

Air Installations Compatible Use Zones Report for Naval Station Mayport Jacksonville, Florida

June 2007

Prepared by:

UNITED STATES DEPARTMENT OF THE NAVY

Naval Facilities Engineering Command Southeast
Jacksonville, Florida

*Air Installations Compatible Use Zones Report
Naval Station Mayport, Florida*

Table of Contents

List of Tables.....	v
List of Illustrations	vi
Acronyms and Abbreviations.....	vii
1 Introduction	1-1 1.1
AICUZ Program.....	1-2 1.2
Purpose, Scope, and Authority	1-3 1.3
Responsibility for Compatible Land Use	1-4 1.4
Changes that Require an AICUZ Update	1-5
2 Naval Station Mayport.....	2-1 2.1
Location.....	2-1 2.1.1
Mission.....	2-4 2.1.2 Tenant
Commands.....	2-4 2.2
History.....	2-4 2.3
Economic Contributions	2-6
3 Airspace and Aircraft Operations	3-1 3.1
Airspace.....	3-1 3.1.1 Airspace
Vicinity.....	3-1 3.1.2 Airspace Control Zones and
Flight Procedures.....	3-1 3.2 Aircraft
Operations.....	3-2 3.2.1 Flight
Operations.....	3-8 3.2.2 Pre-Flight and Engine
Maintenance Run-up Operations.....	3-11 3.2.3 Runway and Flight Track
Utilization.....	3-11
4 Aircraft Noise.....	4-1 4.1
What is Sound/Noise?	4-1 4.2
Airfield Noise Sources	4-3 4.3
Noise Complaints	4-3 4.4
Noise Abatement/Course Rules.....	4-4 4.5
Noise Contours.....	4-5
4.5.1 2006 Noise Contours.....	4-6 4.5.2
Comparison of the 1976 and 2006 AICUZ Noise Contours	4-9
5 Airfield Safety	5-1 5.1
Accident Potential Zones.....	5-1 5.1.1 APZ
Configurations and Areas	5-2 5.2 Flight Safety
Mishaps.....	5-10 5.2.1 Aircraft
Surfaces.....	5-10 5.2.2 Imaginary
Surfaces.....	5-10 5.2.3 Bird/Animal Aircraft Strike
Hazard.....	5-13
14:M:\1500-1599\1517.SD14_Mayport\Final AICUZ Rpt June07.doc ⁱⁱⁱ	
Air Installations Compatible Use Zones Report	
Naval Station Mayport, Florida	
Table of Contents, <i>continued</i>	
	<u>Section Page</u>
5.2.4 Electromagnetic Interference	5-14
5.2.5 Lighting	5-14
5.2.6 Smoke, Dust, and Steam	5-15
6 Land Use Compatibility Analysis.....	6-1 6.1
Land Use and Land Development Control.....	6-2 6.1.1 Existing

Land Use and Regional Growth.....	6-2	6.1.2 Planning Authority	
.....	6-8	6.2 Land Use Compatibility Guidelines and	
Classifications.....	6-9	6.2.1 Existing Land Use	
Data.....	6-10	6.3 Land Use Compatibility Assessment	
.....	6-12	6.4 Summary of Land Use Compatibility	
.....	6-16	6.4.1 Installation Land Use Compatibility Concerns	
.....	6-16	6.4.2 Community Land Use Compatibility Concerns	
.....			6-17
7 Land Use Tools and Recommendations	7-1	7.1	
Tools for Implementing AICUZ.....	7-2	7.1.1 Federal	
Level.....	7-2	7.1.2 Local Government	
Tools.....	7-3	7.1.3 Private Citizens/Real Estate	
Professionals/Businesses	7-4	7.2 Recommendations	
.....	7-4	7.2.1 NS Mayport	
Recommendations	7-4	7.2.2 Local Government and Agency	
Recommendations.....	7-6	7.2.3 Private Citizens/Real Estate	
		Professionals/Businesses Recommendations..	7-8
8 References.....	8-1		

Appendices

A NS Mayport Air Operations Data 2003.....	A-1 B
Land Use Compatibility Recommendations	B-1

List of Tables

	<u>Table Page</u>
1-1 Responsibility for Compatible Land Uses.....	1-5 3-1
Historical Airfield Operations, Naval Station Mayport, Florida	3-8

3-2 Annual Day and Night Airfield Operations for Calendar Year 2003 Naval Station Mayport, Florida.....	3-10
4-1 Subjective Response, Naval Station Mayport, Florida.....	4-4 4-2
Noise Abatement/Flight Procedures, Naval Station Mayport, Florida.....	4-5
4-3 Off-Base Population and Area Impact for 2006 Noise Contours, Naval Station Mayport, Florida.....	4-9
4-4 Areas within Noise Zones (DNL), 1976 and 2006, Naval Station Mayport, Florida.....	4-11
5-1 Land Area within Accident Potential Zones (1976 and 2006), Naval Station Mayport, Florida.....	5-10
5-2 Imaginary Surfaces – Class B Fixed-wing Runways	5-11
6-1 Population of Duval County, City of Jacksonville and Greater Arlington Planning District Population Projections.....	6-6
6-2 Greater Arlington Planning District Population Estimates.....	6-6 6-3
Land Use Compatibility Recommendations.....	6-11 6-4
SLUCM Numbers and Land Use Classifications.....	6-11 6-5
Existing Land Uses within Naval Station Mayport High-Noise Zones (acres).....	6-14
6-6 Compatibility of All Land Use Activities within the AICUZ Footprint Using Existing Land Uses.....	6-14
6-7 Existing Land Uses within NS Mayport Primary Surface and Clear Zones (acres).....	6-16

14:M:\1500-1599\1517.SD14_Mayport\Final AICUZ Rpt June07.doc V

Air Installations Compatible Use Zones Report
Naval Station Mayport, Florida

List of Illustrations

	<u>Figure</u>	<u>Page</u>
2-1 General Location Map, NS Mayport, Mayport, Florida.....	2-2	2-2
Airfield Location and Vicinity, NS Mayport	2-3	3-1
Arrival Flight Tracks – Runway 05, NS Mayport.....	3-3	3-2
Arrival Flight Tracks – Runway 23, NS Mayport.....	3-4	3-3

Departure Flight Tracks – Runway 05, NS Mayport	3-5	3-4
Departure Flight Tracks – Runway 23, NS Mayport	3-6	3-5
Traffic and Pattern Flight Tracks, NS Mayport.....	3-7	3-6
Run-up Locations, NS Mayport	3-12	4-1
2006 Noise Contours, NS Mayport	4-8	4-2
Comparison between 1976 and 2006 Noise Contours, NS Mayport.....	4-10	5-1
Standard Accident Potential Zones	5-3	5-2
Accident Potential Zones with More Than One Predominant Flight Track.....	5-4	5-3
2006 Fixed-Wing APZs, NS Mayport.....	5-6	5-4
2006 Helicopter APZs, NS Mayport	5-7	5-5
2006 Composite APZs, Fixed-Wing and Helicopter Operations, NS Mayport	5-8	5-6
Comparison between 1976 and 2006 APZs, NS Mayport.....	5-9	5-7
Imaginary Surfaces and Transition Planes for Class B Fixed-Wing Runways	5-11	5-8
Imaginary Surfaces for NS Mayport	5-12	6-1
Existing Land Use and 2006 Noise Contours, NS Mayport.....	6-3	6-2
Existing Land Use and 2006 APZs, NS Mayport.....	6-4	6-3
Existing Land Use Compatibility and 2006 Noise Contours, NS Mayport.....	6-13	6-4
Existing Land Use Compatibility and 2006 APZs, NS Mayport	6-15	6-5
Vacant/Undeveloped Parcels with Development Potential, NS Mayport	6-18	

Air Installations Compatible Use Zones Report
Naval Station Mayport, Florida

Acronyms and Abbreviations

AAD average annual day

AGL above ground level

AICUZ Air Installations Compatible Use Zones APZ accident potential zone

ATC air traffic control

BASH bird/animal aircraft strike hazard CFR Code of Federal

Regulations

COMHELMARSTRKWINGLANT Helicopter Maritime Strike Wing, Atlantic CY

calendar year

dB(A) decibels (A-weighted)

DNL day-night average sound level (sometimes called Ldn) DoD United States Department of Defense DoDINST United States Department of Defense Instruction DST Daylight Savings Time

EIS environmental impact statement EMI electromagnetic interference

FAA Federal Aviation Administration FCLP Field Carrier Landing Practice

FLUCC Florida Land Use Classification Code GCA ground-controlled approach

GIS Geographic Information Systems GSA Government Services Administration GSI glide slope indicator

HSL Helicopter Anti-Submarine Light Wing HUD Housing and Urban Development NAVFAC Naval Facilities Engineering Command Navy United States Department of the Navy NS Mayport Naval Station Mayport

OPNAVINST Office of Naval Operations Instruction

14:M:\1500-1599\1517.SD14_Mayport\Final AICUZ Rpt June07.doc vii

Air Installations Compatible Use Zones Report
Naval Station Mayport, Florida

Acronyms and Abbreviations, *continued*

RNM Rotorcraft Noise Model SH-60 or H-60 Seahawk helicopter SLUCM

Standard Land Use Coding Manual SR State Route

TACAN tactical air navigation TDR Transfer of Development Rights

UFC Unified Facilities Criteria VFR visual flight rules

Air Installations Compatible Use Zones Report
Naval Station Mayport, Florida

1 Introduction

All airports attract development. Housing is constructed for airport employees who want to live nearby, and businesses are established to cater to the airport. As development encroaches upon the airfield, more people are exposed to the noise and accident potential associated with aircraft

NS Mayport
Naval Station Mayport

Navy
United States
Department of the Navy
uses that are compatible with noise levels, accident potential, and flight clearance requirements associated with military airfield operations. This AICUZ report has been prepared for Naval Station Mayport (NS Mayport), Mayport, Florida (also referred to in this report as the Installation, the Air Installation, and the Station). Preparation and presentation of this update to NS Mayport’s AICUZ study is part of the United States Department of the Navy’s (Navy’s) continuing participation in the local planning process. As local communities prepare land use plans and zoning ordinances, the Navy has the responsibility to provide input on its activities relating to the community. This study is presented in the spirit of mutual cooperation and assistance by NS Mayport to aid in the local land use planning process. This study updates information on base flying activities since the 1993 AICUZ study, and

operations. The goal of the United States Department of Defense’s (DoD’s) Air Installations Compatible Use Zones (AICUZ) Program is to protect the health, safety, and welfare of those living near a military airfield while preserving the defense flying mission. The AICUZ Program recommends land

DoD
United States
Department of
Defense

AICUZ
Air Installations

Air Installations Compatible Use Zones Report
Naval Station Mayport, Florida

APZ
accident potential zone
provides noise contours and accident potential zones (APZs) based on projected flying activities through 2008. The noise contours and APZs presented in this study are based on actual 2003 flight operations conducted at NS Mayport. Section 1 of this AICUZ report provides background on the AICUZ Program. Section 2 describes the Air Installation, its tenants and operations. Section 3 discusses current airspace and aircraft operations at the

Installation. Section 4 presents information on aircraft noise zones – how noise zones are determined, what changes have occurred, and what measures have been implemented by the Navy in response to noise complaints. Section 5 discusses aircraft safety issues. Section 6 evaluates the compatibility of surrounding land uses with aircraft operations. Section 7 outlines tools for implementing the AICUZ Program and provides the Navy recommendations for promoting land use compatibility consistent with the goals of the AICUZ Program.

1.1 AICUZ Program

In the early 1970s, the DoD established the AICUZ Program to balance the need for aircraft operations and community concerns over aircraft noise and accident potential. The AICUZ Program was developed in response to growing incompatible urban development (encroachment around military airfields). The goals of the AICUZ Program are:

③ To protect the health, safety, and welfare of those living and working near military fields;

and

③ To preserve the military flying mission.

To meet these goals, the Navy has identified the following components as requirements for a successful AICUZ Program:

③ Develop and periodically update a study and map for each air installation to quantify and depict aircraft noise zones and APZs;

③ Coordinate with federal, state, and local officials to encourage compatible land use development around the Air Installation;

14:M:\1500-1599\1517.SD14_Mayport\Final AICUZ Rpt June07.doc 1-2

Air Installations Compatible Use Zones Report Naval Station Mayport, Florida

FAA
Federal Aviation Administration

Administration (FAA) and DoD also encourage local communities to restrict development or land uses that could endanger aircraft in the vicinity of the airfield, including lighting (direct or reflected) that would impair pilot vision; towers, tall structures, and vegetation that penetrate navigable airspace or are constructed near the airfield; uses that generate smoke, steam, or dust; uses that attract birds, especially waterfowl; and electromagnetic interference (EMI) with aircraft communication, navigation, or other electrical systems.

EMI
electromagnetic interference

③ Inform the local community of the importance of maintaining the Navy's ability to conduct aircraft operations; and

③ Review operations and implement operational changes and noise abatement strategies that would minimize noise impacts while ensuring mission requirements.

Under the AICUZ Program, DoD identifies noise zones and APZs as planning tools for local planning agencies. The Federal Aviation

1.2 Purpose, Scope, and Authority

The purpose of the AICUZ program is to achieve compatibility between air installations and neighboring communities. To satisfy the purpose of the AICUZ Program, local commands work with nearby communities to prevent incompatible development of land adjacent to the air station. As development encroaches upon the airfield, more people experience the noise and accident potential associated with aircraft operations.

The scope of the AICUZ study includes a detailed analysis and quantification of:

- ③ Aircraft noise and accident potential;
- ③ Land use compatibility;

- ③ Operational alternatives;
- ③ Noise reduction strategies; and
- ③ Potential solutions to existing and potential incompatible land use problems.

14:M:\1500-1599\1517.SD14_Mayport\Final AICUZ Rpt June07.doc 1-3

Air Installations Compatible Use Zones Report

Naval Station Mayport, Florida

Station Command's cooperation with the local governments to protect the Installation's mission requirements and, at the same time, protect and promote the public's health, safety, and welfare. The authority for the establishment and implementation of the NS Mayport AICUZ Program is derived from:

- ③ United States Department of Defense Instruction (DoDINST) 4165.57, "Air Installations Compatible Use Zones," dated November 8, 1977;
- ③ Chief of Naval Operations Instruction (OPNAVINST) 11010.36B, "Air Installations Compatible Use Zones Program," dated December 19, 2002;
- ③ UFC 3-260-01, "Unified Facilities Criteria, Airfield and Heliport Planning and Design," dated November 1, 2001; and
- ③ United States Department of Transportation, FAA Regulations, Code of Federal Regulations (CFR), Title 14, Part 77, "Objects Affecting Navigable Airspace."

