivery of aviation ordnance from May 1 through October 31 and only during daylight hours. Also, PGMs are not currently authorized for use at the range. The range was utilized by the Third Infantry Division (3rd ID) for 311 days during calendar year 2009, but 3rd ID was deployed during 2010, and 2011 data were not immediately available during the preparation of this FEIS. The restriction of aviation ordnance to six months per year is not compatible with MAG-31's training requirement, nor is there sufficient capacity to accommodate the training sorties that would be generated by 3rd ID's use. Therefore, Fort Stewart does not meet the purpose of and need for the Proposed Action.

Townsend Bombing Range, Georgia, is located 70 NM southwest of MCAS Beaufort. The range's airspace consists of Restricted Areas R-3007A, B, C, and D that extend from ground surface to 25,000 feet MSL. The restricted airspace is adjacent to the Coastal MOA complex that extends from 300 feet AGL to 18,000 MSL. MAG-31 currently conducts a majority of their training at TBR but, in addition to meeting the current training needs, the SUA also would be adequate for containing MAG-31's minimum threshold training requirements with a minor modification (USMC 2010a). Currently, PGMs are not utilized at TBR due to the lack of land necessary to contain the WDZs; however, unlike some of the ranges listed below, TBR is not immediately bound by natural or manmade features like waterways, roads, or power lines, which makes land expansion a more feasible option. Finally, as previously stated, the USMC owns TBR and MAG-31 is the primary user; therefore, no conflicting military operations exist that would prevent TBR from meeting MAG-31's minimum threshold training requirements (USMC 2010a).

Poinsett Range, South Carolina, is located 75 NM north of MCAS Beaufort. The range's airspace consists of Restricted Areas R-6002A, B, and C that extend from ground surface to 23,000 feet

MSL. The Restricted Areas adjoin Poinsett MOA, which extends from ground surface to 2,500 feet MSL with the exception of two blocks of airspace from ground surface to 1,500 feet MSL over the communities of Pinewood and Summerton. The range's land area is bounded on the east, west, and south by public roads and on the north by power lines. Additionally, a power line transects the range east to west. The range also is adjoined by the Manchester State Forest. Restricted Area R-6002 extends into the Shaw Air Force Base (AFB) Class C and Class D airspace and is located 1.5 NM from the City of Sumter. Poinsett Range allows the use of GBU-31, GBU-32, and GBU-38 (JDAMs) and GBU-10, GBU-12, and GBU-16 (LGBs); however, the range only has one authorized cone for final attack heading of 30 degrees with airspeeds up to 520 knots (598 miles per hour) and up to 23,000 feet MSL.

As presently configured, the Poinsett Range Restricted Area is approximately half the size of the TBR Restricted Area and the Poinsett MOA is approximately one quarter the size of the Coastal MOA complex. Current training operations at TBR would be severely restricted if transferred to Poinsett Range. Poinsett only allows a single run-in heading, which does not meet the minimum threshold training requirement of two 15-degree cones for final attack heading (USMC 2010a). Further, based on a map analysis, the ability to expand the range is constrained by the City of Sumter to the north and east, by power lines to the north, by public highways to the east, west, and south, and by the Manchester State Forest to the south. As currently configured, Poinsett Range does not meet the purpose of and need for the Proposed Action and does not appear to have the capability to expand either the land or airspace boundaries

Fort Jackson, South Carolina, is located 90 NM northwest of MCAS Beaufort. The range's airspace consists of Restricted Areas R-6001A and B that extend from ground surface to 23,000 feet MSL. FAA Joint Order 7400.8T restricts aviation operations to between 3,200 and 13,000 feet AGL and for only two hours daily. Further, during those two hours only MK-106 practice bombs can be used. Fort Jackson has no adjoining MOA.

As presently configured, the airspace does not support current training operations and is not capable of supporting the minimum threshold training requirement (USMC 2010a). In addition, the FAA does not allow the delivery of PGMs required to meet the purpose of and need for the Proposed Action.

Fort Gordon, Georgia, is located 96 NM west of MCAS Beaufort. The range's airspace consists of Restricted Areas R-3004A and B that extend from ground surface to 16,000 feet MSL. FAA Joint Order 7400.8T restricts aviation activities to below 12,000 feet AGL and further restricts activities such that operations are not permitted on weekends, national holidays, or the entire week of the Masters Golf Tournament. Existing contamination issues within the target areas would severely restrict the delivery of GBU-10, -12, -16, -31, -32, and -38 bombs.

The altitude restrictions imposed by the FAA do not support the minimum threshold training requirement (USMC 2010a); therefore, Fort Gordon does not meet the purpose of and need for the Proposed Action.

Grand Bay Range, Georgia, is located 150 NM southwest of MCAS Beaufort. The range's airspace consists of Restricted Areas R-3008A, B, C, and D. Restricted Area R-3008A is directly over the target area and extends from ground surface to 10,000 feet MSL. R-3008B is adjacent to R-3008A, and extends from ground surface to 10,000 feet MSL. R-3008C, also adjacent to R-3008A, extends from 500 feet AGL to 10,000 feet MSL. R-3008D overlies A, B, and C and extends from 10,000 to 23,000 feet MSL. Moody 1 MOA is generally north, south, and west of R-3008 and extends from 8,000 to 18,000 feet MSL. Moody 2 North is east of the R-3008 and extends from 500 feet AGL to 8,000 feet MSL. Moody 2 South is also east of the R-3008 and extends from 100 feet AGL to 8,000 feet MSL. All of these MOAs directly connect to R-3008.

Moody AFB operates the Grand Bay Range. Range operating procedures do not allow the use of laser-guided weapons (GBU-10, -12, and -16) and only allow GBU-38 to be employed from the north

with a 10-degree cone for final attack heading. Due to the restriction on all laser-guided munitions, as well as GBU-31 and -32, Grand Bay Range does not meet the purpose of and need for the Proposed Action.

Camp Blanding, Florida, is located 160 NM south of MCAS Beaufort. The range's airspace consists of Restricted Areas R-2903A, B, C, and D and R-2904A. R-2903A extends from ground surface to 23,000 feet MSL and is available from 7:00 am to 7:00 pm, Tuesday through Sunday. R-2903B overlies R-2903A, extends from 23,000 to 32,000 feet MSL, and is available from 8:00 pm to 5:00 am on Saturday and Sunday. R-2903C extends from R-2903A to the southeast, from ground surface to 7,000 feet MSL. R-2903D extends to the southeast from R-2903C and from ground surface to 5,000 feet MSL. R-2903C and D are available from 7:00 am to 7:00 pm, Tuesday through Sunday. R-2904A extends from the north of R-2903A, from ground surface to 1,800 feet MSL, and is available from 8:00 am to 5:00 pm daily from April through August and on Saturday and Sunday from September through March. A letter of procedure with the FAA limits aviation activity to 14,000 feet MSL and below.

Due to the altitude restrictions imposed by the FAA, along with the fact that a large portion of the restricted airspace is over non-DOD land that is not available for air-to-ground ordnance training, Camp Blanding does not meet the minimum threshold training requirements (USMC 2010a). DOD-owned land is bounded on all sides by public highways that restrict expansion opportunities. The ranges at Camp Blanding were utilized 317 days in fiscal year (FY) 2010, therefore, sufficient capacity to accommodate MAG-31's training sorties is not available. Further, current training activities are not compatible with the proposed operations and would have to be de-conflicted, which would result in degraded training capability for U.S. Army units currently using the range. As presently configured, the restricted airspace does not have sufficient vertical boundaries to 25,000 feet MSL, does not support current training activities, nor does it support the minimum threshold training requirement (USMC 2010a). Therefore, Camp Blanding does not meet the purpose of and need for the Proposed Action.

As shown in Table 2-1 and discussed in the descriptions of the ranges above, TBR is the only candidate range to meet all three of the range evaluation criteria that would satisfy the USMC's purpose of and need for the Proposed Action. None of the other six candidate ranges meet all the evaluation criteria; therefore, these ranges were removed from further consideration. The USMC determined that TBR has the greatest potential to accommodate the purpose of and need for the Proposed Action. Therefore, the USMC began developing land acquisition alternatives for consideration (please refer to Section 2.2.1).

2.2 Proposed Action

The Proposed Action that is evaluated in this FEIS is to modernize and expand TBR to accommodate MAG-31's requirement to train with inert PGMs and the larger safety zones their use requires. To accomplish this, the USMC proposes to acquire lands in the vicinity of TBR on which to create new target areas to accommodate the larger WDZs and meet the minimum threshold training requirement.

The Proposed Action includes the following interrelated components:

- Acquisition of land;
- Acquisition of a timber easement;
- Modification of existing airspace;
- Construction of infrastructure to support PGM training; and
- Improvement of training capabilities.

2.2.1 Acquisition of Land

The USMC proposes to acquire land adjacent to TBR to accommodate the WDZs for GBU-31, GBU-32, and GBU-38 (JDAMs), and WDZs and LSDZs for GBU-10, GBU-12, and GBU-16 (LGBs). As outlined in Section 1.1.4, PGMs require larger WDZs. USMC range safety policies require danger zones to be contained within the range boundary and/or lands under exclusive military use and control. The WDZs and LSDZs are designed to contain all projectiles, hazardous fragments, laser hazards, and ricochets. To safely deliver PGMs at TBR, the land area must be increased to ensure the containment of the danger zones, while simultaneously allowing for the employment of realistic tactics, techniques, and procedures. The protection of the public from the hazards associated with the proposed training is of utmost importance and was a key component in the design of each of the proposed alternatives. Numerous precautions are mandated by the USMC, the U.S. Air Force, and local range safety regulations to protect the public, military, and civilian personnel.

To develop land acquisition areas, the USMC analyzed the lands surrounding TBR and used modeling software to determine WDZs/LSDZs. These land acquisition areas (up to approximately 34,861 acres), in combination or as stand-alone options, became the action alternatives for this FEIS. Each action alternative meets the minimum threshold training requirements for PGM delivery training as outlined in the June 1, 2010, joint letter from II MEF and MCIEAST to the Marine Corps Combat Development Command (USMC 2010a). The land acquisition alternative must provide for a minimum of two l5-degree cones for final attack heading (one of which allows for tactical run-ins), with release of weapons at airspeeds from 360 to 540 knots (414 to 621 miles per hour) and at 24,000 feet MSL. Additionally, to meet the threshold training requirement, a range must allow for delivery of GBU-31, GBU-32, and GBU-38 (JDAMs); and GBU-10, GBU-12, and GBU-16 (LGBs). The larger size of the PGM WDZs was the main factor in determining the size of the proposed acquisition area (please refer to Section 1.1.4 and Figure 1-2). Figure 2-2 illustrates how the USMC used the PGM WDZs to initially determine the size of the proposed acquisition areas.

Utilizing the delivery parameters stated above, WDZ Tool generated a Composite Weapon Danger Zone (CWDZ) to identify the land area necessary to meet the desired improvements in training capabilities and to ensure continued public safety for air-to-ground weapon delivery. The CWDZ was overlain on aerial imagery of the existing TBR and surrounding lands. Taking into account existing natural and manmade terrain features (roads, streams, power lines, etc.) and property ownership boundaries, the acquisition areas were developed. The proposed acquisition areas would go up to, but would not include, these landscape features. The Proposed Action does not include the acquisition of the power lines or the current utility ROWs. No utility transmission lines or associated ROWs would be affected by the Proposed Action.

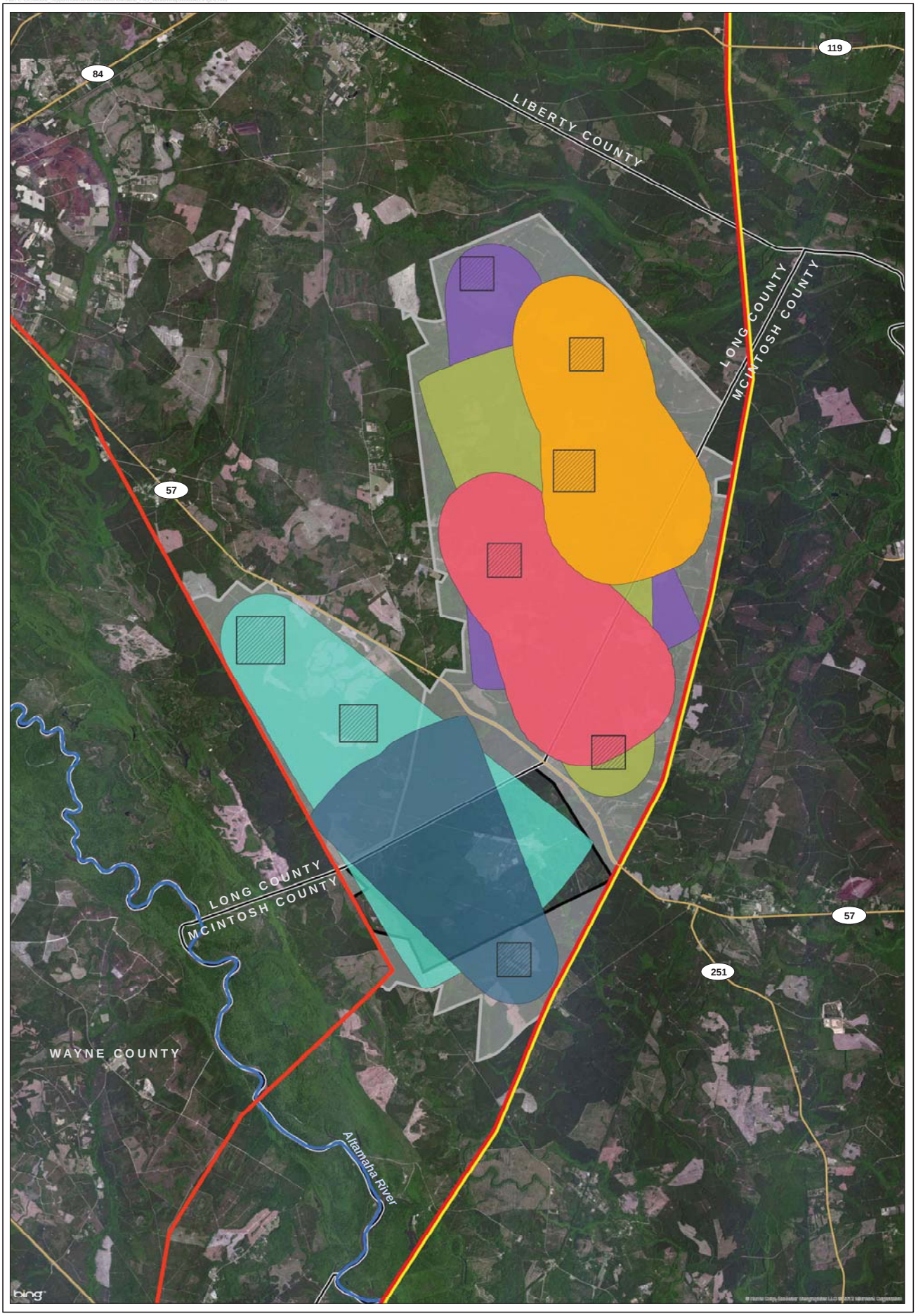
The PGMs discussed in this EIS use laser or GPS guidance systems. A comprehensive safety program exists for the use of lasers. This program requires the individual targets and/or target areas to be certified for laser use, personnel to be trained in the proper use of lasers, and established procedures to be followed. Range officials will continue to ensure all prescribed precautions are enforced to protect the public from military operations.

