
RAICUZ Study for
Noxubee County Target Range SEARAY
Naval Air Station Meridian, MS
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Prepared by:



The Onyx Group

for

Southern Division
Naval Facilities Engineering Command
North Charleston, South Carolina

This study was produced by:

The Onyx Group of Alexandria, VA

Under the direction of the:

Southern Division, Naval Facilities Engineering Command

The following individuals and organizations made major contributions to the effort:

Southern Division, Naval Facilities Engineering Command

Mr. Richard Jolly, Senior Planner, Navy Contracting Officer Technical Representation

COMTRAWING ONE

MAJ-Robert Alexander, USMC

LT-Chuck Trimble, USN

NAS Meridian, MS

Mr. Danny Cook, PWD

LT-Michael McCarthy, ATC Officer

AC1-Douglas Boelter

The Onyx Group

Mr. Tom Horsch, PE -Project Manager/Senior Planner

Mr. Gregory Dorn, AICP- Planner/GIS Specialist

Wyle Laboratories

Jawad Rachami, Project Manager

Koffi Amefia, Aircraft/Airfield Noise Specialist

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List of Acronyms

AC	Acres
AIROPS	Air Operations
AGL	Above Ground Level
ATC	Air Traffic Control
ARTCC	Air Route Traffic Control Center
CIP	Capital Improvements Program
CIB	Capital Improvements Budget
CMC	Commandant of the Marine Corps
CNO	Chief of Naval Operations
CTW-1 or COMTRAWINGONE	Commander, Training Air Wing One
dB	Decibel
DME	Distance Measuring Equipment
DNL (also Ldn)	Day-Night Average Sound Level
DOD	Department of Defense
EIS	Environmental Impact Statement
EA	Environmental Assessment
FAA	Federal Aviation Administration
GIS	Geographic Information System
GTPDD	Golden Triangle Planning and Development District
HAD	High Angle Dive
ID	Identification
IFR	Instrument Flight Rules
INST	Instruction
LAD	Low Angle Dive
LADB	Low Angle Dive Bomb
Ldnmr	Onset-rate Adjusted A-weighted Day-night Average Sound Levels
MAD	Medium Angle Dive
MAG	Magnetic
MOA	Military Operating Area
MSL	Mean Sea Level
MTR	Military Training Route
NACES	Navy Aircrew Common Ejection Seat
NAS	Naval Air Station
NEPA	National Environmental Policy Act
NLR	Noise Level Reduction
NM	Nautical Mile
NMIDA	North Mississippi Industrial Development Association
NOTAM	Notice to Airmen
OLF	Out Lying Field
OPNAVINST	Office of the Chief of Naval Operations Instruction
RAICUZ	Range Air Installation Compatible Use Zones
RSZ	Range Safety Zones
SEL (also Lae)	Sound Exposure Level
SUA	Special Use Airspace
TACAN	Tactical Air Navigation
TDR	Transfer of Development Rights
USAF	United States Air Force
VFR	Visual Flight Rules

Purpose of the Range Compatible Use Zones

This study addresses the Range Air Installations Compatible Use Zones (RAICUZ) for the Noxubee County Target Range SEARAY. Aircraft from Naval Air Station (NAS) Meridian, Mississippi, are the primary users of this range. The purpose of the Target Range SEARAY RAICUZ Study is to protect public health, safety, and welfare, and to prevent encroachment from degrading the operational value and capability of the range. It contains range safety and noise analysis as well as land use recommendations. The primary objectives of the study are to preclude public exposure to hazards associated with inert weapons training within the range; prevent incompatible development or uses near the range; protect the Navy's investment by safeguarding the operational capacity of the range; and inform the public about the RAICUZ program and seek cooperative efforts to maximize safety and minimize effects within the vicinity of the installation.



Range and Airspace Overview

Target Range SEARAY is approximately 2,900 acres of fee and easement ownership interests. Target Range SEARAY's main mission is to provide a practice inert bombing range for pilots in training at NAS Meridian. Special use airspace (SUA) has a defined vertical and lateral limit that has been established by the Federal Aviation Administration (FAA) within which the flight of non-military aircraft, while not wholly prohibited, is subject to restrictions. SUA is established to segregate air activities, which may be hazardous to non-participating aircraft. Restricted areas are a type of SUA, and restricted area R-4404A/B/C overlays and surrounds Target Range SEARAY.

Noise

This study addresses the noise impacts associated with aircraft operations. Aircraft noise was analyzed based on aircraft activities within R-4404A/B/C. The noise is described in terms of Onset-Rate adjusted A-weighted Day-Night Average Sound Levels (Ldnmr). The range supported 8,600 aircraft sorties in Calendar Year 2001 (CY01) and is projected to support 12,800 aircraft sorties during Calendar Year 2005 (CY05). The average Ldnmr of 65-75 dB resulting from aircraft operating within the restricted airspace areas were computed to encompass some 1,900 acres off-range in CY01 and are projected to encompass some 3,400 acres in CY05.

The area most impacted by noise is southwest of the target on approach and turning northwest on departure from the target. While much of this area is uninhabited, it does not mean off-range residents do not hear the noise associated with range operations; and some of these residents may find the noise levels objectionable. However, with the exception of not recommending housing construction in areas exposed to noise levels of 65-75 Ldnmr, few zoning restrictions would be recommended for off-range areas at this time due to the noise levels reflected in this study.

Safety

Safety issues associated with range operations involve both aircraft over-flight and ordnance delivery at the range. Live ordnance is not allowed at the range and currently only MK 76 and BDU 33 practice bombs are used. These inert practice bombs have only a small spotting charge that releases a cloud of smoke on impact.

Safety associated with air-to-ground delivery of ordnance is ensured by first planning and developing Range Safety Zones (RSZs) for all targets, which translate aviation and ordnance delivery safety concerns into degrees of safety that can be reasonably attained. For Target Range SEARAY, there is a single bull's-eye target used for practice bombing drops.



There are three RSZs designated for air-to-ground ranges:

- **Range Safety Zone A:** This zone defines the minimum range surface area needed to contain ordnance employed in air-to-ground training including initial impact and ricochet. It is the area of maximum safety hazard. RSZ A corresponds with the range composite weapons safety footprint, which is calculated using the SAFE-RANGE methodology. This composite hazard area is the summation footprint of all appropriate weapons safety footprints for the range. The range composite weapons safety footprint, RSZ A, encompasses approximately 1,634 acres. Of that, 572 acres are located within the range fee ownership boundary and 975 acres are located within Navy controlled perpetual and assignable easement properties. A total of 87 acres are located outside Navy owned or controlled land.
- **Range Safety Zone B:** This zone is defined as the area of armed overflight, which is considered an intermediate level of safety hazard concern. The length of the zone begins at the point the pilot releases the master arming switch in preparation for weapons delivery to the target. RSZ B for Target Range SEARAY is 1,000 feet wide, begins 2.5 miles from the target, and ends at the edge of RSZ A. RSZ B totals 197 acres, of which 53 acres are located over range property and 162 acres are located outside range property.
- **Range Safety Zone C:** RSZ C defines a minimum level of safety hazard concern and recognizes airspace that is restricted for safety of flight. RSZ C is required to provide the range user tactical maneuvering room. This zone is a three-dimensional concept, which sets restrictions both laterally and vertically. RSZ C is a 5 nautical mile (NM) radius centered on the range's bull's-eye and covering 66,566 acres horizontally. Vertically, RSZ extends from the ground to 11,500 feet mean sea level (MSL). Though R-4404C is located directly above R-4404B extending from 11,500 feet MSL to 14,500 feet MSL, R-4404C is not used for range operations, and therefore, not included in the vertical portion of RSZ C.

Range Compatible Use Zones

The core of the RAICUZ program is a land use plan that recommends land uses for areas exposed to different levels of potential weapons impact and noise. Target Range SEARAY RAICUZ noise and safety areas were identified as part of this study, and are used as a basis for identifying different types of compatible use.

Impact Analysis

Target Range SEARAY is within Noxubee County, Mississippi. The majority of land surrounding the range is undeveloped. Any change in off-range land use would be tied to population and development trends in this area. Currently, no development plans envision any development actions. The relatively small change in population, housing units, commercial growth, and employment forecasted for Noxubee County in the next decade are indicative that there will be little if any demand for changes in off-range land use adjacent to Target Range SEARAY.

Recommendations and Implementation

The following are recommendations that can be used in implementing the RAICUZ program at NAS Meridian and Target Range SEARAY.

1. Designate a RAICUZ officer to interface with local government officials and local residents. The RAICUZ officer could also be instrumental in assisting in a community outreach program.
2. Consider acquisition of real estate interests in the portion of RSZ A that falls outside the current Range ownership boundaries.
3. Monitor local planning activities and proposed development within the land areas under R-4404 and seek to update land use controls to ensure future compatible land use as appropriate.
4. Update current mapping within the Navy's SAFE-RANGE database to reflect the results of this study.

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1.0 Introduction

The Noxubee County Target Range SEARAY is located 33 miles northwest of Naval Air Station (NAS) Meridian and 18 miles northeast of Out Lying Field (OLF) Joe Williams in eastern-central Mississippi. The range is used to train NAS Meridian's student naval pilots in bomb ordnance deliveries. The area of Mississippi surrounding the range is primarily rural with a low population density, making it an ideal location for a training range. With the increase in NAS Meridian's responsibilities, importance, and pace of operations resulting from the 1993 closure of NAS Chase Field, the Navy is working to ensure that the Target Range SEARAY remains viable and operationally intact by commissioning this Range Air Installations Compatible Use Zones (RAICUZ) study.

This RAICUZ study has been prepared in accordance with Navy guidelines outlined in the Office of the Chief of Naval Operations Instruction (OPNAVINST) 3550.1, RAICUZ Program. The study includes range safety and noise analyses, and provides land use recommendations which are compatible with range safety zones and noise levels associated with range operations. Incompatible development, a form of encroachment, has become commonplace on public and privately owned lands in the vicinity of other Navy installations. The study works to minimize any existing and future incompatible development from impacting operations at the Target Range SEARAY. Ultimately, the study outlines a strategy, or program, for the Navy and community to implement noise and safety compatibility planning.

1.1 RAICUZ Program

The Navy initiated the RAICUZ program to protect the public's health, safety, and welfare and to prevent civilian encroachment from degrading the operational capacity of military ranges. The purpose of the RAICUZ program is to achieve compatibility between air-to-ground training ranges and existing and proposed land uses and airspace in the vicinity of the range installation by meeting the following primary objectives:

- Preclude public exposure to hazards associated with air-to-ground weapons delivery;
- Prevent incompatible land development near training range operations (associated with low-level overflight, drop hazards, and high noise levels);
- Protect Navy and Marine Corps investment by safeguarding the operational capabilities of those ranges;
- Inform the public about the RAICUZ program and seek cooperative efforts to minimize potential safety impacts and aircraft related noise impacts in the vicinity of the air-to-ground range installation.

The RAICUZ program recommends land uses that are compatible with noise levels and range safety zones (RSZs) associated with range operations. The Navy has identified the following components as requirements for a successful RAICUZ program:

- Develop and periodically update a study and map for each range to quantify and depict noise zones and RSZs;
- Coordinate with federal, state, and local officials to encourage compatible land use development around the range;
- Inform the local community of the importance of maintaining the Navy's ability to conduct range operations;

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- Review operations and implement operational changes and noise abatement strategies that would minimize safety and noise impacts while ensuring mission requirements.

The core of the RAICUZ program is a compatible land use plan tailored to each air ground installation.

1.2 Purpose, Scope, and Authority

The purpose of Noxubee County Target Range SEARAY RAICUZ Study is to evaluate the safety hazards and noise impacts associated with air-to-ground ordnance delivery training at Target Range SEARAY, located in Noxubee County, Mississippi. The range is located in the area underlying special use airspace designated Restricted Area 4404 A, B, and C (R-4404A/B/C) and within the Meridian One Military Operating Area (MOA). NAS Meridian is the host naval activity responsible for operation, scheduling, and maintenance of the range and R-4404A/B/C. This study evaluates aircraft operational tempo and noise and safety impacts associated with range operations for the current year, or Calendar Year 2001 (CY01) and for a projected year, or Calendar Year 2005 (CY05).

The authority for the establishment and implementation of the Target Range SEARAY RAICUZ study is derived from OPNAVISNT 3550.1.

1.3 Need for the Range

The continued capability of the Target Range SEARAY to support mission requirements is critical to the overall mission of NAS Meridian. The Navy refers to this as sustainable readiness and cites the following reasons for continued use of the Target Range SEARAY:

- The world remains a dangerous place.
- The nation needs forces at a high state of readiness.
- Readiness is only obtained with continual high quality training and modernization.
- Forces need to “train as we fight”.
- The American public expects victory and near-flawless performance in peacekeeping and battle.
- Section 5062 Title 10 United States Code directs the CNO to train all Naval forces for combat.

The need for Target Range SEARAY is integral to the mission of NAS Meridian- *“NAS Meridian supports aviation and technical training, and other tenant activities by providing timely, quality services and facilities in an environmentally safe, secure community.”* The major NAS Meridian tenant command using the range is Commander, Training Air Wing One (CTW-1 or COMTRAWINGONE). CTW-1 administers, coordinates, supervises, and support flight and academic training at the station. The range is used to train NAS Meridian’s CTW-1 student naval pilots in bomb ordnance deliveries.

In addition, NAS Meridian plays an important role in the economy of the surrounding community. The continued use of the installation and its assets including the range are not only of importance to the Navy, but to the community as well.

1.4 RAICUZ Methodology

The nature of flight operations at a range differs significantly from those at an air station. Range flight operations and ordnance drops demand a different emphasis on safety and noise abatement procedures than air station flight training. The RAICUZ study is an instrument to show the modeled effects of aircraft noise and weapon safety footprints to assess the compatibility of range operations and surrounding land uses.

Aircraft noise levels were modeled using computer simulation of typical range operations that reflect site-specific operational data including the type and number of aircraft using the range, flight tracks, frequency and time of operations, and the number and types of operations. The aircraft noise footprint development, methodology, and results are discussed in Chapter 3 of this study.

To assess the safety hazards associated with air-to-ground ordnance delivery, the Department of Defense (DOD) Safe Range methodology was used. The Safe Range program incorporates a bomb footprint database, a digitized range database, and a probability distribution function to analyze training options. Further discussion of the Safe Range footprints, methodology, and applications to the Target Range SEARAY are discussed in Chapter 4 of this study. The combination of the Safe Range footprints forms Range Safety Zone A (RSZ A).

In general, the compatibility guidelines for land uses in RSZ A and Range Safety Zone B (RSZ B), the area of armed overflight, are more stringent because ordnance can land in these areas. As such, residential development is not compatible in these RSZs. Residential development is compatible in Range Safety Zone C (RSZ C), an area of minimal safety hazard that recognizes airspace which is restricted for safety of flight. However, development restrictions are suggested in RSZ C for the density of single and multi-family housing areas to reduce the number of persons potentially exposed to overflights. The suggested maximum density in RSZ C is less than one dwelling unit per 10-acres. Discussion of the noise contours and RSZs in relation to land use compatibility is discussed in Chapter 5 of this study. Chapter 6 follows up with a discussion on tools to implement the RAICUZ study and recommendations to reduce and prevent future incompatibilities.

1.5 Responsibility for Compatible Land Use

The military installation owning the range (NAS Meridian) and the local government agencies with planning and zoning authority (surrounding county in conjunction with regional planning and development district assistance) share the responsibility for ensuring land use compatibility near the range. In addition, real estate agencies, residents, developers, and builders share in this responsibility. Cooperative action by all parties is essential to prevent land use incompatibility and future encroachment. Table 1-1 identifies these responsibilities.

Table 1-1 Responsibility for Compatible Land Uses

Party	Responsibilities
NAS Meridian	<ul style="list-style-type: none"> • Examine aircraft operations for changes that could reduce impacts. • Conduct noise and weapons impact studies. • Prepare and release a RAICUZ study/maps. • Examine local land uses. • Make land-use recommendations/suggestions. • Work with federal, state, and local agencies, residents, developers, and builders. • Monitor operations and noise complaints. • Prepare and update RAICUZ as required.
County Government with Planning and Development District Assistance	<ul style="list-style-type: none"> • Incorporate RAICUZ guidelines into comprehensive development plans and local ordinances. • Regulate height, lighting, and obstruction concerns. • Regulate acoustical treatment in new construction. • Require fair disclosure in real estate transaction for buyers, renters, and lessees.
Private Citizens	<ul style="list-style-type: none"> • Educate oneself on the importance of the Navy’s RAICUZ program. • Identify RAICUZ considerations in all property transactions. • Understand RAICUZ effects before buying, renting, leasing, or developing property. • Call the designated NAS Meridian phone number to register noise complaints and provide all requested information.
Real Estate Professionals	<ul style="list-style-type: none"> • Ensure that potential buyers and lessees receive and understand RAICUZ information on affected properties. • When working with builders/developers, ensure an understanding and evaluation of the RAICUZ program.
Builders/Developers	<ul style="list-style-type: none"> • Develop properties in a manner to protect the health, safety, and welfare of the civilian population by constructing land-use facilities which are compatible with aircraft and range operations (e.g., sound attenuation).

1.6 Changes that Require a RAICUZ Update

This is the initial RAICUZ Study for this range. In the future, this study should be evaluated for the need of update when significant change in mission, aircraft operations, a change in type of aircraft using the range, a change in flight paths or procedures, a change in the type of ordnance used, a change in the method of delivery of ordnance that would affect the weapons impact footprint, or a change in target location are expected to occur. If such changes occur at Target Range SEARAY, a RAICUZ update may be necessary. Once designated, RAICUZ areas shall not be modified without CNO or CMC approval per OPNAVINST 3550.1.

2.0 Description of Range and Airspace

This section provides a detailed description of the Target Range SEARAY and R-4404A/B/C, the restricted airspace associated with the range. Range operations for CY01 and projected range operations for CY05 are also presented.

2.1 Location and History of Target Range SEARAY

Target Range SEARAY is located 33 miles northwest of NAS Meridian and 18 miles northeast of OLF Joe Williams in a rural portion of eastern-central Mississippi. Three significantly populated cities are within 100 miles of the range. Meridian, Mississippi, a city with a population of 39,968 persons per the 2000 US Census, is the closest of the three cities and is located 43 miles to the south of the range. The two other significantly populated cities within 100 miles of the range are Tuscaloosa, Alabama, located 70 miles to the northeast, and Jackson, Mississippi, located 100 miles to the west. See Figure 2-1. The 2000 US Census populations for these two cities totaled 77,906 persons and 184,256 persons, respectfully.

Figure 2-2 illustrates the location of the range with respect to NAS Meridian and OLF Joe Williams. Figure 2-3 provides a more detailed view of the range location, R-4404A/B/C, and surrounding features within southwestern Noxubee County. The range can be reached from the north and south by US Route 45 and from the east and west by State Routes 14 and 21. Unimproved (dirt and gravel) access roads lead from these primary roads to the range.

Pine forested (*loblolly-pines*) and clear cut flatlands surround the range and comprise the majority of the area within R-4404A/B/C area. Development in the area mainly consists of low density single family residences, and is limited to State Routes 14 and 21, rural roadways, and the towns of Macedonia, Mashulaville, and New Salem. Mashulaville is the most developed of the towns with approximately 50 structures built within a 1-mile radius of the town center.

The range is 670 acres in size, and was acquired in 1976 and expanded in 1978 to its current size. An additional 2,231 acres of buffer zone is regulated through a perpetual and assignable easement (See Appendix A for easement documentation. Acres based on Navy provided Geographic Information System [GIS] files). Ground cover on the range can be described as maintained open space in the target, approach, and command and control areas. The maintained open space facilitates the monitoring of bombing accuracy and improves fire safety. The majority of the remaining portion of the range and buffer zone is vegetated landscape/pine forested flatlands that isolate the public from the target area and provide a buffer for dropped ordnance that may miss the target or ricochet away from the target area. The range boundary is posted with signs that inform the public that the range area is restricted access/use for safety reasons. The access roads to the range are gated, allowing vehicular access to only authorized personnel.

Today, the range is used to train NAS Meridian's CTW-1's VT-7 squadron student naval pilots in inert bomb ordnance deliveries using T-45C aircraft. The VT-7 squadron trains pilots for the Navy and Marine Corps fleet squadrons as well as a few foreign military pilots. In FY01, this squadron graduated 141 replacement pilots and 26 instructors. Generally, students are assigned to VT-7 after having completed intermediate strike training with VT-9 (CTW-1's other squadron). VT-7 introduces these students to the T-45C airframe and prepares them with further jet training through an advanced strike syllabus. After successfully completing the regimen, aviators are typically assigned to a fleet replacement squadron for further flight training in a final aircraft type (e.g., F/A-18, AV-8B). VT-7 squadron had 56 T-45C aircraft assigned to it and, as of November 2001, is receiving a new aircraft every three weeks. The current maintenance program keeps at least seventy percent of the aircraft "mission capable", and 37 aircraft are scheduled for use per day.