DoDINST
United States
Department of
Defense Instruction

OPNAVINST
Chief of Naval
Operations Instruction

UFC
Unified Facilities
Criteria

CFR
Code of Federal
Regulations

The update to the NS Mayport AICUZ study will utilize an analysis of community development trends and mission requirements to develop a strategy that prevents incompatible land development adjacent to the Installation. AICUZ considerations are based on the impacts of noise, the safety considerations of aircraft accidents, and economic considerations related to public funds and local economic viability. The basis for implementing AICUZ guidelines lies in the

1.3 Responsibility for Compatible Land Use

Ensuring land use compatibility within the AICUZ is the responsibility of many, including DoD, local planning and zoning agencies, real estate professionals, residents, developers, and builders. Military installations and local government agencies with planning and zoning authority share the responsibility for preserving

land use compatibility near the military encroachment. Table 1-1 identifies entity installation. Cooperative action by all parties is responsibilities. essential to prevent land use incompatibility and

Air Installations Compatible Use Zones Report
Naval Station Mayport, Florida

Table 1-1 Responsibility for Compatible Land Uses	
Navy	Continue to examine air mission for operation changes that could reduce impacts. Conduct noise and APZ studies. Develop AICUZ maps. Examine local land uses. Make land use recommendations. Release an AICUZ Report. Work with local governments and private citizens. Monitor operations and noise complaints. Update AICUZ, as warranted.
Local Government	Incorporate AICUZ guidelines into a comprehensive development plan and zoning ordinance. Regulate height and obstruction concerns through an airport ordinance. Regulate acoustical treatment in new construction. Require fair disclosure in real estate for all buyers, renters, and lessees.
Private Citizens	Educate oneself on the importance of the Installation's AICUZ Program. Identify AICUZ considerations in all property transactions. Understand AICUZ effects before buying, renting, leasing, or developing property.
Real Estate Professionals	Ensure that potential buyers and lessees receive and understand AICUZ information on affected properties. When working with builder/developers ensure an understanding and evaluation of the AICUZ Program.
Builders/Developers	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 operations (e.g., sound attenuation features).
<p>Key: AICUZ = Air Installations Compatible Use Zones. APZ = Accident potential zone. Navy = United States Department of the Navy.</p>	

Engine Run-Ups aircraft engine test at maximum power for maintenance or prior to take-off of an aircraft

1.4 Changes That Require an AICUZ Update

Aircraft noise consists of two major sound sources: flight operations and ground engine maintenance “run-ups,” which are associated with pre-flight and maintenance checks. The

level of noise exposure relates to a number of variables, including the aircraft type, engine power setting, altitude, flight track, temperature, relative humidity, frequency, and time of operations. Generally, these factors fluctuate from year to year. Small fluctuations in the annual number of operations will not have a significant effect on community noise exposure. AICUZ reports should be updated when an air installation has a significant change in aircraft

operations (i.e., number of takeoffs and landings), a change in the type of aircraft

stationed and operating at the installation, or a significant change in flight paths or procedures.

14:M:\1500-1599\1517.SD14_Mayport\Final AICUZ Rpt June07.doc 1-5

Air Installations Compatible Use Zones Report
Naval Station Mayport, Florida

This AICUZ study has been prepared in accordance with the Navy's latest AICUZ guidance, in consideration of expected changes in mission, aircraft, operational levels, etc., that can reasonably be projected. This update to the NS Mayport AICUZ report is needed due to changes in the percentage of the predominantly fixed-wing transient aircraft operations. This AICUZ Report supersedes information on base flying activities since the 1994 Noise Update for NAS Mayport. For aircraft stationed at NS Mayport, no significant change in operational activities, outside those activities addressed in this AICUZ update, are expected. Although no significant aircraft operations changes are expected, future aircraft in the Navy and Navy fleet may include another version of the current Seahawk helicopters operating at NS Mayport. However, this aircraft is not yet in the current NS Mayport aircraft inventory.

Air Installations Compatible Use Zones Report
Naval Station Mayport, Florida

2 Naval Station Mayport

2.1 Location

NS Mayport is located on the northern coast of Florida at the mouth of the St. Johns River, approximately 15 miles east of the city of Jacksonville in Duval County. Figure 2-1 depicts the regional setting of Mayport. Its surrounding area is mostly residential, with an area of commercial activity around the fishing village of Mayport. Atlantic

Beach, Neptune Beach, Jacksonville Beach, and Ponte Vedra Beach are location and its immediate vicinity. As

The only aircraft permanently based at NS Mayport is the **Seahawk (SH)-60 helicopter**. All other aircraft types using the Station do so on a visitor basis.

all populated communities just south of the

Installation. Figure 2-2 shows the airfield

illustrated, the Installation is surrounded by a large body of water, with the Atlantic Ocean on the east and St. John's River to the north and

west. The runway is located on the northwest quadrant of NS Mayport property. NS Mayport is one of two major Navy air installations in the Jacksonville area. The only aircraft permanently based at NS Mayport is the SH-60 helicopter. All other aircraft types using the Station do so on a visitor basis. Aircraft activity at NS Mayport comprises both rotary-wing and fixed-wing operations. Rotary-wing aircraft (i.e., helicopters) are the main users of the airfield in terms of total

operations with such activity as arrivals, departures, patterns, and run-up operations, including maintenance test cell operations for the five active and one reserve based SH-60 squadrons. The SH-60 is the dominant aircraft in terms of flight operations at NS Mayport. All fixed-wing aircraft operations at the Installation are conducted by transient aircraft. The C-12 and other aircraft account for the majority of the transient operations at NS Mayport. In addition to C-12 operations, other fixed-wing activity at

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Cities



Location of NS Mayport

- Interstates
- Florida Counties
- Georgia Counties
- Parks
- Water Bodies

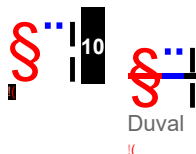
20 10 0 20 Miles Baker

Charlton Camden § |

Nassau

Jacksonville

NS Mayport ^



Atlantic Beach Jacksonville

ATLANTIC

St. Johns
Clay

St. Augustine
(



Putnam
OCEAN

Flagler



Orlando (

Figure 2-1

General Location Map, NS Mayport Mayport, Florida

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Runway and Taxi Aprons

Military Property

0.25 0.125 0 0.25 Miles

Heckscher Drive^e
St. Johns River^f

Intercoastal W
ater_w
a_y
23

**Mayport
Village**

05
NS Mayport

Airfield Location and Vicinity NS Mayport
Air Installations Compatible Use Zones Report
Naval Station Mayport, Florida

Mission

The mission of NS Mayport is to enhance warfighter operational readiness through superior logistical support to the fleet and a demonstrated commitment to the welfare of war fighters and their families. During mobilization, NS Mayport provides support to all deploying personnel.

HSL

Helicopter Anti Submarine Light Wing – Helicopter Squadron the Installation includes transient operations by F/A-18, C-12, T-45, F-15 and other aircraft at the time of the noise study. However, the mix of transient aircraft is constantly evolving.

2.1.1 Mission

The mission of NS Mayport is to enhance warfighter operational readiness through superior logistical support to the fleet and a demonstrated commitment to the welfare of war fighters and their families. During mobilization, NS Mayport provides support to all deploying personnel.

2.1.2 Tenant Commands

Current flight tenant activities and tenant aircraft at NS Mayport are:

- ③ Helicopter Maritime Strike Wing, Atlantic (COMHELMARSTRKWINGLANT);
- ③ Helicopter Anti-Submarine Squadron Light Forty (HSL-40), with 12 SH-60s;
- ③ Helicopter Anti-Submarine Squadron Light Forty Two (HSL-42), 14 SH-60s;
- ③ Helicopter Anti-Submarine Squadron Light Forty Four (HSL-44), 14 SH-60s;
- ③ Helicopter Anti-Submarine Squadron Light Forty Six (HSL 46), 14 SH-60s;
- ③ Helicopter Anti-Submarine Squadron Light Forty Eight (HSL-48), 14 SH-60s; and
- ③ Helicopter Anti-Submarine Squadron Light Sixty (HSL-60), 6 SH-60s.

2.2 History

The history of the Navy in Mayport began during the early stages of World War II when Mayport was selected to become the second southeast Naval installation. The city of Jacksonville provided the initial tract of 700 acres. The natural basin at the mouth of the St. Johns River was expanded and dredged to 29 feet, and used

by patrol craft, rescue boats, and jeep carriers. When the base was commissioned in

Air Installations Compatible Use Zones Report
Naval Station Mayport, Florida

that year, and Mayport became a maintenance and fueling facility for submarines. The Naval Auxiliary Air Station was commissioned at Mayport on April 1, 1944. In 1945, the air station encompassed the entire site, including the pier and docking facilities. At the war's end, Mayport was decommissioned and placed in a caretaker status. In June 1948, Mayport was reactivated as a Naval Outlying Landing Field. By 1951, construction had begun for a carrier pier. *USS TARAWA* (CVS-40) was stationed at Mayport after the pier was completed.

By July 1, 1955, Mayport once again became a Naval Auxiliary Air Station. It had grown considerably in land area, command importance, and activity and it represented an investment of nearly \$10 million. It included an 8,000-foot-long jet runway and an additional 4,200-foot runway. In 1959, Mayport was redesignated as Naval Station Mayport. The Naval Station received national exposure in 1962 during the Cuban missile crisis when NS Mayport served as an advanced staging area. From 1982 to 1984, ships homeported at NS Mayport were involved in operations off the coast of Beirut, Lebanon. In 1983, three NS Mayport ships were involved in Operation Urgent Fury, the rescue operation in Grenada. Today, the Installation covers approximately 3,500 acres. NS Mayport is located in Duval County, Florida, near the confluence of the St. Johns River and the Atlantic Ocean, approximately 15 miles east of downtown Jacksonville. Duval County, which lies along the northeast coast of Florida, is bordered by

SR

State Route

1942, it occupied less than one quarter of the land acreage it does today. In 1943, Mayport was reclassified as a Naval Section Base. A landing field and taxiway were completed during

Nassau County to the north, Baker County to the west, Clay and St. Johns Counties to the south, and the Atlantic Ocean to the east. The Atlantic Ocean and the St. Johns River are east and north, respectively, of NS Mayport. Huguenot Park, Little Talbot Island Park, and

Fort George Island are north of the St. Johns River. Salt marsh and wetland communities are located southwest and west of the Installation. State Route (SR) A1A, Wonderwood Drive, and Kathryn Abbey Hanna

14:M:\1500-1599\1517.SD14_Mayport\Final AICUZ Rpt June07.doc 2-5

Air Installations Compatible Use Zones Report Naval Station Mayport, Florida

Park border the southern edge of NS Mayport. Land uses along the boundaries of the Installation generally provide good buffers between NS Mayport and surrounding communities. Commercial development around NS Mayport is located primarily in the community of Mayport, Florida, along SR A1A, and south of the naval complex along Mayport Road.

Existing land use at NS Mayport is the result of planned incremental development of facilities during station operation. In general, administration, maintenance, and repair functions are located adjacent to the waterfront, providing a logical grouping of activities around the ships and turning basin. The 8,000-foot runway and airfield operations lie west of the turning basin between the harbor operations and the community of Mayport. Housing and community facilities are separated from the industrial areas by the roadway network, administration facilities, and the golf course. The community of Mayport is situated on a narrow strip of land along the St. Johns River, northwest of NS Mayport between Chicopit Bay and the ferry boat station. The community of Mayport is comprised predominantly of single-family homes, with limited commercial and industrial uses along the riverfront. Residential densities are mostly low to medium (up to 15 units per acre).

2.3 Economic Contributions

NS Mayport provides a significant economic contribution to the City of Jacksonville. As of January 2004, the military/civilian payroll was \$638.7 million and there were \$200 million worth of goods and services purchased on the local economy (Austin 2006). The total economic impact of NS Mayport is \$1.8 billion. This number was derived by the following formula (Austin 2006):

$$\text{Payroll} \times 2.5 \text{ (economic multiplier)} + \text{Goods and Services}$$

There are also 41,897 DoD retirees and Survivor Benefits recipients with a payroll of \$857 million in the greater Jacksonville area.

14:M:\1500-1599\1517.SD14_Mayport\Final AICUZ Rpt June07.doc 2-6

Air Installations Compatible Use Zones Report
Naval Station Mayport, Florida

3 Airspace and Aircraft Operations

3.1 Airspace

3.1.1 Airspace Vicinity

NS Mayport Tower provides airport traffic control (ATC) services to all aircraft operating below 2,500 feet above mean sea level within a 5-mile radius of NS Mayport. Airport traffic control also is

ATC
air traffic control

DST
Daylight Savings Time
provided to aircraft and vehicles operating on the taxiways and runways at NS Mayport.
Approach/departure control and en route services are provided to aircraft operating within the airspace delegated to NS Mayport by the FAA.

3.1.2 Airspace Control Zones and Flight Procedures

NS Mayport has one runway (05/23) that is 8,000 feet long by 200 feet wide. NS Mayport is a Class IIIB ATC facility with control towers and ground-controlled approach (GCA) facilities providing full pattern control within its Class D airspace (5-nautical-mile radius). The aircraft flight pattern during takeoff is to the left when using Runway 05 and is to the right when using

GCA
ground-controlled approach

AGL
above ground level

runway Runway 23, unless otherwise instructed. published operating hours are Monday through Thursday, 7:00 a.m. to 12:00 a.m. Daylight General utilization for Runway 05 is 49% of the total operations and 51% for Runway 23. When aircraft are flying patterns around the Station, the altitude is 500 feet above ground level (AGL) for helicopters and 1,000 feet AGL for fixed-wing aircraft. NS Mayport airfield's

14:M:\1500-1599\1517.SD14_Mayport\Final AICUZ Rpt June07.doc 3-1

Air Installations Compatible Use Zones Report Naval Station Mayport, Florida

CY
calendar year

COMHELMARSTRK WINGLANT

Helicopter Maritime Strike Wing, Atlantic operational requirements only; and closed on holidays. Mission requirements may require flight operations outside of normal operating hours.

In calendar year (CY) 2003, the six HSL squadrons recorded approximately 20,000 total flying hours while operating from NS Mayport's airfield. Nonetheless, NS Mayport has operated free of Class A flight/flight-related mishaps over an 18-year period beginning January 21, 1988 (see Section 5.2.1). The only recently recorded flight mishap occurred in July 1997 when a T-45 flipped over on the runway surface.

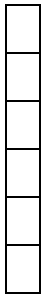
3.2 Aircraft Operations

NS Mayport is currently the home station for 74 SH-60 helicopters. The primary users of the airfield are six Atlantic Fleet HSL squadrons, resident at NS Mayport under the Helicopter Maritime Strike

Wing, Atlantic

(COMHELMARSTRKWINGLANT). The HSL wing pilots fly the Sikorsky SH-60 Seahawk, which is the only aircraft that is permanently based at NS Mayport. However, a wide range of other military aircraft uses the runways on a transient basis to accomplish specific missions. The principal transient aircraft include the T-45, F/A 18, F-15, and C-12 (see Appendix A).