The CWDZ was modified to minimize the amount of land necessary to fully contain the CWDZ while meeting the threshold training requirement. Through this process, the USMC developed four possible land acquisition areas. Acquisition Area 2, which was presented during scoping, is not being carried forward in this EIS for further analysis (please refer to Section 2.4.3). Also, during preparation of this EIS, Area 1, as it was presented at scoping, was divided into two sections and renamed Areas 1A and 1B. Therefore, the three possible land acquisition areas for the Proposed Action are (Figure 2-3):

- Acquisition Area 1A (approximately 6,231 acres);
- Acquisition Area 1B (approximately 4,956 acres); and

- Acquisition Area 3 (approximately 23,674 acres).

If this acquisition is approved, further steps such as erecting signage, fencing, and gates would be taken to ensure the public is excluded from those areas where hazards exist. Prior to the commencement of training, and throughout the conduct of training, range personnel would ensure the range is clear of non-participating personnel. Personnel conducting training and range control personnel would actively manage all training activities to ensure all hazards remain within the boundaries of the proposed range.



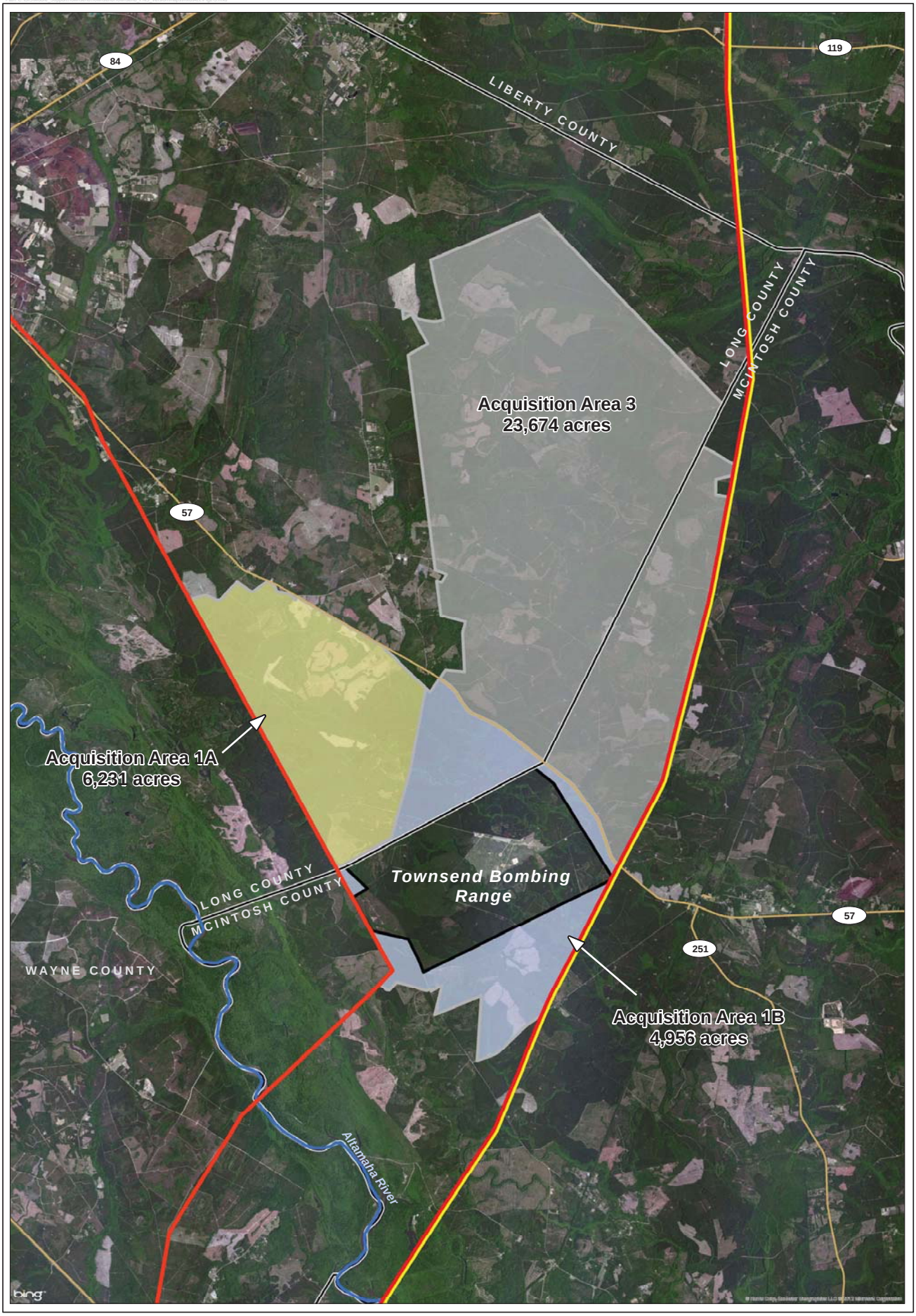
Acquisition Areas
Existing Range
Target Area
Counties
Major Roads
Power Line
Shared Power Line and Natural Gas Pipeline Right-of-Way
Altamaha River
Target Area 1 PGM WDZ
Target Area 2 PGM WDZ
Target Area 4 PGM WDZ
Target Area 5 PGM WDZ
Target Area 6 PGM WDZ
Target Area 8 PGM WDZ
PGM = Precision-Guided Munition
WDZ = Weapon Danger Zone

N

0 1 2 Miles

Figure 2-2
Modeled WDZs
Townsend Bombing Range
McIntosh and Long Counties, Georgia

Sources: Bing 2012, Bassed on Lusk 2009, McFadden 2011, McFadden 2012



Acquisition Area 1A
Acquisition Area 1B
Acquisition Area 3
Existing Range

Counties
Major Roads
Power Line
Shared Power Line and Natural Gas Pipeline Right-of-Way
Altamaha River

Figure 2-3
Potential Acquisition Areas
Townsend Bombing Range
McIntosh and Long Counties, Georgia

N

0 1 2 Miles

Sources: Bing 2012, Based on Lusk 2009, McFadden 2011

2.2.2 Acquisition of a Timber Easement

In addition to the proposed land acquisition, the USMC proposes to purchase a timber easement from McIntosh County, Georgia, on approximately 3,007 acres of land within the current TBR boundary (Figure 2-4). McIntosh County retained the timber easement to the portion of the existing TBR property that was purchased from Union Camp Corporation in 1991-1992. McIntosh County manages its timberlands for commercial production, which requires infrequent prescribed burns. The USMC, on the other hand, requires the land to be managed to support military mission requirements. Air-to-ground training with inert ordnance can result in wildfires due to sparks as munitions hit the ground and ricochet, as well as from the spotting charge. The USMC manages timberlands in support of ordnance use by frequently employing prescribed burns. Prescribed burns help to eliminate underbrush, pine straw, dead leaves, and similar, which can fuel a wildfire. This is a critical land management tool on a range where a small spark could ignite this fuel causing a serious, uncontrolled wildfire. To ensure the safety of TBR personnel and the public, under the Proposed Action it is necessary for the USMC to own all the timberland and to manage it in support of mission requirements.

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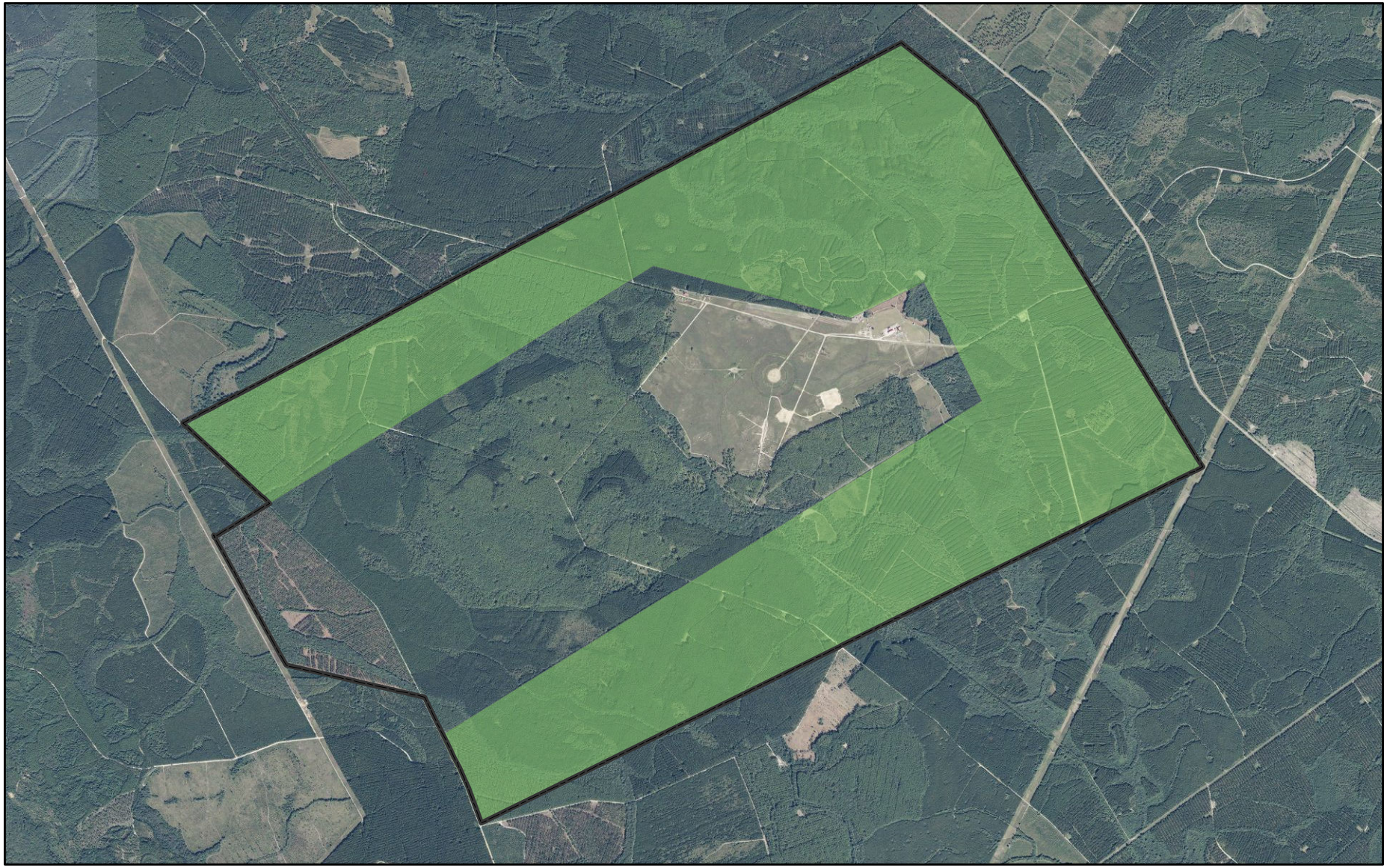