2.2 Range Description

The range ownership is a combination of fee and easement real estate interests in the land. As indicated in Figure 2-4, the range area consists of some 654 acres in fee and a surrounding area of an additional 2,235 acres in restrictive use easements. Documentation providing the specific easement restrictions is included in Appendix A of this study.

The following describes important features of the range as provided in COMTRAWINGONE INST 3710.7M. Figure 2-5 shows these features of the range. Figure 2-6 provides an aerial view of the range similar to what pilots would see on final run-in/approach.

- **Aerial Description:** When viewed from the air, the surface impact area appears as a keyhole-shaped clearance area (1/2 x 1 mile) surrounded by pine forest. The long axis of the area (run-in line) is oriented on a magnetic heading of 045°.
- **Aiming (Bomb) Target:** The bomb target (bull's-eye) is a 20 foot diameter bull's-eye and three concentric circles having the following radii: 75, 150, and 300 feet. The bull's-eye is 240 feet MSL.
- **Strafe Target (Inactive):** The strafe target is a 40 by 80 foot rectangular area that forms a 12 foot high mound. The mound is located on the bomb target run-in line, 1,400 feet southwest of the bomb target. At one time, the range was also used for strafing.
- **Strafe Foul Line (Inactive):** The strafe target file line is located on the run-in line of the bombing target 1,800 feet southwest of the strafing target.
- **Control Towers:** Two spotting towers are located approximately 3,100 feet south of the bomb target. The towers are currently unmanned during operations. Scoring is tracked by instructor's from aircraft.
- **Helicopter Pad:** The helicopter pad is located just north of the two spotting towers.

The run-in heading approved for the target and entered into the Safe-Range program for safety impact modeling is 045° magnetic (MAG). No additional run-in headings are proposed or projected through CY05. Authorized ordnance includes only MK 76 and BDU 33 practice bombs. Training ordnance similar to that listed above may be substituted only with the approval of CTW-1.

DESCRIPTION OF RANGE AND AIRSPACE



Figure 2-1 Regional Location Map I



- | Legend | |
|---|---|
|  | Activity Locations |
|  | Interstates |
|  | Watercourses |
|  | Urbanized Areas
(As Defined by US Census Bureau) |
|  | State Boundaries |

Sources
 NAS Meridian, 2002
 US Census Tiger Data, 2000



0 20 40 Miles


DESCRIPTION OF RANGE AND AIRSPACE

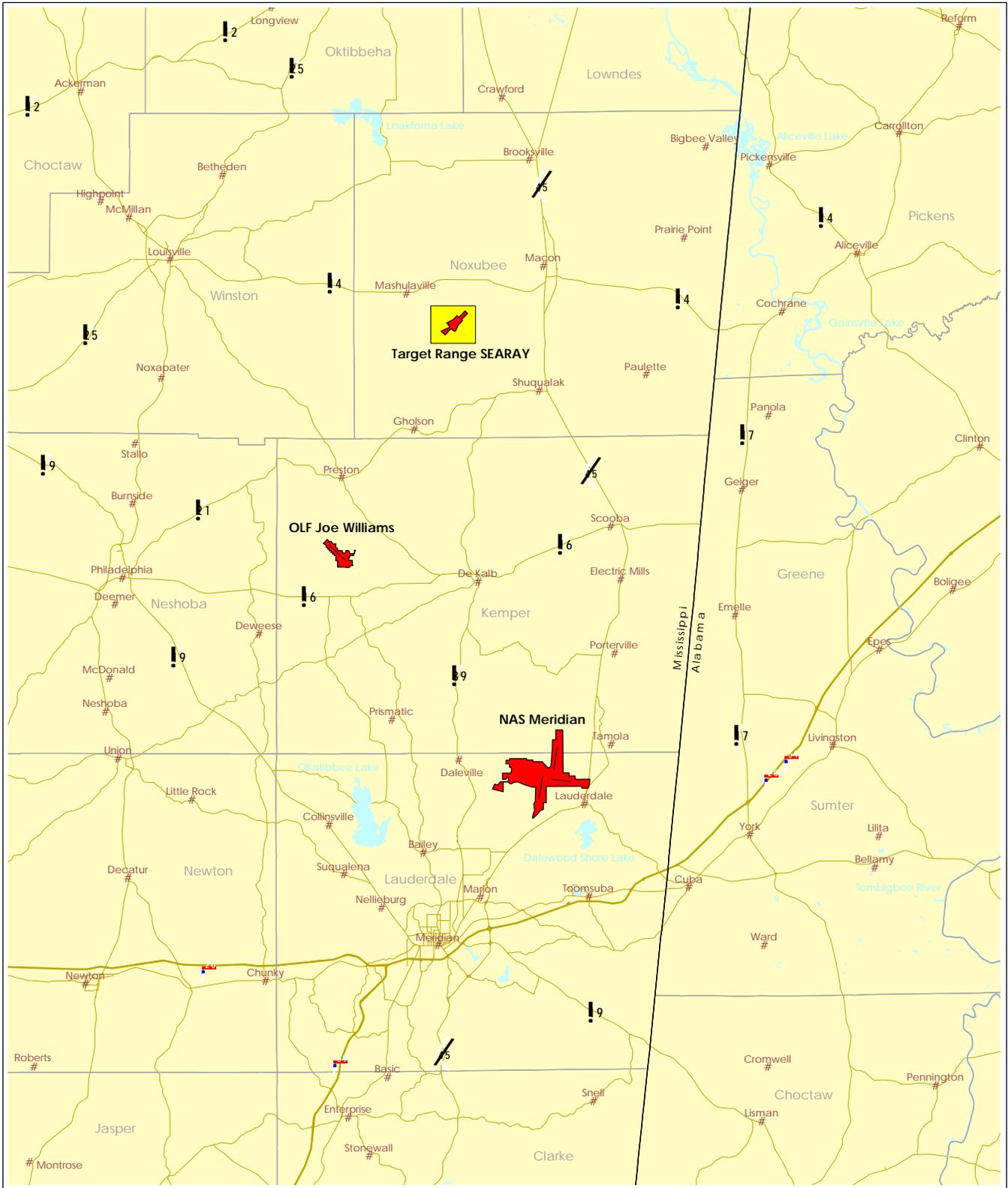


Figure 2-2 Regional Location Map II



- Legend**
- Activity Locations
 - Major Roads
 - Watercourses

- County Boundaries
- State Boundary
- # Towns

Sources
 NAS Meridian, 2002
 US Census Tiger Data, 2000



0 2 4 6 Miles

DESCRIPTION OF RANGE AND AIRSPACE

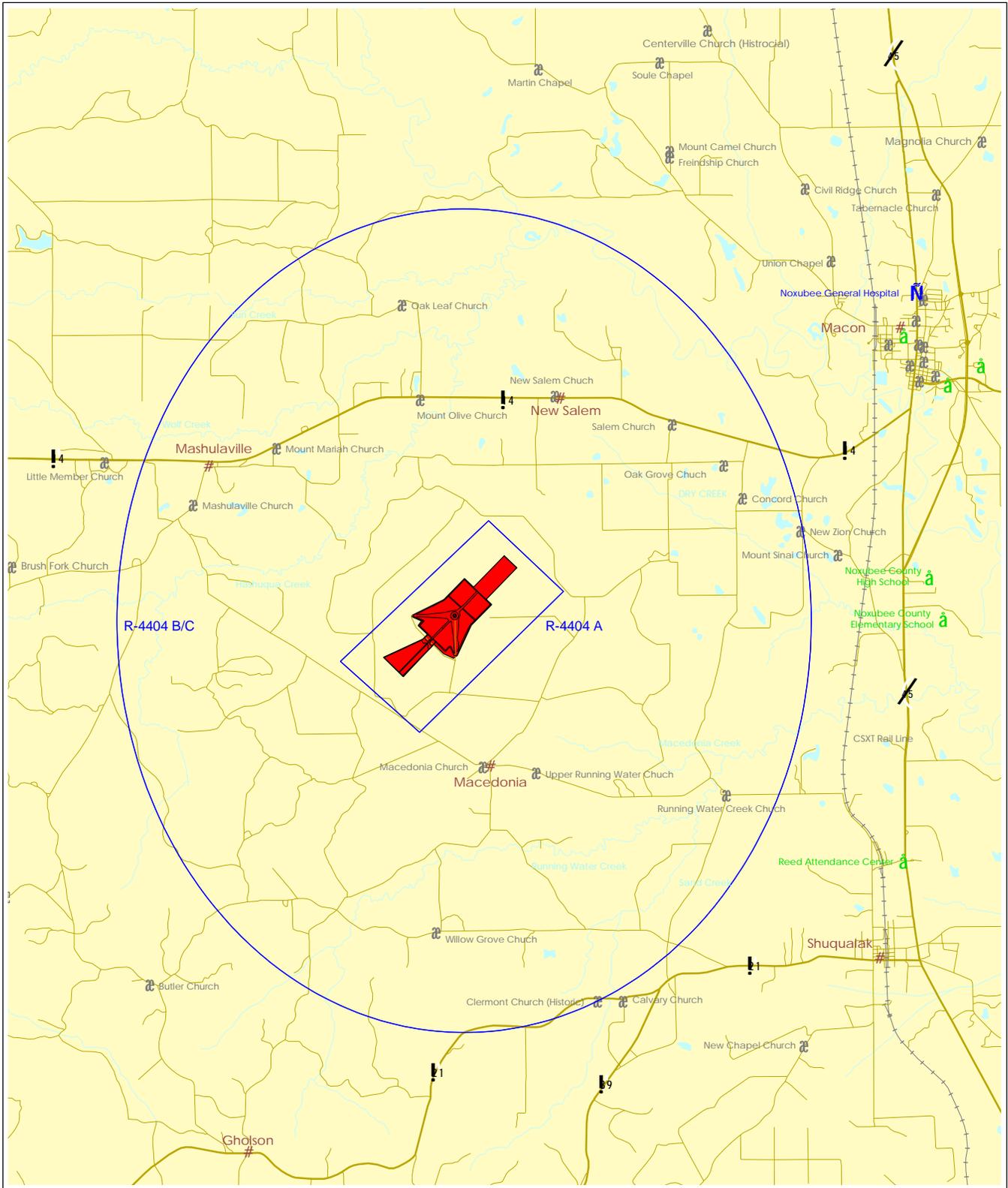


Figure 2-3 Location Map



- | Legend | |
|---|---------------------|
|  | Target Range SEARAY |
|  | R-4404 A/B/C |
|  | Roads |
|  | Watercourses |
|  | Railroad |
|  | Hospital |
|  | Churches |
|  | Schools |
|  | Towns |

Sources
 NAS Meridian, 2002
 US Census Tiger Data, 2000



0 0.5 1 Miles


DESCRIPTION OF RANGE AND AIRSPACE

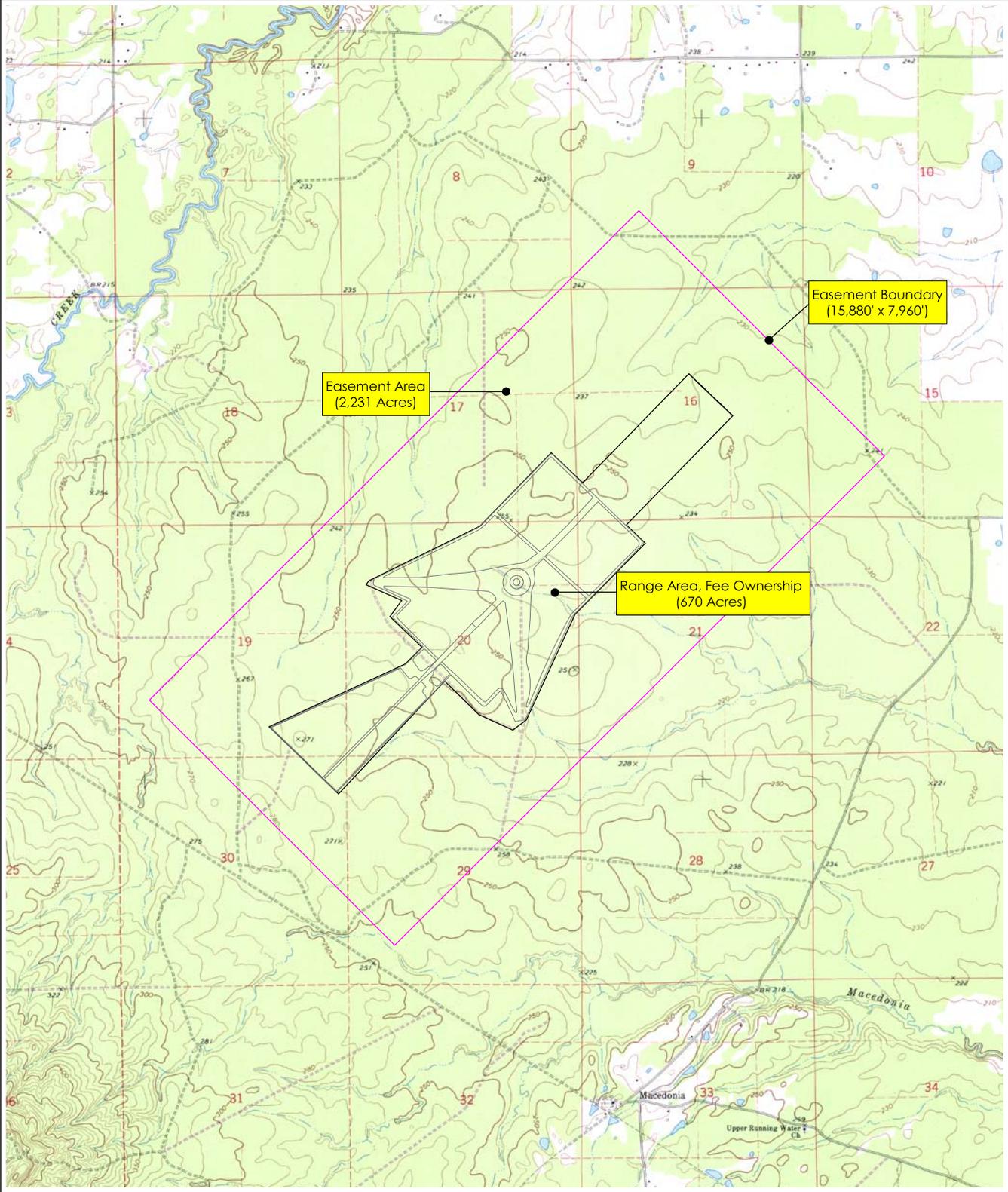


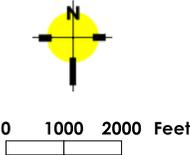
Figure 2-4 Real Estate Summary Map



- Legend**
- Target Range Boundary
 - Easement Boundary

- USGS Basemap**
- Undeveloped and Vegetated/Forested
 - Inhabited Areas (White), Contours (Brown), Watercourses (Blue), and Structures (Black)
 - Roads

Sources
 SOUTHDIV, 2002
 NAS Meridian, 2002
 USGS 1:24,000 DRG



DESCRIPTION OF RANGE AND AIRSPACE

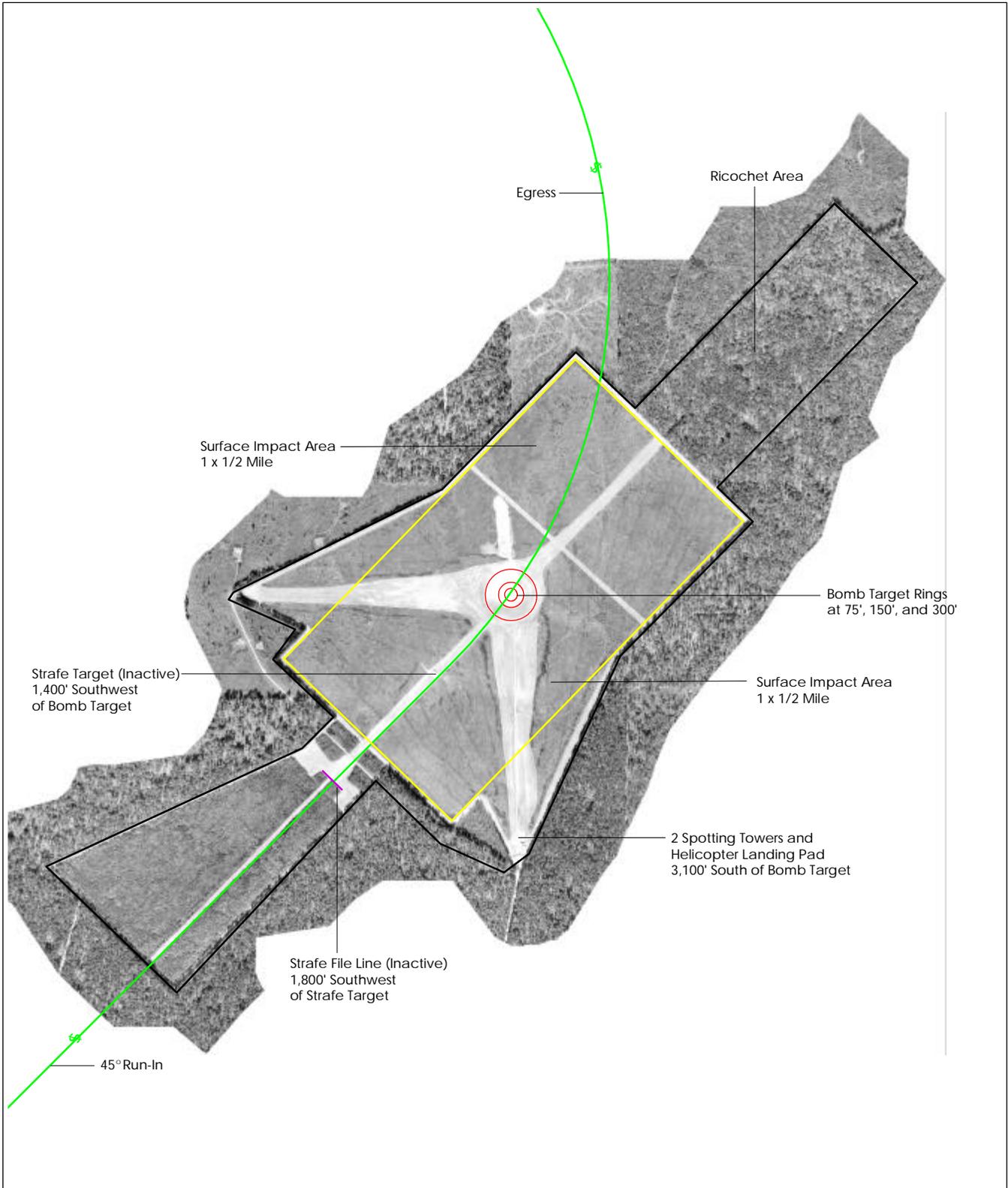


Figure 2-5 Target Range SEARAY Features



- Legend**
- Target Range SEARAY Boundary
 - Surface Impact Area Boundary
 - Bombing Target Rings
 - Bombing Pattern
 - Strafe File Line

Sources
 SOUTHDIV, 2002
 NAS Meridian, 2002
 COMTRAWINGONEINST 3710.7M



0 500 1000 Feet



Figure 2-6 Aerial Photograph of Target Range SEARAY



Source
NAS Meridian, 2002

2.3 Airspace Description

Restricted airspace is defined as airspace above a range of specific dimensions where activities, either flight or on the ground, must be confined because of their nature, which may be considered hazardous to non-participating aircraft. When the restricted airspace is being used for military training, non-participating aircraft are prohibited from flying through it. When the restricted airspace is not being used for military operations, civilian and commercial access through the airspace may be requested and is usually granted by the airspace controlling agency. R-4404A/B/C is the restricted airspace located over the Target Range SEARAY and is depicted in Figure 2-7, a portion of the Federal Aviation Administration (FAA) Memphis Sectional Aeronautical Chart.

R-4404A/B/C is located within the Meridian One West Military Operating Area (MOA) and centered on the 348^o radial, 28 Distance Measuring Equipment (DME) from the Navy Meridian Tactical Air Navigation (TACAN). R-4404A/B/C and the Meridian One West MOA form the Meridian Special Use Airspace (SUA). Tables 2-1 and 2-2 describe R-4404A/B/C. The restricted airspace is controlled by FAA, Air Route Traffic Control Center (ARTCC) Memphis, Tennessee.