Over the past few years, NS Mayport's total annual flight operations have generally decreased from a high of 156,885 operations in 1993 to 103,066 in 2003. It is anticipated that NS Mayport's annual flight operations will remain steady at approximately 103,000 operations per year for the next few years. Table 3-1 summarizes annual flight operations at NS Mayport for the past 10 years. Figures 3-1 through 3-5 show the existing flight tracks for air operations at NS Mayport.



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Arrival Track [redacted] way 05

Runway and Taxi Aprons

Flight Tracks



Recreation and Open Space

Military Property

0 0.25 0.5 Miles

Ft. George

05A¹
Inlet

Timucuan Ecological and
Historical Preserve

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05A⁷

05A⁶

Heckscher Drive
05A⁴

05A²

St. Johns River

Mayport
Village

NS Mayport

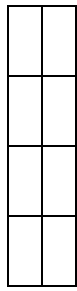
*ATLANTIC
OCEAN*

Hanna Park

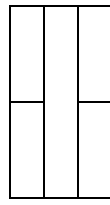
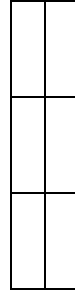
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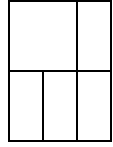


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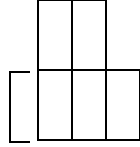
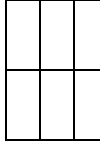


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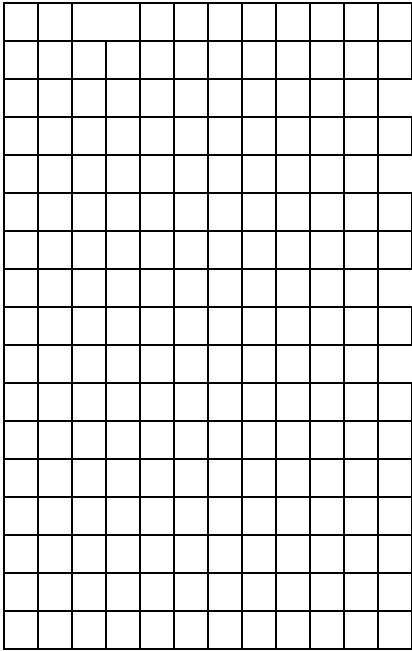
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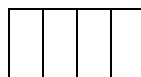
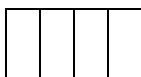
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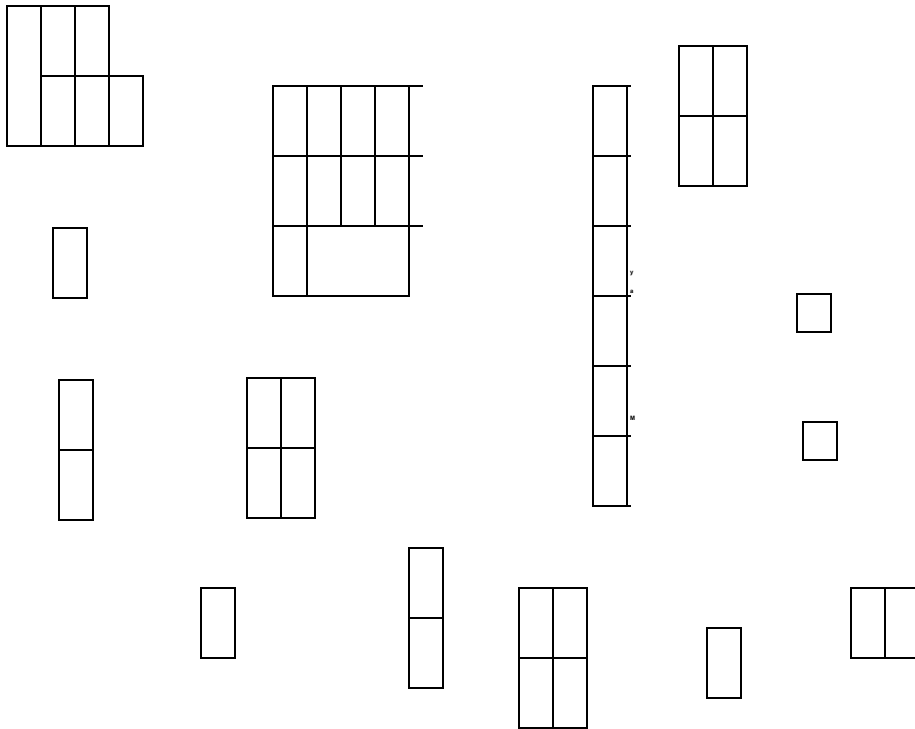


Figure 3-1
Arrival Flight Tracks - Runway 05
NS Mayport

© Ecology & Environment, Inc. GIS Department Project #02:000822-SZ02-02
 \\BUFSDL4\GIS\Tallahassee\Mayport\Mayport2006\Maps\IMXDsf\flight_tracks_23.mxd 6/20

Source: Wyle 2001; Naval Station Mayport 2000; National Park Service 2001

Military Property

Flight Tracks



Ft. George Inlet

0.5 25 0 5 Miles



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Arrival Track Runway 23

Runway and Taxi Aprons

Recreation and Open Space

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Mayport

Timucuan Ecological and Historical Preserve

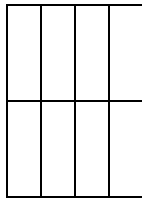


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Village



Heckscher Drive 23A6



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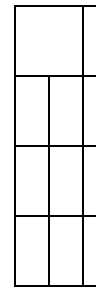
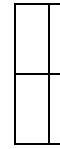
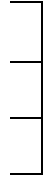
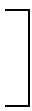
St. Johns River ATLANTIC



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NS Mayport æ



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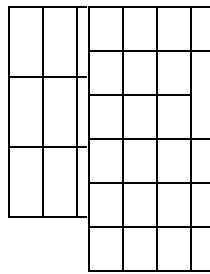
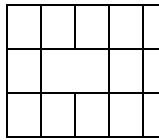
Hanna Park OCEAN



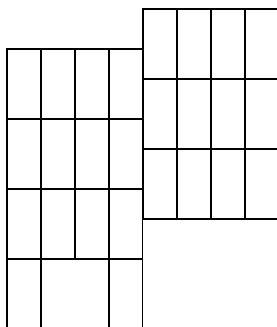
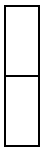
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Wanderwood Drive

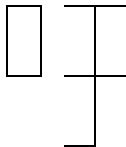
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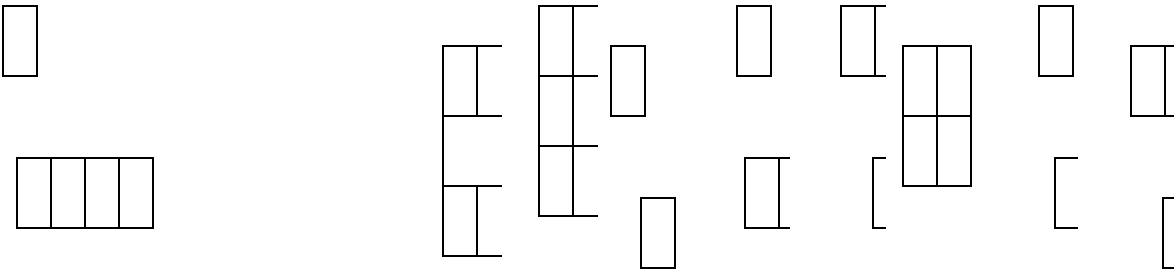


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**Figure 3-2
Arrival Flight Tracks - Runway 23
NS Mayport**

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 Maps\MXD\flight_tracks_05_de..._mod05-31-07.mxd 05/31/2007

Source: Wyle 2005; Naval Station Mayport 2000 National Parks Service 2001



Military Property
 Recreation and Open Space
 Runway and Taxi Aprons

Flight Tracks

æ Church

â School

Departure Track Rotary Wing

Departure Track Fixed Wing

0.5 0.25 0 0.5 Miles



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**Timucuan Ecological
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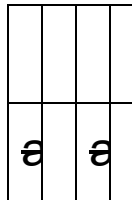
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St. Johns River ATLANTIC



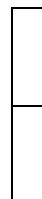
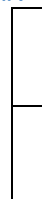
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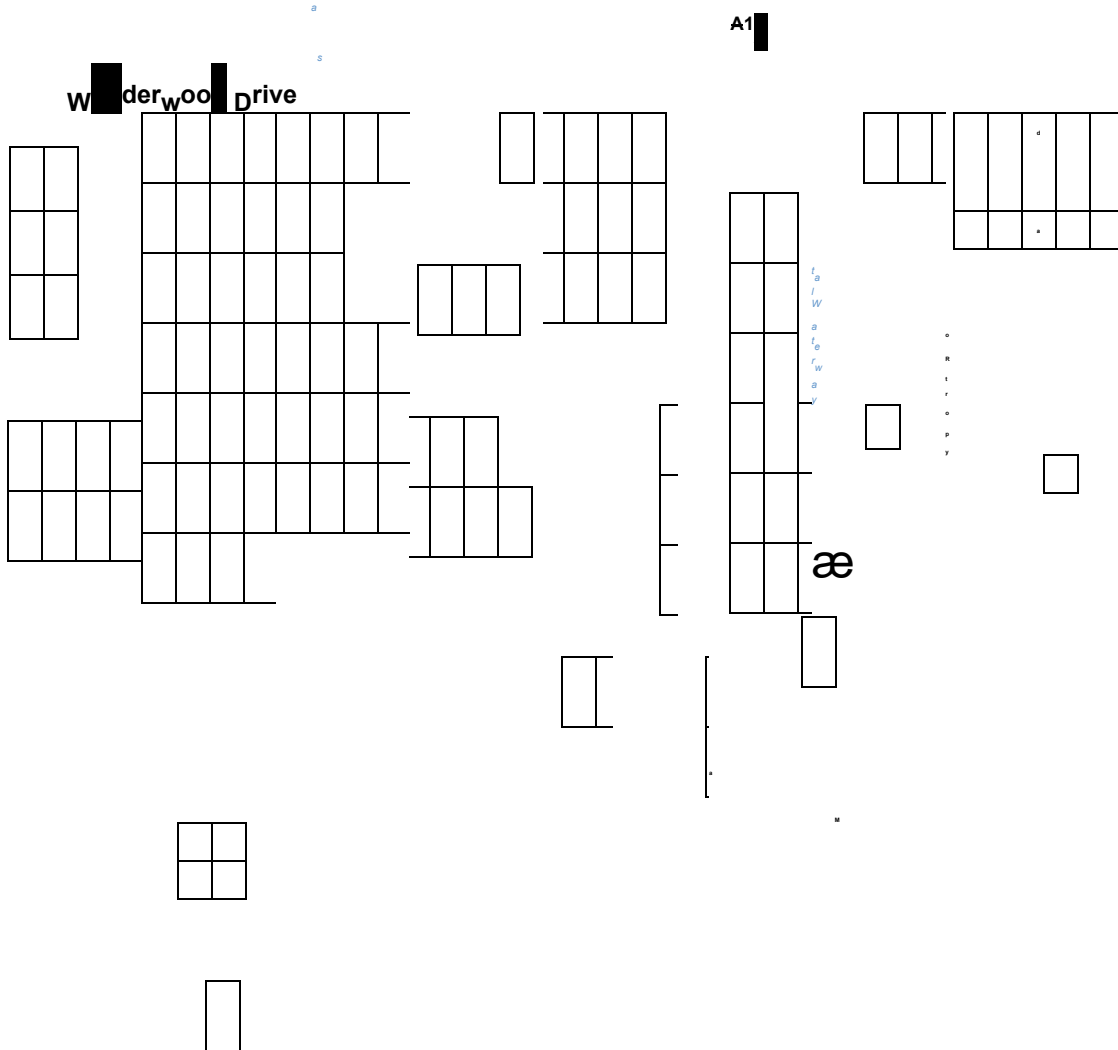


Figure 3-3
Departure Flight Tracks - Runway
05 NS Mayport

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Source: Wyle 2005; Naval Station Mayport 2000; National Parks Service 2001



Flight Tracks



Church



School

Departure Track Rotary Wing

Departure Track Fixed Wing

Military Property

Recreation and Open Space

Runway and Taxi Aprons

0.5 0.25 0 0.5 Miles



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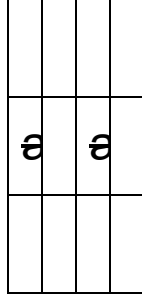
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Mayport Village

St. Johns River



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NS Mayport

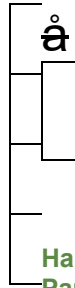
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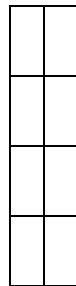


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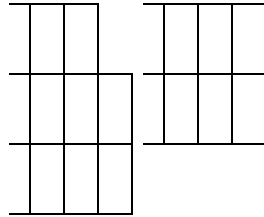
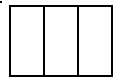
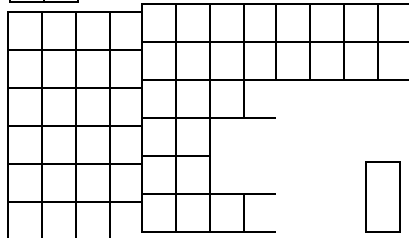
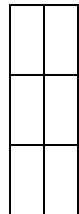
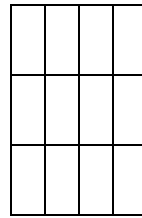
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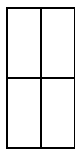


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Figure 3-4

Departure Flight Tracks - Runway 23 NS Mayport

© Ecology & Environment, Inc. GIS Department Project #02:000822-SZ02-02

\\VABch\Bch\Mayport\Mayport2006\Maps\MXD\figure3-5_flight_tracks_05_mod05-31-07.mxd 05/31/2007 Source: Ecology & Environment, Inc. 2005; Wyle 2001; Naval Station Mayport 2000; National Park Service 2001