McIntosh County Timber Easement - 3,007 acres

Existing Range Boundary

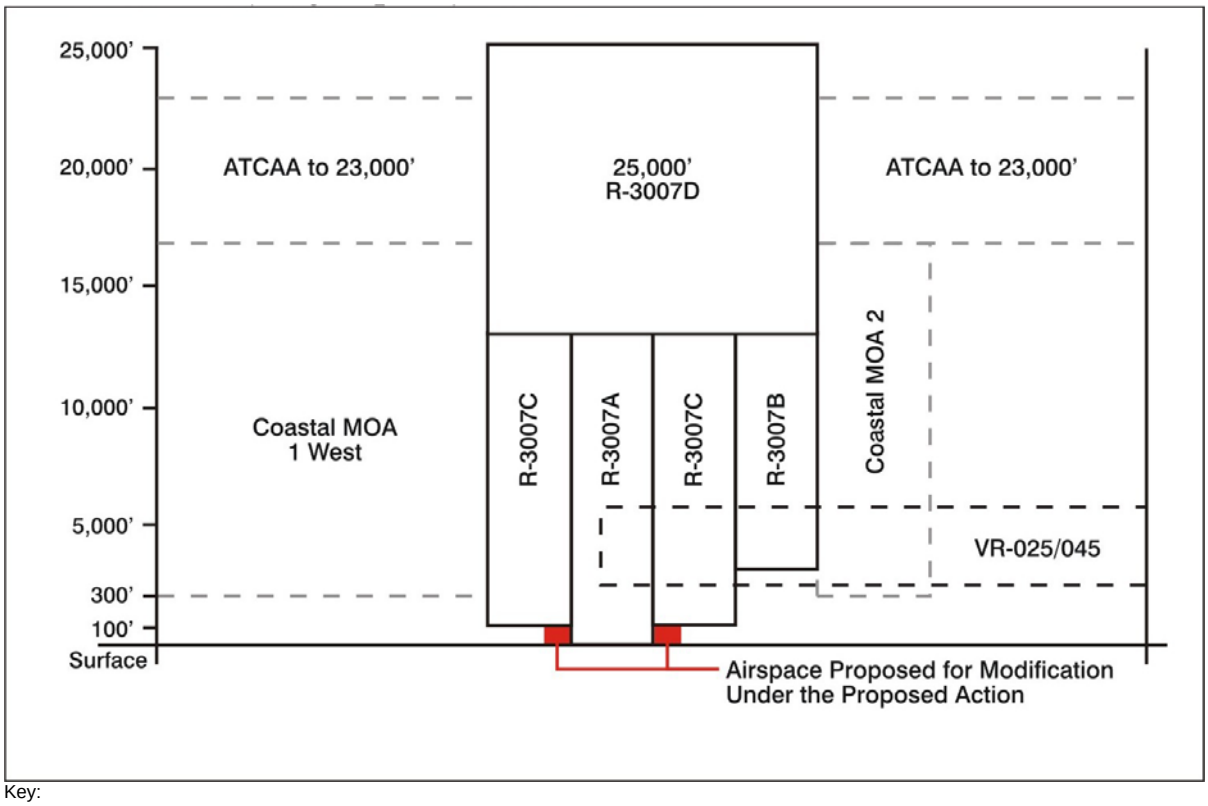
Figure 2-4
McIntosh County Timber Easement
Townsend Bombing Range
McIntosh and Long Counties, Georgia

0 3,000 6,000 Feet

Sources: Based on Lusk 2009, USDA 2010

2.2.3 Modification of Existing Airspace

The USMC proposes to modify Restricted Area R-3007A by extending the current restricted area laterally to the proposed acquisition area boundary (see Figure 2-5). The purpose of this additional airspace is to exclude non-participating aircraft from intruding into hazardous operations, as required by FAA regulations. The current restricted area consists of airspace that extends from the surface to 25,000 feet MSL and airspace that extends from 100 feet AGL to 25,000 feet MSL. The proposed modification would eliminate the current gap from 100 feet AGL down to the surface of the ground over the areas proposed for acquisition. This extension, which would apply only to the existing restricted airspace over lands proposed for acquisition by the DON, would unite the airspace with acquired land to enable the delivery of inert ordnance in order to comply with FAA regulations. It is not an indication that fixed-wing flight operations would be conducted at altitudes below 100 feet. No lateral modification of the R-3007 complex is proposed as part of the Proposed Action.



Key:
ATCAA = Air Traffic Controlled Assigned Airspace.
MOA = Military Operations Area.
R = Restricted Area.
VR = Visual Route.

Figure 2-5: TBR Airspace Cross Section

2.2.4 Construction of Infrastructure to Support PGM Training

Depending on the action alternative selected, the USMC would propose to construct up to eight new target areas. The target area acreage represents between 4% and 8% of the total land proposed for acquisition under the action alternatives. In general, the acreage outside the target areas would remain as forestland to support the air-to-ground training. Additional construction activities would include a new observation tower and support facilities, as well as additional utilities, roads, and fencing. Construction activities are expected to disturb up to 2,000 acres.

Target areas, ranging in size from 200 acres to 400 acres, would be constructed in locations that were determined to accommodate the larger WDZs that are required for realistic PGM training. Each target area would include an array of targets as detailed below and would be surrounded by a 50-foot firebreak. The firebreak would not be constructed to handle everyday vehicle use, but could be used by emergency vehicles. Each target area may have a boundary fence 8 feet in height. Existing roads would be used to the greatest extent possible, but all target areas would require some degree of road construction or improvement. Each target area would include the construction of static or fixed targets, referred to as hard targets, designed to represent a specific real-world threat. These hard targets include, but are not limited to, an airfield, a terrorist training camp, or a fuel farm. Along with the hard targets, each target area would include simulated, non-working tactical targets. These tactical targets are designed to simulate real-world threats and include, but are not limited to, combat vehicles, mobile surface-to-air missile (SAM) sites, anti-aircraft artillery (AAA) sites, and tanks. The tactical targets would be relocated periodically throughout the target areas to allow for variation in the training scenarios. The placement and location of the tactical targets would be designed to closely resemble real-world conditions with hidden or partially concealed threats. This design for target placement would minimize the amount of forest clearing within the target areas. Figure 2-6 represents a potential target area configuration.

Targets can be constructed out of many different types of materials, including wood and steel; they also may be non-working versions of the real-world threat. Another primary material for construction of targets is the use of ‘conex’ boxes (steel and/or metal shipping containers that are generally 6 feet by 9 feet by 40 feet long). Conex boxes allow the target to be relocated and reconfigured to provide different training scenarios. Please refer to Section 2.3.1 for specific target area descriptions.

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Target Area
Target Structure
Firebreak
Fence Line
New Road

SAM = Surface-to-Air Missile

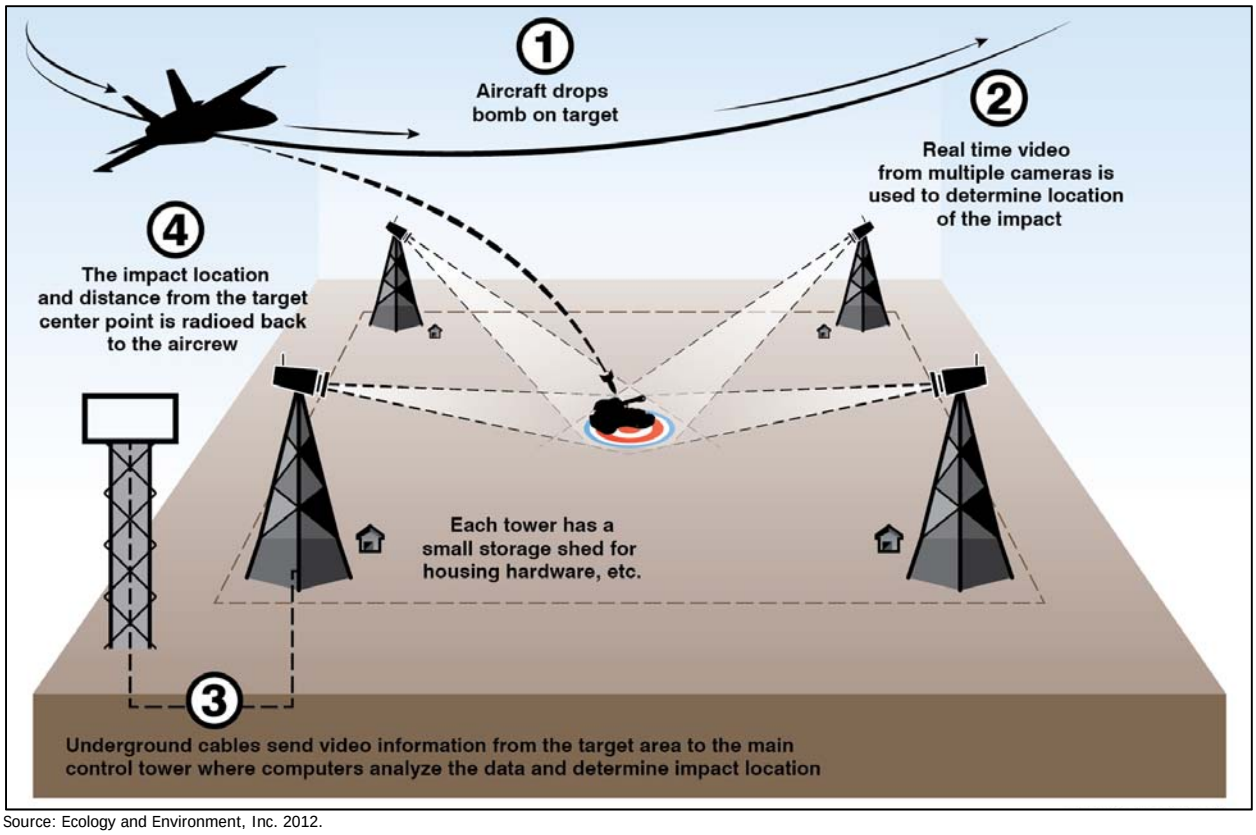
Figure 2-6
Potential Target Area Configuration
Townsend Bombing Range
McIntosh and Long Counties, Georgia

N

0 400 800 Feet

Sources: Bing 2012, McFadden 2011

Each target area would accommodate a Weapon Impact Scoring System (WISS), which is used to score air-to-ground ranges and provide feedback to the pilots on the level of accuracy for training purposes. The system operates with tower-mounted video cameras that relay the image to a manned control station. The WISS records the munitions impact location and distance from the target center point, which is relayed to aircrews via radio (see Figure 2-7). The WISS could be powered by onsite photovoltaic panels or the local electric utility, but would have a backup generator.



Source: Ecology and Environment, Inc. 2012.

Figure 2-7: How the Weapons Impact Scoring System (WISS) Works

2.2.5 Improvement of Training Capabilities

The expansion of TBR and the creation of new target areas would enhance current training capabilities by accommodating full-scale inert (non-explosive) weapons, enabling the use of PGMs, and increasing weapons delivery parameters by providing multiple run-in headings (i.e., aircraft direction during ordnance delivery).

2.2.5.1 Current Training Activities and Range Assets

Current training activities and range assets at TBR serve as the baseline to assess the level of improvement in training capabilities that could be afforded at an expanded range. TBR training involves the use of only inert munitions, which contain no explosives, but may contain a small smoke charge (spotting charge) to assist in scoring the event and providing feedback to the pilot. MAG-31 is the primary user of TBR and currently flies 2,358 training sorties per year at TBR. MAG-31 practices various

missions at TBR with the most important being Close Air Support (CAS), Aerial Reconnaissance (AR), and tactical control of ground attack aircraft. Key operational capabilities supported by TBR include:

- day/night operations;
- air-to-ground weapons training;
- joint modular ground targets;
- joint Large Force Exercises (LFE);
- employment of laser-guided training rounds (LGTR);
- real and simulated electronic warfare (e.g., joint threat emitters);
- surface-to-air and air-to-air threat identification and response;
- limited Unmanned Aircraft Systems (UAS) training;
- Large-Scale Target Sensor System;
- infrared (IR)/electro-optics;
- WISS;
- CAS;
- cargo drops and other helicopter operations (e.g., door gunnery); and,
- Situational Awareness Data Links (SADL) and Remote Optical Video-Enhanced Receiver (ROVER) Video Data Link (VDL) for training exercises, and real-time and post-exercise evaluation/feedback.

Fixed-wing and rotary-wing pilots from all four of the services travel from a number of air installations on the East Coast and Carrier Battle Groups in the Atlantic Ocean to train at TBR. The purpose of and need for the proposed modernization and expansion of TBR is to fulfill MAG-31's aviation training requirement to train with PGMs in a realistic training environment and achieve readiness proficiency for air-to-ground operations for MAG-31 F/A-18 pilots. Therefore, this FEIS focuses on MAG-31. The other TBR users and aircraft operations are discussed further in Section 4, Cumulative Impacts.

TBR also continues to evolve in support of joint-service training curriculums. For example, range infrastructure and training areas now support more integrated exercises that involve ground units and UAS operations in coordination with air-to-ground strikes. Important range features that support Joint National Training Capability certification at TBR include movable and fixed targets that simulate urban warfare, land navigation areas, high- and low-angle strafe pits, and other designated sites for CAS training.

TBR's 5,183 acres are divided into different target areas for military training operations (Figure 2-8). Within the approximately 350-acre cleared target area, air-to-ground targets at TBR include 10 numbered stationary targets, a movable target, an Urban Target Area (UTA), a strafe pit, and IR targets (MCAS Beaufort 2008), which are identified in Table 2-2 along with the ordnance currently authorized for each target. Most of the stationary targets can be scored by a WISS and several of the targets are approved for laser use. Table 2-2 details each of the existing target areas.

Mission support operations require varied disciplines necessary for the collective day-to-day management and operation of TBR. Such operations include natural resources management; emergency and fire response operations; environmental compliance; explosives ordnance disposal (EOD);

road/facility/infrastructure construction, maintenance, and demolition; and safety and security procedures/protocols; among others (MCAS Beaufort 2008).

For TBR, natural resources management is primarily carried out through dual-use programs that apply to timber harvesting and hunting on TBR. For the forested areas under USMC jurisdiction, Naval Facilities Engineering Command Southeast (NAVFAC SE) and Fort Stewart provide forestry and prescribed burning support as needed. In the event of a fire at TBR emergency response equipment to control, contain, and fight fires on TBR includes: a 200-gallon capacity water pumping trailer, a 300-gallon capacity portable mounted water pumping unit, a side-by-side all-terrain vehicle (ATV) with a fire suppression unit, a bulldozer, and a fire plow (MCAS Beaufort 2007).