The rectangular shaped R-4404A encompasses the entire range, and it allows for final run-in and initial egress (on low angle dive bomb 10^o patterns) from the target and impact areas. R-4404A extends from the surface to 11,500 feet mean sea level (MSL). R-4404B forms the pattern area associated with range. R-4404B is a circle with a 5 nautical mile (NM) radius centered on the bull's eye and extending from 1,200 above ground level (AGL) to 11,500 feet MSL. R-4404C, located directly above R-4404B, extends 11,500 feet MSL to 14,500 feet MSL. R-4404C is used for R-4404C is the "spin" area for out-of-control flight training. R-4404C is not used for Target Range SEARAY operations. The Meridian One West MOA is used by aircraft to ingress/egress R-4404A/B/C from/to NAS Meridian.

Figure 2-8 illustrates the ingress/egress flight tracks and bombing patterns flight tracks for R-4404A/B/C. The ingress/egress flight tracks are illustrated from R-4404A/B/C to NAS Meridian.

DESCRIPTION OF RANGE AND AIRSPACE

Table 2-1 R-4404A Description

Number	Area Name	Effective Altitude	Time Use		
			Days of Week	Hours of Day	Weather
R-4404A	Macon, MS	Surface to 11,500' MSL	Continuous	1300 to 2400 ¹	VFR-IFR
Coordinates are 33 03N 88 43W to 33 05N 88 40W to 33 04N 88 39W to 33 02N 88 41W to beginning. Controlling agency is FAA, ARTCC, Memphis, Tennessee. Using agency is COMTRAWING ONE, NAS Meridian, MS. Last updated 11/93. ¹ Other times by NOTAM 24 hour in advance.					

Table 2-2 R-4404B/C Description

Number	Area Name	Effective Altitude	Time Use		
			Days of Week	Hours of Day	Weather
R-4404B	Macon, MS	1,200' AGL to 11,500' MSL	Continuous	1300 to 2400 ¹	VFR-IFR
R-4404C	Macon, MS	11,500' MSL to 14,500' MSL	Continuous	1300 to 2400 ¹	VFR-IFR
Coordinates are 5 NM radius circle centered at 33 03N 88 41W. Controlling agency is FAA, ARTCC, Memphis, Tennessee. Using agency is COMTRAWINGONE, NAS Meridian, MS. Last updated 11/93. ¹ Other times by NOTAM 24 hour in advance.					

Notes:

Air Route Traffic Control Center (ARTCC), Commander, Training Air Wing One (COMTRAWING ONE), Federal Aviation Administration (FAA), Mean Sea Level (MLS), Notice to Airmen (NOTAM), Instrument Flight Rules (IFR), Visual Flight Rules (VFR).

Source:

Flight Information Publication, Special Use Airspace, North and South America, by National Imagery and Mapping Association (NIMA), 1999.



Figure 2-7 Airspace Diagram



Source
 FAA Sectional Aeronautical
 Chart, Memphis, 2002



Not to Scale

DESCRIPTION OF RANGE AND AIRSPACE

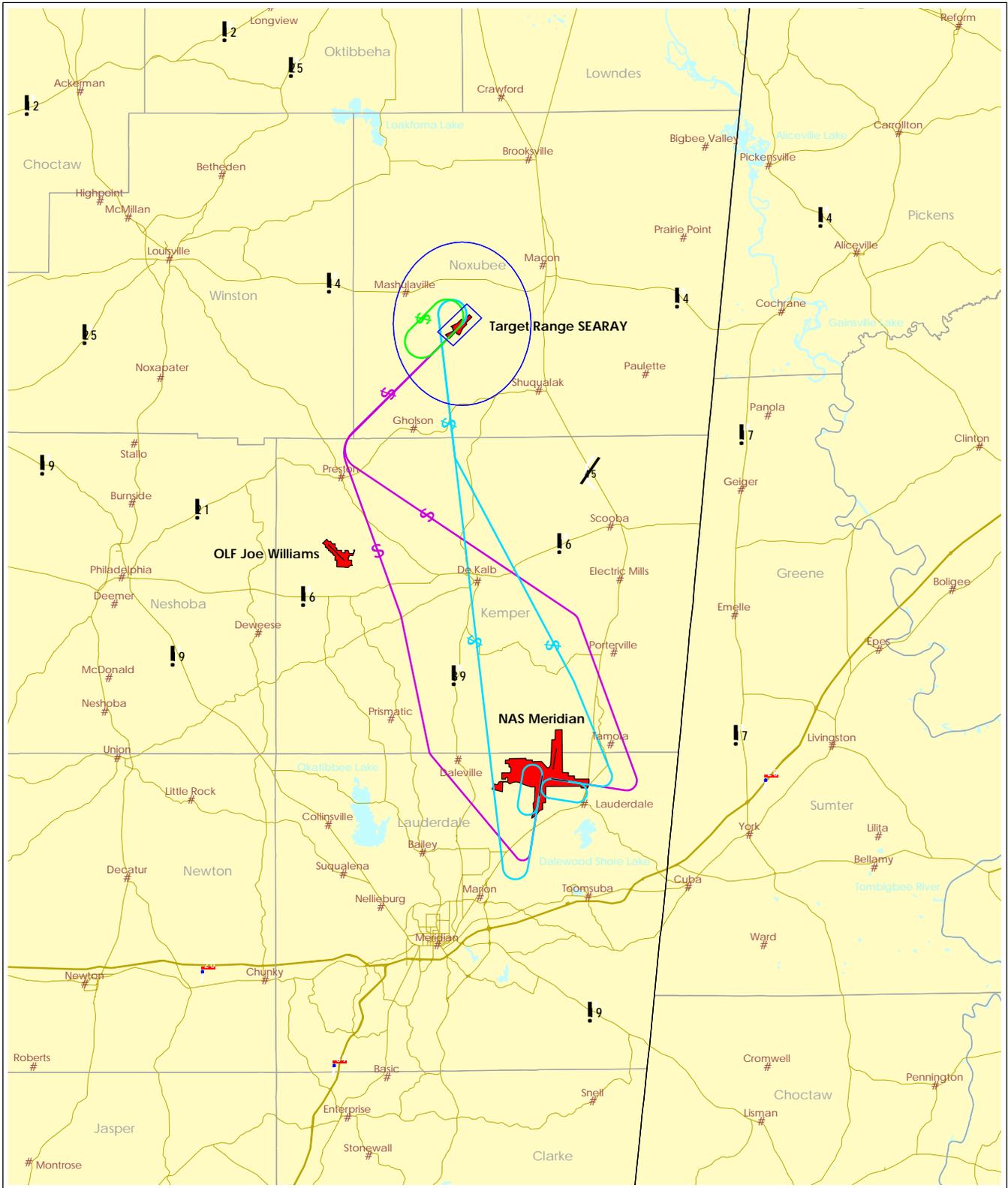


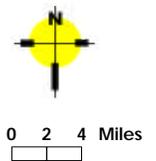
Figure 2-8 Flight Tracks for Target Range SEARAY



- Legend**
- Ingress Track/Run-In 45 Degrees
 - Egress Route
 - Bombing Pattern
 - R-4404 A/B/C

- Activity Locations
- State Boundary
- Roads
- Watercourses
- Railroad
- # Towns

- Sources**
- Wyle Laboratories, 2002
 - NAS Meridian, 2002
 - US Census Tiger Data, 2000
- Note**
- Patterns may differ near NAS.



2.4 Range Operations

2.4.1 CY01 Aircraft Sorties and Operations

According to NAS Meridian personnel, there were 2,150 formation sorties to R-4404 and Target Range SEARAY in CY01. Each formation sortie included four T-45C aircraft for a total of 8,600 individual aircraft sorties to the range and restricted airspace. Table 2-3 provides a summary of CY01 sorties. A sortie is defined as an entry, followed by an exit, of range airspace. Sorties entering and existing R-4404 use the ingress and egress routes presented in Figure 2-8. No nighttime sorties occurred, or sorties flown between 2200 or 0700.

Table 2-3 CY01 Sorties at Target Range SEARAY

Aircraft Type	Annual Formation Sorties			Number of Aircraft/Formation	Annual Aircraft Sorties		
	0700-2200	2200-0700	Total		0700-2200	2200-0700	Total
T-45C	2,150	0	2,150	4	8,600	0	8,600

Source:
NAS Meridian Personnel, 2002

Once a formation sortie is within R-4404, aircraft from the formation remain at staggered altitudes until an instructor has an individual aircraft drop down to the bombing pattern and begin the ordnance delivery operation. T-45C aircraft practicing ordnance delivery operations at Target Range SEARAY are limited to dive maneuvers. A dive maneuver is initiated from high altitude, with the aircraft performing a descent toward the target along the bombing pattern. Ordnance is usually released at approximately 1 nautical mile from the target. Once the ordnance is released, the aircraft then climbs back to its initial maneuvering altitude along the bombing pattern for another run-in or returns to a higher holding altitude with the other aircraft.

In order to develop noise contours, T-45C aircraft operations were divided into the three dive maneuver operation types flown at the range. Dive operation types at Target Range SEARAY include a High Angle Dive (30^o HAD), a Medium Angle Dive (20^o MAD), and a Low Angle Dive (10^o LAD). Of these operations, 30^o HAD constitute 75 percent of the operations on the range while 20^o MAD and 10^o LAD contribute 5 percent and 20 percent, respectively. For noise contour modeling purposes, flight profiles presented in Table 2-4 were developed for each aircraft and each variation of the three delivery techniques. At the end of a mission, all aircraft exit the restricted area to the south along the egress route where they initiate contact with ATC.

During a single sortie to the target area, aircraft normally perform several runs over the target to drop their ordnance. NAS Meridian personnel stated that a formation of aircraft normally perform 14 to 18 runs. In order to generate noise contours, an average of five ordnance-delivery runs per aircraft was modeled.

DESCRIPTION OF RANGE AND AIRSPACE

Table 2-4 Modeled CY01 Operations at Target Range SEARAY

Aircraft Type	Modeled Aircraft Sorties Per Operations			Operation Types	Description of Flight Track	Utilization Percentage	Number of Runs	Modeled Operations		
	0700-2200	2200-0700	Total					0700-2200	2200-0700	Total
T-45C	8,600	0	8,600	10 ^o LAD	10 ^o Low Angle Dive	20%	5	8,600	0	8,600
				20 ^o MAD	20 ^o Medium Angle Dive	5%	5	2,150	0	2,150
				30 ^o HAD	30 ^o High Angle Dive	75%	5	32,250	0	32,250
				Ingress	45 ^o Run-In	100%	N/A	8,600	0	8,600
				Egress	Egress to NAS	100%	N/A	8,600	0	8,600

Notes:

Low Angle Dive (LAD), Medium Angle Dive (MAD), High Angle Dive (HAD)

Source:

Noise Study for NAS Meridian, OLF Joe Williams, and Target Range SEARAY, Mississippi, 2002, Wyle Laboratories

2.4.2 CY05 Aircraft Sorties and Operations

According to NAS Meridian personnel, it is projected that there will be 3,200 formation sorties to R-4404 and Target Range SEARAY in CY05. As in CY01, these sorties would occur in formations of four aircraft, thus, a total of 12,800 individual aircraft sorties are projected to occur. In addition, no nighttime sorties are projected to occur. Table 2-5 provides a summary of CY05 sorties.

Table 2-5 CY05 Sorties at Target Range SEARAY

Aircraft Type	Annual Formation Sorties			Number of Aircraft/Formation	Annual Aircraft Sorties		
	0700-2200	2200-0700	Total		0700-2200	2200-0700	Total
T-45C	3,200	0	3,200	4	12,800	0	12,800

Source:

NAS Meridian Personnel, 2002

T-45C aircraft practicing ordnance delivery operations at Target Range SEARAY in CY05 would use the same three dive maneuvers as in CY01. Furthermore, the bombing pattern and ingress and egress flight tracks will remain the same. In order to develop noise contours, T-45C CY05 operations at Target Range SEARAY were modeled as presented in Table 2-6.

Table 2-6 Modeled CY05 Operations at Target Range SEARAY

Aircraft Type	Modeled Aircraft Sorties Per Operations			Operation Types	Description of Flight Track	Utilization Percentage	Number of Runs	Modeled Operations		
	0700-2200	2200-0700	Total					0700-2200	2200-0700	Total
T-45C	12,800	0	12,800	10 ^o LAD	10 ^o Low Angle Dive	20%	5	12,800	0	12,800
				20 ^o MAD	20 ^o Medium Angle Dive	5%	5	3,200	0	3,200
				30 ^o HAD	30 ^o High Angle Dive	75%	5	48,000	0	48,000
				Ingress	45 ^o Run-In	100%	N/A	12,800	0	12,800
				Egress	Egress to NAS	100%	N/A	12,800	0	12,800

Notes:
 Low Angle Dive (LAD), Medium Angle Dive (MAD), High Angle Dive (HAD)

Source:
 Noise Study for NAS Meridian, OLF Joe Williams, and Target Range SEARAY, Mississippi, 2002, Wyle Laboratories

2.4.3 Ordnance Use

Authorized ordnance for Target Range SEARAY includes only MK 76 and BDU 33 practice bombs. The MK 76 and BDU 33 are both 25 pound non-explosive practice bombs used for training purposes as a low-cost low-risk alternative to live munitions. These training munitions, by design, have similar flight and delivery behavior to war shot munitions. Both have a smoke cartridge to mark the point of impact. The MK 76 simulates 500, 1000 and 2000 pound bombs. The BDU 33 simulates the 500 pound MK 82 in low drag configuration.

In CY01, 11,760 MK 76 and 2,270 BDU 33 practice bombs were dropped at Target Range SEARAY. The totals are projected to increase by approximately 50% in CY05 based on a similar increase in the number of aircraft sorties to the range. Table 2-7 provides CY01 and CY05 ordnance use at the range.

Table 2-7 CY01 and CY05 Ordnance Use at Target Range SEARAY

Year	Units by Type of Ordnance		
	MK 76	BDU 33	Total
CY01	11,760	2,270	14,030
CY05	17,640	3,405	21,045

Source:
 NAS Meridian Ordnance Yearly Transaction Report, 2001

2.5 T-45 Goshawk

The T-45A “Goshawk” aircraft, the Navy version of the British Aerospace Hawk aircraft, is used for intermediate and advanced portions of the Navy pilot training program for jet carrier aviation and tactical strike missions. The latest version of the aircraft, known as the T-45C, includes a digital cockpit and is flown by NAS Meridian pilots using Target Range SEARAY. The T-45C is a replacement for the aging T-2 “Buckeye” trainers at NAS Meridian. As of 2001, there were 74 T-2C and 46 T-45C fixed-wing aircraft, and 2 UH-1 rotary-wing aircraft at NAS Meridian. By 2005, all VT-9’s T-2C aircraft will be retired and a total of 90 T-45C will be the sole jet training aircraft at NAS Meridian. Figure 2-9 is a photograph of a T-45C.

As described by www.globalsecurity.org, the primary mission of the T-45 is to provide Navy strike flight training. The aircraft provides the capability to train student naval aviators for high performance jet aircraft and to qualify students for a standard instrument rating and initial carrier qualification. In addition, the aircraft supports training in fundamental tactical skills, emphasizing the development of habit patterns, self confidence, and judgment required for safe and efficient transition to fleet aircraft with advanced technology weapon systems.

The T-45 aircraft is apart of the T-45 Training System (T-45TS) that is the first totally integrated undergraduate jet pilot training system. It consists of five elements: instructional programs using computer-assisted techniques; advanced flight simulators; the T-45 aircraft; a Training Integration System (TIS); and contractor logistics support package. The training system elements build upon each other to teach pilot skills progressively and logically.

The T-45 Goshawk is powered by a single Rolls-Royce/Turbomeca Adour turbofan engine, producing a sea level static thrust of 5,527 pounds. The wing is low mounted and moderately swept, with full span leading edge slats and double slotted trailing edge flaps. The single vertical stabilizer and horizontal stabilator are both of swept design, with the vertical stabilizer integrating a mechanically powered rudder and control augmentation system for all speed flight. Speed brakes are mounted on the aft fuselage just forward of the stabilator. All control surfaces, with the exception of the rudder, are hydraulically powered.

Two wing pylons permit carriage and delivery of a variety of training weapons, including MK 76 and BDU 33 practice bombs. Five external stores stations accommodate a wide variety of weapons, including a 30mm gun pod as one of the alternates on the fuselage centerline station. The cockpit is air conditioned and pressurized, accommodating two aircrew in a tandem seating arrangement. The instructor is in a raised position behind the student, both under a large single-piece, sideway-opening canopy, providing excellent visibility. Each cockpit is fitted with the Martin-Baker Navy Aircrew Common Ejection Seat (NACES) affording safe escape from zero airspeed and zero altitude. Maximum weight for the T-45A is approximately 15,000 pounds. The aircraft is capable of achieving an airspeed of 0.85 Mach at 30,000 feet in level flight.

The T-45C is known as Cockpit-21 because its cockpit has been reconfigured with multifunctional displays. Its head-up displays have also been upgraded. The digitally modified T-45C is a step up in technology from the analog cockpit associated with the T-45A jet trainer, first flown in 1988. This change to Cockpit-21 is more like the configurations of present tactical fighter aircraft. In contrast to the dated analog system, Cockpit-21 has two multi-function displays providing navigation, weapon delivery, aircraft performance and communications data. Not only does the T-45C upgrade enhance the Navy's ability to train future F/A-18 Hornet, AV-8B Harrier and other aircraft carrier pilots, but it will also shorten training time.

Procurement of the T-45C (digital configuration) is scheduled for 15 aircraft per year with associated ground training systems and support until 2003, for a total of 187 aircraft and 17 simulators. Eighty-two T-45As and 16 T-45Cs had been accepted by the Navy through CY 1998. The T-45Cs, which began delivery in December 1997, are based at NAS Meridian, Mississippi, and training in the T-45C began in August 1998. All T-45As will be retrofitted to the digital configuration starting in 2004.

Figure 2-9 T-45C Goshawk



Source:
www.modelingmadness.com, 2002

DESCRIPTION OF RANGE AND AIRSPACE

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3.0 Noise

Aircraft noise is of concern to many in communities surrounding air-to-ground military ranges. The impact of aircraft noise is also a factor in the planning of future land use near the ranges. Because the noise from these operations impacts surrounding land use, the Navy has defined certain areas as high noise zones under the RAICUZ Program. This section discusses noise associated with aircraft operations at Target Range SEARAY. Since only inert ordnance is permitted at Target Range SEARAY, no impulse noise or ordnance blasts is associated with the noise analysis for this range.

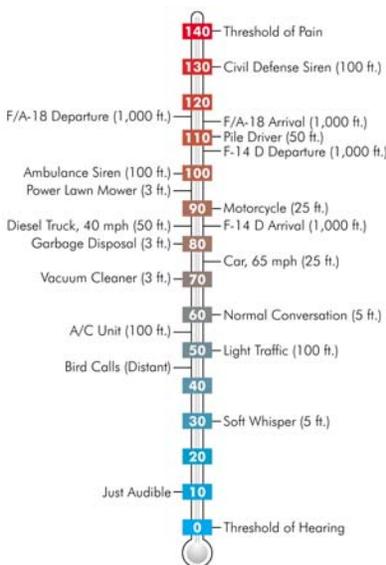
3.1 What is Noise?

Sound is a physical phenomenon consisting of minute vibrations that travel through a medium, such as air, and are sensed by the human ear. Whether that sound is interpreted as pleasant (e.g., music) or unpleasant (e.g., jackhammers) depends largely on the listener's current activity, past experience, and attitude toward the source of that sound. Noise is unwanted sound. Sound is all around us; sound becomes noise when it interferes with normal activities such as sleep and conversation.

The measurement and human perception of sound involves three basic physical characteristics - intensity, frequency, and duration. First, intensity is a measure of the acoustic energy of the sound vibrations and is expressed in terms of sound pressure. The higher the sound pressure, the more energy carried by the sound and the louder the perception of that sound. The second important physical characteristic is sound frequency, which is the number of times per second the air vibrates or oscillates. Low-frequency sounds are characterized as rumbles or roars, while sirens or screeches typify high-frequency sounds. The third important characteristic of sound is duration or the length of time the sound can be detected.

Sound or noise levels are measured in A-weighted decibels (dBA), a unit of sound pressure adjusted to the range of human hearing, with an intensity greater than the ambient or background sound pressures. Normal speech has a noise level of approximately 60 dBA; sound levels above 110 dBA begin to be felt inside the human ear as discomfort. Sound levels much above 140 dBA are felt as pain.

Figure 3-1 Sound Levels of Typical Noise Sources and Noise Environments



3.1.1 Noise Metrics

A "metric" is defined as something "of, involving, or used in measurement." As used in environmental noise analyses, a metric refers to the unit or quantity which quantitatively measures the effect of noise on the environment.