Flight Tracks

Church
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Traffic and

Rotary Wing Traffic and

Pattern Traffic Fixed Wing

Military Property

Recreation and Open Space

Runway and Taxi Aprons

0.5 0.25 0 0.5 Miles

Timucuan Ecological
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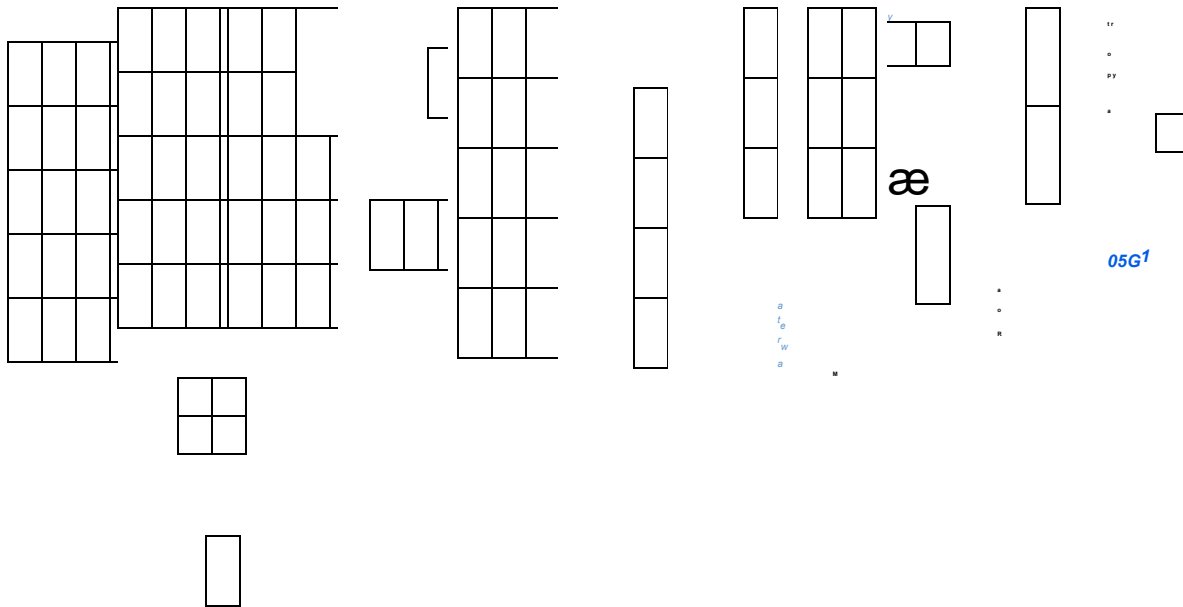


Figure 3-5
Traffic and Pattern Flight
Tracks NS Mayport
 Air Installations Compatible Use Zones Report
 Naval Station Mayport, Florida

Table 3-1 Historical Airfield Operations Naval Station Mayport, Florida					
Calendar Year	MILITARY		CIVIL		Total
	Navy/Marine	Other	Air Carrier	General Aviation	
1993	155,076	879	74	856	156,885
1994	138,635	654	68	726	140,083
1995	134,061	274	28	917	135,280
1996	125,324	144	10	314	125,792
1997	86,499	1,016	36	50	87,601
1998	86,340	686	0	287	87,313
1999	90,974	270	0	141	91,385
2000	98,174	309	8	1,026	99,517
2001	101,209	895	8	1,118	103,230
2002	93,997	576	10	1,038	95,621
2003	101,919	455	18	674	103,066

Source: Wyle 2005.

Flight Operation
 Any aircraft takeoff or landing at NS Mayport

associated with a departure or arrival of an aircraft to or from defense-related special-use airspace.

Approved flight operations at NS Mayport are defined as:

③ **Departure.** An aircraft taking off to a local training area, a non-local training area, or as part of a training maneuver (i.e., touch-and-go).

③ **Straight-In/Full-Stop Arrival.** An aircraft lines up 6 to 10 nautical miles from the field on runway centerline. The aircraft descends gradually, comes to a full stop, and then taxis off the runway.

③ **Overhead Arrival.** An expeditious arrival using visual flight rules. An aircraft approaches the runway 500 feet above the altitude of the landing pattern. Approximately halfway down the runway, the aircraft performs a 180-degree turn to enter the landing pattern. Once established in the pattern, the aircraft lowers landing gear and flaps, and performs a 180-degree descending turn to land on the

GCA
ground-controlled approach

3.2.1 Flight Operations

A flight operation refers to any takeoff or landing runway.

at NS Mayport. The takeoff and landing may be part of a training maneuver (or pattern) associated with the air station runway, or may be

③ **Ground-Controlled Approach (GCA) Box.** A radar or “talk down” approach directed from the ground by ATC personnel. ATC personnel provide pilots with verbal course

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Air Installations Compatible Use Zones Report Naval Station Mayport, Florida

make an instrument approach during inclement weather.

③ **Touch-and-Go Operation.** An aircraft lands and takes off on a runway without coming to a full stop. After touching down, the pilot immediately goes to full power and takes off again. The touch-and-go actually is counted as two

operations – the landing is counted as one operation and the takeoff is counted as another.

③ **Field Carrier Landing Practice (FCLP).** An aircraft practices simulated carrier landings. FCLPs are required training for all pilots before landing on a carrier. The number of FCLPs performed is determined by the length of time that has elapsed since the pilot’s last landing on a carrier. FCLPs normally are not conducted at NS Mayport.

FCLP
Field Carrier Landing Practice

GSI
Glide Slope Indicator
and glide slope information, allowing them to

③ **Low Approach.** An instrument approach to a

runway where the pilot does not make contact with the runway.

③ **Glide Slope Indicator (GSI).** An aircraft practices approach to a simulated frigate deck from 1.2 miles out and 400 feet AGL. One landing and one takeoff are counted as two operations.

During CY2003, NS Mayport recorded 103,066 aircraft operations within the Air Installation's airspace, including takeoffs, landings, touch-and-gos and approaches. The operations

modeled in this report were Navy, Marine, and other military operations that totaled 101,568.

The remaining 1,498 operations were aircraft which transited the NS Mayport controlled airspace, but never actually utilized the airfield.

Helicopter operations represented about 97%, or 100,256 operations, of the annual operations.

The combined average number of operations per active day at NS Mayport in CY2003 is shown in Table 3-2.

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3-10

Air Installations Compatible Use Zones Report
Naval Station Mayport, Florida

Maintenance Run ups
Testing of aircraft engines for
maintenance
operations

five seconds at the initial profile power setting.

Maintenance run-ups are conducted at NS

Mayport and the run up locations are depicted on

Figure 3-6; Table 3-2 lists the run-up operations

for the locations depicted on Figure 3-6. The

SH-60 is the only aircraft utilizing these run-up

areas since it is the only permanently based

aircraft at the Installation. The tempo of activity

at the in-frame run-up locations, R1/R2 and

R3/R4, are modeled using the same directional

split as used for the runway or flight operations.

In this case, 49% are in the Runway 05 direction

and 51% are in the Runway 23 direction. All

out-of-frame run-ups occur at location R5 and

operate on an approximate 60 degree heading

(from the north). All run-ups occur during the

daytime period.

Flight Track

General pre determined path an aircraft flies while conducting air operations near and airfield

3.2.2 Pre-Flight and Engine Maintenance Run-up Operations

Pre-flight engine run-ups prior to departure at runway ends and scheduled maintenance engine run-ups at test cells or at run-up pad locations can contribute significantly to the total noise environment. According to ATC, NS Mayport, the SH-60s at NS Mayport typically do not conduct any preflight run-ups (Wyle 2005). The F/A-18 is modeled for noise with a 10-second preflight run-up at 80% power. The remaining fixed-wing aircraft are modeled with a minimum allowable standard initial takeoff roll run-up of

3.2.3 Runway and Flight Track Utilization

The numerical designation of a runway is the number of degrees (rounded to the nearest 10th) that each end of the runway is aligned from the north point of a compass. Runway 5, for example, is aligned 50 degrees from magnetic north. Runway 23 is the opposite end of Runway 5, or 230 degrees (50 degrees plus 180 degrees) from magnetic north. Aircraft approaching or departing from the air stations are assigned specific routes or flight tracks. Flight tracks shown in this report are idealized representations (single lines), but flights vary due to aircraft

Run-up [redacted] tions



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Runway a [redacted] Taxi Apro [redacted]

Military Pro [redacted] rty

") Run-up Location [redacted]

Timucuan Ecological and Historical Preserve

Ft. George Inlet

Recreational and Open Space

0.5 0.25 0 0.5 Miles



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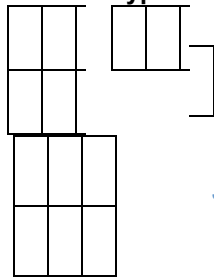


RWY 23
ATLANTIC OCEAN

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Pad 12

Heckscher
Drive
Village



Mayport

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Pad 11

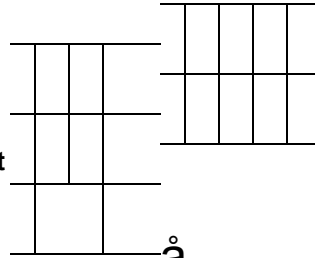
St. Johns River

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RWY 05
Pad 10

Test Cell

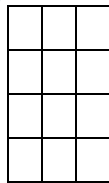
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NS Mayport



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Intercoastal

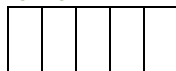


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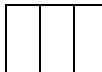


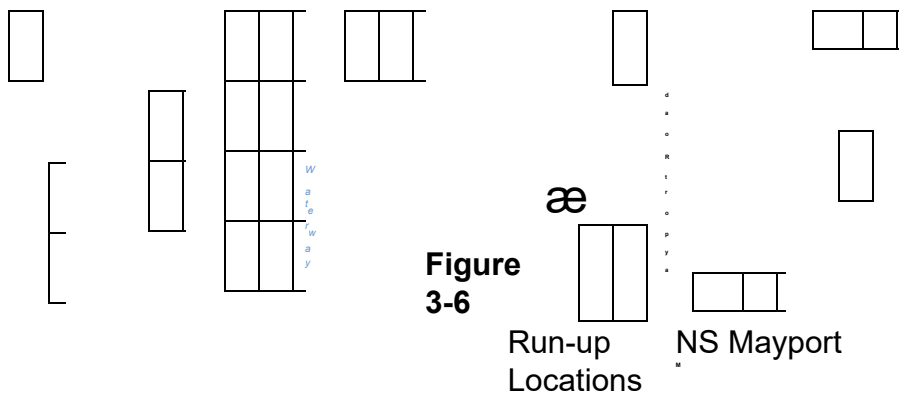
WⁿAderwood Drive

Hanna Park



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Air Installations Compatible Use Zones Report
Naval Station Mayport, Florida

type, performance, configuration, pilot technique, air traffic conflicts, and weather conditions (e.g., wind), such that the actual flight track is a band, often one-half to several miles wide. Predominant arrival, departure, and pattern flight tracks for Runways 05 and 23, respectively, are shown on Figures 3-3 to 3-5.

Flight tracks were provided by personnel at NS Mayport ATC. Figures 3-3 through 3-5 show the flight tracks for the types of operations listed in Table 3-2. According to NS Mayport ATC, runway use at NS Mayport occurs 49% of the time on Runway 05, and 51% of the time on Runway 23. Figure 3-3 shows the departure flight tracks for Runway 05. Note that fixed-wing aircraft use only departure track 05D1 off Runway 05 and departure tracks 23D1 and 23D5 off Runway 23. Figure 3-4 shows the departure flight tracks for Runway 23. Note that fixed-wing aircraft use only arrival track 05A5 to Runway 05 and track 23A2 to Runway 23. Figure 3-5 depicts the touch-and-go, GCA box and GSI patterns flown at NS Mayport. Fixed-wing aircraft use only the GCA box tracks 05G1 and 23G1, and the touch-and-go tracks 05T3 and 23T3. Helicopters use all the closed tracks, except 05T3 and 23T3. For detailed tables depicting runway and flight track utilization for all modeled aircraft, please refer to Appendix A.

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Air Installations Compatible Use Zones Report
Naval Station Mayport, Florida

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Air Installations Compatible Use Zones Report
Naval Station Mayport, Florida

4 Aircraft Noise

Aircraft noise is of concern to many in the Installation's surrounding community. Aircraft noise may potentially impact the planning of future land use near air facilities. Because the noise from aircraft operations significantly impacts areas surrounding an installation, NS Mayport has defined certain areas as high-noise zones under their AICUZ Program. This section discusses noise associated with aircraft operations at NS Mayport, including average noise levels, noise complaints, noise abatement/flight procedures, and noise contours.

4.1 What is Sound/Noise?

Sound is the result of a sound source inducing vibrations in the air.

Noise can be defined as unwanted sound.

dBA

A-weighted decibel; a unit of sound pressure, adjusted to the range of human hearing, with an intensity greater than the ambient or background sound pressure.

DNL

day-night average sound level noise metric. Sound is the result of a sound source inducing vibrations in the air. Noise can be defined as unwanted sound. Some of the potential sources of noise include roadway traffic, land use activities, railway activities, and aircraft operations. Whether sound becomes noise is dependent upon the listener, but sound can become noise when it interferes with normal

activities.

In this document all sound or noise levels are measured in A weighted decibels (dBA), which are a unit of sound pressure adjusted to the range of human hearing, with an intensity greater than the ambient or background sound pressure. 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.

The noise exposure from aircraft operations at NS Mayport, as with other installations, is measured using the day-night average sound level noise metric (DNL). DNL (sometimes expressed as Ldn) is an indicator of community sensitivity to aircraft noise and is the standard metric used in most states. The acronym DNL is typically used as the descriptor for day-night average sound level and is used throughout this

report. The DNL averages aircraft sound levels at locations over a 24-hour period with an additional 10-dBA weighting imposed on equivalent daytime sound levels that occur during nighttime hours (10:00 p.m. to 7:00 a.m.). The 10-dBA adjustment is to account for an increased

sensitivity to noise at this time and low ambient noise levels, which are about 10 dBA lower than daytime hours.

The DNL does not represent the sound level heard at any particular time within the designated 24-hour period, but is the averaging of all the sound energy over a 24-hour-period while maintaining the same total sound exposure. The smoothing of noise over the 24-hour period does not ignore the louder single events. When noise levels of two or more events are added, the event with the lower noise level is dominated by the event with the higher noise. Thus, the combined noise level is slightly higher than the noise level produced by the louder event. For example, a sound level of 100 dBA that lasts for 30 seconds, followed by a sound level of 50 dBA which lasts for 30 seconds has a time average sound level of 97 dBA. Therefore, noise levels of the loudest aircraft operations significantly influence the 24-hour average.

The DNL is depicted visually as a noise contour that connects points of equal value. The noise contours in this document are depicted in 5-dB increments. The area between two noise contours is known as a noise zone. The noise exposure area is divided into noise zones as follows:

- ③ Less than 60 DNL;
- ③ 60 to 65 DNL;
- ③ 65 to 70 DNL;
- ③ 70 to 75 DNL; and
- ③ Greater than 75 DNL.

For land use planning purposes, the noise zones can be generally characterized as follows. The noise zone of less than 60 DNL is generally considered an area of low or no noise impact. 60-65 DNL is an area of slight impact where some land use controls are required. 65-75 DNL is an area of moderate impact where some further land use controls

are required. The noise zone greater than 75 DNL is the most severely impacted area and requires the greatest degree of land use control.