The GA ANG, as directed by the Range Maintenance Section Non-Commissioned Officer in Charge, is responsible for routine maintenance of TBR according to monthly, quarterly, and annual maintenance plans, which includes duties such as plowing firebreaks, repairing targets, despectralizing targets, repairing roads, repairing equipment, and maintaining the range. Target maintenance is largely accomplished on a bimonthly basis during range EOD clearance, which is the responsibility of MCAS Beaufort. EOD clearance is conducted for five working days per bimonthly event, for a total of six weeks per year. Range personnel have access to the entire range during the EOD events for road repairs, land management, timber management, and other activities that are abbreviated while TBR is in use. TBR is closed to flight operations during the EOD clearance events, making these events the principal time to rearrange, replace, or rebuild targets with minimal impact on training missions. (MCAS Beaufort 2008)

Path: C:\GIS\Moore_Support\Townsend\Townsend\Townsend_PNS_Version\maps\mxd\ALL\Fig2-8_Existing_Target_Areas.mxd

IR = Infrared
SAM = Surface-to-Air Missile
UTA = Urban Target Area

Figure 2-8
Existing Target Areas
Townsend Bombing Range
McIntosh and Long Counties, Georgia

N

0 600 1,200 Feet

Sources: MCAS Beaufort 2008, Bing 2012

Table 2-2
Current Range Operation Areas/Targets and Acceptable Ordnance

Impact Areas/Targets		Ordnance	Details
Target #1: Conventional Bull's-Eye		BDU 33, BDU 48, MK 76, MK 106, and 2.75-inch rockets	• Most heavily used target • 46-meter diameter cleared circle • Scoring on the Weapons Impact Scoring System (WISS) • Approved for laser use • Infrared (IR) lighting or standard lighting scenarios available • Rockets restricted to 225-degree run-in
Target #2: Surface-to-Air Missile (SAM) Site		BDU 33, BDU 48, MK 76, MK 106, and 2.75-inch rockets	• Simulates a flat-face acquisition radar surrounded by four transporter erector launcher and radar units • WISS Scoring • Approved for laser use • Rockets restricted to 225-degree run-in
Target #3: Command Post		BDU 33, BDU 48, MK 76, and MK 106	• 9-meter by 9-meter target simulation of a small command and control building • WISS Scoring • Approved for laser use
Target #4: Heavyweight		BDU 33, BDU 48, MK 76, MK 106, inert General Purpose (GP) heavyweight bombs, and 20 millimeter (mm)/30mm bullets (high angle strafe only)	• Accepts large munitions • Simulates hardened bunker • WISS Scoring • Approved for laser use • Inert GP bombs restricted to 270-degree run-in
Target #5: High Angle Strafe		20mm/30mm bullets	• Target is a M-109/A1 rocket launcher in a small circular area filled with sand • Approved for laser use • No tracers of any kind • 260-degree to 290-degree run-in course
Target #6: Scud Site		BDU 33, BDU 48, MK 76, MK 106, and 2.75-inch rockets	• Simulates scud launcher surrounded by small support vehicles • Weapons Impact Scoring System (WISS) Scoring • Approved for laser use

Table 2-2
Current Range Operation Areas/Targets and Acceptable Ordnance

Impact Areas/Targets		Ordnance	Details
Target #7: Simulated Petroleum, Oil, and Lubricants (POL) Site Fuel Farm		BDU 33, BDU 48, MK 76, MK 106, and 2.75-inch rockets	• Consists of various storage tanks and refueling-type vehicles • Imposes a visual recognition problem when performing surface attack tactics or first-run on other targets • Also serves as an additional heavyweight target and "motor pool" area for Close Air Support (CAS) attacks by Ground Forward Air Controllers (GFAC) • WISS Scoring • Approved for laser use
Target #8: Armored Personnel Carrier (APC) Convoy		BDU 33, BDU 48, MK 76, MK 106, 2.75-inch rockets, and 7.62mm ammunition	• Initially constructed to accommodate helicopter gunnery • Used for CAS/GFAC missions • Supports M-60 coaxial mini-gun training • No WISS Scoring • Approved for laser use
Target #9: Rapier Air Defense System		BDU 33, BDU 48, MK 76, MK 106, and 2.75-inch rockets	• Simulates a Rapier Air Defense System • Four mock missiles in the ready-to-launch position • Point target not frequently used • WISS Scoring • Approved for laser use
Target #10: Tree Line Convoy Target		BDU 33, BDU 48, MK 76, MK 106, and 2.75-inch rockets	• Tight array of five armored personnel carriers in the tree line just south of the main target • Provides semi-concealed target for tactical scenarios, particularly for CAS/GFAC missions • Limited WISS Scoring • Approved for laser use
Strafe Pit Target Lane #1 (North) Lane #2 (Middle) Lane #3 (South)		20 mm/30 mm, 0.50-caliber	• Lane #1 uses the traditional panel strafe target made of target cloth • Lane #2 is an easily rebuildable strafe target • Lane #3 is a tank target (hard target) for tactical strafe • High angle strafe only (Lanes #1 and #2) • Low or high angle strafe (Lane #3) • 255-degree run-in only (All Lanes) • No tracers of any kind (All Lanes)

Table 2-2
Current Range Operation Areas/Targets and Acceptable Ordnance

Impact Areas/Targets		Ordnance	Details
Urban Target Area (UTA)		BDU 33, BDU 48, MK 76, MK 106, and 2.75-inch rockets	• Large steel shipping containers stacked to simulate large urban buildings • WISS Scoring • Approved for laser use
Moving Strafe Target		20 mm/30 mm	• Improved Remote Strafe Scoring System (IRSSS) • Remotely operated, global positioning system (GPS)-guided target that moves along a track (N/S)
Infrared (IR) Target		n/a	• Used in locating targets by an IR signature

Sources: GA ANG 2005; MCAS Beaufort 2008.

2.2.5.2 Improvement of Training Capabilities Evaluation Criteria

The USMC developed the following three evaluative criteria to assess the level of improvement of training capabilities that could be afforded at an expanded range.

1. ***Increased capacity of an expanded range to accommodate training missions prescribed in the air-to-ground portion of the current F/A-18 training and readiness manual.*** Currently, MAG-31 aircrew can accomplish 47% of their air-to-ground training requirements at TBR. The comparison is stated as an increase in the percentage of training syllabus sorties each action alternative would afford above what can currently be accomplished at TBR. The point of comparison directly indicates the value of an expanded range with respect to how much it would improve combat readiness of Marine aircrews.
2. ***Flexibility to accommodate various training skill levels and the ability to accommodate multiple training events simultaneously.*** Aviation mission skills can be categorized by two distinct training levels; basic skills and mission skills. These are analogous to learning to drive in a NASCAR race. First the driver must learn the basics of driving. Then the driver graduates to learning to drive on a race track at high speeds, drafting in intense traffic, and making split-second decisions. Currently, TBR can accommodate either basic skills training or mission skills training; however,

operations at the current range cannot accommodate both training levels simultaneously.

- **Basic skills training**. Training at this level focuses on pilot proficiency in using the aircraft and loaded ordnance as a complete weapons system to deliver the ordnance on target and on time. Training at this basic skill level includes knowledge of and proficiency with the mission systems on the aircraft itself (e.g., mission computers, various weapon delivery modes of the aircraft, and integration of radar and infrared targeting systems to identify and designate targets). Every aircrew in a unit must be kept proficient in the basics. Because this is the core level training that all higher mission skills are based on, the ability for units to conduct multiple basic systems training events simultaneously at an expanded range is crucial.
- **Mission skills training**. Training at this level focuses on the ability to conduct a mission in an environment that simulates combat to the greatest extent possible. It is naturally more complex and requires sufficient land and airspace to replicate a combat environment. Mission skills training requires integration of multiple aircraft into a single mission, includes employment of tactics that are used in combat, and is the training level at which specific types of missions are practiced.

  Training to the skills required of specific mission types necessitates the ability to replicate controls normally established on the battlefield. Specifically, the battlefield is divided into the close and deep battle areas. Bombing missions within the close battle area are referred to as Close Air Support (CAS) due to the close proximity that bombs are dropped to ground troops. CAS missions require close coordination with ground troops through the use of forward air controllers (airborne) (FAC(A)) to drop ordnance in close proximity to ground troops. Mission skills to drop ordnance in close proximity to ground troops (CAS missions) and to control those missions as a FAC(A) are some of the most important skills learned by F/A-18 aircrew.

  Conversely, bombing missions beyond the close battle area, i.e., in the deep battle area, do not require the detailed timing and coordination of a CAS mission, but typically consist of more aircraft and require more precise execution and tactics due to the complex interaction between numerous aircraft in an environment with multiple enemy threats. Bombing missions in the deep battle area are known as air interdiction (AI) missions.

  As a part of mission skills training, an expanded range that offers the greatest number of targets and variety of attack profiles would be the most desired. Variety in targets and attack profiles provides for less repetitive, more challenging training that best represents combat conditions.

  The most effective expanded range would offer the ability to simulate both the deep and close battle areas. Preferably, missions could be flown in close and deep battle areas simultaneously to test the full range of the command and control system used in battle and to challenge aircrews with the broadest set of mission skills.

3. ***Availability of targets during range maintenance periods.*** TBR must undergo periods of range maintenance to keep targets viable, maintain safe operations, and allow forestry management. Routine maintenance includes EOD sweeps, maintenance of roads and firebreaks, target repair, prescribed burning activities, and

timber management. During maintenance periods, the current range is closed to all operations. Optimally, an expanded range would provide for a full range of operations on some target areas while others are closed for maintenance.

2.3 Alternatives Carried Forward for Further Analysis

2.3.1 Common Elements Among All Action Alternatives

Using the possible land acquisition areas discussed in Section 2.2.1, the USMC developed four action alternatives. All four action alternatives incorporate the components of the Proposed Action (please refer to Section 2.2). All four action alternatives would involve the acquisition of land and a timber easement, the modification of existing airspace, and the construction of required infrastructure, and would result in varying levels of improvement of training capabilities. Although each action alternative would involve each of these items, the land acquired under each action alternative would be different and is discussed in further detail below. Table 2-3 lists the acquisition areas and proposed target areas for each of the action alternatives. All action alternatives would involve the continued ownership and use of the existing range and target areas by the USMC and the continued operation of TBR by the GA ANG.

Table 2-3
Action Alternative Details

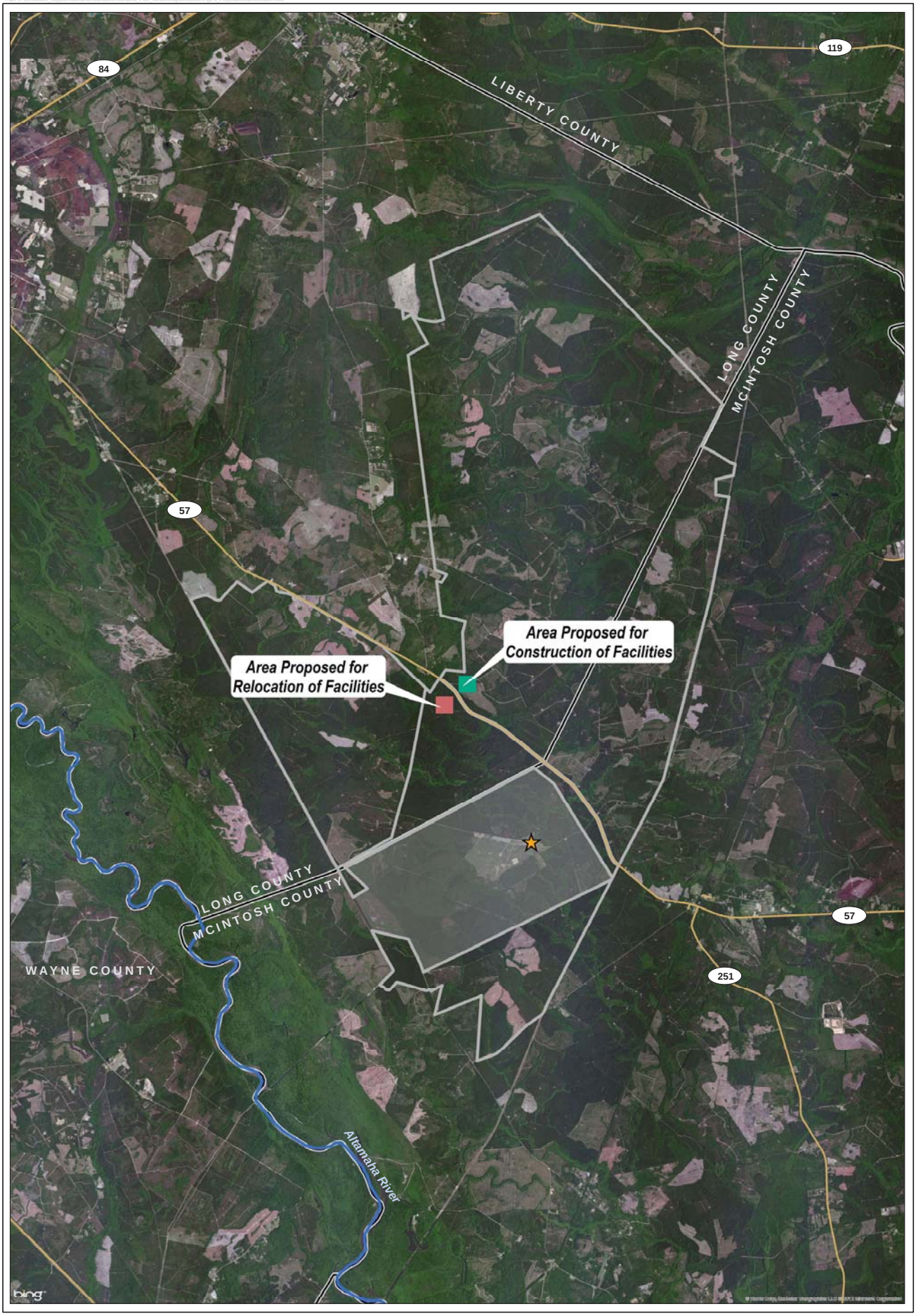
Action Alternative	Acquisition Areas	Proposed Target Areas
1	1A + 1B	6, 7, and 8
2	3	1, 2, 3, 4, and 5
3	1A + 1B + 3	1, 2, 3, 4, 5, 6, 7, and 8
4	1B + 3	1, 2, 3, 4, 5, and 8

The acquisition of a timber easement would be the same for all action alternatives: 3,007 acres (please refer to Section 2.2.2). The USMC proposes to purchase the timber easement currently held by McIntosh County on 3,007 acres of the existing range.