The metric used to describe the noise environment on and in the vicinity of air installations is normally described in terms of the time-average sound level generated by the aircraft operating at the facility. The Federal noise metric used for this purpose is the Day-Night Average Sound Level (abbreviated DNL), which is defined in units of dB. The symbol Ldn is generally used as the descriptor for day-night average sound level in mathematical equations, although the descriptors Ldn and DNL are commonly used interchangeably. The DNL noise metric averages noise events that occur over a 24-hour period. Aircraft-related operations conducted during "acoustic" night (10:00 p.m. to 7:00 a.m.) are weighted with a 10 dB penalty because people are more sensitive to noise during normal sleeping hours, when ambient noise levels are lower. DNL has been determined to be a reliable measure of community sensitivity to noise and has become the standard metric used in the U.S. to quantify noise in military noise studies.

The average of noise over a 24-hour period does not ignore the louder single events. When noise levels of two or more sources are added, the source with the lower noise level is dominated by the source with the higher noise level. Thus, the combined noise level is usually only slightly higher than the noise level produced by the louder source. However, it should be remembered that an individual does not "hear" DNL and its use is intended for land use planning and not to describe what someone hears when a single event occurs. The noise levels experienced inside a contour may be similar to that experience outside a contour line at a given point in time depending on temperature, wind and other factors.

Individual or single noise events are described in terms of the Sound Exposure Level (SEL) in units of dB. SEL takes into account the amplitude of a sound, and the length of time during which each noise event occurs. It thus provides a direct comparison of the relative intrusiveness among single noise events of different intensities and durations.

Military aircrews conduct combat training over land and water at low altitudes and high airspeeds. Additionally, these military aircraft seem to come from nowhere with a great noise and, just as quickly, disappear again. Assessing the noise from military aircraft during these operations require the use of a modified noise metric to appropriately account for the "surprise" effect that occurs under these conditions. The SEL and the DNL metric is adjusted to account for the "surprise" effect of the onset-rate of aircraft noise on humans. Onset-Rate Adjusted SEL is denoted as SEL_r. The adjusted DNL is designated as the Onset-Rate Adjusted Day-Night Average Sound Level (abbreviated Ldn_r). These metrics are used to assess noise associated with Special Use Airspace (SUA), such as Restricted Areas, Ranges, Military Operating Areas (MOAs), and Military Training Routes (MTRs). The methodology used is referred to as MOA Range NOISEMAP (MR_NMAP) and is described later in this chapter.

Another unique characteristic of military operations is that they occur in a sporadic fashion. For example, operations may occur as frequently as tens of times per day on a range, or less than a couple of times per year in a temporary MOA designed for exercises. Because of the sporadic occurrences of operations, the number of average daily operations is determined using the number of flying days in the calendar month with the highest number of operations in the airspace being studied. This metric is designated as the Onset-Rate Adjusted Monthly Day-Night Average Sound Level and is denoted Ldn_{mr}. This metric is used in this RAICUZ study.

Aircraft noise is expressed in terms of A-weighted sound levels. A-weighting is a method of adjustment of the frequency content of a noise event to closely resemble the way in which the average human ear responds to aircraft noise. The A-weighting scale is therefore considered to provide a good indication of the impact of noise produced by aircraft operations.

3.1.2 Aircraft Noise Modeling Methodology

The methodology and suite of computer programs used to model noise exposure at Target Range SEARAY is known as MR_NMAP which was developed for the DOD by the United States Air Force (USAF). The MR_NMAP suite of computer programs consists of MR_OPS Version 2.2, OMEGA10R, MR_NMAP Version 2.2, NMPLLOT Version 4.3, and NOISEFILE. The MR_OPS program allows for entry of airspace information, the horizontal distribution of operations, flight profiles (average power settings, altitude distributions, and airspeeds), and number of sorties. “Horizontal distribution of operations” refers to the modeling of lateral airspace utilization via three general representations; broadly distributed operations for modeling of generally random flight operations in a MOA and Range, operations distributed among parallel tracks for modeling of MTR events, and operations on specific tracks for modeling unique MOA, Range, MTR, or target area flight activity.

OMEGA10R extrapolates/interpolates the reference SELs for each model of aircraft from the NOISEFILE database, taking into consideration the specified speeds, engine thrust settings, and environmental conditions appropriate to each flight operation and generates tables of SEL for increasing altitude. The core program, called MR_NMAP, incorporates the number of daytime (0700-2200) and nighttime (2200-0700) operations, specified horizontal distributions, volume of the airspace, and profiles of the aircraft to primarily calculate (a) Ldnmr at many points on the ground, (b) average Ldnmr for the entire airspace, or (c) maximum Ldnmr under MTRs or specific tracks. From calculations of Ldnmr for many points on the ground, the NMPLLOT program draws contours of equal Ldnmr for overlay onto land-use maps.

A limitation of computer modeling is faced while calculating time-average sound levels for airspaces for lower levels (below 55 dB). The reliability of the results varies due to the increased variability of effects of atmospheric conditions on individual aircraft sound levels at the longer distances, and the presence of other sources of noise. Additionally, when flight activity is infrequent, the time-averaged sounds levels are generated by only a few individual aircraft noise events, which may not be statistically representative of the given aircraft modeled. Most of the guidelines for land use compatibility with aircraft noise involve DNL of 60-65 dB and higher.

In general, the computer modeling used to develop noise contours considers the following information:

- Type of operation (arrival, departure, pattern)
- Number of operations/day
- Time of operation
- Flight track
- Aircraft power settings, speeds, and altitudes
- Environmental data (temperature and humidity)

3.2 Aircraft Noise Contours

The following presents CY01 and CY05 noise exposure contours for Target Range SEARAY as developed in the *Noise Study for NAS Meridian, OLF Joe Williams, and Target Range SEARAY, Mississippi, 2002*, produced by Wyle Laboratories.

3.2.1 CY01 Noise Exposure

Target Range SEARAY Average Monthly Ldnmr Contours for CY01 are illustrated in Figure 3-2. The 60-dB Ldnmr contours parallel the entire “racetrack” bombing pattern on the inside and outside. Closer to the target, the 65-dB Ldnmr contours extend approximately 2 miles southwest and northeast along the bombing pattern. The 70-dB Ldnmr contour is located within the 65-dB Ldnmr and extends approximately 1 mile southwest and northeast along the bombing pattern. The 65-dB and 70-dB Ldnmr contours are concentrated where the aircraft is at its highest power/speed immediately before the target and ordnance release and after the target and ordnance release on the eastern side of the bombing pattern.

Land areas encompassed by the contours are contained in Table 3-1. The table also contains subtotals of acreage and population within the 60-65, 65-70, and 70-75 dB Ldnmr contour bands. The area excludes the on-range area (as defined by the Target Range SEARAY boundary) and population totals are calculated as the summed proportion of populations associated with census blocks that fall within the individual noise contours (See *Noise Study for NAS Meridian, OLF Joe Williams, and Target Range SEARAY, Mississippi, 2002*, produced by Wyle Laboratories for more detailed information regarding the methodology and assumptions used in calculating the contours and population).

Table 3-1 CY01 Estimated Off-Range Land Area and Population Within Ldnmr Noise Exposure Contours for Target Range SEARAY

DNL Contour Band	Item	CY01
60-65 dB	Acres	9,843
	Population	56
65-70 dB	Acres	1,738
	Population	6
70-75 dB	Acres	165
	Population	0
Summary of Exposure to 65-75 dB		
65-75 dB	Acres	1,903
	Population	6

Note:
Calendar Year (CY)

Source:
Noise Study for NAS Meridian, OLF Joe Williams, and Target Range SEARAY, Mississippi, 2002, Wyle Laboratories

For noise analysis using MR_NMAP, noise exposure is presented for the number of days in the busiest month over a period of a year, the month of May 2001. The noise study uses 30 days as the basis for modeling the CY01 range sorties.

3.2.2 CY05 Noise Exposure

Target Range SEARAY Average Monthly Ldnmr Contours for CY05 are illustrated in Figure 3-3. The 60-dB Ldnmr contours parallel the entire “racetrack” bombing pattern on the inside and outside and are slightly larger on both sides than the CY01 contours. Closer to the target, the 65-dB Ldnmr contours extend approximately 3 miles southwest and northeast along the bombing pattern. The 70-dB Ldnmr contour is located within the 65-dB Ldnmr and extends approximately 1.5 mile southwest and northeast along the bombing pattern. The increase in contour size when compared to CY01 is due to the increase in range sorties.

Land areas encompassed by the contours are contained in Table 3-2. The table also contains subtotals of acreage and population within the 60-65, 65-70, and 70-75 dB Ldnmr contour bands. The area excludes the on-range area (as defined by the Target Range SEARAY boundary) and population impact is calculated as the summed proportion of populations associated with census blocks that fall within the individual noise contours (See *Noise Study for NAS Meridian, OLF Joe Williams, and Target Range SEARAY, Mississippi*, 2002, produced by Wyle Laboratories for more detailed information regarding the methodology and assumptions used in calculating the contours and population).

Per Table 3-2, the CY05 65-75 dB DNL contour band contains 3,439 acres in off-range land area and an estimated population of 20 persons. This is an increase of 1,536 acres in off-range land area and 14 impacted persons when compared with CY01. There are no persons impacted in the 70-dB and greater DNL contour.

Table 3-2 Comparison of CY01 and CY05 Estimated Off-Range Land Area and Population Within Ldnmr Noise Exposure Contours for Target Range SEARAY

DNL Contour Band	Item	CY01	CY05	CY05-CY01
60-65 dB	Acres	9,843	13,478	3,635
	Population	56	79	23
65-70 dB	Acres	1,738	2,964	1,226
	Population	6	20	14
70-75 dB	Acres	165	475	310
	Population	0	0	0
Summary of Exposure				
65-75 dB	Acres	1,903	3,439	1,536
	Population	6	20	14

Note:
Calendar Year (CY)

Source:
Noise Study for NAS Meridian, OLF Joe Williams, and Target Range SEARAY, Mississippi, 2002, Wyle Laboratories

3.3 Noise Complaints

A noise complaint response and abatement program has been implemented at NAS Meridian to log and track noise complaints, analyze complaint locations and times, and identify the flights/operations that generated the complaints. Possible adjustment of operational procedures are discussed and may be implemented to avoid future conflicts. Based on NAS Meridian personnel and the noise complaints log, very few noise complaints are attributed to operations at Target Range SEARAY.

The following describes NAS Meridian's response process when a noise complaint is made. Persons with noise complaints generated in the operational environs of NAS Meridian, OLF Joe Williams, Target Range SEARAY, and the NAS Meridian SUA can call (601) 679-2505 to place a complaint. Assigned air operations (AIROPS) personnel answer the call and record pertinent information such as the location and time and a description of the noise generating event. After the noise complaint is logged, it is passed through AIROPS and air traffic control (ATC) to COMTRAWING ONE where it is reviewed, the responsible squadron identified, and any flight violations identified. The noise complaint is then discussed and commented on at the squadron level. Comments are then passed back to AIROPS and ATC. AIROPS personnel may call back the person who complained and provide an explanation as to what caused the noise.

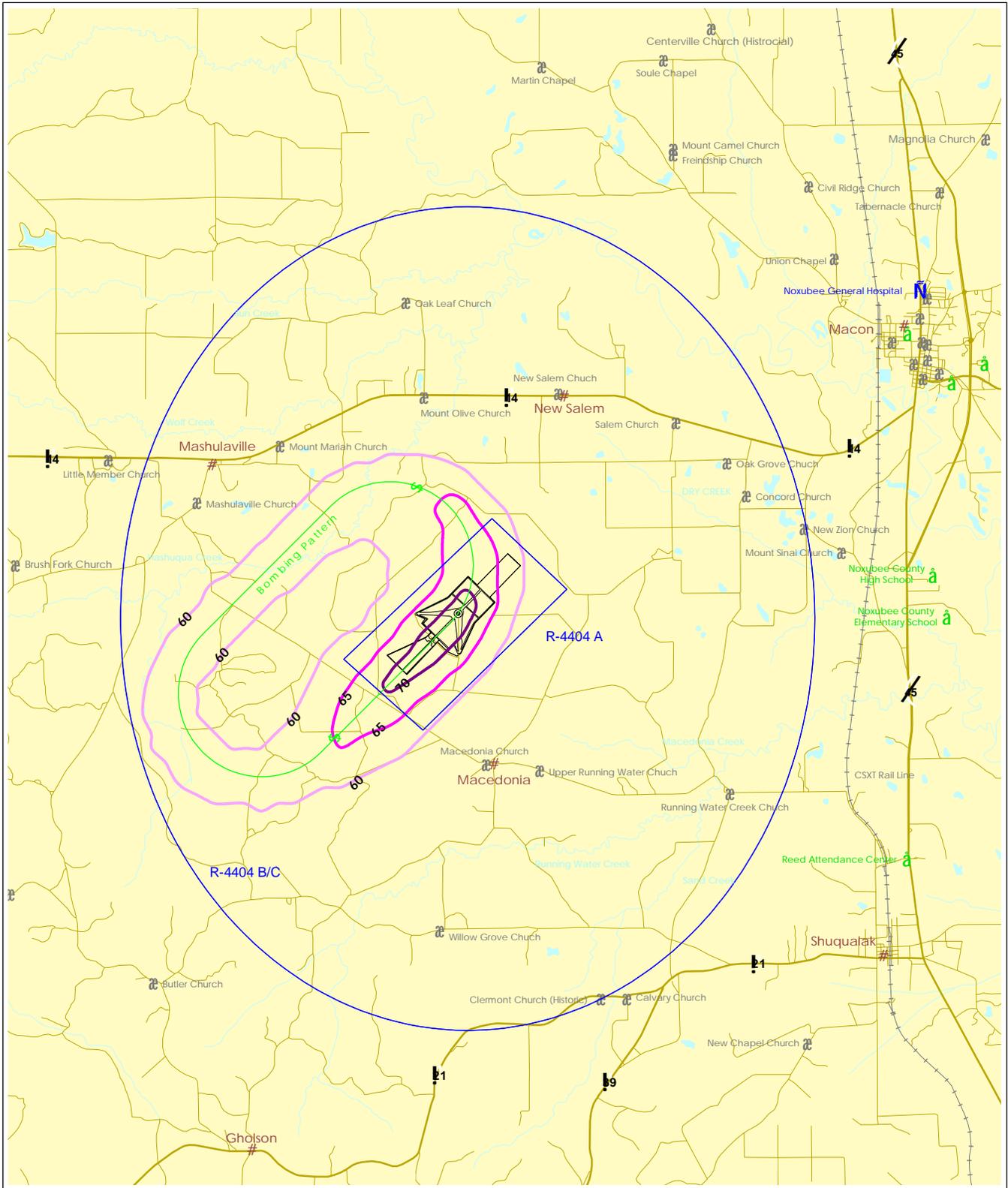


Figure 3-2 Noise Contours, CY01



- Legend**
- 60 Ldnmr
 - 65 Ldnmr
 - 70 Ldnmr
 - R-4404 A/B/C
 - Bombing Pattern
 - Sea Ray Target Range
 - Roads
 - Watercourses
 - Railroad

- Sources**
- N Hospital
 - ⌘ Churches
 - a Schools
 - # Towns

- Sources**
- Wyle Laboratories, 2002
 - SOUTHDIV, 2002
 - NAS Meridian, 2002
 - US Census Tiger Data, 2000



0 0.5 1 Miles

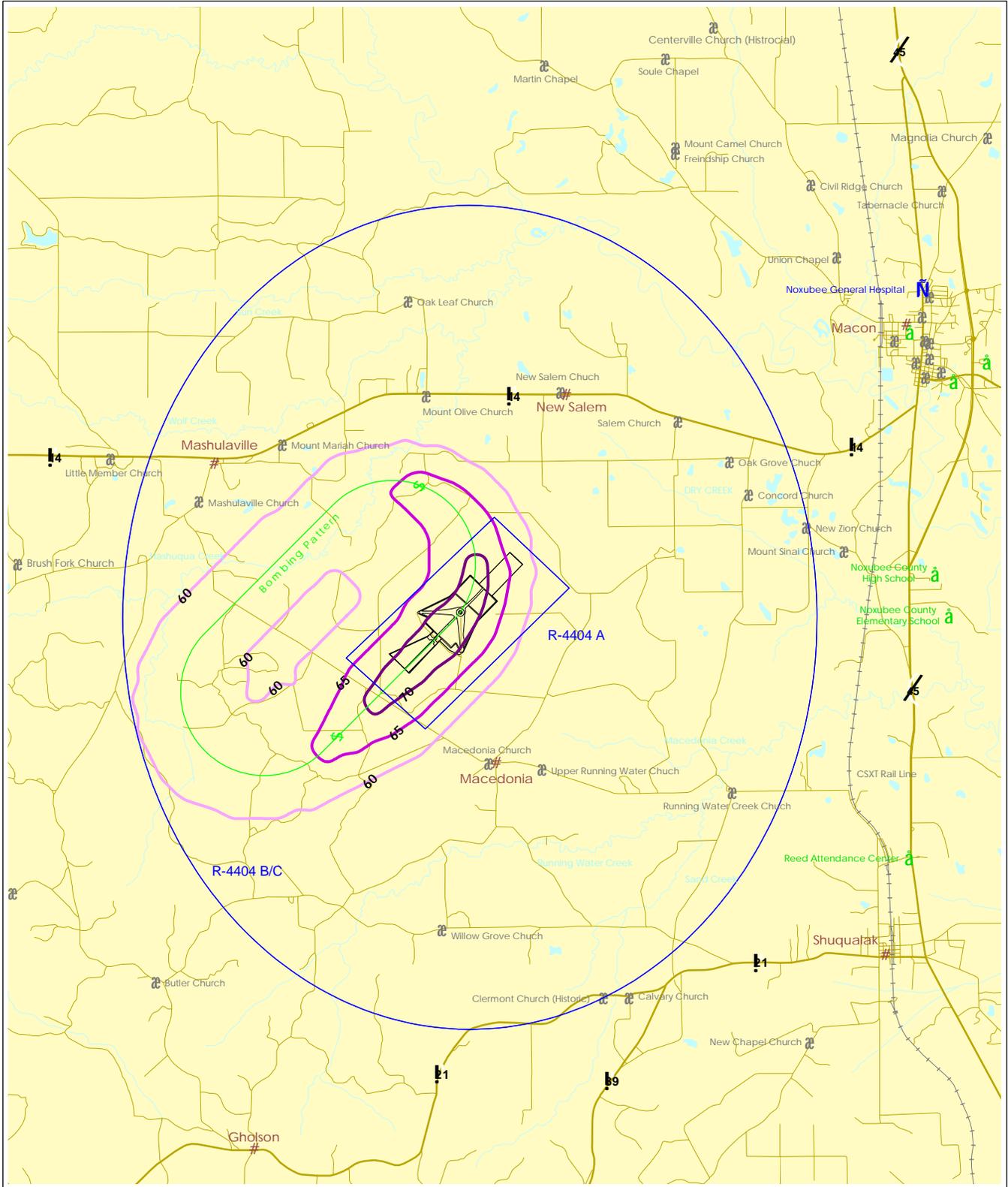


Figure 3-3 Noise Contours, CY05



- Legend**
- 60 Ldnmr
 - 65 Ldnmr
 - 70 Ldnmr
 - R-4404 A/B/C
 - Bombing Pattern
 - Target Range SEARAY
 - Roads
 - Watercourses
 - Railroad

- N Hospital
- ⌘ Churches
- a Schools
- # Towns

- Sources**
- Wyle Laboratories, 2002
 - SOUTHDIV, 2002
 - NAS Meridian, 2002
 - US Census Tiger Data, 2000



0 0.5 1 Miles

4.0 Range Safety Zones and Hazard Analysis

For land use planning purposes, three critical areas have been defined for varying levels of safety hazard concerns due to potential weapons impact. RSZ A defines the maximum safety hazard and is the area that represents the weapons impact area (including potential ricochet). RSZ B is the area of armed overflight. RSZ C is the restricted airspace for aircraft to maneuver on the range.

This section describes each of the RSZs for Target Range SEARAY and the OPNAVINST 3550.1 criteria and methods used to develop them. RSZs translate aviation and air-to-ground ordnance safety concerns into degrees of safety that can be easily attained. They provide consideration for safety of flight and persons on the ground relative to dropped ordnance and potential crash sites. RSZs are provided at air-to-ground ranges independent of annual range utilization. Figure 4-1 illustrates the RSZs for Target Range SEARAY. Figure 4-2 provides a more detailed illustration of RSZ A and B. Figure 4-3 provides a detailed illustration of RSZ A and the boundary of the Navy controlled perpetual and assignable easement properties.