4.2 Airfield Noise Sources

The main sources of noise at airfields are flight operations and engine maintenance operations or run-ups. Computer models are used to

develop the noise contours based on information about these operations, including:

- ③ Type of operation (arrival, departure, pattern);
- ③ Number of operations/day;
- ③ Time of operation;
- ③ Flight track;
- ③ Type of surface;
- ③ Type of terrain;
- ③ Aircraft power settings, speeds, and altitudes;
- ③ Number and duration of maintenance run-ups; and
- ③ Environmental data (temperature and humidity).

4.3 Noise Complaints

Noise complaint procedures for NS Mayport are established in the Installation's Air Operations Manual. The procedures address how noise complaints shall be received, the responsible parties to be advised of the noise complaint, and what type of action is required to address the complaint. Individual response to noise levels varies and is influenced by many factors including:

- ③ Activity the individual is engaged in at the time of the noise;
- ③ General sensitivity to noise;
- ③ Time of day;
- ③ Length of time an individual is exposed to a noise;
- ③ Predictability of noise; and
- ③ Average temperature.

Generally, community noise complaints are called in to the Air Operations Center at NS Mayport. From there, the complaints are routed

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Air Installations Compatible Use Zones Report Naval Station Mayport, Florida

Noise Complaint Hotline

Complaints can be called in to: (904) 270- 5144 to the responsible squadron, the Public Affairs office, and the Naval Station Commanding Officer. NS Mayport is currently in the process

of revising their Air Operations Manual. Some of the revisions address the installation of a designated automated call-in line for the purpose of registering and recording noise complaints.

Complaints can be called in to: (904) 270-5144. Calls continue to be processed in the above mentioned manner.

A small change in dBA generally will not be noticeable. As the change in dBA increases,

individual perception is greater, as shown in Table 4-1.

	Nava
Change	
1 decibel	
3 decibel	
5 decibel	
10 decibel	
20 decibel	
Source: Wyle 2005.	

measures to reduce noise. The Navy conducts noise abatement procedures to the best of its ability, commensurate with safety and operational training requirements. Other actions and requirements under the NS Mayport Air Operations Manual (NS Mayport 2005) established for NS Mayport directly or indirectly affect noise abatement and flight safety both on the ground and in the air. Noise abatement procedures for NS Mayport are implemented under the NS Mayport Air Operations Manual and are summarized in Table 4-2. The purpose of these procedures is to minimize noise in recognition of community response to aircraft noise at NS Mayport.

4.4 Noise Abatement/Course Rules

NS Mayport actively pursues operational

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Air Installations Compatible Use Zones Report Naval Station Mayport, Florida

**Table 4-2
Noise Abatement/Flight Procedures
Naval Station Mayport, Florida**

Noise Abatement/Air Installations Compatible Use Zones.

- ③ High-power turn-ups in excess of normal pre-takeoff checks are prohibited anywhere on the airfield except in the designated high-power turn-up and are to be conducted only during published airfield operating hours.
- ③ When operations are being conducted on Runway 05, downwind turns south of the lighthouse shall not be approved. This is to ensure aircraft do not overfly the city of Mayport. SH-60 only. ③ Aircraft must be at pattern altitude prior to turning downwind. SH-60 only.

Additional procedures which directly or indirectly affect noise abatement include the following: ③

Hours of Operation. NS Mayport operates Monday through Thursday 7:00 a.m. to 12:00 a.m. DST; Friday 8:00 a.m. to 6:00 p.m. DST; Saturday and Sunday open by co-ordination for operational requirements only; closed holidays. Written request for holiday and/or extended operating hours should be forwarded to the NS Mayport Airfield Operations Officer seven days in advance of the desired date. ③

Run-up Operations. All pre-takeoff high-power engine checks shall be done at the run-up area adjacent to the duty runway.

③ **Flight Paths.** Pilots shall not request clearance to perform unusual maneuvers within the airport traffic area if such maneuvers are not essential to the performance of the flight. ATC personnel are not permitted to approve a pilot's request, or to ask a pilot to perform these maneuvers, to include low passes, climbs at very steep angles, Mission profiles which require uninterrupted (unrestricted) climbs to altitude should be coordinated through the ATC facility so that clearances may be obtained

③ **Airspace.** Unless otherwise approved, all classes of aircraft in reported VFR condition, regardless of type flight plan, shall maintain 1,000 feet until one mile beyond the departure end threshold to avoid inbound overhead traffic from the departure end threshold. The pattern is left traffic for Runway 05 and right traffic for Runway 23 unless otherwise instructed. Pattern altitude is 500 ft AGL for helicopters and 1000 ft AGL for fixed-wing aircraft.

③ **Quiet Hour Operations.** During published quiet hours all airfield movement will be limited. Emergency and PPR aircraft for full stop landing only. No takeoffs, turn-ups, low approaches or taxiing will be authorized. Written requests for quiet hours will be forwarded to the Commanding Officer, NS Mayport (Attention: Air Operations Officer). Requests must be received by Airfield Operations a minimum of five working days prior to the requested quiet hours.

Source: NS Mayport 2005, Wyle 2005.

Key:

AGL = Above ground level.

ATC = Air traffic control.

DST = Daylight Savings Time.

NM = Nautical mile.

PPR = Prior permission required.

TACAN = Tactical Air Navigation

VFR = Visual flight rules.

4.5 Noise Contours

The AICUZ process calls for the modeling and analysis of existing and projected conditions that can be reasonably forecast. The existing conditions are described by the flight operations input data that consist of the aircraft types using the airfield, flight operations, and flight tracks of those aircraft.

The Navy AICUZ noise study is based on existing (2003) and projected operational data. The initial step in the AICUZ process is the preparation of a noise study to define ground-level noise exposure

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Air Installations Compatible Use Zones Report Naval Station Mayport, Florida

Transient Aircraft Operations

While NS Mayport's mix of transient fixed wing aircraft will evolve over the next few years, the total of annual transient operations is expected to remain the same.

AAD

average annual day; The AAD operations level is calculated by dividing the total annual airfield operations by 365 days. contours. The noise study is developed using a computer-based model (NOISEMAP and Rotorcraft Noise Model [RNM] in this study) which uses as input aircraft activity and site-specific operational data at the Installation. This includes type and mix of aircraft, flight profiles (airspeed, altitude and power settings), and flight tracks, along with frequency and times of operations. Projections of aircraft operations were based on information provided by personnel at NS Mayport and the Southern Division of Naval Facilities Engineering Command. While the mix of transient fixed-wing aircraft will evolve over the next few years, the total of annual transient operations is expected to remain about the same. Over the next few years, as older Hornets retire, the predominant transient aircraft in the noise environment will be the F/A-18 E/F Super

Hornets. For the purposes of modeling, the Super Hornet was used to represent all transient fixed-wing aircraft to ensure the Navy noise impacts are not underrepresented.

Land use compatibility guidelines and long-term noise exposure assessments are based on yearly average noise levels. Therefore, the 2006 noise contours for NS Mayport were developed based on average annual day (AAD) operations. The AAD operations level is calculated by dividing the total annual airfield operations by 365 days, consistent with Navy guidelines OPNAVINST 11010.36B, dated December 2002. See Appendix A for a detailed discussion of noise modeling.

4.5.1 2006 Noise Contours

The main noise source at the Air Installation is aircraft operations, including flight operations and engine maintenance operations or run-ups. NS Mayport provides facilities and support for the homebasing and training of the HSL helicopter squadrons. Helicopters are relatively quiet when compared to other aircraft, particularly in relation to jet aircraft. Thus, operations at NS Mayport by transient fixed wing aircraft, though relatively few in number, contribute greatly to the overall noise environment.

The 2006 AICUZ noise contours generated from this effort for NS Mayport are shown on Figure 4-1. In order to be consistent with the

contours present the cumulative noise contributions from each aircraft operation along each modeled flight track. The following observations are made to explain the shape and extent of the DNL contours shown on Figure 4-1:

- ③ The extensions of the contours in the northeast and southwest directions are due mainly to the arrival operations of fixed-wing aircraft. The arrivals result in length/extension of the contour and the departures contribute to the width/spreading of the contour.
- ③ The lobes off the end of the runway are due to the pre-flight run-ups conducted by the F/A-18 C/D aircraft.
- ③ The 60-dB contour extension over water, north of the runway, is due to helicopter closed-pattern operations.
- ③ The 60-dB noise “island” to the southwest is where the helicopter closed-pattern operations and runway departure flight tract 32D2 intersect.
- ③ The ripples in the 65-dB contour abeam the runway to the southeast are caused by the hover checks and ground checks done by the helicopters at Pads 10, 11, and 12.

As shown on Figure 4-1, the DNL contour levels resulting in off station noise impacts outside the confines of NS Mayport are the 60-dB and 65-dB contours. (In order to be consistent with the City of Jacksonville planning standard, the 2006 noise contours for NS Mayport include the 60 to 65 DNL noise contour.) This off-base exposure is mainly due to the fixed-wing arrivals from Runways 05 and 23. The noise exposure is reflective of the flight tracks used by aircraft at NS Mayport. Considering that NS Mayport’s noise contours are primarily contained within the Air Installation boundary, or over open water/wetlands, very few people and a relatively small area of land outside the base boundary near the Village of Mayport are within the

NS Mayport Noise Contours

Because NS Mayport’s noise contours are primarily contained within the Air Installation boundary or over open waters/wetlands, very few people and a relatively small area of land outside the base boundary are within the noise contours. City of Jacksonville planning standard, the 2006 noise contours for NS Mayport include the 60 to 65 DNL noise contour. The contour shape and size are dictated by operations from both helicopters and fixed-wing aircraft, each contributing to a unique portion of the contour. While the SH-60 conducts the largest number of operations of all the aircraft at NS Mayport, it is not the only major noise contributor, nor is it the loudest in terms of a single event. Therefore, the

figure_Proposed2008noise_contours_mod05-31-07.mxd 05/31/2007 Source: ESRI, 2005; Wyle, 2005; NS Mayport, 2005

Recreation and Open-Space



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and Historic Preserve

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ATLANTIC OCEAN

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Hanna Park

NS Mayport

Wonderwood
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St. Johns River

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Noise Levels

æ Church

å School

60 DNL

65 DNL

70 DNL

>75 DNL

Run and Taxi Trains

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Mayport
Village

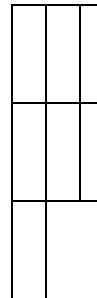
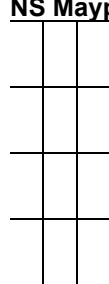
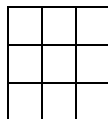
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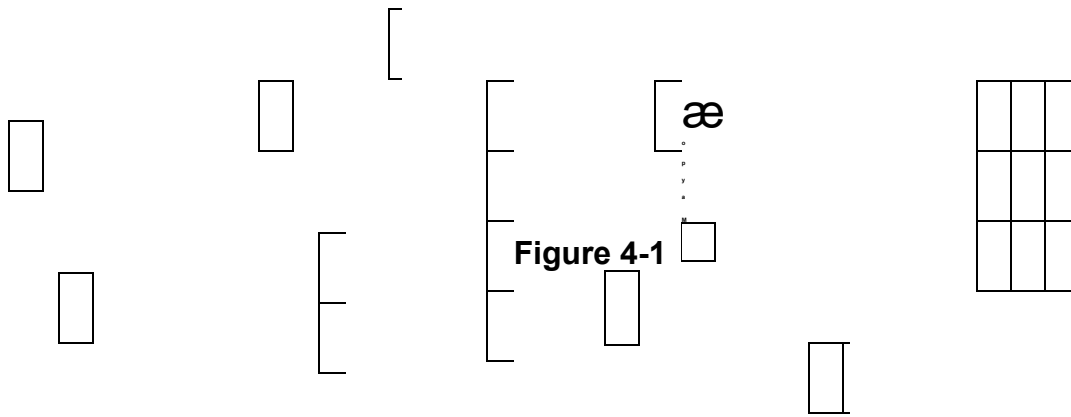
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2006 AICUZ Noise
Contours NS Mayport

Air Installations Compatible Use Zones Report
Naval Station Mayport, Florida

noise contours. Population and area counts are performed to provide estimates on how many people and how much land area is encompassed by the noise contours. This is based on the latest available Census 2000 data. Table 4-3 summarizes the people and acres exposed to noise in the 2006 AICUZ noise contours. There are 128 acres and 140 people living in 67 housing units exposed to noise levels between 60 DNL and 65 DNL. Likewise, the table indicates the impact of the noise exposure for noise levels from 65 DNL to 75 DNL and for greater than 75 DNL.

Table 4-3
Off-Base Population and Area Impact
for 2006 Noise Contours
Naval Station Mayport, Florida

DNL	Population	Housing Units	Area (acres)
60 to 65	140	67	128
65 to 75	8	4	9
Greater than 75	0	0	0

Source: Wyle 2005.
Note:
Total areas exclude areas within the Installation and over water. Key:
DNL = Day-night average sound level.

4.5.2 Comparison of the 1976 and 2006 AICUZ Noise Contours

Figure 4-2 compares the established 1976 NS Mayport AICUZ noise contours with the 2006 noise contours prepared for this AICUZ update. Table 4-4 compares the 1976 area within the high-noise zone with the 2006 area within the high-noise zone. The total acres within noise zones decreased by 318 acres; however, the geographic extent and

distribution of the contours has changed. Significant differences in the area encumbered by high-noise are identified within the 65 to 70 DNL range.