The USMC proposes to modify the existing airspace based on the amount of land acquired. Any combination of the land proposed to be acquired would be under the current Restricted Area R-3007. The USMC proposes to modify R-3007A by extending the current restricted area laterally to the proposed acquisition area boundary.

Alternative 1 would involve the relocation of the existing range compound facilities and observation tower to the northern corner of Area 1B (Figure 2-9). The existing facilities would not be relocated under Alternatives 2, 3, or 4; however, a new observation tower would need to be constructed in the southwestern corner of Area 3 (Figure 2-9). All the action alternatives also would involve the installation of target scoring equipment, maintenance facility construction, and roadway construction/improvement.

Completion of the above actions would allow the use of PGMs and an increase in the number of training scenarios that can be accomplished at TBR. Subsequently, these changes would allow MAG-31 pilots to complete up to 85% of the F/A-18 air-to-ground ordnance training syllabus requirements.



Existing Facilities
Acquisition Areas
Existing Range
Counties
Major Roads
Altamaha River
Area Proposed for Construction of Facilities
Area Proposed for Relocation of Facilities

Figure 2-9
Proposed Area for the Relocation of Existing or the Construction of New Facilities
Townsend Bombing Range
McIntosh and Long Counties, Georgia

N

0 1 2 Miles

Sources: Bing 2012, Based on Lusk 2009, McFadden 2011

Infrastructure to Support PGM Training

The USMC proposes to construct up to eight target areas to support training with PGMs. Ordnance currently approved for use at TBR (Table 2-2) would be approved for use on all new proposed target areas. To meet the purpose of and need for the Proposed Action, these target areas also would be authorized for the delivery of GBU-31, GBU-32, and GBU-38 (JDAMs) and GBU-10, GBU-12, and GBU-16 (LGBs).

Each additional target area would include the construction of hard targets (i.e., airfield, a terrorist training camp, or a fuel farm) that are designed to represent specific real-world threats (please refer to Section 2.2.4). Along with these hard targets, each target area would include simulated, non-working tactical targets (i.e., combat vehicles, mobile SAM sites, AAA sites, and tanks). The tactical targets may be relocated throughout the target areas to allow for variation in training operations.

Along with increases in infrastructure come increases in mission support requirements due to additional targets and acreage needing maintenance. Although each action alternative would involve manpower increases, the amount of additional personnel under each action alternative would be different and is discussed in further detail below. In addition, under each action alternative, post-exercise range sweeps and EOD range clearance operations would be expanded to include the land acquisition areas, infrastructure, and target areas.

Target Area 1

Target Area 1 (Figure 2-10) would be a UTA that would include an approximately 15-acre simulated village or small urban area consisting of buildings and roadways. An array of conex boxes would be used to form the buildings, and the target area would be graded to form the roadways. The target area would include a simulated SAM site. The SAM site would be a scoreable target approximately 600 feet in diameter encompassing simulated radar, surrounding missile launcher pads, and interconnected cable paths. This target area also would include an array of tactical targets. Target Area 1 would involve clearing approximately 25 acres for target placement and approximately 13 acres for the firebreak. Cleared acreage represents 19% of the total target area acreage. Additionally, 11,600 linear feet of boundary fencing may be used within the firebreak.

Target Area 2

Target Area 2 (Figure 2-11) would be a simulated terrorist training camp consisting of an array of conex boxes to form targets. This target area also would include the placement of tactical targets representing an AAA site and a radar site. Target Area 2 would involve the clearance of approximately 15 acres for target placement and approximately 13 acres for the firebreak. Cleared acreage represents 14% of the total target area acreage. Additionally, 11,600 linear feet of boundary fencing may be used within the firebreak.

Target Area 3

Target Area 3 (Figure 2-12) would be a conventional bull's-eye target that would require the clearing of approximately 19 acres. This target is designed as a simple, easily identified, and generic drop target. The target would be comprised of a 150-foot radius bull's-eye surrounded by two concentric rings of 250- and 500-foot radii. This target area would include two tactical target arrays that would require additional clearing (approximately 2 acres each). Target Area 3 would involve the clearance of approximately 23 acres for target placement and approximately 16 acres for the firebreak. Cleared acreage represents 13% of the total target area acreage. Additionally, 14,250 linear feet of boundary fencing may be used within the firebreak.

Target Area 4

Target Area 4 (Figure 2-13) would be a tactical convoy site comprised of numerous tactical targets placed in a line. These targets would simulate a military convoy along a roadway with various sizes of staged military vehicles. Target Area 4 would involve the clearance of approximately 23 acres for target placement and approximately 13 acres for the firebreak. Cleared acreage represents 18% of the total target area acreage. Additionally, 11,600 linear feet of boundary fencing may be used within the firebreak.

Target Area 5

Target Area 5 (Figure 2-14) would be a train depot, which is a moving target system on a simulated track, and would require the clearing of approximately 10 acres. The target would consist of a remotely operated, GPS-guided target armored to resist damage when hit by ordnance. A 3-foot tall berm would be placed 2,000 feet in front of the target to aid in protection of the track-and-movement system. A generator would be placed on a mover. This target area also would include the placement of two tactical target arrays, each requiring clearing of approximately 5 acres. Target Area 5 would involve the clearance of approximately 20 acres for target placement and approximately 13 acres for the firebreak. Cleared acreage represents 17% of the total target area acreage. Additionally, 11,600 linear feet of boundary fencing may be used within the firebreak.

Target Area 6

Target Area 6 (Figure 2-15) would be an airfield site requiring the clearing and grading of two simulated runways approximately 3,000 feet by 300 feet each (approximately 21 acres each). Simulated target structures, including empty fuel storage tanks, mock airplanes, and similar structures, would surround the airfield. All simulated structures would be constructed using conex boxes and other inert material. This site is not intended for the landing of aircraft and would not be used for that purpose. Simulated petroleum, oil, and lubricant (POL) facility targets would be approximately 500-foot-diameter circles and would include various empty storage tanks and refueling type vehicles. These vehicles would not contain POL products and would be drained of any lubricants or fuels prior to placement. The target area also would include two tactical target arrays. Target Area 6 would involve the clearance of approximately 52 acres for target placement and approximately 19 acres for the firebreak. Cleared acreage represents 18% of the total target area acreage. Additionally, 16,500 linear feet of boundary fencing may be used within the firebreak.

Target Area 7

Target Area 7 (Figure 2-16) would be a UTA. The UTA would simulate a large urban city consisting of buildings and roadways. An array of conex boxes would be used to form the buildings and the target area would be graded to form the roadways. Target Area 7 would involve the clearance of approximately 55 acres for target placement and approximately 15 acres for the firebreak. Cleared acreage represents 28% of the total target area acreage. Additionally, 13,000 linear feet of boundary fencing may be used within the firebreak.

Target Area 8

Target Area 8 (Figure 2-17) would be a fuel farm site requiring the clearing of two 1,000- by 1,000-foot squares (approximately 23 acres each). Each target area would include various types of empty storage tanks and refueling vehicles. No vehicles or tanks would contain POL. The target area also would include two tactical target arrays. Target Area 8 would involve the clearance of approximately 50 acres for target placement and approximately 13 acres for the firebreak. Cleared acreage represents 32% of the total target area acreage. Additionally, 11,600 linear feet of boundary fencing may be used within the firebreak.

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Target Area
Target Structure
Firebreak
Fence Line
New Road

SAM = Surface-to-Air Missile
UTA = Urban Training Area

0 400 800 Feet

Sources: Bing 2012, McFadden 2011

Figure 2-10
Target Area 1
Townsend Bombing Range
McIntosh and Long Counties, Georgia

Path: C:\GIS\Moore_Support\Townsend\Townsend\Townsend_PNS_Version\maps\mxd\ALL\Fig2-11_TargetArea2.mxd

Target Area
Target Structure
Firebreak
Fence Line
New Road

Figure 2-11
Target Area 2
Townsend Bombing Range
McIntosh and Long Counties, Georgia

0 400 800 Feet

Sources: Bing 2012, McFadden 2011

Target Area
Target Structure
Firebreak
Fence Line

N

0 400 800
Feet

Figure 2-12
Target Area 3
Townsend Bombing Range
McIntosh and Long Counties, Georgia

Sources: Bing 2012, McFadden 2011

Target Area
Target Structure
Firebreak
Fence Line

N

0 400 800 Feet

Figure 2-13
Target Area 4
Townsend Bombing Range
McIntosh and Long Counties, Georgia

Sources: Bing 2012, McFadden 2011

Path: C:\GIS\Moore_Support\Townsend\Townsend\Townsend_PNS_Version\maps\mxd\ALL\Fig2-14_TargetArea5.mxd

Target Area
Target Structure
Firebreak
Fence Line

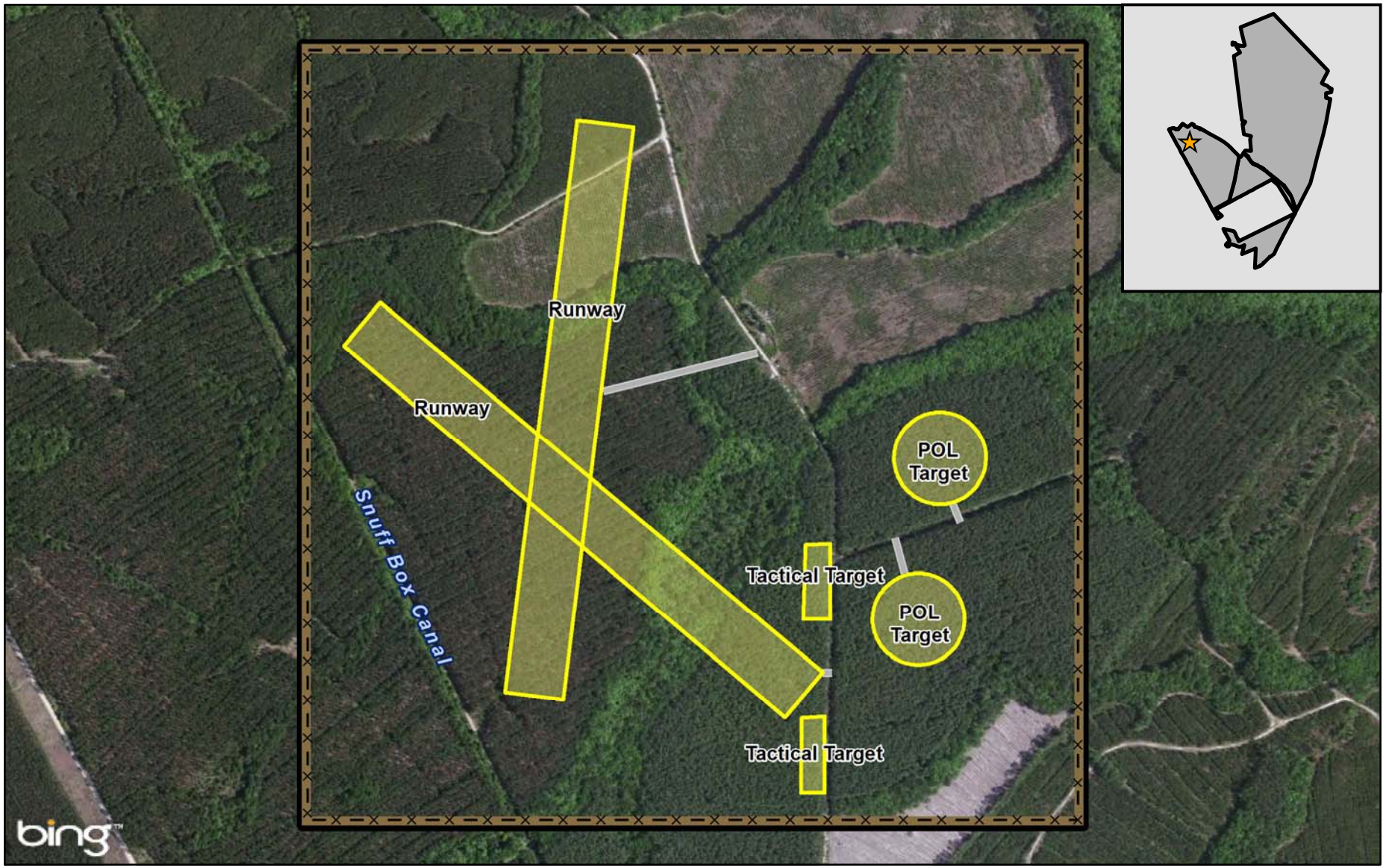
N

0 400 800 Feet

Sources: Bing 2012, McFadden 2011

Figure 2-14
Target Area 5
Townsend Bombing Range
McIntosh and Long Counties, Georgia

Path: C:\GIS\Moore_Support\Townsend\Townsend\Townsend_PNS_Version\maps\mxd\ALL\Fig2-15TargetArea6.mxd



Target Area
Target Structure
Firebreak
Fence Line
New Road

POL = Petroleum, Oil, and Lubricant

Figure 2-15
Target Area 6
Townsend Bombing Range
McIntosh and Long Counties, Georgia

0 400 800 Feet

Sources: Bing 2012, McFadden 2011

Path: C:\GIS\Moore_Support\Townsend\Townsend\Townsend_PNS_Version\maps\mxd\ALL\Fig2-16_TargetArea7.mxd

Target Area
Target Structure
Firebreak
Fence Line
New Road

UTA = Urban Training Area

N

0 400 800 Feet

Sources: Bing 2012, McFadden 2011

Figure 2-16
Target Area 7
Townsend Bombing Range
McIntosh and Long Counties, Georgia

Path: C:\GIS\Moore_Support\Townsend\Townsend\Townsend_PNS_Version\maps\mxd\ALL\Fig2-17_TargetArea8.mxd

Target Area
Target Structure
Firebreak
Fence Line
New Road

N

0 400 800 Feet

Figure 2-17
Target Area 8
Townsend Bombing Range
McIntosh and Long Counties, Georgia

Sources: Bing 2012, McFadden 2011

The number of target areas that would be constructed varies by action alternative as shown in Table 2-3 above. Table 2-4 provides a summary of the eight proposed target areas, as described above, the corresponding acquisition area, and the action alternative.