4.1 Range Safety Zone A

RSZ A defines the maximum safety hazard and is also defined as the minimum surface area needed to contain ordnance employed in air-to-ground training. RSZ A corresponds with the range composite weapons safety footprint, which is calculated using the HAZARD methodology described below.

4.1.1 HAZARD/SAFE-RANGE Methodology

The HAZARD methodology was developed for the USAF in 1989, and was adopted by the Navy in 1994. An updated computer application based on the HAZARD methodology called SAFE-RANGE, developed in 2002 for the USAF and Navy, was used to identify the composite weapons safety footprint for Target Range SEARAY. SAFE-RANGE uses a database of footprints that were statistically developed for specific aircraft, munitions, event types, and delivery parameters, including speed, and altitude. Each footprint contains 99.99 percent of all initial and ricochet impacts at the 95 percent confidence interval. In other words, statistically, not more than one in ten thousand impacts (initial or ricochet) are expected to occur outside the footprint. The composite weapons safety footprint does not include weapon impacts resulting from hung bombs, aircraft system failures, pilot error or aircraft crashes. The computer application is used to apply the appropriate footprints to each target at all authorized run-in headings.

All resulting footprints are combined to form the composite footprint for the range. The SAFE-RANGE methodology results in a composite footprint that is specific to each distinct type of operation at each target on the range. Should an operation type be added or discontinued at any target, the composite footprint is likely to change correspondingly.

Information for Target Range SEARAY was imported into the SAFE-RANGE program from a government-provided map database. The database contains the range and targets, airspace, water areas, and other cultural and environmental features. Once the database was installed, footprints taken from the Navy SAFE-RANGE Footprint Database were applied to the target according to restrictions specified by operational procedures. The range manual, COMTRAWINGONE INST 3710.7M, was used to determine the range operating procedures.

RANGE SAFETY ZONES AND HAZARD ANALYSIS

As detailed in Section 2.0, the run-in heading approved for this target and entered into the SAFE-RANGE program is 045° magnetic (MAG). Authorized ordnance includes only MK-76 and BDU 33 practice bombs. T-45 aircraft use the range. Table 4-1 lists the two footprints from the Navy Hazard Footprint Database used to identify RSZ A. All operations performed by T-45 aircraft at the range fall within the parameters of these two footprints.

Table 4-1 HAZARD Data

ID	Service	Aircraft	Event	Weapon	Range	Target
54	Navy	T-45	LADB	MK-76	Controlled	Firm
	Dive Angle	Altitude	Speed	A (Long)	B (Cross)	C (Short)
	-20 to 0	500 to 2,000	450	7,135	2,474	3,592
ID	Service	Aircraft	Event	Weapon	Range	Target
55	Navy	T-45	Dive Bomb	MK-76	Controlled	All
	Dive Angle	Altitude	Speed	A (Long)	B (Cross)	C (Short)
	-45 to -20	2,000 to 4,000	450	9,531	3,380	3,871

Notes:

1. Identification (ID) in Navy Hazard Footprint Database, Low Angle Dive Bomb (LADB).
2. Altitude and A (Long), B (Cross), and C (Short) numbers in feet.

Source:

Navy SAFE-RANGE Footprint Database, 2003

4.1.2 Range Composite Weapons Footprint

The range composite weapons safety footprint, RSZ A, encompasses 1,634 acres. Of that, 572 acres are located within the range fee ownership boundary and 975 acres are located within Navy controlled perpetual and assignable easement properties (See Appendix A for specific easement restrictions). A total of 87 acres are located outside Navy owned or controlled land. Figure 4-2 provides a detailed illustration of RSZ A and R-4404A. Figure 4-3 provides a detailed illustration of RSZ A and the boundary of the Navy controlled perpetual and assignable easement properties. The areas encompassed by the three individual weapons footprints used for the composite are illustrated in Appendix B.

There are no permanent residences within RSZ A. Aside from range operations, agriculture is the primary activity allowed within RSZ A.

4.2 Range Safety Zone B

RSZ B is the area of armed overflight and represents an intermediate level of safety hazard concern. Per OPNAVINST 3550.1, the length of the zone begins at the point the pilot releases the master arming switch in preparation for weapons delivery to the target and the zone continues along the run-in centerline to the target until reaching the edge of RSZ A. The width of RSZ B is 1,000 feet, or 500 feet on each side of the run-in centerline. Based on information provided by COMTRAWING ONE, student pilots release the master arming switch on the run-in centerline 2.5 miles from the target.

RSZ B for Target Range SEARAY is illustrated in Figure 4-2, is 1,000 feet wide, begins 2.5 miles from the target, and ends at the edge of RSZ A. RSZ B totals 197 acres, of which 53 acres are located over range property and 162 acres are located outside range property. Of the 162 acres located outside the range boundary, 44 are located within the Navy controlled perpetual and assignable easement properties and 122 acres are not. Figure 4-3 provides a detailed illustration of RSZ B and the Navy controlled perpetual and assignable easement properties.

As with RSZ A, there are no permanent residences within RSZ B. Aside from range operations, hunting and timbering are the primary activities that occur within RSZ B.

4.3 Range Safety Zone C

RSZ C defines a minimum level of safety hazard concern and recognizes airspace which is restricted for safety of flight. RSZ C is required to provide the range user tactical maneuvering room. This is a three-dimensional concept which sets restrictions both laterally and vertically.

RSZ C for Target Range SEARAY is simply the restricted airspace associated with range operations, R-4404A/B. RSZ C can account for the run in centerline to the target in addition to the restricted airspace, but this methodology is not applicable to Target Range SEARAY because the student pilots do not fly designated low level routes en route from NAS Meridian to the range/target. Once in R-4404, student pilots fly throughout the airspace at staggered altitudes until individually instructed to drop to lower altitudes and approach the target along the run-in centerline. Therefore, because the student pilots are spending the most time flying throughout R-4404, this area was designated as the best representation of RSZ C.

RSZ C is a 5 nautical mile (NM) radius centered on the range's bull's eye and covering 66,566 acres horizontally. Vertically, RSZ extends from the ground to 11,500 feet. Though R-4404C is located directly above R-4404B extending from 11,500 feet MSL to 14,500 feet MSL, R-4404C is not used for range operations, and therefore, not included in the vertical portion of RSZ C.

4.4 Compatible Land Use within Range Safety Zones

Ultimately, RSZs are used as the basis for differentiating different types of compatible land use. Land use considerations for RSZs are more stringent than those for noise impacts because the possible consequences of incompatible development are more serious. Table 4-2 provides a summary of the acres of land encompassed by the RSZ areas.

Table 4-2 Acres of Land Encompassed by Range Safety Zones

RSZ	Total Area (AC)	On-Range (AC)	Off-Range (AC)		
			Total	On-Navy Easement	Off-Navy Easement
RSZ A	1,634	572	1,062	975	87
RSZ B	215	53	162	40	122
RSZ C*	66,566	670	65,896	2,231	63,665

Notes:

Acres (AC), Range Safety Zone (RSZ)

*RSZ C is a three dimensional concept covering the lateral and vertical boundaries of R-4404A/B. As noted previously, R-4404C is the “spin” area for out of control flight training and is not used for range operations.

Source:

Real Estate Summary Map, SOUTHDIV, 1980 and Geographic Information Systems (GIS) Analysis, The Onyx Group, 2003

To provide a sense of risk within the RSZ A area that falls outside the boundary of the Navy controlled perpetual and assignable easement properties, a risk assessment was conducted using SAFE-RANGE. The application calculates the probabilities of a weapon impact on designated points, called areas of critical concern. For this analysis, a point was chosen outside the Navy controlled easement area near the unimproved road located within the very northern tip of RSZ A.

The risk assessment concluded that the probability of an impact occurring outside the Navy controlled easement is extremely low– the probability is estimated to be in the range of one in a million for present and projected operations.

Given the undeveloped/uninhabited land use of the area, warning signs could be posted that inform people they are near the range. In particular, signs could be posted along the unimproved road located within the very northern tip of RSZ A. Additionally, since the costs are estimated to be minimal, extending the government's protective easement to include all of RSZ A should be considered.

RANGE SAFETY ZONES AND HAZARD ANALYSIS

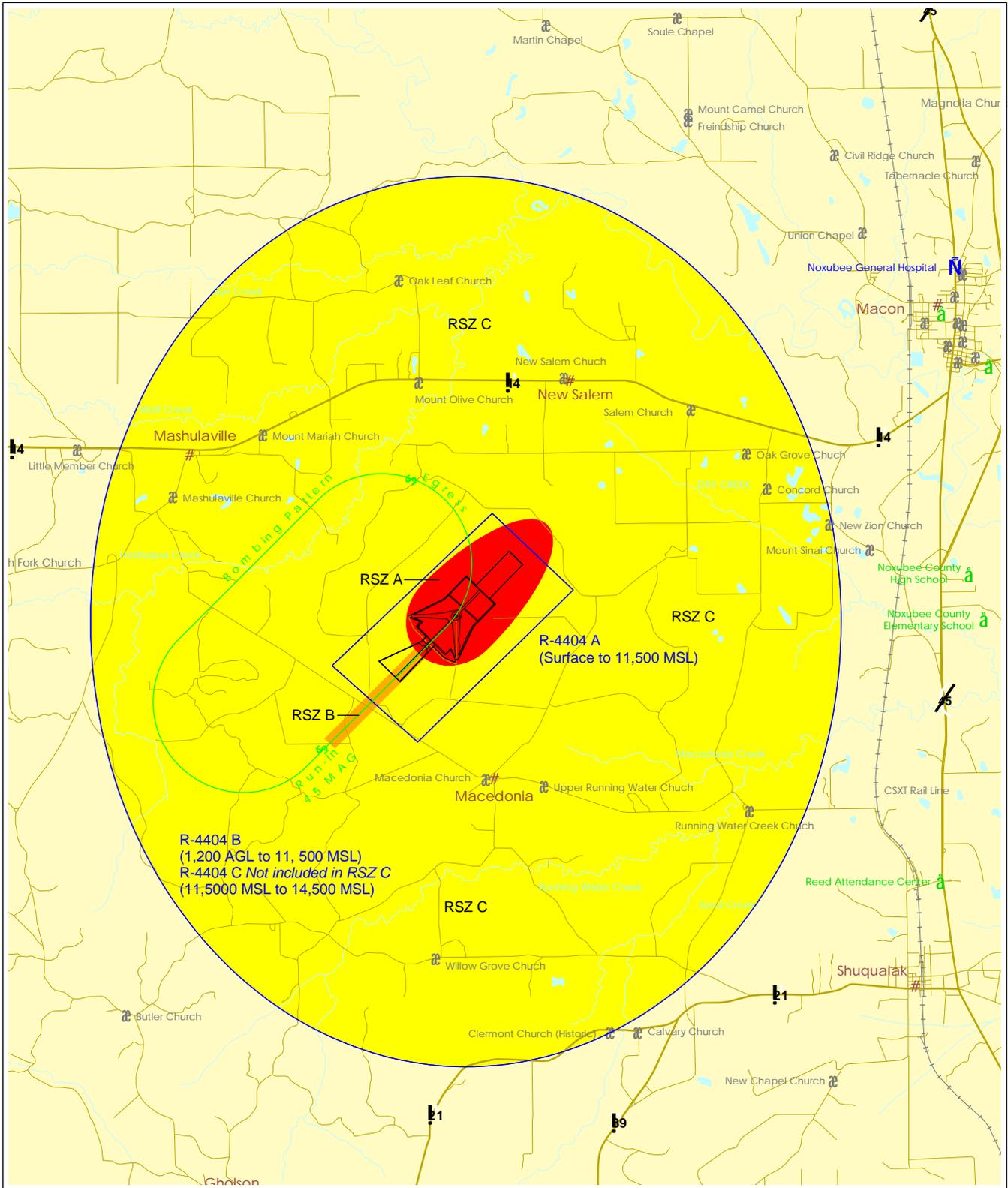


Figure 4-1 Range Safety Zones I



- Legend**
- RSZ A
 - RSZ B
 - RSZ C
 - R-4404 A/B/C
 - Bombing Pattern

- Target Range SEARAY
- Roads
- Watercourses
- Railroad

- Hospital
- Churches
- Schools
- Towns

- Sources**
- SOUTHDIV, 2002
 - NAS Meridian, 2002
 - US Census Tiger Data, 2000



0 0.5 1 Miles

RANGE SAFETY ZONES AND HAZARD ANALYSIS

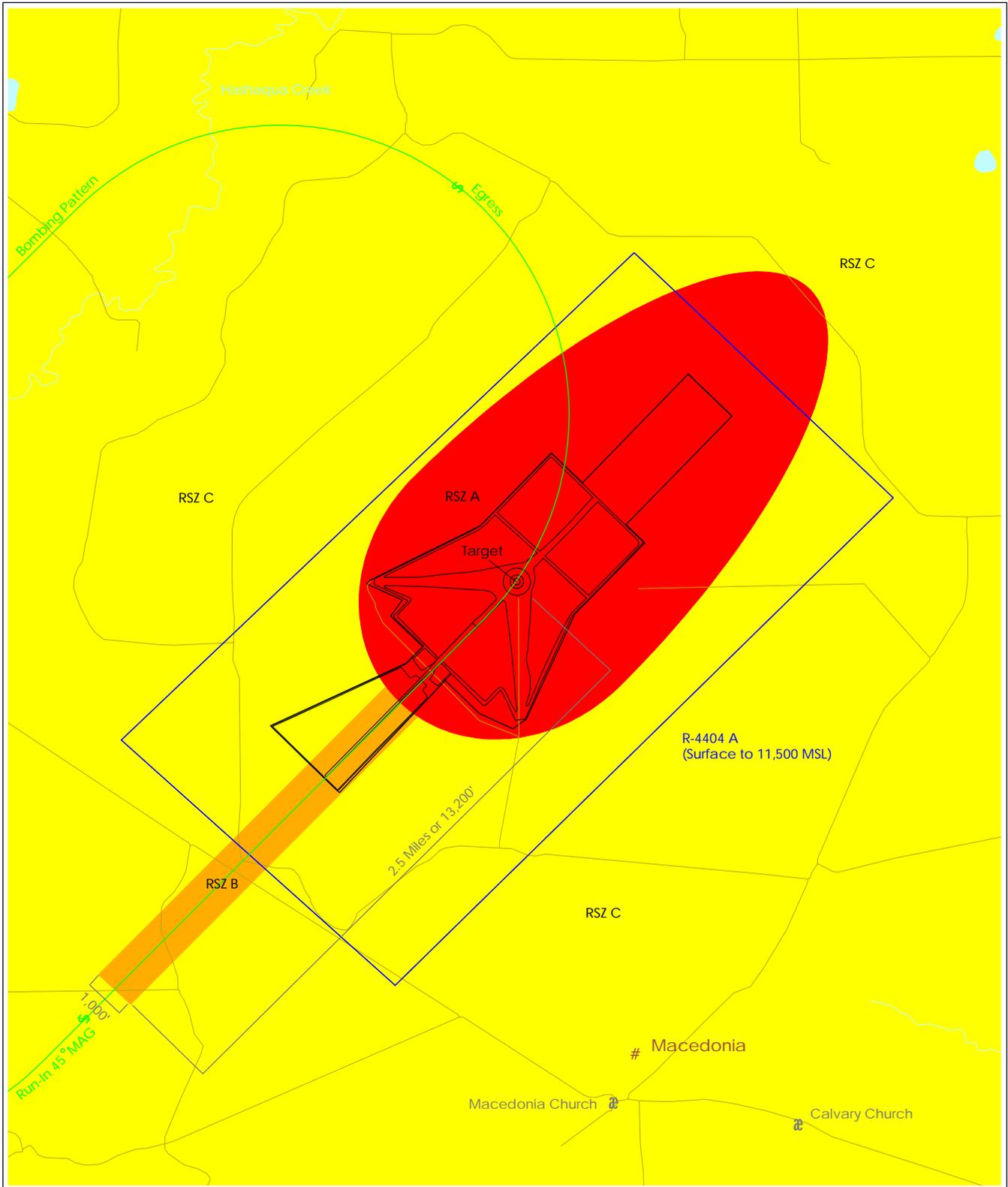


Figure 4-2 Range Safety Zones and Airspace Boundary



- Legend**
- RSZ A
 - RSZ B
 - RSZ C
 - R-4404 A
 - Bombing Pattern

- Target Range SEARAY
- Roads
- Watercourses
- Railroad

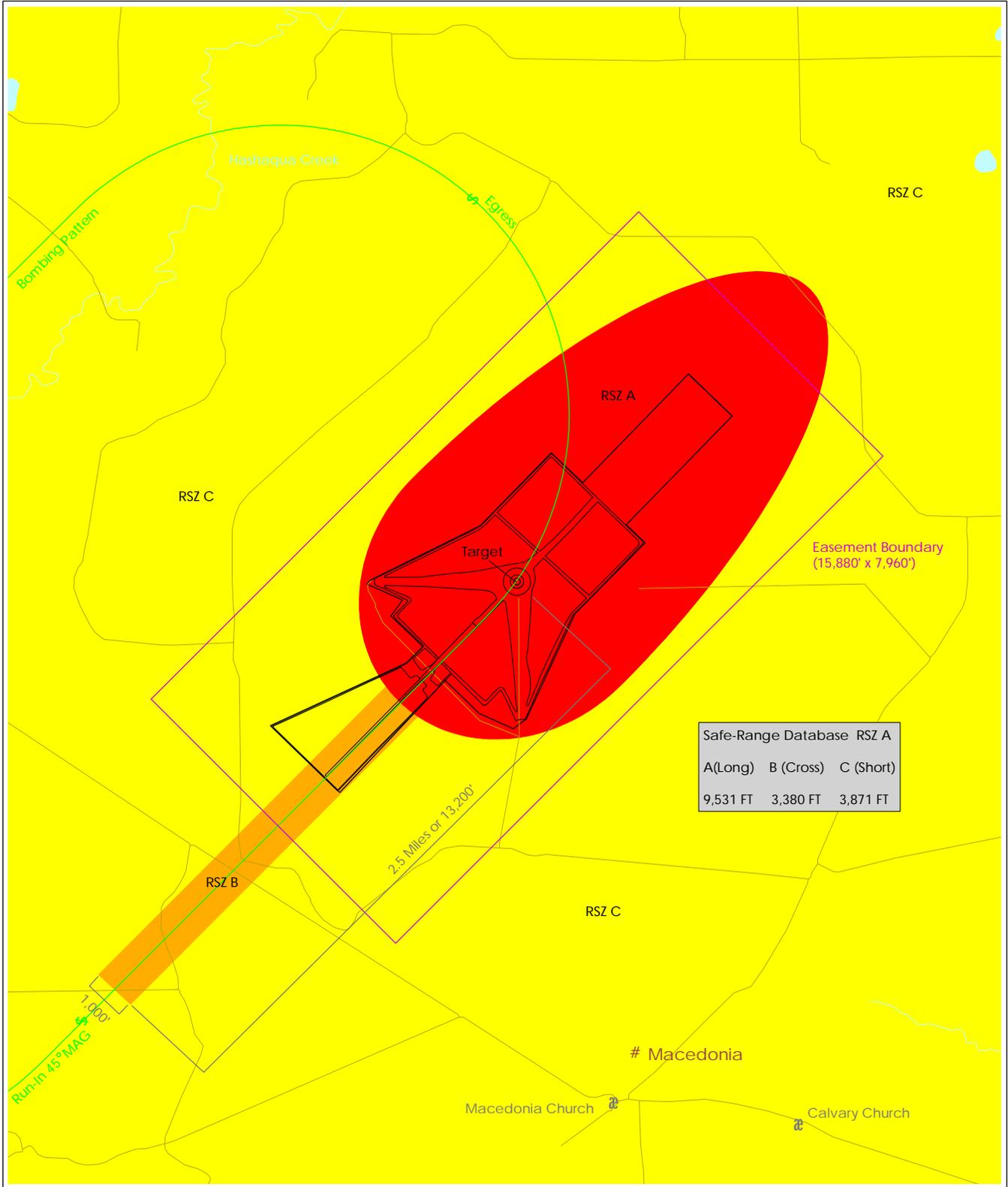
- Churches
- # Town

- Sources**
- SOUTHDIV, 2002
 - NAS Meridian, 2002
 - US Census Tiger Data, 2000



0 1000 2000 Feet

RANGE SAFETY ZONES AND HAZARD ANALYSIS



Safe-Range Database RSZ A		
A(Long)	B (Cross)	C (Short)
9,531 FT	3,380 FT	3,871 FT

Figure 4-3 Range Safety Zones and Easement Boundary



- Legend**
- RSZ A
 - RSZ B
 - RSZ C
 - Easement Boundary
 - Bombing Pattern

- Target Range SEARAY
- Roads
- Watercourses
- Railroad

- Churches
- Town

- Sources**
- SOUTHDIV, 2002
 - NAS Meridian, 2002
 - US Census Tiger Data, 2000



0 1000 2000 Feet

5.0 Land Use Compatibility Analysis

This section, also known as the impact analysis, examines noise and safety footprints of Target Range SEARAY as they apply to current and future land use in the area surrounding the range. The intent is to identify existing land use compatibilities and incompatibilities, and potential future land use compatibilities and incompatibilities.