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figure_noise_1976and2006_contours.mxd 1/22/2006 **Change in Ft. George Inlet**

Noise Levels

2006 Noise Contour

1976 Noise Contour

Recreation and Open Space

Runway and Aprons

Church



School



65
Source: Wyle 2001; Navy 1993; National Park Service 2001

60

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70



75

Timucuan
Ecological and
Historical
Preserve

65

Mayport Village

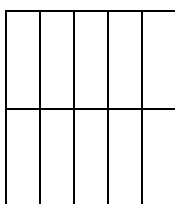
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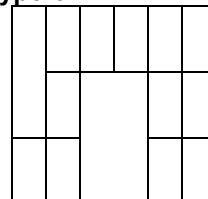
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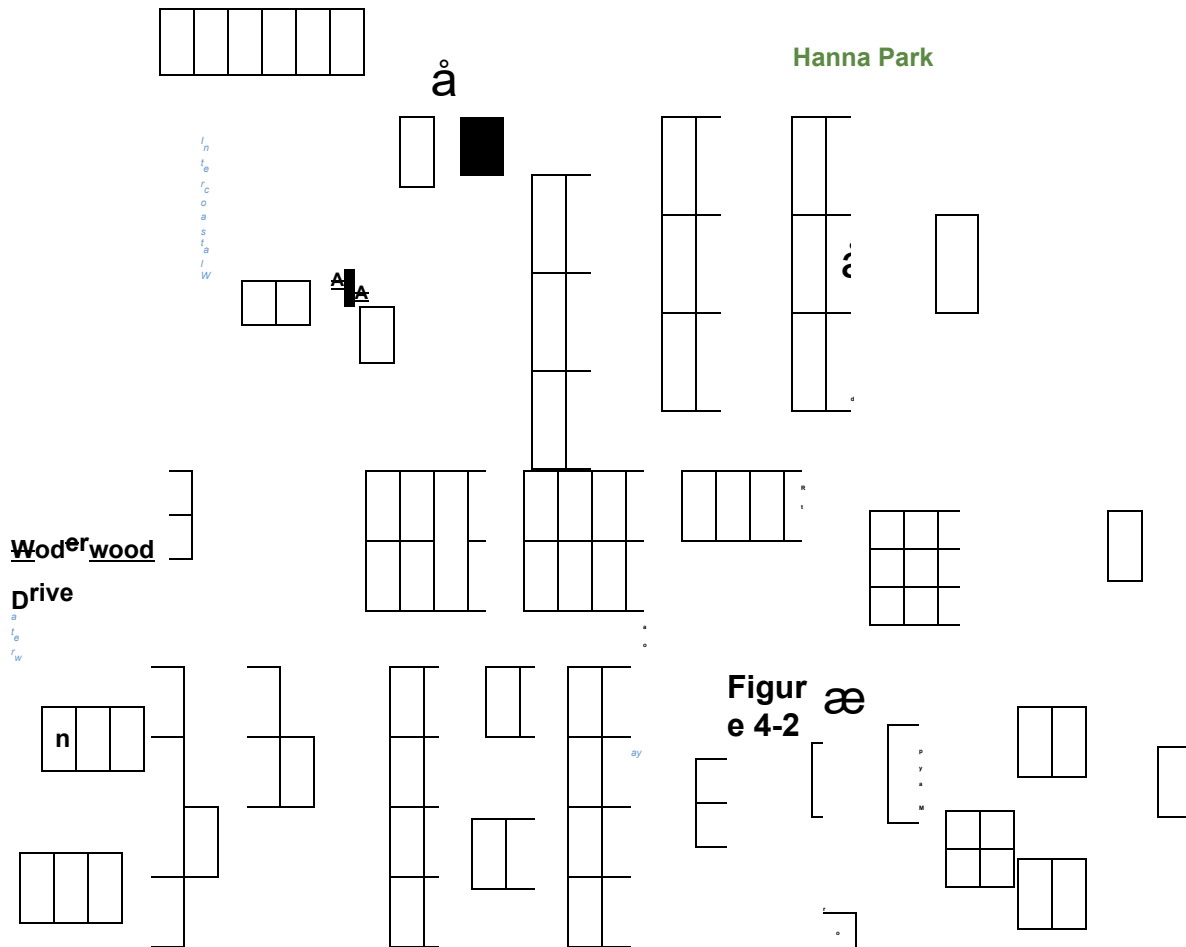
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St. Johns River

NS Mayport





Comparison between 1976 and 2006 Noise Contours
NS Mayport

**Air Installations Compatible Use Zones Report
Naval Station Mayport, Florida**

Table 4-4 Areas within Noise Zones (DNL) 1976 and 2006 Naval Station Mayport, Florida		
Noise Zone (DNL)	TOTAL LAND AREA	
	1976 AICUZ Noise Zones (acres)	2006 AICUZ Noise Zones (acres)^a
65 to 75	1,366	1053.4
Greater than 75	19	13.6
TOTAL AREA	1,385	1,067

Source: Wyle 2005.
Note:
^a Total areas include areas within the Installation and over water. Key:
DNL = Day-night average sound level.
AICUZ = Air Installations Compatible Use Zones.

RNM
Rotorcraft Noise Model.
The difference in the geographic extent of the noise contours can be attributed to a number of

different factors. In 1976, noise modeling did not include the 60 DNL contour and computer modeling software was not as sophisticated and accurate as it is today.

The 2006 AICUZ noise contours were modeled using a combination of modeling software such as NOISEMAP 7.0 and RNM, which is designed specifically to model noise emissions from helicopter operations. A further difference is the distribution of air operations. In 1976, NS Mayport conducted vastly different air operations, including a larger number of fixed-wing operations than are currently being conducted.

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Air Installations Compatible Use Zones Report
Naval Station Mayport, Florida

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Air Installations Compatible Use Zones Report
Naval Station Mayport, Florida

5 Airfield Safety

The Navy has identified airfield safety issues to assist the community in developing land uses compatible with airfield operations. These issues include accident potential and hazards within the airfield vicinity that obstruct or interfere with aircraft arrivals and departures, pilot vision, communications, or aircraft electronics.

While the likelihood of an accident is low, the DoD has defined APZs around military airfields to assist communities with compatible development. Within these zones, Navy guidelines recommend that people-intensive land uses (such as residential, schools, stadiums, etc.) be avoided.

In addition, the FAA and the military have defined flight safety zones (imaginary surfaces) below aircraft departure and approach flight tracks. For the safety of the aircraft, the height of structures and vegetation is restricted in these zones. The flight safety zones are designed to reduce the hazards that can cause aircraft mishaps; the APZs are designed to minimize the potential harm if a mishap does occur.

Other hazards to flight safety that should be avoided in the airfield vicinity include:

- ③ Uses that would attract birds, especially waterfowl;

EMI

Electromagnetic interference; the inhibition or prevention of clear reception of broadcast signals.

- ③ Lighting (direct or reflected) that would impair pilot vision;
- ③ Uses that would generate smoke, steam, or dust; and
- ③ EMI with aircraft communication, navigation, or other electrical systems.

Zones

In the 1970s, recognizing the need to identify areas of accident potential, the military conducted a tri-service study of historic accident and operations data throughout the military. The study showed that most

5.1 Accident Potential

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Air Installations Compatible Use Zones Report Naval Station Mayport, Florida

APZs are areas where an aircraft accident is most likely to occur, but does not reflect the probability of an accident occurring.

NAVFAC

Naval Facilities
Engineering
Command

aircraft mishaps occur on, or near, the runway or along the centerline of the runway, diminishing in likelihood with distance. Based on the study, the DoD has identified APZs as areas where an aircraft accident is most likely to occur, if one occurs; they do not reflect the probability of an accident. APZs follow departure arrival and pattern flight tracks and are based upon analysis of historical data

5.1.1 APZ Configurations and Areas

NS Mayport’s APZs were developed using the guidance provided by OPNAVINST 11010.36B, Air Installations Compatible Use Zones Program, 2002; Naval Facilities Engineering Command (NAVFAC) P-80.3, Facilities Planning Factor Criteria for Navy and Marine

Corps Shore Installations, Appendix E, Airfield Safety Clearances, 1982; and UFC 3-260-01, “Unified Facilities Criteria, Airfield and Heliport Planning and Design,” dated November 1, 2001. The areas for the airfield Primary Surface and Clear Zone for fixed-wing operations, and a Primary Surface, Clear Zone, and APZ 1 for helicopter operations were developed using the above guidance. Data regarding specific flight profiles and helicopter elevations along various flight tracks were provided by the COMHELMARSTRKWINGLANT (Wyle 2005). Since NS Mayport experiences less than 5,000 fixed-wing operations annually, APZs for fixed-wing operations are not required. An APZ 2 for helicopter operations also normally is not required unless local accident history indicates a need. The following definitions were used in the development of the NS Mayport APZ composite (Navy 1982):

③ For fixed-wing runways, DoD has two classes of runways (Class A and Class B) for the purpose of defining APZs. All runways at NS Mayport are **Class B**, which are for use by heavy or high-performance aircraft. Three areas beyond the runway primary surface are APZs designated as: the Clear Zone, APZ 1, and APZ 2 (Figure 5-1).

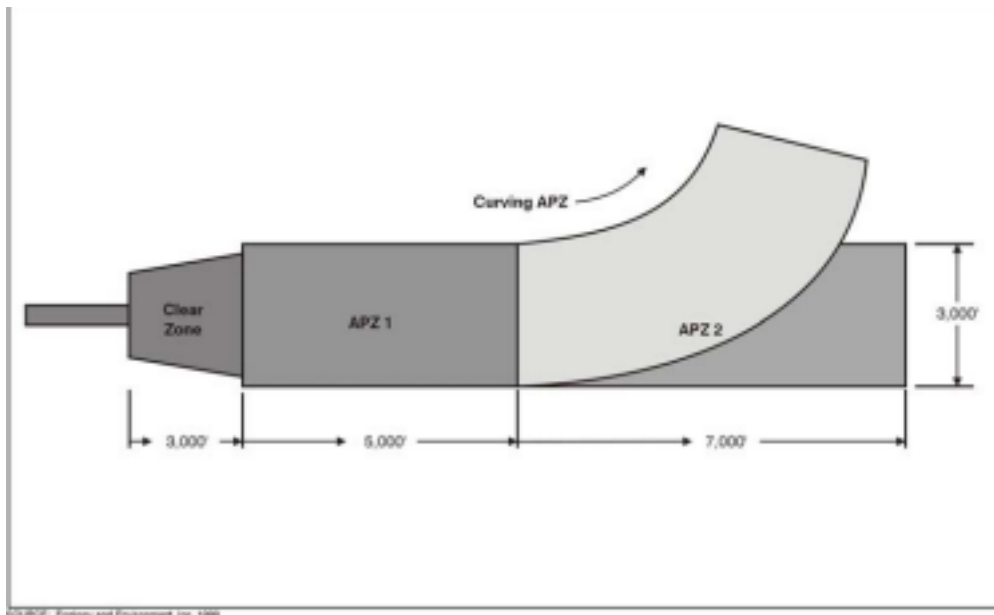


Figure 5-1 Standard Accident Potential Zones

- ③ The **Primary Surface** is a surface on the ground or water centered lengthwise on the runway and extending 200 feet beyond each end of the runway. The width of the Primary Surface for a Class B built prior to 1981 shall be 1,500 feet.
- ③ The **Clear Zone** extends 3,000 feet immediately beyond the runway and has the highest potential for accidents. It measures 1,500 feet wide at the end of the runway and 2,284 feet wide at its outer edge. A Clear Zone is required for all active runways. Typically, DoD has acquired the Clear Zone area in fee, or by restrictive easement to keep it clear of obstructions.
- ③ **APZ 1** extends 5,000 feet beyond the Clear Zone with a width of 3,000 feet. APZ 1 is typically rectangular; however, when circumstances warrant, the APZ may be curved to correspond with predominant flight tracks. An APZ 1 area is provided for flight tracks that experience 5,000 or more annual operations (departures or approaches).
- ③ **APZ 2** extends 7,000 feet beyond APZ 1 (or the Clear Zone if APZ1 is not used) with a width of 3,000 feet. An accident is more likely to occur in APZ 1 than APZ 2 and more likely to occur in the Clear Zone than in either APZ 1 or APZ 2. APZ 2 area is designated whenever APZ 1 is required. If APZ 1 is not warranted, the APZ 2 may still be used if an analysis of operations and/or accidents indicates a need for it. Like APZ 1, the geometric configuration of APZ 2 may also be curved. When FCLP is an active aspect of aircraft operations at an installation, APZ 2 extends the entire FCLP track beyond APZ 1.

predominant arrival and departure flight tracks used by the aircraft. Therefore, if an airfield has more than one predominant flight track to or from the runway, APZs can extend in the direction of each flight track (Figure 5-2).

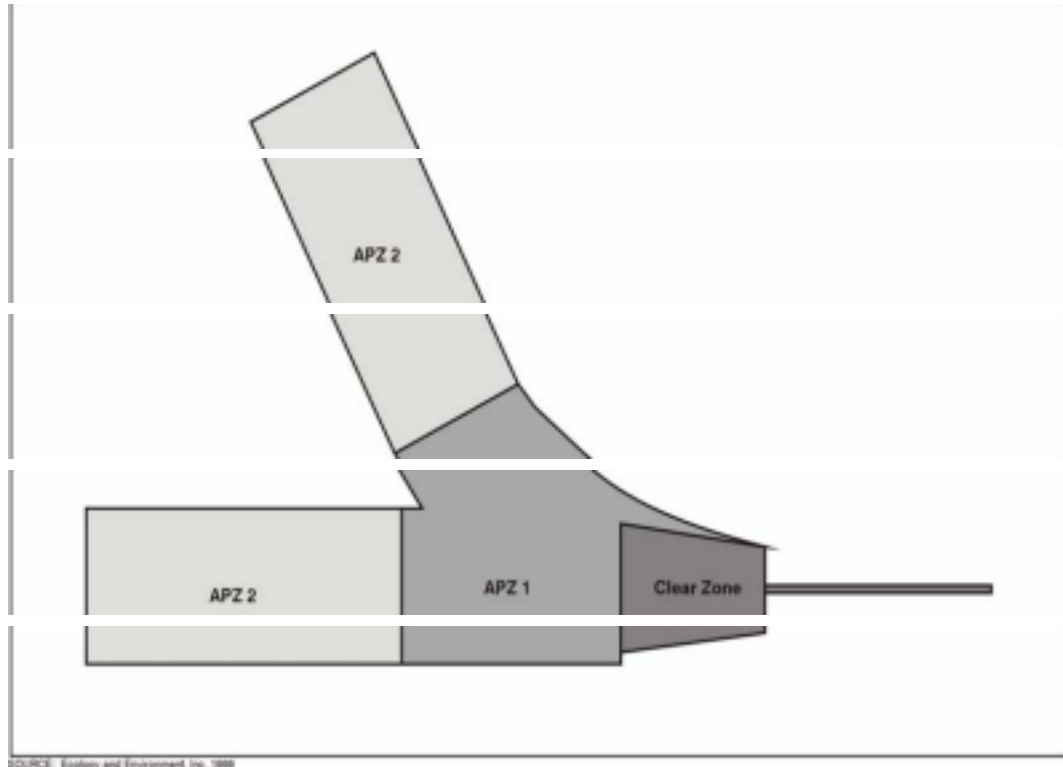


Figure 5-2 Accident Potential Zones With More Than One Predominant Flight Track

The DoD has implemented special APZ guidelines for helicopter operations:

VFR

visual flight rules

are the length of the runway plus 75 feet at each end, and a width of 300 feet (or 150 feet beyond a helipad).

the VFR approach/departure surface until that surface is 50 feet above the established landing area elevation.