Table 2-4
Proposed Target Areas

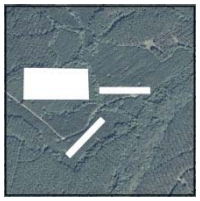
Impact Areas		Details	Acquisition Area	Action Alternative
Target Area #1: Urban Target Area (UTA)		• Hard Targets - Simulates Village/Small Urban Area • Tactical Targets – SAM Site (600-feet diameter) • WISS Scoring • Approved for laser use • Approved for high angle strafe	Area 3	2, 3, and 4
Target Area #2: Terrorist Training Camp		• Tactical Targets - AAA and Radar Site • WISS Scoring • Approved for laser use • Approved for high angle strafe	Area 3	2, 3, and 4
Target Area #3: Conventional Bull's-Eye		• 500-foot radius cleared circle • Various Tactical Targets • WISS Scoring • Approved for laser use • Approved for high angle strafe	Area 3	2, 3, and 4
Target Area #4: Convoy Site		• Simulates Military Convoy • Tactical Targets – Various Sized Vehicles • WISS Scoring • Approved for laser use • Approved for high angle strafe	Area 3	2, 3, and 4
Target Area #5: Train Depot		• Simulates Moving Targets on Track • Remote Operated GPS Guided • Two Additional Tactical Targets • WISS Scoring • Approved for laser use • Approved for low and high angle strafe	Area 3	2, 3, and 4
Target Area #6: Simulated Airfield Site with POL Site/Fuel Farm		• Two Simulated Runways • Tactical Targets – Simulated Fuel Storage Tanks, Mock Airplanes, Empty Tanks, and Vehicles • WISS Scoring • Approved for laser use • Approved for high angle strafe	Area 1A	1 and 3

Table 2-4
Proposed Target Areas

Impact Areas		Details	Acquisition Area	Action Alternative
Target Area #7: Urban Target Area (UTA)		• Simulates Large Urban City • Consists of various buildings and roadways • WISS Scoring • Approved for laser use • Approved for high angle strafe	Area 1A	1 and 3
Target Area #8: Simulated Fuel Farm/POL Site		• Tactical Targets – Empty Fuel Storage Tanks and Refueling Vehicles • WISS Scoring • Approved for laser use • Approved for high angle strafe	Area 1B	1, 3, and 4

Key:
☐ = target structure.
AAA = air-to-air tactics.
GBU = guided bomb unit.
GPS = global positioning system.
MK = Mark.
POL = petroleum, oil, and lubricants.
SAM = surface-to-air missile.
WISS = Weapons Impact Scoring System.

2.3.2 Alternative 1

Under Alternative 1, the USMC proposes to acquire Areas 1A and 1B along the south side of State Hwy. 57 (Figure 2-18). Land acquisition under this action alternative would total approximately 11,187 acres. Under this action alternative, the USMC would construct Target Areas 6, 7, and 8 as described in Section 2.3.1. Construction of three additional target areas would expand TBR's training capabilities and would allow MAG-31 pilots to accomplish up to 72% of the current F/A-18 air-to-ground ordnance training syllabus requirements. Table 2-5 depicts the increases in sorties, training and readiness percentage, and inert ordnance expenditures by alternative.

Table 2-5
Sortie[a] and Ordnance Distribution by Action Alternative

	TBR	Action Alternative			
		1	2	3	4
Number of Sorties	2,358	3,583	4,243	4,243	4,243
% Increase in total Sorties	N/A	52%	80%	80%	80%
Training and Readiness % Met [b]	**47%**	**72%**	**85%**	**85%**	**85%**
Estimated Precision-guided Munitions (PGMs)[c]	0	2,452	3,018	3,018	3,018
Estimated General Purpose (GP) Inert Bombs	7,992	6,786	7,356	7,356	7,356
Estimated Laser-guided Training Rounds (LGTR)[d]	754	754	752	752	752
20 mm[e]	23,500	23,500	23,500	23,500	23,500
2.75-inch rockets	2,664	3,594	4,014	4,014	4,014

Notes:
(a) A sortie is one aircraft flying from MCAS Beaufort to TBR conducting 30 minutes of training and returning to base.
(b) Percentage of the air-to-ground portion of the F/A-18 Training and Readiness Manual (F/A-18 training syllabus requirements) that could be accomplished at TBR under the respective action alternative.
(c) Based on 2 PGMs per PGM training sortie.
(d) Based on 2 LGTRs per LGTR training sortie.
(e) Accounts for scored strafe sorties only.

Sources: Wilson 2011 and NAVMC 3500.50A Ch 1.

The operations mission support requirements under Alternative 1 are estimated to be minor and the least out of the four action alternatives since this option would involve maintaining the fewest number of additional target areas, the smallest amount of additional acreage, and it would require the least amount of additional manpower with an increase of only 10 range personnel.

2.3.3 Alternative 2

Under Alternative 2, the USMC proposes to acquire Area 3, which is approximately 23,674 acres on the north side of State Hwy. 57 (Figure 2-18). Under this action alternative, the USMC would construct Target Areas 1, 2, 3, 4, and 5 as described above in Section 2.3.1. Construction of five additional target areas would significantly expand TBR's training capabilities and would allow MAG-31 pilots to accomplish up to 85% of current F/A-18 air-to-ground ordnance training syllabus requirements (Table 2-5).

The operations mission support requirements under Alternative 2 are estimated to be moderate since the number of additional target areas and the amount of acreage are only slightly more than with Alternative 1. Alternative 2 would involve only 12 range personnel, an increase of two over Alternative 1.

2.3.4 Alternative 3

Alternative 3 is a combination of Alternatives 1 and 2. Under Alternative 3, the USMC proposes to acquire Areas 1A and 1B along the south side of State Hwy. 57 as well as Area 3 on the north side of State Hwy. 57 (Figure 2-18). Land acquisition under this alternative would total approximately 34,861 acres. Under this action alternative, the USMC would construct all eight target areas as described above in Section 2.3.1. Construction of eight additional target areas would significantly expand TBR's training capabilities and would allow MAG-31 pilots to accomplish up to 85% of current F/A-18 air-to-ground ordnance training syllabus requirements (Table 2-5). Since Alternative 3 would include the most land and more target areas than any of the action alternatives, it would provide the USMC the greatest flexibility and would simulate more real-world combat environments.

The operations mission support requirements under Alternative 3 are estimated to be the greatest out of the four action alternatives since this option would involve maintaining the largest number of additional target areas, the most acreage, and would require the largest number of additional manpower with 18 range personnel.

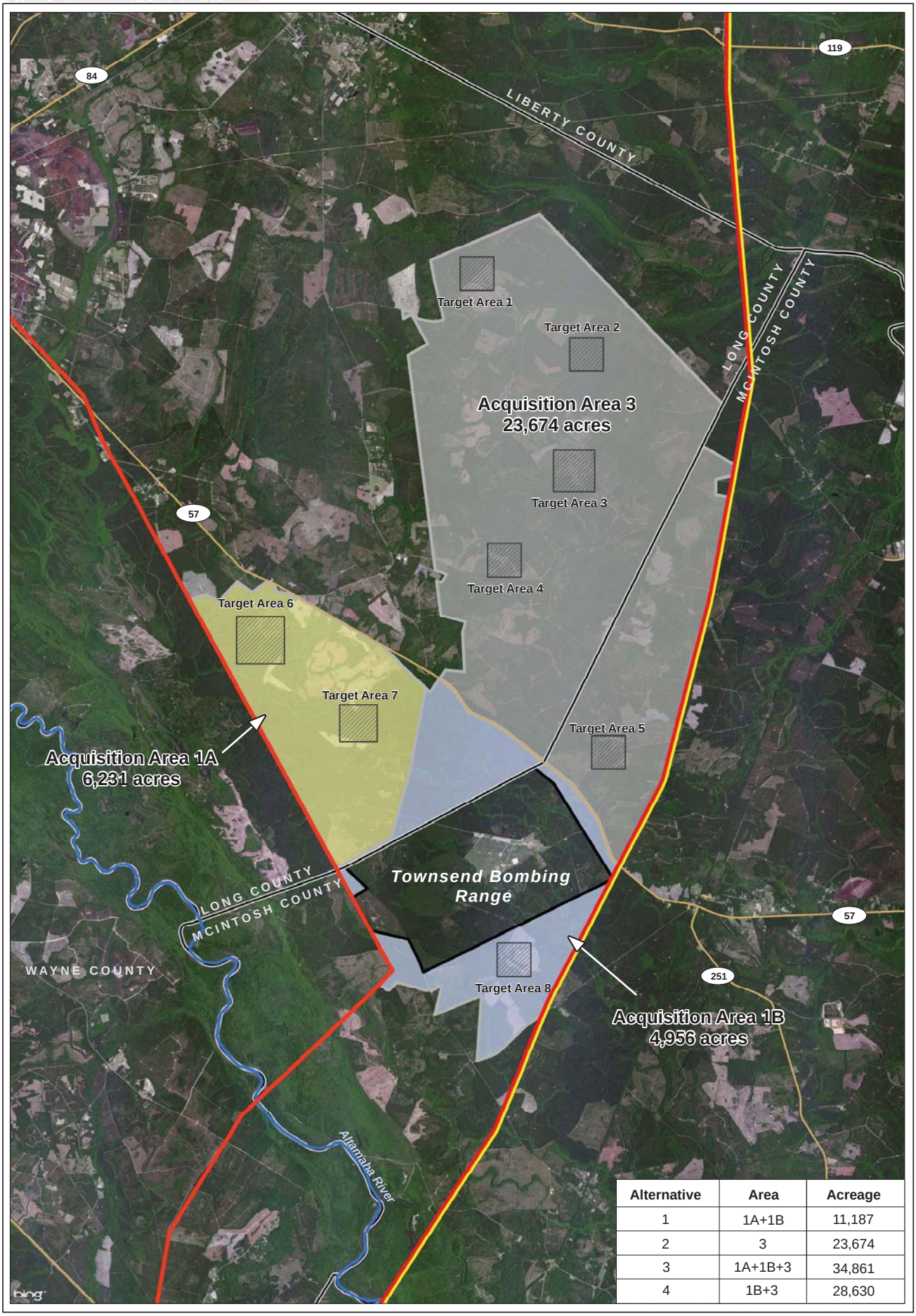
2.3.5 Alternative 4

Under Alternative 4, the USMC proposes to acquire the property that is proposed for acquisition under Alternative 2, as well as a portion of the land that is proposed for acquisition under Alternative 1. Alternative 4 proposes to acquire Areas 1B and 3 (Figure 2-18). Land acquisition under this alternative would total approximately 28,630 acres. Under this action alternative the USMC would construct Target Areas 1, 2, 3, 4, 5, and 8. Construction of six additional target areas would significantly expand TBR's training capabilities and would allow MAG-31 pilots to accomplish up to 85% of current F/A-18 air-to-ground ordnance training syllabus requirements (Table 2-5).

The operations mission support requirements under Alternative 4 are estimated to be similar to Alternative 2 since the number of additional target areas and the amount of acreage are comparable, and they both would require the same number of additional range personnel (12 in total).

2.3.6 No Action Alternative

Analysis of the No Action Alternative provides a benchmark that enables decision makers to compare the consequences of the action alternatives to the status quo. Under the No Action Alternative, the Proposed Action would not take place and the status quo would continue, the USMC would not acquire any land for training purposes, and training operations at TBR would not change due to this Proposed Action. The No Action Alternative would not provide an East Coast range capable of supporting the use of PGMs. Aviation units stationed at MCAS Beaufort would continue to deploy to the southwestern United States to undergo PGM training and meet individual aircrew training requirements. TBR would continue to support current training operations, but would be unable to accommodate PGM training.



Alternative	Area	Acreage
1	1A+1B	11,187
2	3	23,674
3	1A+1B+3	34,861
4	1B+3	28,630

Acquisition Area 1A
Acquisition Area 1B
Acquisition Area 3
Existing Range
Target Area
Counties
Major Roads
Power Line
Shared Power Line and Natural Gas Pipeline Right-of-Way
Altamaha River

N

0 1 2 Miles

Figure 2-18
Land Acquisition Alternatives
Townsend Bombing Range
McIntosh and Long Counties, Georgia

Sources: Bing 2012, Based on Lusk 2009, McFadden 2011

2.4 Alternatives Considered, but Not Analyzed Further

2.4.1 Development of a New Training Range

The USMC considered the creation of a completely new air-to-ground target range. The USMC determined this is infeasible and inconsistent with the overall military services approach of streamlining training assets and using existing assets to their maximum utility. As stewards of the Nation's training assets, in accordance with DOD Instruction Number 4165.71 (Real Property Acquisition), the military services must start with ranges and airspace that are already established and then explore ways in which the required training could be accomplished with what is currently available prior to creating an entirely new training resource. This philosophy of maximizing existing assets rather than continually creating new ones is both responsible and prudent. Therefore, this alternative is not considered further in this FEIS.