Currently, development is compatible in the area impacted by noise and safety concerns associated with CY01 operations at Target Range SEARAY. Most of the impact area remains undeveloped with low density single family residences located in the least critical of the noise and safety zones. According to the 2000 US Census, Noxubee County population density totaled 18 persons per square mile. In the future, incompatible development is not expected with CY05 operations. County population is projected to decrease slightly and no major public utility and infrastructure projects that promote development are known of in the impact area. However, uncontrollable and incompatible development does have the potential to take place in the future, for Noxubee County has not enacted any land use controls/zoning regulations.

This section first presents suggested noise and safety land use compatibility guidelines. Following these guidelines, information is presented pertaining to the local socio-economics, land use planning authorities, and existing land use in the area surrounding the range. Existing land use compatibilities and incompatibilities are identified. Next, future land use is described and any potential future land use compatibilities and incompatibilities are described. Finally, concerns to range operations and concerns to the public are presented.

5.1 Land Use Compatibility Guidelines

Local governments are encouraged to adopt programs, policies, and regulations that promote compatible land use in noise and safety zones where appropriate and feasible. The following presents land use compatibility guidelines as adapted from OPNAVINST 3550.1 and 11010.36B.

5.1.1 Land Use Compatibility Guidelines in Noise Zones

For land use planning purposes, the noise exposure from aircraft operations is divided into three noise zones. Noise Zone 1 (DNL < 65 dB) is the area of minimal impact where sound attenuation is not suggested in most cases. Noise Zone 2 (DNL 65-75 dB) is an area of moderate impact where some land use controls are needed. Noise Zone 3 (DNL > 75 dB) is the most severely impacted area and the area that requires the greatest degree of compatible land use controls. In addition to noise zones, areas of concern may be defined where noise levels are not considered objectionable (less than DNL 65 dB), but some degree of land use controls are recommended; e.g. areas under ingress and egress routes to and from training ranges. Note: Noise Zone 3 is not applicable to the environs around Target Range SEARAY, for noise levels do not reach 75 dB).

LAND USE COMPATABILITY ANALYSIS

The guidelines for suggested land use compatibility in noise zones for standard land use categories are included in Appendix B and summarized in Table 5-1. This table is derived from OPNAVINST 11010.36B, and can be used to identify the compatibilities and incompatibilities of existing and projected land uses in impacted areas. Nearly all studies analyzing aircraft noise and residential compatibility, including this study, recommend no residential uses in noise environs above DNL 75 dB, or Noise Zone 3. Restrictions are normally not recommended for areas with noise below DNL 60-65 dB. However, in rural areas with low ambient noise levels some restrictions may be appropriate. In Noise Zone 2, ranging from 65-75 dB, residential use is incompatible.

Agriculture, mining, and fishing, are compatible with Noise Zone 3. Within Noise Zone 2, office buildings, outdoor spectator sports, industrial/manufacturing, commercial/retail, and utilities are conditionally compatible in Noise Zone 2 if Noise Level Reduction (NLR) measures are taken. Within Noise Zone 1, all land uses are normally compatible.

Table 5-1 Suggested Land Use Compatibility in Noise Zones

Land Use	Noise Zone 3	Noise Zone 2	Noise Zone 1
	Ldnmr	75	65 dBA
Residential - Single Family, Duplex, Mobile Homes		1	
Residential - Multiple Family		1	
School Classrooms, Libraries, Churches		1	2
Hospitals, Nursing Homes		1	2
Auditoriums, Concert Halls, Movie Theaters		1	2
Office Buildings - Personal Business, Professional		2	
Outdoor Spectator Sports		3	
Industrial, Warehouse, Supplies		2	
Commercial, Retail, Manufacturing, Utilities		2	
Livestock Farming			
Extensive Natural Recreation Areas			
Playgrounds, Neighborhood Parks			
Golf Courses, Riding Stables, Water Recreation		2	
Marine Craft Transportation	2	2	
Agriculture (except Livestock), Mining			
Fishing and Related Activities			

Notes:

1. These uses in this zone are discouraged. Where use is to be allowed by local government authorities, noise level reduction (NLR) measures of 25 dB to 30 dB are recommended (e.g., berms and sound barriers to mitigate outdoor noise, mechanical ventilation and closed windows to mitigate indoor noise).
2. Measures to achieve NLR are recommended.
3. Sound reinforcement systems are recommended.

	Incompatible
	Conditionally Compatible
	Compatible

Source:

Adapted from OPNAVINST 11010.36B (See Appendix B for complete recommendations)

5.1.2 Land Use Compatibility Guidelines in Range Safety Zones

For land use planning purposes, three critical areas of concern have been defined for varying levels of safety hazard due to potential weapons impact. RSZ A defines the maximum safety hazard. It is the area described by the weapons safety footprints and represents the weapons impact area, including potential ricochet. RSZ B is the area of armed overflight. RSZ C is the minimum restricted airspace for aircraft to maneuver on the range. The guidelines for suggested land use compatibility in RSZs and standard land use categories are shown in Table 5-2. This table is derived from OPNAVINST 3550.1, and can be used to identify the compatibilities and incompatibilities of existing and projected land uses in impacted areas. No land uses are considered compatible with RSZ A. This is due to inherent dangers associated with the ricochet of ordnance and the consideration for public safety. Many land uses are also incompatible with RSZ B or have an associated condition to achieve compatibility. All property in RSZ C is recommended as compatible or conditionally compatible with the intent of encouraging low density land uses and discouraging noise sensitive land uses.

Table 5-2 Suggested Land Use Compatibility in Range Safety Zones

Land Use	Range Safety Zones		
	A	B	C
Residential – Single Family, Duplex, Mobile Homes	Incompatible	Incompatible	Conditionally Compatible 3
Residential - Multiple Family	Incompatible	Incompatible	Conditionally Compatible 5
Transient Lodging	Incompatible	Incompatible	Conditionally Compatible 5
School Classrooms, Libraries, Churches	Incompatible	Incompatible	Conditionally Compatible 5
Hospitals, Nursing Homes	Incompatible	Incompatible	Conditionally Compatible 5
Auditoriums, Concert Halls	Incompatible	Incompatible	Conditionally Compatible 2
Office Buildings - Personal Business, Professional	Incompatible	Incompatible	Conditionally Compatible
Commercial, Retail, Manufacturing, Utilities	Incompatible	Incompatible	Conditionally Compatible
Playgrounds, Neighborhood Parks	Incompatible	Incompatible	Conditionally Compatible 2
Golf Courses, Riding Stables, Water Recreation	Incompatible	Conditionally Compatible 4	Conditionally Compatible
Outdoor Spectator Sports	Incompatible	Incompatible	Conditionally Compatible 2
Industrial, Warehouse, Supplies	Incompatible	Incompatible	Compatible
Marine Craft Transportation	Incompatible	Conditionally Compatible 1	Compatible
Agriculture, Mining, Fishing	Incompatible	Conditionally Compatible 1	Compatible
Recreational, Wilderness Area	Incompatible	Conditionally Compatible 2	Compatible 2

Notes:

1. RSZ B is an area of armed overflight. Land uses that have the potential to attract congregations of people are not compatible. For scored targets, no development should be permitted within 500 feet either side of the run-in centerline. For tactical targets, further analysis is required. Factors to be considered are labor intensity and structural coverage.
2. Incompatible when the training mission requires low-altitude overflight (below 500 feet). Height of structures is limited to 50 feet.
3. Suggested maximum density in RSZ C is less than one dwelling unit per 10 acres.
4. Clubhouses, chapels, and other facilities where people congregate are not compatible in RSZ B.
5. Noise-sensitive uses should be avoided.

	Incompatible
	Conditionally Compatible
	Compatible

Source:
Adapted from OPNAV Instruction 3550.1

5.2 Socioeconomic Profile

Areas around the Target Range SEARAY and within the noise and safety zones are all located in Noxubee County. Noxubee County had a population of 12,548 persons, and a population density of 18 persons per square mile per the 2000 US Census. Macon, the county seat located 10 miles northeast of the range, had a population of 2,461. The population within the county has remained nearly the same between 2000 and 1990, decreasing a total of 56 persons, as shown in Table 5-3. The table also shows the 1990 and 2000 US Census populations for the counties surrounding Noxubee County. Kemper County, located to the south of Noxubee County, and transversed by student pilots flying to and from the range, has a similar sized population and density per square mile to that of Noxubee County.

Table 5-3 US Census 1990 and 2000 Populations of Noxubee and Surrounding Counties

County	US Census Population (Persons)		1990 to 2000 Change	
	1990	2000	Number	Percent
Greene, AL	10,153	9,974	-179	-1.8
Kemper, MS	10,356	10,453	97	0.9
Lowndes, MS	59,308	61,586	2,278	3.8
Noxubee, MS	12,604	12,548	-56	-0.4
Oktibbeha, MS	38,375	42,902	4,527	11.8
Pickens, AL	20,699	20,949	250	1.2
Winston, MS	19,433	20,160	727	3.7

Source:
US Census 2000

The North Mississippi Industrial Development Association (NMIDA) predicts a continued decrease in the population for Noxubee County between 2000 and 2010 of 12,548 persons to 12,211 persons.

The labor force in Noxubee County is primarily employed in manufacturing (durable and non-durable goods). A significant portion of the labor force is also employed in agriculture/forestry, retail trade, and educational services. According NMIDA, the largest manufacturing employer in the county is Peco Foods of Mississippi, a food products company employing 475 persons located in Brooksville. Outdoor Technologies, a rubber and miscellaneous plastic products employing, is located in Macon and is the second largest county manufacturing employers with a workforce totaling 275 persons. Pride of the South Catfish (Brooksville), Shuqualak Lumber Company (Shuqualak), and Cal-Jac (Macon) round out the county's top five manufacturing employers.

5.3 Planning Authority

While not directly affecting the range, Noxubee County land use and zoning actions can increase or decrease the acreage of compatible land uses surrounding the range. Currently, Noxubee County has not implemented any land use controls/zoning regulations. Mississippi Law (Title 17, Chapter 1) adopted in 1972 does permit individual counties to adopt zoning and subdivision regulations to affect land use controls...

“For the purpose of promoting health, safety, morals, or the general welfare of the community, the governing authority of any municipality, and, with respect to the unincorporated part of any county, the governing authority of any county, in its discretion, are empowered to regulate the height, number of stories and size of building and other structures, the percentage of lot that may be occupied, the size of the yards, courts and other open spaces, the density of population, and the location and use of buildings, structures and land for trade, industry, residence or other purposes, but no permits shall be required with reference to land used for agricultural purposes, including forestry activities as defined in Section 95-3-29 (2)(c), or for the erection, maintenance, repair or extension of farm buildings or farm structures, including forestry buildings and structures, outside the corporate limits of municipalities. The governing authority of each county and municipality may create playgrounds and public parks, and for these purposes, each of such governing authorities shall possess the power, where requisite, of eminent domain and the right to apply public money thereto, and may issue bonds therefor as otherwise permitted by law.”

Mississippi has also implemented planning and development districts that provide planning assistance to counties. With the passage of the Economic Development Act of 1965 and the Appalachian Development Act of 1965, a new concept of assistance to local governments began. This new concept gave rise to a statewide system of planning and development districts in Mississippi. The Golden Triangle Planning and Development District (GTPDD) was formed for the purpose of improving and expanding economic development and civic improvement in a seven-county area that includes Noxubee County.

On July 8, 1972, the GTPDD received its corporate charter as a multi-county, multi-purpose, non-profit economic development corporation. This charter was revised on October 27, 1976. The major purpose of the GTPDD is to provide a single system of planning, development, and programming from a regional approach. Because of its multi-functional capability, the GTPDD is used by many Federal and State agencies as a delivery organization for those programs.

5.4 Existing and Future Land Use

Pine forested (loblolly-pines) and clear-cut flatlands surround the range and comprise the majority of the impacted area within R-4404A/B/C. Development in the restricted airspace mainly consists of low density single family residences, and is limited to State Routes 14 and 21, rural roadways, and the towns of Macedonia, Mashulaville, and New Salem. Mashulaville is the most developed of the towns with approximately 50 structures built within a 1-mile radius of the town center. Mashulaville is approximately 4 miles northwest of the range target. Significant changes in future land use in these towns and within R-4404A/B/C are not expected, given Noxubee County's projected decrease in population between 2000 and 2010 and its rural character. No major public utility and infrastructure projects that promote development are known of in the impact area. Uncontrolled development and future land use does have the potential to take place in the impact area, for Noxubee County has no land use controls/zoning regulations.

Generally speaking, the undeveloped and low density land uses surrounding the range and within the noise and safety impact area bodes well for range operations. The following provides more detailed land use compatibility analysis within the noise and safety zones.

5.5 Land Use Compatibility

5.5.1 Land Use Compatibility with Noise Zones

Figure 5-1 illustrates existing land use and CY05 Noise Zones 1 and 2 at Target Range SEARAY. As explained earlier, Noise Zone 1 (DNL < 65 dB) is the area of minimal impact. Noise Zone 2 (DNL 65-75 dB) is an area of moderate impact where some land use controls are suggested. Noise Zone 3 is not applicable to the range.

The figure depicts undeveloped and forested/vegetated land uses surrounding the range and within Noise Zone 2. Based on Table 5-1, Suggested Land Use Compatibility in Noise Zones, the undeveloped and forested/vegetated areas within Noise Zone 2 are currently compatible with RAICUZ program recommendations. There are no permanent residences within Noise Zone 2. Aside from range operations, periodic hunting and timbering are the primary activities that occur within this area. In addition, the Navy owns or controls (through the perpetual and assignable easement) the majority of the land within Noise Zone 2.

Noise Zone 1 (DNL < 65 dB) is the area of minimal impact. No current land use incompatibilities exist within the highest noise portions of Noise Zone 1 which occur on both sides of the entire bombing pattern. The land use in the area surrounding the bombing pattern is also characterized as primarily undeveloped and forested/vegetated. Of concern are some residences that are located close to the bombing pattern on its northern side. The RAICUZ instruction allows for the identification of areas of concern that may be defined where noise levels are not considered objectionable (less than DNL 65 dB), but some degree of land use controls are recommended; e.g. areas under ingress and egress routes to and from training ranges.

5.5.2 Land Use Compatibility with Range Safety Zones

Figure 5-2 illustrates existing land use and RSZ A and B. There are no permanent residences within RSZ A and B. Within RSZ C which is all of R-4404, there are 14 churches (per US Census Tiger data illustrated in Figure 2-3) and no more than a few hundred residences. Based on Table 5-2, Suggested Land Use Compatibility in Range Safety Zones, land use within RSZ A and RSZ B is compatible. The Navy owns or controls (through fee purchase and the perpetual and assignable easement) the majority of the area encompassed by RSZ A, and no development including permanent residences or structures exists within RSZ A or B. There are some 87 acres of RSZ A located outside of Navy owned or controlled land.

Most land uses and development including churches and residences are conditionally compatible in RSZ C if certain criteria are met. As listed in Table 5-2, the criteria include height restrictions on structures, and that residential densities are kept to a suggested maximum density of less than one dwelling unit per 10 acres. Residential development density throughout RSZ C is under the suggested one dwelling unit per 10 acres.

5.6 Land Use Compatibility Concerns

5.6.1 Concerns to Range Operations

Development near Target Range SEARAY is limited because of the range's location in the southwestern portion of Noxubee County which is rural in character. Few permanent roads exist and there is limited access to utilities including public water and sewer. However, uncontrollable and incompatible development may occur in the future because the county has not implemented any land use controls/zoning regulations. Quasi-public organizations such as the North Mississippi Industrial Development Association are continually promoting counties such as Noxubee County as prime places for industries to locate given the inexpensive costs of land, skilled labor force, and proximity to major cities. Industrial development in the area could spurn the development of new residences leading to the potential for additional persons to be impacted by noise and safety— a major concern to range operations.

Another concern to the Navy is the lack of a requirement for disclosure to homebuyers that assures their awareness of the range. Residents who may not have been aware of the range at the time of purchase are often those who complain the most about noise from aircraft. Had these individuals been made aware of the range prior to their home purchase, they may have opted to look elsewhere for a residence or more readily accepted the noise by being a more informed consumer.

5.6.2 Concerns to the Public

The Navy remains sensitive to Noxubee County's desire for economic growth including new industries and residences and expanded existing industries. A balance between the community's desire for growth and development and the mutual need for compatible land use within the range's training environs (protects the public's health, safety, and welfare and allows the Navy to fulfill its mission requirements) is a goal shared by the Navy and the community.

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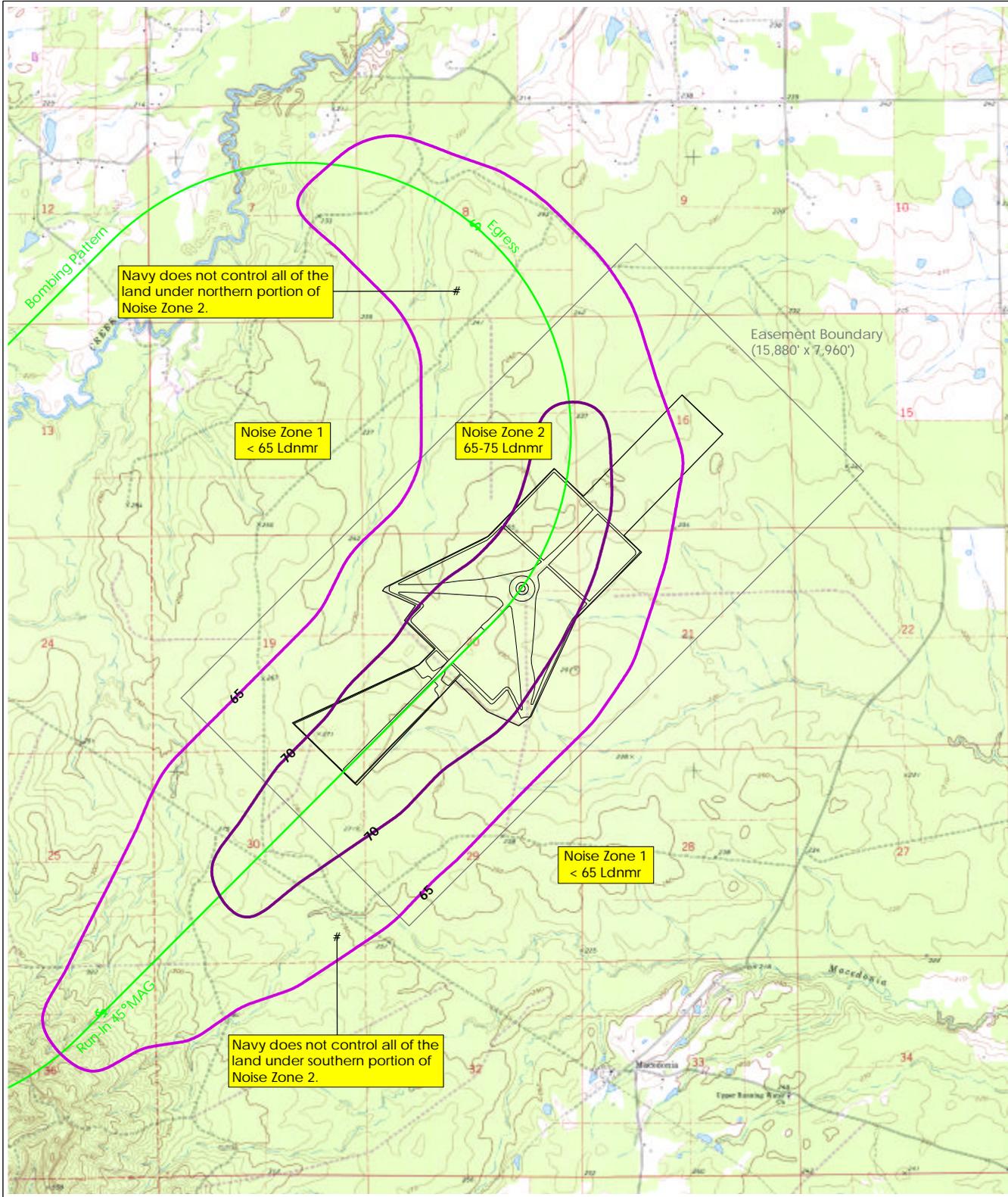