③ **Clear Zone.** The takeoff safety zone for VFR helicopters facilities shall be used as the Clear Zone. The takeoff safety zone is that area under

③ **APZ 1.** An area beyond the Clear Zone for the remainder of the approach/departure zone, which is that area under the

The AICUZ Program provides recommendations for compatible land use within each APZ. Within the Clear Zone, most land uses are incompatible with military aircraft operations. For this reason, it is the Navy’s policy to acquire sufficient real property interests in land within the Clear Zone to ensure that incompatible development does not occur. Within APZ 1 and APZ 2, a variety of land uses are compatible; however, people-intensive uses (e.g., schools, stadiums, etc.) should be restricted because of the greater risk in these areas. When events resulting in threats to the operational integrity from incompatible development (encroachment) occur, and when the local communities are unwilling or unable to take the initiative on combating the threat via their own authority, consideration will be given by the Navy to land acquisition with priority to clear zones and secondary priority to APZs (Navy 2002). Outside the Clear Zone, APZ 1, and APZ 2, the risk of aircraft accidents is not significant enough to warrant special consideration in land use planning.

At NS Mayport, the Navy has acquired a number of parcels within the Clear Zone and APZ corridor to ensure the compatibility of surrounding land uses. The APZs based on fixed-wing operations for NS Mayport are shown on Figure 5-3. The APZs based on helicopter operations are shown on Figure 5-4. Even though the fixed-wing aircraft operations at NS Mayport are limited, the fixed-wing APZs cover a much larger area than helicopter APZs and are, therefore, dominant. The composite 2006 APZs shown on Figure 5-5 were generated as a result of 2003 flight operations. The 2006 APZs represent all active flight tracks that warrant APZs. Figure 5-6 compares the existing 1976 APZs with the 2006 APZs prepared for this AICUZ update. (The 1976 APZs are named A, B, and C, which are comparable to today’s designation of Clear Zone, APZ 1, and APZ 2). The total area included within the APZs is presented in Table 5-1. Lands within the 2006 APZs decreased by approximately 1,484 total acres from the 1976 AICUZ update. The decrease in the area of the APZs is attributed to the reduction in fixed-wing operations.

2006 Accident Potential Zones



æ Church

å School

Clear Zone

Primary Surface

Runway and Taxi Aprons

**Timucuan Ecological
and Historical
Preserve**

St. George Inlet

Recreation and Open Space

0.25 0.125 0 0.25 Miles

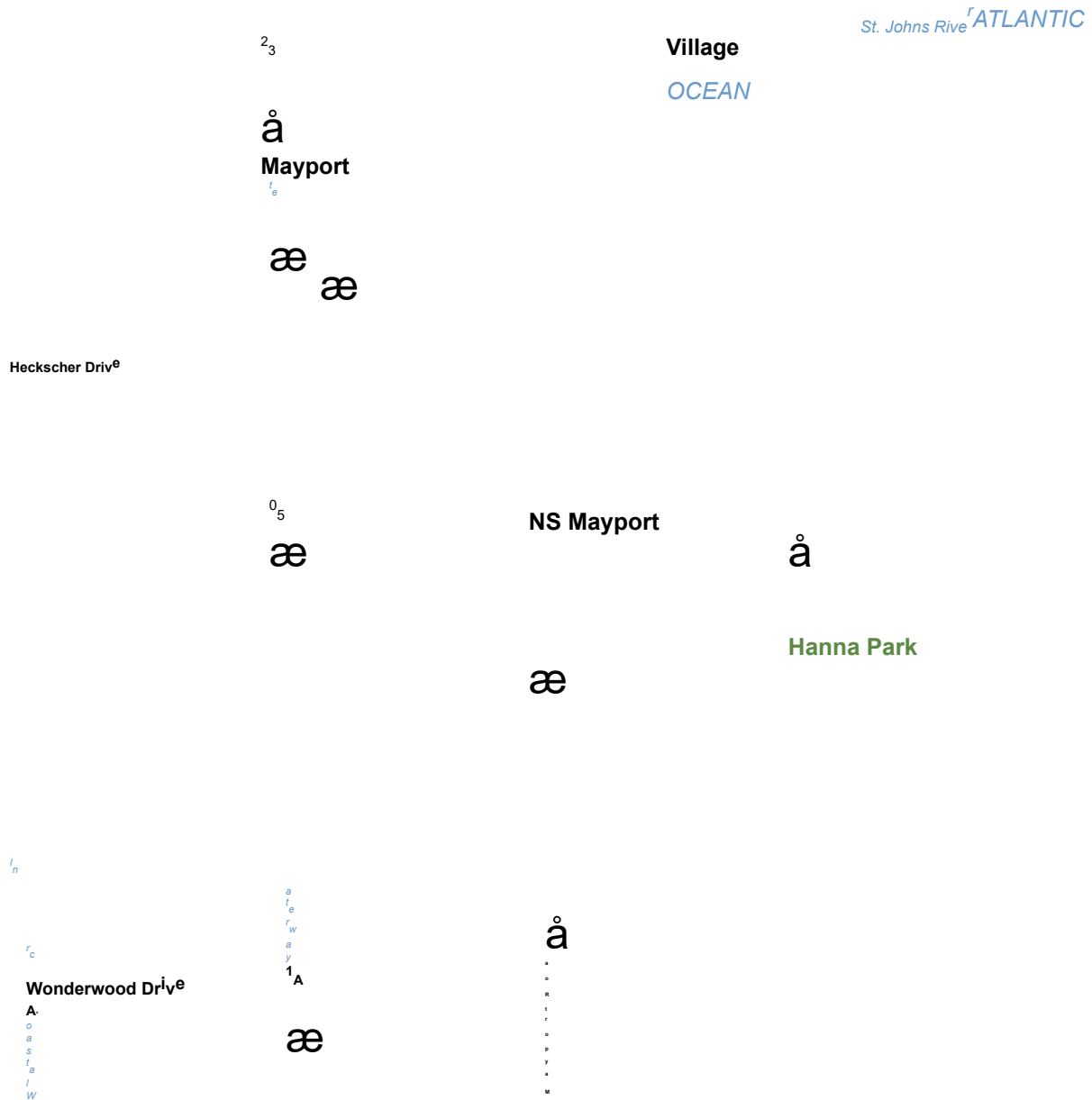


Figure 5-3
2006 Fixed-Wing
APZs NS Mayport



Church

School

Runway and Taxi Aprons

APZ1

Clear Zone

Primary Surface

Timucuan Ecological and Historic Preserve

St. George Inlet

Recreation and Open Space

0.25 0.125 0 0.25 Miles

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Mayport Village
OCEAN

St. Johns River ATLANTIC

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Heckscher Drive

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NS Mayport

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derwood Drive

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Hanna Park

Intercoastal

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Wateway

WONA

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Figure 5-4
2006 Helicopter APZs

NS Mayport

1/22/2006 2006 Accident Potential Zones

- æ Church
- ¥
- å School
- Helicopter - APZ1
- Helicopter - Clear Zone
- and Historic Preserve
- St. George Inlet
- Timucuan Ecological

- Helicopter - Primary Surface
- Fixed-Wing - Clear Zone
- Fixed-Wing - Primary
- Surface Runway and Taxi
- Aprons Recreation and
- Open Space

0.25 0.125 0 0.25 Miles

Mayport Village

NS Mayport

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Hanna Park

St. Johns River å

Inlet

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ATLANTIC OCEAN

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Figure 5-5 2006 Composite APZs Fixed-Wing and Helicopter Operations NS Mayport

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Source: Ecology & Environment, Inc. 2005; Wyle 2001; Navy 1976; National Park Service 2001

1/22/2006 **1976 and 2006**

Accident Potential

Zones 

æ Church

å School

1976 - APZ A

1976 - APZ C

2005 - Clear Zone

2005 - Primary Surface

Runway and Taxi Aprons

and Historical Preserve

Ft. George Inlet

Timucuan Ecological

Recreation and Open

Spaces 0.25 0.125 0 0.25 Miles

ATLANTIC
OCEAN

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Heckscher Drive

Mayport Village

NS Mayport

St. Johns River

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Hanna Park

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Figure 5-6
Comparison between 1976 and 2006 APZs
NS Mayport
Air Installations Compatible Use Zones Report
Naval Station Mayport, Florida

Table 5-1 Land Area within Accident Potential Zones (1976 and 2006) Naval Station Mayport, Florida				
Year	Primary Surface (acres)	Clear Zone (acres)	APZ 1 (acres)	Total Area (acres)
1976 APZs	N/A	662	1,413	2,075
2005 APZs	291	300	0	591
Source: Navy 1976; Wyle 2005; Ecology & Environment, Inc. 2005a. Key: APZ = Accident potential zone.				

Aircraft Safety

In the past 18 years, the only Class A mishap at NS Mayport occurred in March of 2004 when a SH-60 helicopter turned on its side during landing.

5.2 Flight Safety

5.2.1 Aircraft Mishaps

A key indicator of aircraft safety is associated with the number of Class A aircraft mishaps that occur at an airfield. Class A mishaps are typically associated with either a loss of life, loss of an aircraft, or damage costs in excess of \$1 million as a result of the mishap. In the past 18 years, the only Class A mishap at NS Mayport occurred in March of 2004 when a SH-60 helicopter turned on its side during landing. The only other aircraft operations-related accident at NS Mayport was the crash of a T-45 trainer in 1997 when it turned over on the runway. No civilians were involved in either accident.

5.2.2 Imaginary Surfaces

Imaginary planes and transition surfaces define the required airspace that must remain free of obstructions to ensure safe flight approaches, departures, and patterns. Obstructions may include natural terrain and manmade features such as buildings, towers, poles, and other vertical obstructions to airspace navigation. A brief description of the imaginary surfaces for fixed-wing runways is provided in Table 5-2. These imaginary surfaces are shown in Figure 5-7, and specifically for NS Mayport in Figure 5-8. While imaginary surfaces exist for helicopters, they fall completely within the imaginary surfaces defined for fixed-wing aircraft that are presented in this study (Figure 5-8).

Air Installations Compatible Use Zones Report
Naval Station Mayport, Florida

Table 5-2
Imaginary Surfaces – Class B Fixed-wing Runways

Planes and Surfaces	Geographical Dimensions
Primary surface	A 1,500-foot-wide plane centered over the runway and extending 200 feet beyond the end of the runway.
Clear Zone	A trapezoidal area 3,000 feet beyond the end of the runway, measuring 1,500 feet wide at the runway and 2,284 feet wide at its outer edge.
Approach-departure clearance surface (glide angle: 50:1)	An inclined plane extending at a 50:1 angle (i.e., one vertical foot for every 50 horizontal feet), from the end of the primary surface to an elevation of 500 feet above the airfield.
Approach-departure clearance surface (horizontal)	A horizontal surface extending from the 500-foot elevation of the glide angle for a distance of 50,000 feet from the point of origin.
Inner horizontal surface	An oval-shaped plane 150 feet above the runway, extending in a 7,500-foot radius from the centerline of the end of each runway.
Conical surface	A conical surface extending 7,000 feet from the periphery of the inner horizontal surface at a 20:1 slope (i.e., one vertical foot for every 20 horizontal feet) to an elevation of 500 feet above the airfield.
Outer horizontal surface	An oval-shaped plane 500 feet above the runway, extending 30,000 feet beyond the periphery of the conical surface.
Transitional surface	An inclined plane that connects the primary surface and the approach departure clearance surface to the inner horizontal surface, conical surface and outer horizontal surface.
Source: Navy 1981.	

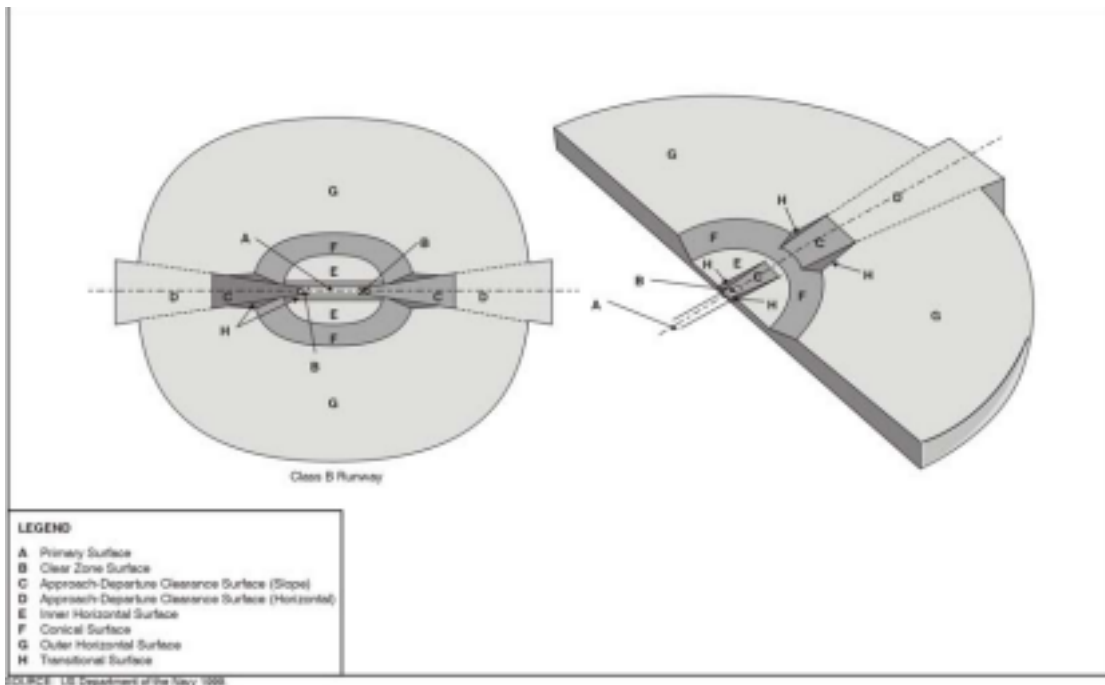


Figure 5-7 Imaginary Surfaces and Transition Planes for Class B Fixed-Wing Runways