2.4.2 Utilizing MCAS Cherry Point Ranges

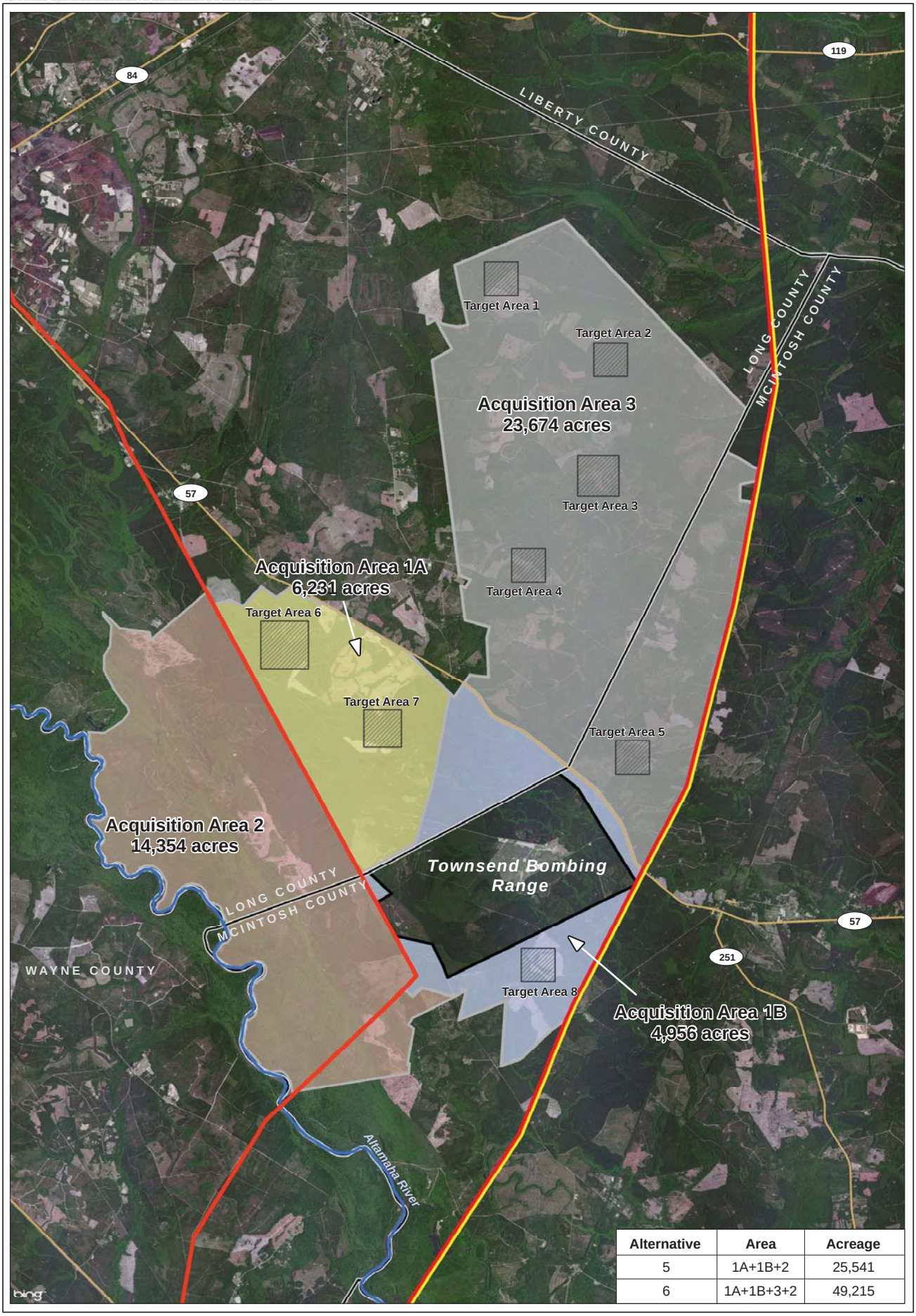
The MCAS Cherry Point ranges fail to meet the proximity criteria (Criteria 1) in the Range Evaluation Criteria (Section 2.1.1, i.e., these ranges are outside the 165 NM radius); however, these ranges were analyzed for their capability to meet the F/A-18 minimum threshold training requirements (USMC 2010a) since they are owned and operated by the USMC. Currently, the MCAS Cherry Point ranges have the capability to accommodate PGMs, but not to the level of meeting the minimum threshold training requirements. The key limitation of the Cherry Point ranges is the available restricted airspace, which is currently capped at 18,000 feet rather than the 24,000-foot minimum threshold training requirement. To meet the necessary requirement would involve airspace modification. Because MCAS Cherry Point is outside the 165 NM local flying area for MAG-31, the USMC determined that it would not provide the same level of benefit that an expansion at TBR would. Therefore, this alternative is not considered further in this FEIS.

2.4.3 Acquisition of Area 2

Initially, the USMC considered and evaluated the acquisition of Area 2 to support the use of PGMs at TBR. Two acquisition alternatives involving Area 2 were identified by the USMC:

- The USMC would acquire a combination of the property proposed for acquisition under Alternative 1 (Areas 1A and 1B), with an additional 14,354 acres between TBR and the Altamaha River identified as Area 2, totaling approximately 25,541 acres (Figure 2-19); or
- The USMC would acquire a combination of the property proposed for acquisition under Alternative 3 (Areas 1A, 1B, and 3), with an additional 14,354 acres between TBR and the Altamaha River identified as Area 2, totaling approximately 49,215 acres (Figure 2-19).

After development of the WDZs (please refer to Section 2.2.1), the USMC determined that Area 2 would not meet the minimum threshold training requirement as identified in the purpose and need. The presence of wetlands and the potential for flooding would make it difficult to access the area for target area construction, range maintenance, and EOD range clearance activities. Therefore, the two alternatives involving Area 2 are not considered further in this FEIS.



Alternative	Area	Acreage
5	1A+1B+2	25,541
6	1A+1B+3+2	49,215

Acquisition Area 1A
Acquisition Area 1B
Acquisition Area 3
Acquisition Area 2
Existing Range
Target Area
Counties
Major Roads
Power Line
Shared Power Line and Natural Gas Pipeline Right-of-Way
Altamaha River

N

0 1 2 Miles

Sources: Bing 2012, Based on Lusk 2009, McFadden 2011

Figure 2-19
Area 2 Land Acquisition Alternatives
Townsend Bombing Range
McIntosh and Long Counties, Georgia

2.4.4 Computer Simulation Training

The USMC considered using simulators and virtual reality computer simulation models to provide PGM training. Computer technologies provide excellent tools and are used in successful, integrated training programs. While the use of simulators and other training technologies reduces the risk and expense typically associated with military training, simulated training alone cannot substitute for real-world training in the handling and delivery of PGMs. The use of computer technology alone would not create the same high-stress environment of actual combat conditions or provide the operational criteria that would be encountered during a contingency situation. Proof of suitability and/or readiness can only be measured by conducting actual operational exercises in a range environment. The use of simulation provides training value to the pilot; however, the only way to reach combat proficiency is to involve the rest of the critical participants in the preparation, buildup, loading, and programming of the weapons (known as end-to-end training), which cannot be done with either stand-alone simulator devices on the ground or software simulation in the aircraft.

As stated previously, training is not simply about the release of munitions. A pilot gains valuable training simply by flying an aircraft loaded with munitions. Weight and drag differences between an aircraft loaded with munitions and one that is not can be dramatic. Pilots need to practice flying with varying drag and weight differences so that, in an actual combat situation, the pilot does not experience an aircraft condition for which that pilot is not trained. For these reasons, the sole use of training simulators in place of actual training activities fails to meet the purpose of and need for the Proposed Action and therefore is not carried forward for analysis.

2.4.5 PGM Use at Offshore Warning Areas

The USMC considered offshore warning areas (W-areas) that are located within 165 NM of MCAS Beaufort for the use of PGM training. W-areas are airspace of defined dimensions over international waters that contain activity that may be hazardous to nonparticipating aircraft. However, it is important to recognize that training activities include much more than simply dropping the weapon. Training should include target acquisition, particularly for LGBs, which includes finding the exact assigned target, positive identification, and flight to the release point. Water reflects and scatters the laser spot that is required for an LGB to hit its intended target, thereby reducing the probability of guidance and of successful engagement with that weapon. Further, the identification of targets allows the military to complete bomb hit assessments, which allow the determination of accuracy during the strike. These types of training activities are difficult or are not possible to execute over ocean waters.

2.5 Preferred and Environmentally Preferred Alternatives

Based on the analysis presented in this FEIS, the USMC has selected Alternative 4 as the Preferred Alternative. Alternative 4 represents the most favorable balance of operational utility and acceptable environmental impacts. The following section describes the USMC's process to establish the Preferred Alternative and outlines the comparison between the four action alternatives.

2.5.1 Operational Comparison Criteria

For an action alternative to be considered feasible and carried forward for analysis in this FEIS, it must meet the minimum threshold training requirement, which states that the range must provide the land and associated airspace for the following minimum criteria (also please refer to Section 2.1.1):

- A minimum of two 15-degree cones for final attack heading (one of which allows for tactical run-ins);
- Release of weapons at airspeeds from 360 to 540 knots (414 to 621 miles per hour);

- Release of weapons at altitudes up to 24,000 feet AGL; and
- Use of GBU-31, GBU-32, and GBU-38 (JDAMs); and GBU-10, GBU-12, and GBU-16 (LGBs).

All four of the action alternatives meet the above criteria for the minimum threshold training requirement (please refer to Section 2.3). Thus, in order to distinguish among the four action alternatives, the USMC applied the following operational comparison criteria to evaluate the relative operational desirability of each action alternative. Please refer to Section 2.2.5.2 where these criteria are explained further.

1. ***Increased capacity of an expanded range to accommodate training missions prescribed in the air-to-ground portion of the F/A-18 training and readiness manual.*** The comparison is stated as an increase in the percentage of training syllabus sorties each alternative would afford above what can currently be accomplished at TBR. The point of comparison directly indicates the value of each alternative with respect to how much it would improve combat readiness of Marine aircrews. The greater the percentage of increase, the greater the combat readiness offered by a given alternative. This is a quantitative measure to show the training quality increase afforded by each alternative.
2. ***Flexibility to accommodate various training skill levels and the ability to accommodate multiple training events simultaneously.*** Aviation mission skills can be categorized by two distinct training levels; basic skills and mission skills. Please refer to Section 2.2.5.2 for more information. The ability to train in and maintain core competency in basic level training is an issue of capacity afforded by an alternative rather than training quality afforded by the alternative. On the other hand, the ability of alternatives to support mission skills training is an issue of training quality versus quantity/capacity as noted for basic skills training. As a part of mission skills training, alternatives that offer the greatest number of targets and variety of attack profiles are the most desired. Variety in targets and attack profiles provides for less repetitive, more challenging training that best represents combat conditions. From a mission skills training perspective, the most effective alternatives offer the ability to simulate both the deep and close battle areas. Preferably, missions could be flown in close and deep battle areas simultaneously to test the full range of command and control systems used in battle and to challenge aircrew with the broadest set of mission skills.
3. ***Availability of targets during range maintenance periods.*** TBR must undergo periods of range maintenance to keep targets viable, maintain safe operations, and allow forestry management. Optimally, alternatives for range expansion would provide for a full range of operations on some target areas while others are closed for maintenance. This point of comparison indicates the extent to which alternatives would provide for operations during range maintenance.

2.5.2 Environmental Comparison Criteria

In addition to operational desirability, the USMC considered the environmental effect of each alternative. The environmentally preferred alternative represents the action alternative that meets the purpose of and need for the Proposed Action while minimizing the impacts on the human environment, which includes the natural and physical environment and the relationship of people with that environment.

In developing the comparison criteria to assess the relative environmental impacts associated with each of the four action alternatives, the USMC considered the analysis in this FEIS as well as inputs received during the public scoping period. The analyses of the individual resource areas are discussed in detail in Section 3 of this FEIS. The analysis to assess the environmental impacts of each of the action alternatives revealed one potentially significant environmental impact—the impact to socioeconomics. The analysis of the other environmental resources revealed no significant impacts. Please refer to Section 3 for more information. The USMC also emphasized the comments that were received during the public scoping period, which highlighted socioeconomic concerns about land acquisition, particularly the loss of property tax revenue as a result of USMC acquisition of privately owned land. Please refer to Section 1.6.1.2 for further information. The USMC then applied the following environmental comparison criteria to distinguish among the four action alternatives:

1. ***Minimize the total acreage that would be acquired.*** During the development of the four action alternatives, the USMC sought to minimize the potential adverse impacts of acquisition (please refer to Section 2.2.1). The USMC carried this principle forward in its assessment to select the Preferred Alternative. This criterion offers a quantitative point of comparison to measure the relative magnitudes of the potential environmental impact of each alternative. An alternative with a relatively small acreage would have a correspondingly smaller adverse socioeconomic impact, or less of an impact on the potential loss of tax revenue, either from a decrease in property tax revenue or timber tax revenue.
2. ***Avoid the acquisition of non-commercial forestland.*** The USMC sought to minimize the disruption to the social fabric in the local communities by focusing on the acquisition of land that is owned by corporations (i.e., commercial forestland) in the development of the action alternatives and continuing through the assessment to select the Preferred Alternative. Therefore, the USMC sought to avoid the acquisition and subsequent relocation of private residences, locally owned businesses, or acquisition of real property that is owned by individuals. Ideally, an alternative that only acquires commercial forestland would be the most environmentally preferred.