Figure 5-1 Existing Land Use and CY05 Noise Zones



- Legend**
- Noise Zone 2, 65-75 Ldnmr
 - 65 Ldnmr Contour
 - 70 Ldnmr Contour
 - Bombing Pattern
 - Target Range SEARAY
 - Easement Boundary

- USGS Basemap**
- Undeveloped and Vegetated/Forested
 - Inhabited Areas (White), Contours (Brown), Watercourse (Blue), and Structures (Black)
 - Roads

- Sources**
- SOUTHDIV, 2002
 - NAS Meridian, 2002
 - USGS 1:24,000 DRG



0 1000 2000 Feet

LAND USE COMPATABILITY ANALYSIS

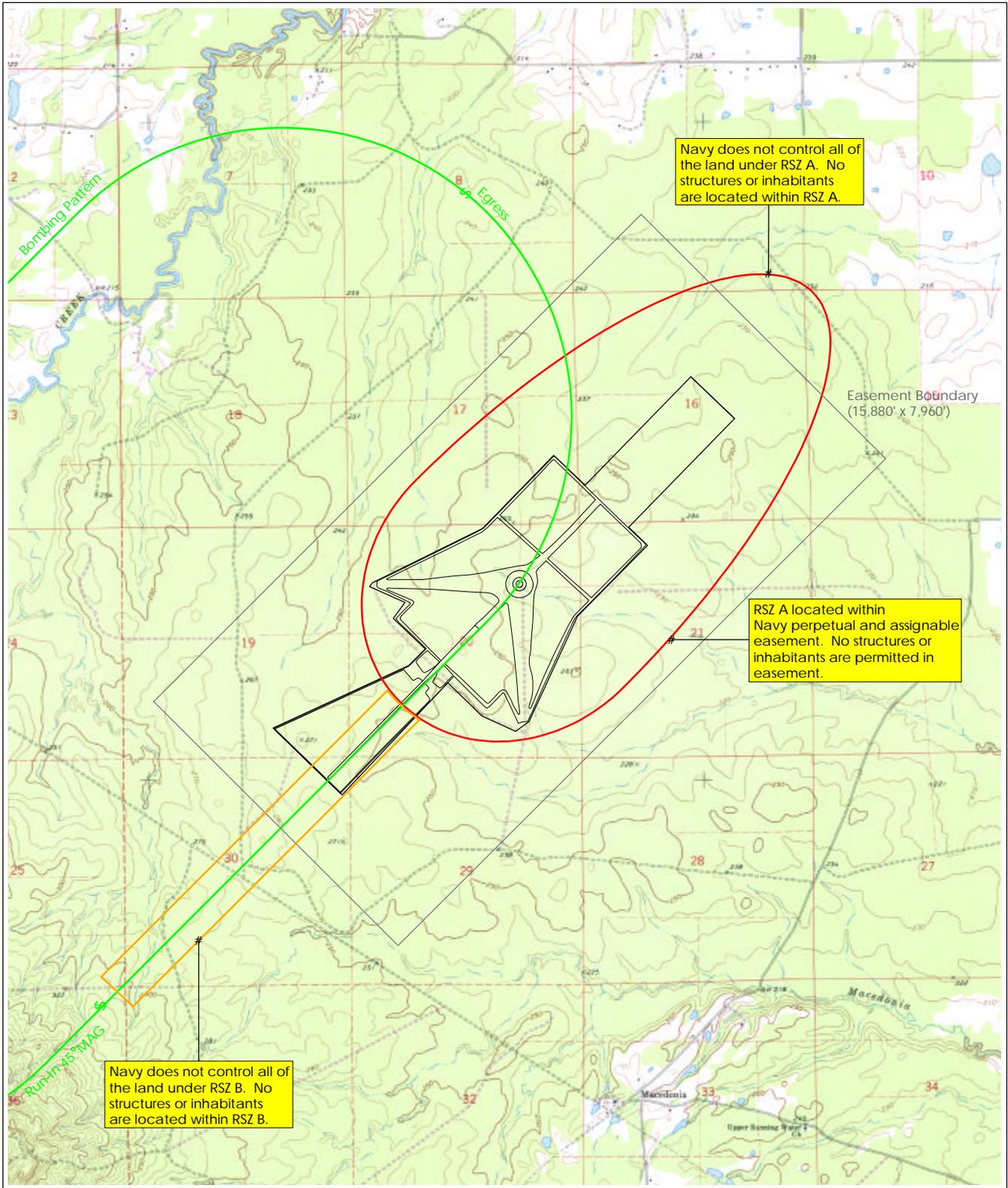


Figure 5-2 Existing Land Use and RSZs



- Legend**
- RSZ A Boundary
 - RSZ B Boundary
 - Bombing Pattern
 - Target Range SEARAY
 - Easement Boundary

- USGS Basemap**
- Undeveloped and Vegetated/Forested
 - Inhabited Areas (White), Contours (Brown), Watercourse (Blue), and Structures (Black)
 - Roads

- Sources**
- SOUTH DIV, 2002
 - NAS Meridian, 2002
 - USGS 1:24,000 DRG



0 1000 2000 Feet

6.0 Implementation and Recommendations

The goals of the RAICUZ program can most effectively be accomplished by active participation of all interested parties, including Navy, local governments, private citizens, real estate professionals, and builders/developers. Program implementation at an installation includes development of a current noise and safety analysis for the range, cooperation with local, state, and federal agencies, consideration of operational alternatives, enacting a complaint response program for residents in surrounding communities, and developing strategies to protect the long term viability of the range. This section presents tools (strategies/techniques) and recommendations for implementing a successful RAICUZ program for Target Range SEARAY.

The Navy's RAICUZ program is focused on promoting land use compatibility between air-to-ground ranges and surrounding communities. The program recognizes the local government's responsibility to protect the public health, safety, and welfare through land use control tools such as zoning ordinances, building codes, subdivision regulations, building permits, and disclosure statements. Successful implementation of such land use controls depends on a close working relationship between the Navy and community leaders. The activity (in this case, NAS Meridian) should continually inform local governments, state governments, other federal agencies, citizens groups, and the general public on:

- Requirements of military flying;
- Range operations;
- Efforts to reduce noise and potential off-range weapons impacts; and
- Local Command's position on specific land use issues.

Although the emphasis of RAICUZ program implementation is focused on areas within the RAICUZ footprint (noise and safety impact area), the Navy can take a position and comment on land use issues outside the footprint that might lead to incompatible development. For example, large-scale developments bordering the RAICUZ footprint or new transportation or utility corridors could make the RAICUZ footprint area more desirable for development. Such development could also prevent mission changes or mission expansion in the future. Therefore, Commanding Officers and their staffs should monitor proposed development beyond the RAICUZ footprint, and, if needed, present those concerns in appropriate forums. Records of important discussions, negotiations, and testimony with and before local officials and boards should be maintained by the Navy.

6.1 Tools for Implementing a RAICUZ Program

The following discusses tools that aid in implementing a RAICUZ Program. Tools at the federal, Navy, local government, private citizen, real estate professional, and builder/developer level are available.

6.1.1 Federal Level Tools

- **Executive Order 12372, Intergovernmental Review of Federal Programs.** As a result of the Intergovernmental Cooperation Act of 1968, the Office of Management and Budget requires, through Circular A-95, that all federal aid development projects must be coordinated with and reinforce state, regional, and local planning. As such, if land use compatibility suggestions as set

IMPLEMENTATION AND RECOMMENDATIONS

forth in this RAICUZ study are adopted by local government agencies, the A-95 review process can divert federal monies away from any projects that support incompatible development.

- **National Environmental Policy Act (NEPA) of 1969.** NEPA mandates full disclosure of environmental effects resulting from proposed federal actions. An environmental impact statement (EIS) disclosure provides a public open forum for review and for negotiating changes to federal actions of other agencies that would be incompatible with local RAICUZ recommendations and objectives. An environmental assessment (EA) is less detailed than an EIS. The EA discusses impact and alternative measure of a proposed action, but has no public open forum for review.
- **Agreements to Limit Encroachments and other Constraints on Military Training, Testing, and Operations.** United States Code, Title 10, Chapter 159, Section 2684a states that the Secretary of Defense or the Secretary of a military department is authorized to enter into agreements with State or local governments, as well as private entities with a stated principal purpose of conservation, restoration, or preservation of land and natural resources, to address the use or development of real property in the vicinity of a military installation. Agreements may include the limiting of incompatible development or use of the property with regards to the mission of the installation, or preserving habitat on the property in keeping with environmental requirements to eliminate or relieve current or anticipated environmental restrictions that may restrict, impede or interfere with current or anticipated military training, testing, or operations on the installation. Agreements may provide for the acquisition of right, title or interest in real property, with the consent of the property owner, as well as the purchase of water rights from any available source. Funds authorized to be appropriated for operation and maintenance of the installation may be used to enter into these agreements.

6.1.2 Navy Level Tools

- **Noise Complaint Response Program.** A noise complaint response and abatement program can be implemented to log and track noise complaints, analyze complaint locations and times, and identify the flights/operations that generated the complaints. Possible adjustment of operational procedures can than be discussed and implemented to avoid future conflicts. NAS Meridian has implemented a noise complaint response program. Persons with noise complaints generated in the operational environs of NAS Meridian, OLF Joe Williams, Target Range SEARAY, and the NAS Meridian SUA can call (601) 679-2505 to place a complaint. Assigned air operations (AIROPS) personnel answer the call and record pertinent information such as the location and time and a description of the noise generating event. After the noise complaint is logged, it is passed through AIROPS and air traffic control (ATC) to the COMTRAWING ONE where it is reviewed and the responsible squadron identified. The noise complaint is than discussed and commented on at the squadron level. Comments are than passed back to AIROPS and ATC. AIROPS personnel may call back the person who complained and provide an explanation as to what caused the noise.

- **Property and Property Rights Acquisition.** The acquisition of property or property rights may be exercised to achieve compatible uses in locations where other measures have failed, or are not feasible. Acquisition may take on several forms, including easements, leaseholds, and fee simple purchase. Documentation of a community's unwillingness or inability to institute adequate controls that promote compatible land use is required in order to support acquisition projects. Furthermore, the first priority for acquisition is the land within RSZ A. The second priority for acquisition would be RSZ B. Noise zones that are located in the outside the RSZs may be considered for acquisition only when the operational integrity of the range is manifestly threatened. There are no projects for land acquisition related to range operations included in the next five years budget.
- **Emphasis on Public Outreach** promotes close working relationships between the range, community leaders, and citizens. A carefully designed program of public relations and education can promote community awareness of the importance of the range and the Navy's desire to be a good neighbor. The Navy can use community forums, brochures, and local speaking engagements (e.g., Rotary Club, Lions Club, Navy League, etc.) to inform the general public about the RAICUZ program and the need for compatible development around the range. Commanding Officers and their community liaison officers should take every opportunity to meet with and make presentations to the local governments, particularly the planning and zoning agencies.

6.1.3 Local Government Tools

The RAICUZ footprint affects a southwestern portion of Noxubee County, Mississippi. County officials have several approaches at their disposal to promote compatible land use and limit incompatibilities and conflicts within the RAICUZ footprint. In addition, the GTPDD (local planning and development district for Noxubee County) can provide assistance to the county with the following:

- **Zoning** is an exercise of the police powers of state and local governments that designates the uses permitted on each parcel of land. It normally consists of a zoning ordinance that delineates the various use districts and includes a zoning map based on the community's vision of the future. As this vision changes over time, the zoning can be changed to suit new ideas. Hence, for zoning to be an effective control against RAICUZ-incompatible land uses, it must be monitored over time. Zoning can and should be used constructively to increase the value and productivity of land within the RAICUZ footprint. Used within its limitations, zoning is the preferred method of controlling land use in RAICUZ-affected areas. Currently, Noxubee County does not have zoning. The limitations that must be considered when using zoning as a compatibility implementation tool include the following:
 1. Zoning is usually not retroactive. That is, changing a zone primarily for the purpose of prohibiting a use that already exists is normally not possible. However, if such zoning is accomplished, the use must be permitted to remain as a “nonconforming” element until the owners have had ample opportunity to recoup investment.
 2. Zoning is jurisdiction-limited and requires coordination of all involved jurisdictions. Zoning that implements a compatibility plan will often be composed of existing and new zoning districts within each of the zoning jurisdictions covered by the plan. Each jurisdiction is likely to have a different base zoning ordinance, with districts having different responsibilities for implementing the compatibility plan.
 3. Zoning is not permanent. In any jurisdiction, zoning can be changed by the current governmental body; also, it is not bound by prior zoning actions. Consequently, zoning that achieves compatibility is subject to continual pressure for change from both urban expansion and enterprises that might profit from such changes. When these changes are proposed, the environmental impacts may require assessment. Also, from time to time, the entire zoning ordinance for a jurisdiction will be updated to accommodate increased growth or incorporate new land use concepts.
 4. Zoning Board of Adjustment actions granting variances to the zoning district or exceptions written into the zoning ordinance can permit development (e.g., schools or churches) that may be incompatible.
- **Comprehensive Planning Programs** create plans for the future development or redevelopment of a community. Comprehensive plans, or policy guides for physical development and land management practices within a local jurisdiction, consist of smaller master plans relating to the various elements of a community (e.g., land use plan, transportation plan, public utilities plan, and housing plan). A comprehensive plan coordinated with the RAICUZ land use objectives will reinforce the overall vision and objectives of the county, help potential developers to stay in tune with the long-range goals for the county, and help promote compatible uses in the areas impacted by range operations.

- **Subdivision Regulations** are a means by which local government can ensure that proper lot layout, design, and improvements are included in new residential developments. These regulations specifically set guidelines that developers must follow when constructing their subdivisions, including minimum requirements for road widths, lot arrangements, allocation of facilities, the relationship of the subdivision to the surrounding area, and the dedication of property. Subdivision regulations are used to ensure that the health and habitability of each new residential development are maintained. All subdivision reviews should include an analysis of the potential effect the RAICUZ would have on the proposed development. Modifications could then be instituted in the development plan to minimize any potentially adverse effects. All local government subdivision regulations require some type of dedication of open space to the public. This provision could be structured such that the space is located nearest Target Range SEARAY, with development situated as far from the boundary as possible.
- **Building Codes** govern the construction and physical modification of structures, providing a means to control noise. Although the building codes contain requirements more specifically keyed to local construction needs, these codes also include provisions concerning administration and enforcement. Building codes could serve as an implementation mechanism strategy not only for areas within the defined RAICUZ, but also for surrounding areas, which are affected by the noise levels to a lesser degree. Minimum amounts of noise suppression materials in new structures could be related to the location of the structure in relation to the noise sources. Existing structures, however, would generally not be affected by new code modifications, the need for which would depend on the level of noise and types of land uses affected. On the federal level, incentives have been implemented to encourage home thermal insulation and the installation of solar heating units. Similar incentives could be used to encourage the installation of noise-suppression materials. To some extent, thermal building insulation measures would also assist in noise suppression.
- **Capital Improvements Programming** is the multiyear scheduling of physical upgrades to public property. A capital improvements program (CIP) is a planning tool used by local jurisdictions to phase the installation of needed public facilities (e.g., water and sewer, roads, schools) on a priority basis. A CIP projects three to six years into the future. It specifies what public improvements will be constructed. Scheduling is based on studies of fiscal resources available and improvements needed. A CIP is an important component of a growth management system. The CIP precedes preparation of a capital improvements budget (CIB). A CIB identifies the methods by which improvements will be financed and the source of the funds. Usually, development occurs where capital improvements are located. Extension of municipal services into an area makes that area more attractive to developers than sites without the improvements (i.e., the developer saves both time and money). Local governments should avoid extending capital improvements into the RAICUZ impacted areas and the immediate vicinity of the footprint to avoid the possibility of incompatible uses.
- **Real Estate Disclosure** can be approached as a voluntary or regulatory practice. These provisions require that developers or landowners who own property within the RAICUZ area must notify any prospective purchaser of such property of the noise and safety considerations. This concept could be strengthened by having each buyer or renter execute a “disclosure statement” that contains the acknowledgment that the buyer or renter has been advised that the property is near a military installation and its location has noise or safety concerns associated with military operations conducted on the range.

IMPLEMENTATION AND RECOMMENDATIONS

- **Public Purchase of Land** can work toward RAICUZ objectives if the community's intention is to leave the land undeveloped or open space.

6.1.4 Private Citizens, Real Estate Professionals, and Businesses

- **Private Citizens** have the ability to not purchase property within high noise and/or RSZs.
- **Real Estate Professionals** have the ability to ensure that prospective buyers or lease holders/renters are fully aware of what it means to be within high noise zones and/or RSZs.
- **Acquisition, Development, and Construction Loan Review to Private Contractors** works to encourage a review of noise and safety hazards as part of a lender's investigation of potential loans to private interests for real estate acquisition and development. Diligent lending practices will promote compatible development and protect lenders and developers alike. Local banking and financial institutions should be encouraged to incorporate a "due diligence review" of all loan applications, including a determination of possible noise or RSZ impacts on the mortgaged property.

6.2 Implementation

Development is compatible in the area impacted by noise and safety concerns associated with current and projected operations at Target Range SEARAY. Most of the impact area is and is expected to remain undeveloped with low density single family residences located in the least critical of the noise and safety zones.

One issue the Navy is presented with is that uncontrollable and incompatible development does have the potential to take place in the future due to Noxubee County's lack of land use controls/zoning regulations. Recommendations that promote continued compatible development and prevent incompatible development and potential encroachment resulting from the lack of land use controls/zoning regulations are presented as follows.

6.2.1 Navy Implementation Actions

- The designation of a **RAICUZ Officer** responsible for implementing the RAICUZ program for Target Range SEARAY is recommended. The RAICUZ officer should become knowledgeable of the contents of this study; property use and ownership in the vicinity of the range; the Navy's perpetual and assignable easement surrounding the range; operations at the range; and Noxubee County, the Golden Triangle Planning and Development District (GTPDD), and any future development plans. Tasks assigned to the RAICUZ officer often include monitoring and reporting monthly on the following areas as they affect the operational integrity of Target Range SEARAY:
 1. County comprehensive/development plans, updates, and amendments
 2. Capital improvement plans and the construction of new schools, churches, auditoriums
 3. Large tract land sales
 4. Proposed development plans, particularly near RSZ A and B and the bombing pattern
 5. Environmental Impact Statements
 6. Potential implementation of land use and building code regulations in Noxubee County
- **Community outreach program** is a specific implementation strategy in order to provide citizens with factual information regarding the noise and safety impacts of range operations. This program should be designed to allow individuals the opportunity to express concerns and receive explanation. Public presentations offer an excellent opportunity for direct communication with the community. Officers from NAS Meridian can provide presentations to local officials, various community organizations including Chambers of Commerce, service clubs, community groups, property owner associations, and building trades.
- The Navy can consider pursuing acquisition of easement interests similar to those that currently exist for this Range over the land areas of RSZ A outside the current areas of ownership.

6.2.2 Local Government and Agency Recommended Actions

- Three-way **communications** between Noxubee County, GTPDD, and NAS Meridian can be helpful. While it is the responsibility of NAS Meridian to inform and educate community decision makers about the RAICUZ program, community decision makers should continue to actively inform and seek input from NAS Meridian for land-use decisions that may potentially affect the operational integrity of the range.
- When making **land use and development decisions** affecting property in proximity to the RAICUZ area, Noxubee County and GTPDD should recognize that:
 1. Noise contours and RSZs comprising the RAICUZ footprint are dynamic and there is a potential for changes in the RAICUZ area, as the operational needs to satisfy the military mission change.
 2. There are active flight tracks associated with RSZ C. Although the number of flights may not produce noise contours that extends a higher noise zone over all of RSZ C, there is single event noise associated with operations in the area. Residents living within RSZ C are subject to occasional aircraft noise.
- Noxubee County is encouraged to adopt the Navy's RAICUZ recommendations into their **land use plans and develop regulations** that promote compatible development. Such actions will sustain the presence of the range and protect the health, safety, and general welfare of the public.
 1. Noxubee County does not currently have land use controls in place such as zoning, subdivision regulations, and building codes- development of such ordinances is encouraged.
 2. Adopt an ordinance that requires real estate agents and leasers to disclose when properties are within the RAICUZ area.
- All **capital improvement projects** in proximity to the range should be evaluated and reviewed for the potential direct and indirect impacts that such improvements may have on the ability to implement a successful RAICUZ program.

6.2.3 Citizens, Real Estate Professionals, and Businesses Recommended Actions

- The **citizens** of Noxubee County have the responsibility to:
 1. Provide sufficient and accurate information when registering a noise complaint with NAS Meridian. Sufficient and accurate information is necessary to assess the potential causes resulting in the complaint and to assess any practical remedies for reducing future complaints.
 2. To become informed about the RAICUZ program at NAS Meridian and to learn about the goals and objectives of the program; its value in protecting the health, safety, and welfare of the population; the limits of the program; and the positive community aspects of a successful RAICUZ program.
- **Real estate professionals** should:
 1. Provide written disclosure to prospective purchasers, renters, or leases when a property is located within the RAICUZ area.
 2. To the greatest extent possible, make prospective buyers and lessees aware of the potential magnitude of noise exposure they might experience.
- **Lending institutions** that provide development and construction loans to private contractors should consider whether to limit financing for real estate purchases or construction incompatible with the RAICUZ program. This strategy encourages a review of noise and RSZs as part of a lender’s investigation of potential loans to private interest for real-estate acquisition and development. Diligent lending practices will promote compatible development and protect lenders and developers alike. Local banking and financial institutions should be encouraged to incorporate a “due diligence review” of all loan applications, including a determination of possible noise or RSZ impacts on the mortgaged property. The Navy can play a role in this strategy by providing RAICUZ seminars to lenders throughout the region.

6.3 Recommendations

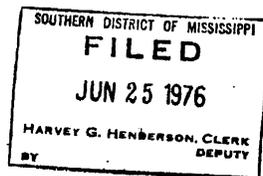
The following are recommendations that can be used in implementing the RAICUZ program at NAS Meridian and Target Range SEARAY.

1. Designate a RAICUZ officer to interface with local government officials and local residents. The RAICUZ officer could also be instrumental in assisting in a community outreach program.
2. Consider acquisition of interests in the portion of RSZ A that falls outside the current range ownership boundaries.
3. Monitor local planning activities and proposed development within the land areas under R-4404 and seek to update land use controls as appropriate to ensure future compatible land use.
4. Update current mapping within the Navy’s SAFE-RANGE database to reflect the results of this study.

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Perpetual and Assignable Easement around Target Range SEARAY

Multi-Purpose Target Range
NAS Meridan, MS



IN THE UNITED STATES DISTRICT COURT
FOR THE SOUTHERN DISTRICT OF MISSISSIPPI
EASTERN DIVISION

UNITED STATES OF AMERICA

PLAINTIFF

VS.

CIVIL ACTION NO. E76-55(R)

2,888.90 ACRES OF LAND, MORE OR LESS,
SITUATE IN NOXUBEE COUNTY, MISSISSIPPI,
AND GEORGIA-PACIFIC CORPORATION, A
GEORGIA CORPORATION, ET AL

DEFENDANTS

COMPLAINT

1. This is an action of a civil nature brought by the United States of America at the request of the Assistant Secretary of the Navy of the United States for the ascertainment and award of just compensation to the owners and parties in interest.

2. The authority for the taking is the Act of Congress approved February 26, 1931 (46 Stat. 1421, 40 U.S.C. 258a), and acts supplementary thereto and amendatory thereof, and under the further authority of the Act of Congress approved August 1, 1888 (25 Stat. 357, 40 U.S.C. 257); Section 2663 of Title 10, United States Code, which authorizes the acquisition of land for military purposes; the Act of Congress approved December 27, 1974 (Public Law 93-552), which act authorizes acquisition of the land; and the Act of Congress approved January 3, 1975 (Public Law 93-636), which act appropriated funds for such purposes.

3. The public uses for which said land is taken are as follows: The said land is necessary to adequately provide for the establishment of required facilities for use by the Department of the Navy and for other military uses incident thereto. The said land has been selected for acquisition by the United States for use in connection with the U. S.

Naval Air Station, Meridian, Mississippi, and for such other uses as may be authorized by Congress or by Executive Order.

4. The estates taken for said public uses are as follows:

(a) The fee simple title to Parcel Nos. 1, 2, 3, 4, 5, 6 and 7, as described in Schedule "A".

Easement language →

(b) A perpetual and assignable easement for the establishment, maintenance, operation and use of a safety area in, on, over and across Parcel Nos. E-8, E-9, E-10, E-11, E-14, E-15 and E-16 described in Schedule "A", consisting of the right, power, privilege and authority to maintain and control the premises for government purposes, including the rights to prohibit human habitation, construction of structures of any kind, and hunting, and to post signs indicating the nature and extent of the government's control; together with the additional perpetual right and easement to clear and keep clear the clearing strip portions of said Parcel Nos. E-8, E-9, E-10, E-11, and E-14, as described and defined in Schedule "A", from any man made or natural obstructions, including the right to cut to ground level and remove all trees and any other growths or obstructions on the land; reserving, however, to the land-owners their heirs, executors, administrators, successors, and assigns, all rights, title, interest and privileges as may be used without interfering with or abridging the rights hereby acquired by the government, including the right to utilize all of said parcels except the aforesaid clearing strip portions for the planting, cultivation, cutting and harvesting of trees and other agricultural products, and for such other uses as may be approved and authorized in writing by the representative of the United States in charge of the project.

(c) A perpetual and assignable easement and right of way in, upon, over and across all of Parcel No. E-21 and part of Parcel Nos. E-14 and E-16 described and defined in Schedule "A": to locate, construct, operate, maintain and repair a roadway and utility lines; and to construct, maintain,

repair, operate, patrol and replace drainage ditches, said ditches to be located partly on Parcel Nos. E-14 and E-21 and partly on land adjoining and abutting said Parcel No. E-21, designated as Drainage Easements (Station 106 + 70) and Drainage Easements (Station 133 + 60), and particularly located as described in Schedule "A"; together with the right to trim, cut, fill and remove all trees, underbrush, obstructions and other vegetation, structures or obstacles within the limits of said road right of way and drainage easement areas; reserving, however, to the land-owners, their heirs, executors, administrators, successors and assigns the right to use the surface of said land as access to their adjoining land.

5. The property so to be taken is described in Schedule "A" hereto attached.

6. The persons having or claiming an interest in the property are:

Georgia-Pacific Corporation
Mrs. Belle S. Fair
Mrs. Dorothy F. Brown
Davis L. Fair, Jr.
Davis L. Fair, Jr., Executor and Trustee,
Estate of D. L. Fair, Sr.
Claude Fair
Mrs. Julia J. Fair
Mrs. Elizabeth F. Mitchell
Mrs. Jane B. Chambers
Mrs. Julia Boren Baker
Fred F. Mitchell, Jr.
Mrs. Helen F. Bennett
Mrs. Helen F. Bennett, Trustee
Eugene L. Fair, Jr.
Georgia R. Fair
Henry J. Fair
Henry J. Fair, Trustee
DeVane Fair
Elizabeth Love Fair
Jeanne Jamison Fair
F. L. Fair, Sr.
Mrs. Rebecca T. Fair
Mrs. Rebecca T. Fair, Executrix and
Trustee, Estate of Frank L. Fair, Jr.
John S. Fair, Sr.
John S. Fair, Jr.
Louise R. Fair
John S. Fair
Charles D. Fair
Charles D. Fair, Executor and Trustee,
Estate of Mrs. Lily May Fair
Stewart Lyons Fair
Margaret S. Fair

Mrs. Charles D. Fair
B.E.R., Inc.
Placid Oil Company
Heirs of C. W. Salter
Medora Lenow Salter
Cary Weatherly Salter, Jr.
John A. Salter, II
Medora Lenow Salter Weaver
Flora Elizabeth Selter Emerson
Heirs of C. V. Adams
Cornelia J. Adams
J. R. Hilliard
Humble Oil and Refining Company
E. L. Crabtree
John M. Crabtree
Bonnie Inez Barge
Charles Richard Barge
Charlene Barge Schurtz
Noxubee County, Mississippi
Shell Oil Company
C. A. Barge

Cova SA
Richard A. Boykin
John G. Boykin
Frances Boykin Smith
J. Robert Boykin
W. Dewitt Reams
American National Bank
& Trust Company

7. The following may have or claim an interest in the property by reason of taxes and assessments due and eligible:

State of Mississippi
Mississippi State Highway Commission
Mississippi State Tax Commission
Mississippi State Land Commission
Noxubee County, Mississippi
Noxubee County Tax Collector
Noxubee County Board of Supervisors
Noxubee County Board of Education
Unknown holders of bonds of Noxubee County, Mississippi

8. In addition to the persons named, there are or may be others who have or may claim some interest in the property to be taken, whose names are unknown to the plaintiff and such persons are made parties to the action under the designation "Unknown Owners."

WHEREFORE, the plaintiff demands judgment that the property be condemned and that just compensation for the taking be ascertained and awarded and for such other relief as may be lawful and proper.

ROBERT E. HAUBERG
United States Attorney

BY: L. K. Travis
L. K. TRAVIS
Assistant United States Attorney

Suggested Land Use Compatibility in Noise Zones

Land Use		Suggested Land Use Compatibility						
		Noise Zone 1 (DNL or CNEL)		Noise Zone 2 (DNL or CNEL)		Noise Zone 3 (DNL or CNEL)		
SLUCM NO	LAND USE NAME	< 55	55- 64	65 - 69	70 -74	75- 79	80 -84	85+
	Residential							
11	Household Units	Y	Y ¹	N ¹	N ¹	N	N	N
11.11	Single units: detached	Y	Y ¹	N ¹	N ¹	N	N	N
11.12	Single units: semidetached	Y	Y ¹	N ¹	N ¹	N	N	N
11.13	Single units: attached row	Y	Y ¹	N ¹	N ¹	N	N	N
11.21	Two units: side-by-side	Y	Y ¹	N ¹	N ¹	N	N	N
11.22	Two units: one above the other	Y	Y ¹	N ¹	N ¹	N	N	N
11.31	Apartments: walk-up	Y	Y ¹	N ¹	N ¹	N	N	N
11.32	Apartment: elevator	Y	Y ¹	N ¹	N ¹	N	N	N
12	Group quarters	Y	Y ¹	N ¹	N ¹	N	N	N
13	Residential Hotels	Y	Y ¹	N ¹	N ¹	N	N	N
14	Mobile home parks or courts	Y	Y ¹	N	N	N	N	N
15	Transient lodgings	Y	Y ¹	N ¹	N ¹	N ¹	N	N
16	Other residential	Y	Y ¹	N ¹	N ¹	N	N	N
20	Manufacturing							
21	Food & kindred products; manufacturing	Y	Y	Y	Y ²	Y ³	Y ⁴	N
22	Textile mill products; manufacturing	Y	Y	Y	Y ²	Y ³	Y ⁴	N
23	Apparel and other finished products; products made from fabrics, leather and similar materials; manufacturing	Y	Y	Y	Y ²	Y ³	Y ⁴	N
24	Lumber and wood products (except furniture); manufacturing	Y	Y	Y	Y ²	Y ³	Y ⁴	N
25	Furniture and fixtures; manufacturing	Y	Y	Y	Y ²	Y ³	Y ⁴	N
26	Paper and allied products; manufacturing	Y	Y	Y	Y ²	Y ³	Y ⁴	N
27	Printing, publishing, and allied industries	Y	Y	Y	Y ²	Y ³	Y ⁴	N
28	Chemicals and allied products; manufacturing	Y	Y	Y	Y ²	Y ³	Y ⁴	N
29	Petroleum refining and related industries	Y	Y	Y	Y ²	Y ³	Y ⁴	N

APPENDIX B

Suggested Land Use Compatibility in Noise Zones (Continued)

Land Use		Suggested Land Use Compatibility						
		Noise Zone 1 (DNL or CNEL)		Noise Zone 2 (DNL or CNEL)		Noise Zone 3 (DNL or CNEL)		
SLUCM NO	LAND USE NAME	< 55	55- 64	65 - 69	70 -74	75- 79	80 -84	85+
30	<i>Manufacturing (continued)</i>							
31	Rubber and misc. plastic products; manufacturing	Y	Y	Y	Y ²	Y ³	Y ⁴	N
32	Stone, clay and glass products; manufacturing	Y	Y	Y	Y ²	Y ³	Y ⁴	N
33	Primary metal products; manufacturing	Y	Y	Y	Y ²	Y ³	Y ⁴	N
34	Fabricated metal products; manufacturing	Y	Y	Y	Y ²	Y ³	Y ⁴	N
35	Professional scientific, and controlling instruments; photographic and optical goods; watches and clocks	Y	Y	Y	25	30	N	N
39	Miscellaneous manufacturing	Y	Y	Y	Y ²	Y ³	Y ⁴	N
40	<i>Transportation, communication and utilities.</i>							
41	Railroad, rapid rail transit, and street railway transportation	Y	Y	Y	Y ²	Y ³	Y ⁴	N
42	Motor vehicle transportation	Y	Y	Y	Y ²	Y ³	Y ⁴	N
43	Aircraft transportation	Y	Y	Y	Y ²	Y ³	Y ⁴	N
44	Marine craft transportation	Y	Y	Y	Y ²	Y ³	Y ⁴	N
45	Highway and street right-of-way	Y	Y	Y	Y ²	Y ³	Y ⁴	N
46	Automobile parking	Y	Y	Y	Y ²	Y ³	Y ⁴	N
47	Communication	Y	Y	Y	25 ⁵	30 ⁵	N	N
48	Utilities	Y	Y	Y	Y ²	Y ³	Y ⁴	N
49	Other transportation, communication and utilities	Y	Y	Y	25 ⁵	30 ⁵	N	N
50	<i>Trade</i>							
51	Wholesale trade	Y	Y	Y	Y ²	Y ³	Y ⁴	N
52	Retail trade – building materials, hardware and farm equipment	Y	Y	Y	Y ²	Y ³	Y ⁴	N
53	Retail trade – shopping centers	Y	Y	Y	25	30	N	N
54	Retail trade - food	Y	Y	Y	25	30	N	N

Suggested Land Use Compatibility in Noise Zones (Continued)

Land Use		Suggested Land Use Compatibility						
		Noise Zone 1 (DNL or CNEL)		Noise Zone 2 (DNL or CNEL)		Noise Zone 3 (DNL or CNEL)		
SLUCM NO	LAND USE NAME	55- 64	65 - 69	< 55	55- 64	65 - 69	< 55	85+
50	<i>Trade (Continued)</i>							
55	Retail trade – automotive, marine craft, aircraft and accessories	Y	Y	Y	25	30	N	N
56	Retail trade – apparel and accessories	Y	Y	Y	25	30	N	N
57	Retail trade – furniture, home, furnishings and equipment	Y	Y	Y	25	30	N	N
58	Retail trade – eating and drinking establishments	Y	Y	Y	25	30	N	N
59	Other retail trade	Y	Y	Y	25	30	N	N
60	<i>Services</i>							
61	Finance, insurance and real estate services	Y	Y	Y	25	30	N	N
62	Personal services	Y	Y	Y	25	30	N	N
62.4	Cemeteries	Y	Y	Y	Y ²	Y ³	Y ^{4,11}	Y ^{6,11}
63	Business services	Y	Y	Y	25	30	N	N
63.7	Warehousing and storage	Y	Y	Y	Y ²	Y ³	Y ⁴	N
64	Repair Services	Y	Y	Y	Y ²	Y ³	Y ⁴	N
65	Professional services	Y	Y	Y	25	30	N	N
65.1	Hospitals, other medical fac.	Y	Y ¹	25	30	N	N	N
65.16	Nursing Homes	Y	Y	N ¹	N ¹	N	N	N
66	Contract construction services	Y	Y	Y	25	30	N	N
67	Government Services	Y	Y ¹	Y ¹	25	30	N	N
68	Educational services	Y	Y ¹	25	30	N	N	N
69	Miscellaneous	Y	Y	Y	25	30	N	N
70	<i>Cultural, entertainment and recreational</i>							
71	Cultural activities (& churches)	Y	Y ¹	25	30	N	N	N
71.2	Nature exhibits	Y	Y ¹	Y ¹	N	N	N	N
72	Public assembly	Y	Y ¹	Y	N	N	N	N
72.1	Auditoriums, concert halls	Y	Y	25	30	N	N	N
72.11	Outdoor music shells, amphitheaters	Y	Y ¹	N	N	N	N	N
72.2	Outdoor sports arenas, spectator sports	Y	Y	Y ⁷	Y ⁷	N	N	N
73	Amusements	Y	Y	Y	Y	N	N	N
74	Recreational activities (include golf courses, riding stables, water rec.)	Y	Y ¹	Y ¹	25	30	N	N
75	Resorts and group camps	Y	Y ¹	Y ¹	Y ¹	N	N	N
76	Parks	Y	Y ¹	Y ¹	Y ¹	N	N	N
79	Other cultural, entertainment and recreation	Y	Y ¹	Y ¹	Y ¹	N	N	N

APPENDIX B

Suggested Land Use Compatibility in Noise Zones (Continued)

Land Use		Suggested Land Use Compatibility						
		Noise Zone 1 (DNL or CNEL)		Noise Zone 2 (DNL or CNEL)		Noise Zone 3 (DNL or CNEL)		
SLUCM NO	LAND USE NAME	65 - 69	< 55	55- 64	65 - 69	< 55	55- 64	85+
80	Resource Production and Extraction							
81	Agriculture (except live stock)	Y	Y	Y ⁸	Y ⁹	Y ¹⁰	Y ^{10,11}	Y ^{10,11}
81.5,	Livestock farming	Y	Y	Y ⁸	Y ⁹	N	N	N
81.7	Animal breeding	Y	Y	Y ⁸	Y ⁹	N	N	N
82	Agriculture related activities	Y	Y	Y ⁸	Y ⁹	Y ¹⁰	Y ^{10,11}	Y ^{10,11}
83	Forestry Activities	Y	Y	Y ⁸	Y ⁹	Y ¹⁰	Y ^{10,11}	Y ^{10,11}
84	Fishing Activities	Y	Y	Y	Y	Y	Y	Y
85	Mining Activities	Y	Y	Y	Y	Y	Y	Y
89	Other resource production or extraction	Y	Y	Y	Y	Y	Y	Y

Key:

SLUCM Standard Land Use Coding Manual, U.S. Department of Transportation

Y (Yes) Land Use and related structures compatible without restrictions.

N (No) Land Use and related structures are not compatible and should be prohibited.

Y* (Yes with Restrictions) The land use and related structures are generally compatible. However, see note(s) indicated by the superscript.

N^x (No with Exceptions) The land use and related structures are generally incompatible. However, see notes indicated by the superscript.

NLR (Noise Level Reduction) Noise Level Reduction (outdoor to indoor) to be achieved through incorporation of noise attenuation into the design and construction of the structure.

25, 30, or 35 The numbers refer to Noise Level Reduction levels. Land Use and related structures generally compatible however, measures to achieve NLR of 25, 30 or 35 must be incorporated into design and construction of structures. However, measures to achieve an overall noise reduction do not necessarily solve noise difficulties outside the structure and additional evaluation is warranted. Also, see notes indicated by superscripts where they appear with one of these numbers.

DNL Day Night Average Sound Level.

CNEL Community Noise Equivalent Level (Normally within a very small decibel difference of DNL)

Ldn Mathematical symbol for DNL.

Notes:

1.

a) Although local conditions regarding the need for housing may require residential use in these Zones, residential use is discouraged in DNL 65-69 and strongly discouraged in DNL 70-74. The absence of viable alternative development options should be determined and an evaluation should be conducted locally prior to local approvals indicating that a demonstrated community need for the residential use would not be met if development were prohibited in these Zones.

b) Where the community determines that these uses must be allowed, measures to achieve and outdoor to indoor Noise Level Reduction (NLR) of at least 25 dB in DNL 65-69 and NLR of 30 dB in DNL 70-74 should be incorporated into building codes and be in individual approvals; for transient housing a NLR of at least 35 dB should be incorporated in DNL 75-79.

c) Normal permanent construction can be expected to provide a NLR of 20 dB, thus the reduction requirements are often stated as 5, 10 or 15 dB over standard construction and normally assume mechanical ventilation, upgraded Sound Transmission Class (STC) ratings in windows and doors and closed windows year round. Additional consideration should be given to modifying NLR levels based on peak noise levels or vibrations.

d) NLR criteria will not eliminate outdoor noise problems. However, building location and site planning, design and use of berms and barriers can help mitigate outdoor noise exposure NLR particularly from ground level sources. Measures that reduce noise at a site should be used wherever practical in preference to measures that only protect interior spaces.

Notes (Continued):

2. Measures to achieve NLR of 25 must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal noise level is low.
3. Measures to achieve NLR of 30 must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal noise level is low.
4. Measures to achieve NLR of 35 must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal noise level is low.
5. If project or proposed development is noise sensitive, use indicated NLR; if not, land use is compatible without NLR.
6. No buildings.
7. Land use compatible provided special sound reinforcement systems are installed.
8. Residential buildings require a NLR of 25
9. Residential buildings require a NLR of 30.
10. Residential buildings not permitted.
11. Land use not recommended, but if community decides use is necessary, hearing protection devices should be worn.

Source:

OPNAVINST 11010.36B, 19 December, 2002.

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