This assessment, based on the operational and environmental comparison criteria above, is outlined below by action alternative. Section 2.5.4 then identifies the Preferred Alternative based on the outcomes of this assessment.

2.5.3 Application of the Comparison Criteria to Evaluate the Action Alternatives

2.5.3.1 Alternative 1

Operational Comparison Criteria

Of the four action alternatives, Alternative 1 would afford the least training and operational capability among the action alternatives; it would accommodate only two attack headings and allow construction of only three additional target areas (Target Areas 6, 7, and 8; Tables 2-3 and 2-4). This alternative would allow pilots to accomplish up to 72% of current F/A-18 air-to-ground ordnance training syllabus requirements. It would meet the threshold requirements, but would not afford the training flexibility of the other three action alternatives. The orientation of Areas 1A and 1B would allow for ingress from offshore Warning Areas (W-Areas) with an easily executable turn to final attack headings. However, Alternative 1 would not provide an adequate representation of close and deep battle areas. Alternative 1 also would not increase the capacity for basic skills training as Areas 1A and 1B would not allow simultaneous mission and basic skills training to be accomplished. Target proximity and orientation with Areas 1A and 1B would not provide for adequate flight separation of the two competing missions. When LGB targets are closed for maintenance or EOD sweeps, no PGM use would be available.

Environmental Comparison Criteria

Under Alternative 1, the least amount of land, 11,187 acres, would be acquired and thus this alternative would have the least effect on the local tax revenues. However, this alternative does not fare well in the criterion to avoid the acquisition of property from individuals. Specifically, it would include the acquisition of one private residence and one locally owned business, and land with a hunting lodge located in Area 1A that is owned and utilized by a private hunting club.

2.5.3.2 Alternative 2

Operational Comparison Criteria

Alternatives 2, 3, and 4 would expand training capabilities by allowing aircrew to accomplish up to 85% of the current F/A-18 air-to-ground ordnance training syllabus requirements—an improvement from 47% at the existing range to 85% under each action alternative.

Despite being able to complete the same percentage of the F/A-18 air-to-ground training syllabus requirements as Alternatives 3 and 4, Alternative 2 would provide less capability. While Alternative 2 would accommodate four final attack headings, only five additional target areas (Target Areas 1, 2, 3, 4 and 5; Tables 2-3 and 2-4) would be constructed. With the construction of the five additional target areas, this alternative would provide more target sets and individual aim points, and thus less repetition in attack scenarios and more challenging and realistic training. However, the construction of five additional target areas under Alternative 2 versus eight additional target areas under Alternative 3 would result in less training flexibility and a commensurate reduction in accommodating real-world combat training environments. Like Alternatives 3 and 4, Alternative 2 has the potential to allow two basic training missions simultaneously and would be an expansion of basic training capacity. It also has the potential to provide adequate land and airspace for two simultaneous CAS missions. However, Alternative 2 would not provide the capability to conduct a simultaneous mix of basic skills training and mission skills training. Alternative 2 also would not provide adequate representation of both close and deep battle areas, which would necessitate the use of simulation for one portion of the battlefield. This limitation would affect training at the mission skill level. This is a significant factor in LFE realism. One JDAM target would remain available during EOD sweeps and/or range maintenance of all target areas, except target area 3. No JDAM capability would exist when Target Area 3 is closed for maintenance. LGB use would be available during EOD sweeps and/or maintenance on any of the designated target areas. Alternative 2 would necessitate all mission ingress from offshore W-Areas to execute a turn of 90 degrees or more to

reach final attack heading. In larger "strike packages," such a turn can create safety hazards due to aircraft falling out of formation, getting to the target late, or interfering with target area maneuvers of following flights.

Environmental Comparison Criteria

Under Alternative 2, 23,674 acres would be acquired; however, this alternative would acquire property primarily from commercial forestland owners, with the exception of approximately 93 acres of currently undeveloped land owned by a single individual.

2.5.3.3 Alternative 3

Operational Comparison Criteria

Alternative 3 would provide the greatest operational capability. Alternative 3 would achieve the same level of enhancement as Alternatives 2 and 4 in the air-to-ground training requirements in the current F/A-18 training syllabus—an improvement from 47% at the existing range to 85% under Alternative 3.

Alternative 3 would contain the largest acreage, 34,861 acres, as well as the greatest number of target areas. This alternative would accommodate four final attack headings beyond the minimum requirement of two 15-degree final attack headings and the construction of an additional eight target areas (see Tables 2-3 and 2-4). Alternative 3 would provide the greatest mix of LGB targets and LGB mission profiles, and the most realistic and challenging training for mission skill sets demanded by MEF Commanders. Increased variations in targets, aim points, and attack headings would result in more challenging and realistic training. This alternative has the potential to allow two basic skills training missions simultaneously, thus, this would be an expansion of basic skills training capacity. The alternative also has potential to provide adequate land and airspace for two simultaneous CAS missions and would allow full representation of close and deep battle areas. Alternative 3 would provide capability to conduct a simultaneous mix of mission skill training and basic skill training, providing the greatest capability and scheduling flexibility of the four action alternatives. This alternative would provide the greatest training flexibility and the most realistic combat training environments. Alternative 3 would also provide advantages over the other three action alternatives from a range maintenance perspective. Under this alternative, JDAM and LGB targets would remain available during EOD sweeps and range maintenance periods of any target area.

Environmental Comparison Criteria

Alternative 3 is a combination of Alternative 1 and Alternative 2. Under Alternative 3, the largest acreage, 34,861 acres, would be acquired, therefore, this alternative would have the greatest effect on tax revenues. This alternative would necessitate the acquisition of property owned by individuals. Alternative 3 would include the acquisition of one private residence, one locally owned business, and land with a hunting lodge located in Area 1A that is owned and utilized by a private hunting club.

2.5.3.4 Alternative 4

Operational Comparison Criteria

The USMC developed Alternative 4 in response to comments from the public received during the public scoping period for the DEIS. The total acreage for Alternative 4, 28,630 acres, would be a reduction of 6,231 acres from the 34,861 acres proposed under Alternative 3. Alternative 4 is a variation on Alternative 3 that would achieve a similar level of operational utility as Alternative 3. Of the four action alternatives, Alternative 4 would offer the second highest operational utility. Alternative 4 would achieve the same level of enhancement as Alternatives 2 and 3 in the air-to-ground training requirements in the current F/A-18 training syllabus—an improvement from 47% at the existing range to 85% under Alternative 4.

Like Alternative 3, Alternative 4 would accommodate four final attack headings beyond the minimum requirement of two 15-degree final attack headings; however, Alterative 4 would provide for the construction of only six additional target areas (Target Areas 1, 2, 3, 4, 5, and 8; Tables 2-3 and 2-4), two fewer than would be constructed under Alternative 3. Alternative 4 would provide the training enhancements as described above for Alternative 3, but on a slightly lesser scale. Under Alternative 4, Area 1B would only allow LGB use on the proposed target area; however, both LGBs and JDAMs would be used in Area 3. Therefore, similar to Alternative 3, although to a lesser extent, Alternative 4 would allow PGM use in each of the proposed acquisition areas (Areas 1B and 3) and would allow for challenging and realistic training through the mix of targets, aim points, and attack headings. Figure 2-20 illustrates the PGM WDZs modeled for Alternative 4. Representation of close and deep battle areas could still be accomplished under Alternative 4. The two proposed acquisition areas (Areas 1B and 3) would provide adequate separation to allow a simultaneous mix of basic and mission skills to be flown, thus increasing training capacity. This alternative also would allow LGB targets to be available during all EOD sweeps and range maintenance periods. JDAM targets would not be available during EOD sweeps of Target Areas 2, 3, and 4.

Environmental Comparison Criteria

Under Alternative 4, 28,630 acres would be acquired; however, this alternative would acquire property primarily from commercial forestland owners, with the exception of approximately 95 acres of currently undeveloped land owned by two individuals

2.5.4 Preferred Alternative

To arrive at the Preferred Alternative for this FEIS, the USMC selected: a) an operationally preferred alternative, and b) an environmentally preferred alternative based on the outcomes of the above comparisons. The operationally preferred alternative represents the action alternative that best meets the purpose of and need for the Proposed Action from an operational perspective and has the highest level of operational utility (i.e., it maximizes the training enhancement and value to the USMC). The environmentally preferred alternative, on the other hand, represents the action alternative that meets the purpose of and need for the Proposed Action while minimizing the impacts on the human environment, which includes the natural and physical environment and the relationship of people with that environment. The USMC then weighed the merits of the operationally preferred alternative against the merits of the environmentally preferred alternative to establish the most suitable way-forward to meet the purpose and need for the Proposed Action. This way-forward, or Preferred Alternative, represents the optimal balance between the operational utility and the potential impacts to the environment.

From an operational perspective, Alternative 3 is the best alternative, followed in decreasing order of operational utility by Alternative 4, Alternative 2, and Alternative 1. Alternative 3 is, therefore, the operationally preferred alternative. On the other hand, from an environmental perspective, Alternative 2 would have the least environmental impact because it would allow for a moderate acquisition of acreage without any impacts to non-commercial forestland property owners, thus it is the environmentally preferred alternative. The best balance between operational utility and acceptable environmental impacts is represented by Alternative 4; therefore, the USMC has selected Alternative 4 as the Preferred Alternative.

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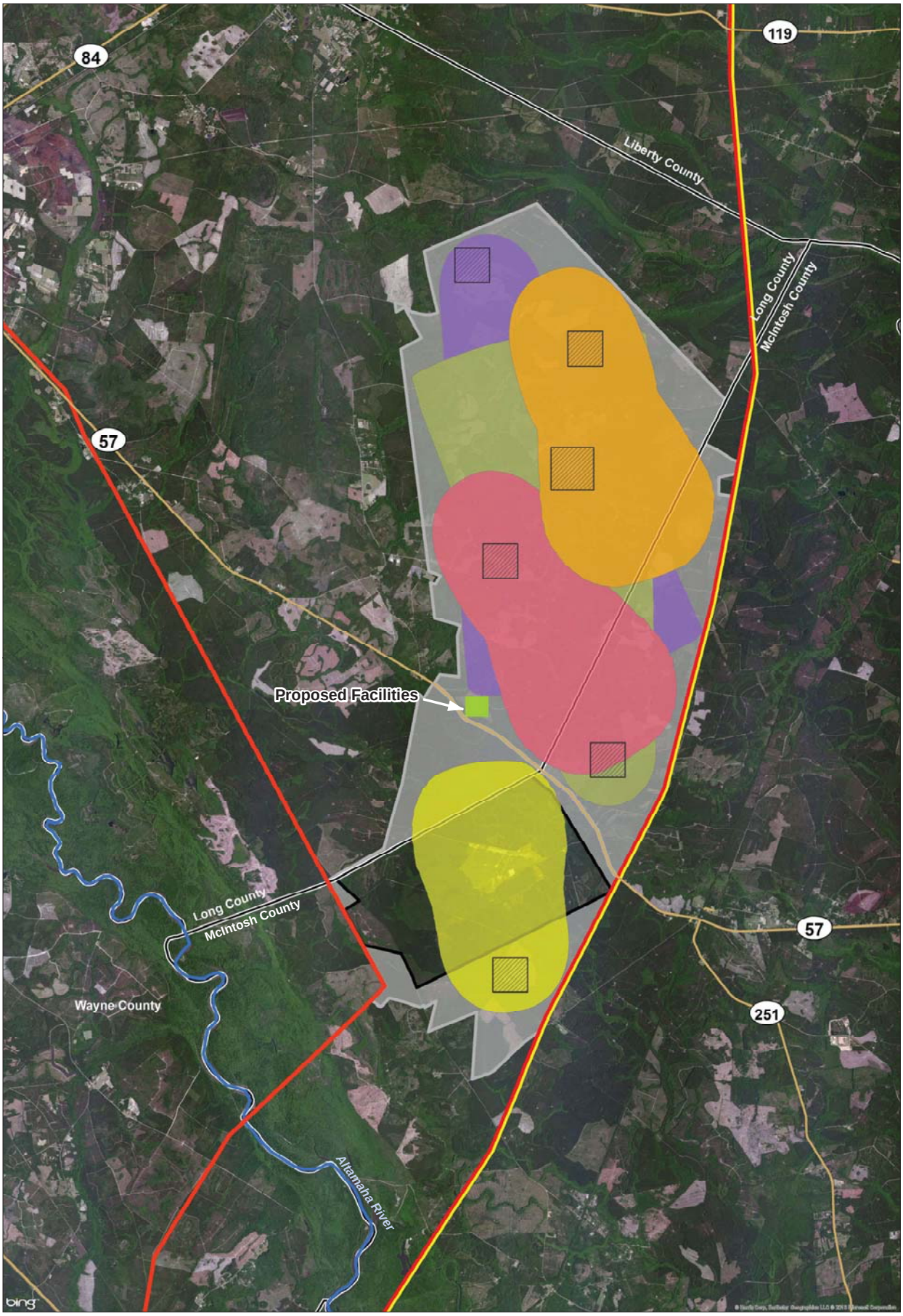

Acquisition Area
Existing Range
Target Area
Proposed Facilities

Target Area 1 PGM WDZ
Target Area 2 PGM WDZ
Target Area 4 PGM WDZ
Target Area 5 PGM WDZ
Target Area 8 LGB WDZ

Counties
Major Roads
Power Line
Shared Power Line and Natural Gas Pipeline Right-of-Way
Altamaha River

N

0 1 2 Miles

Figure 2-20
Alternative 4 Modeled WDZs
Townsend Bombing Range
McIntosh and Long Counties, Georgia

Sources: Bing Maps 2009, Bassed on Lusk 2009, McFadden 2011, McFadden 2012

PGM = Precision-Guided Munition
WDZ = Weapon Danger Zone
LGB = Laser-Guided Bomb

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