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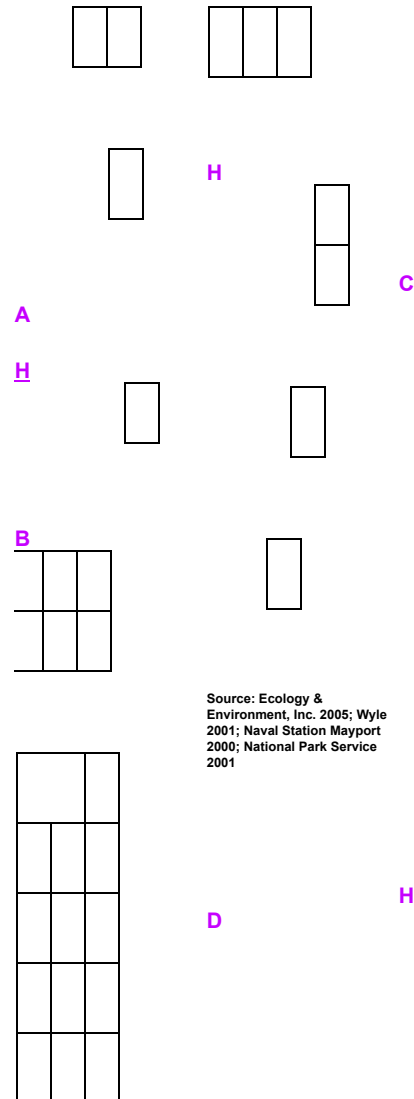
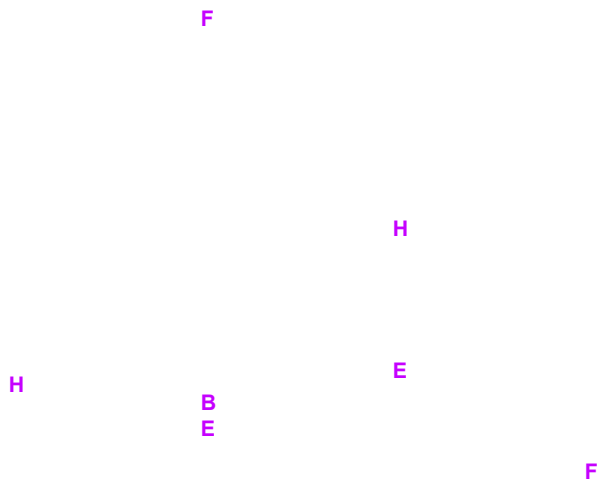


Imaginary Surfaces

Runway and Taxi Aprons

Recreation and Open Space

1:0.501 Miles



Source: Ecology & Environment, Inc. 2005; Wyle 2001; Naval Station Mayport 2000; National Park Service 2001



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Figure 5-8



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Surface
Approach-Depart
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Outer Horizontal
Clearance
Surface (Sloped) Surface

G H

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Approach-Depart
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Clearance
Transitional
Surface

N/A

A B C

Surface

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D

Primary Surface
Inner Horizontal

(Horizontal)

E

Clear Zone
Surface
Surface Conical

Imaginary Surfaces for NS Mayport

Air Installations Compatible Use Zones Report **Naval Station Mayport, Florida**

Wildlife represents a significant hazard to flight operations. Birds, in particular, are drawn to the open, grassy areas and warm pavement of the airfield. Although most bird and animal strikes do not result in crashes, they can result in expensive structural and mechanical damage to aircraft. Most collisions occur when the aircraft is at an elevation less than 1,000 feet. Due to the speed of the aircraft, collisions with wildlife can happen with considerable force.

To reduce the hazards of bird and animal strikes, the FAA and the military recommend that certain land uses that attract birds be located at least 10,000 feet from the airfield. These land uses include:

- ③ Waste disposal operations;
- ③ Wastewater treatment facilities;
- ③ Landfills;
- ③ Golf courses;
- ③ Wetlands;
- ③ Dredge disposal sites;
- ③ Seafood processing plants; and
- ③ Stormwater ponds.

BASH
bird/animal aircraft strike hazard

5.2.3 Bird/Animal Aircraft Strike Hazard

Design modifications also can be used to reduce the attractiveness of these types of land uses to birds

and other wildlife. NS Mayport operates under a personnel that are designed to reduce BASH bird/animal aircraft strike hazard (BASH) problems off the Installation in coordination awareness program. The policy and guidelines of with other federal and state agencies and the the program are established in Air Station Order general public, as necessary. The BASH plan for 3750.6. The program encompasses all actions NS Mayport is designed to: that may identify, reduce, or eliminate bird or other animal hazards to aviation on NS Mayport. and
The plan also includes actions by Installation departments for carrying parts of the plan;

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Air Installations Compatible Use Zones Report

Naval Station Mayport, Florida

- ③ Establish procedures to identify high hazard situations and bird/animal watch conditions;
- ③ Establish aircraft and airfield operating procedures to avoid high hazard situations;
- ③ Establish guidelines to decrease the attractiveness of the airfield and nearby areas to birds; and
- ③ Provide guidelines for dispersing birds when they occur on the airfield.

5.2.4 Electromagnetic Interference

New generations of military aircraft are highly dependent on complex electronic systems to perform critical flight- and mission-related functions. This dependence on digital electronics, combined with higher clock rates, power-conserving signal levels, increased use of composite materials, onboard radar, communications transmitters, and lasers, increases the susceptibility of aircraft communication, navigation, and other electrical systems to EMI. EMI is defined by the American National Standards Institute as any electromagnetic disturbance that interrupts, obstructs, or otherwise degrades or limits the effective performance of electronics/electrical equipment. It can be induced intentionally, as in forms of electronic warfare, or unintentionally, as a result of spurious emissions and responses, such as high tension line leakage. Additionally, EMI may be caused by atmospheric phenomena, such as lightning and precipitation static, and by non-telecommunication equipment, such as vehicles and industry machinery.

5.2.5 Lighting

Bright lights, either direct or reflected, in the airfield vicinity can impair a pilot's vision, especially at night. A sudden flash from a bright

light causes a spot or “halo” to remain at the center of the visual field for a few seconds or more, rendering a person virtually blind to all other visual input. This is particularly dangerous at night when the flash can destroy the eye’s adaptation to darkness, typically requiring 40 to 45 minutes for partial recovery.

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Air Installations Compatible Use Zones Report
Naval Station Mayport, Florida

5.2.6 Smoke, Dust, and Steam

Industrial or agricultural sources of smoke, dust, and steam in the airfield vicinity could obstruct the pilot’s vision during takeoff, landing, or other periods of low altitude flight.

Air Installations Compatible Use Zones Report
Naval Station Mayport, Florida

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Air Installations Compatible Use Zones Report
Naval Station Mayport, Florida

6 Land Use

Compatibility Analysis

The APZs and noise zones comprise the AICUZ map or “footprint” for an air installation. The AICUZ map defines the minimum recommended, acceptable area within which land use controls are needed data in the community planning context to

AICUZ Map

Defines minimum recommended, acceptable area within which land use controls are needed to protect the health, safety, and welfare of those living near a military airfield, and to preserve the defense flying mission. The AICUZ map and the information derived from the map are the fundamental tools necessary for the AICUZ planning process.

The information presented in this section of the AICUZ update is intended for consideration by the Installation, government entities such as Jacksonville/Duval County, the communities of Atlantic, Neptune, and Jacksonville Beach, and the Village of Mayport, as well as other interested groups and participating agencies. The intent of the AICUZ Program is to use AICUZ

achieve the following objectives:

- ③ To encourage cooperative land use planning between the Installation and the community so that future growth and development are compatible with the operational mission of the Installation; and
- ③ To seek ways to reduce the operational impacts on adjacent land (Navy 2002).

Although ultimate control over land use and development in the vicinity of military facilities is the responsibility of local governments, it is through information, such as this AICUZ report, that the DoD encourages localities to adopt programs, policies, and regulations that promote compatible development, where appropriate and feasible, near military facilities.

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Air Installations Compatible Use Zones Report Naval Station Mayport, Florida

This section addresses land use compatibility within aircraft noise zones and APZs by examining existing and planned land uses near NS Mayport. This section begins with a description of the existing land use and growth indicators, and the local programs, policies, and regulations used to promote compatible development in the AICUZ. A land use compatibility assessment follows the background discussion.

6.1 Land Use and Development Control

6.1.1 Existing Land Use and Regional Growth NS

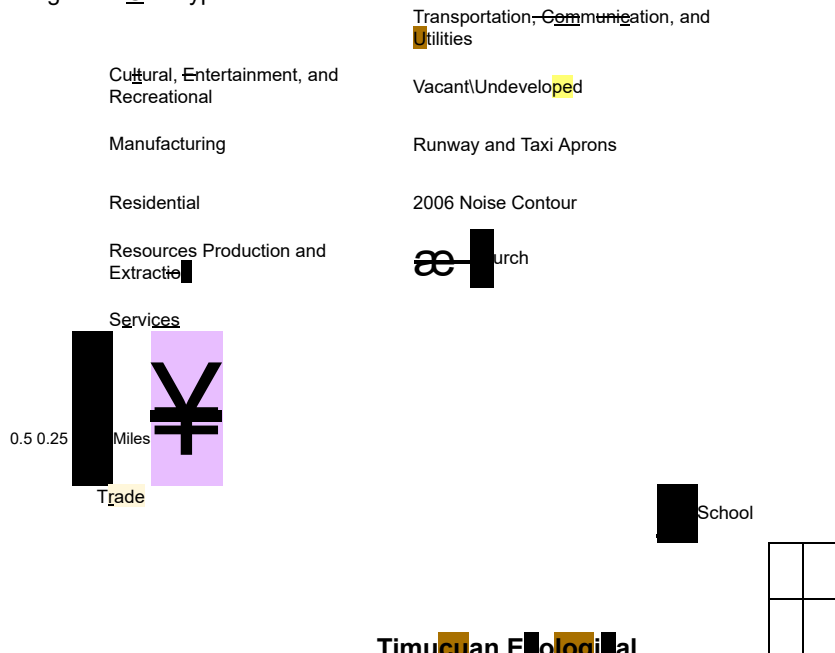
Mayport is located in Duval County, Florida, near the confluence of the St. Johns River and the Atlantic Ocean, approximately 15 miles east of downtown Jacksonville. Duval County, which lies along the northeast coast of Florida, is bordered by Nassau County to the north, Baker County to the west, Clay and St. Johns Counties to the south, and the Atlantic Ocean to the east. The Atlantic Ocean and the St. Johns River are east and north, respectively, of NS Mayport. Salt marsh and wetland communities are located southwest and west of the Installation. Land use around NS Mayport is shown on Figures 6-1 and 6-2. The City of Jacksonville's 2010 Comprehensive Plan and associated land development regulations (i.e., zoning regulations) guide future development/land use in the City of Jacksonville as mandated by the State of Florida's Local Government Comprehensive Planning and Land Development Act, Chapter 163, Part II, Florida Statutes. The community of Mayport is situated on a narrow strip of land along the St. Johns River, northwest of NS Mayport between Chicopit Bay and the ferry boat station. The community of Mayport is predominantly comprised of low-density residential and commercial uses (approximately 50% of the community is residential and 50% is commercial). The low-density residential use is characterized by allowing up to seven units per acre, but the majority is comprised of five units per acre (Lukacovic 2006). The commercial use is zoned as

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Source: Wyle 2005; Jacksonville Planning Department 2001; National Park Service 2001

Existing Land Use Type



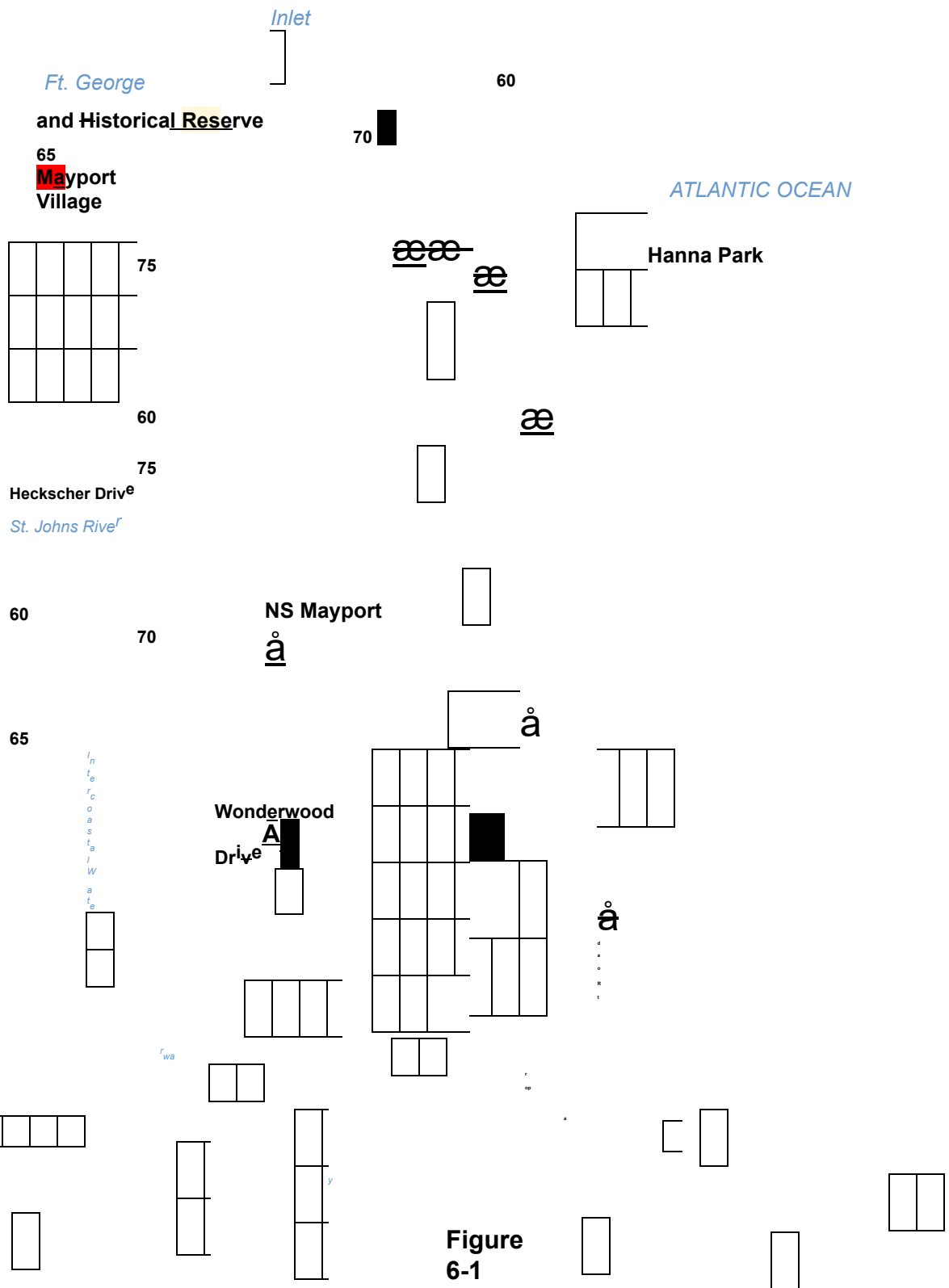


Figure 6-1

Existing Land Use and 2006 Noise Contours NS Mayport

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 Source: Wyle 2005; Jacksonville Planning Department 2001; National Park Service 2001

Existing Land Use Type

Cultural, Entertainment, and Recreational

Manufacturing

Residential

Transportation, and Utilities

Vacant/Undeveloped

Runway and Taxi Aprons

Source: Wyle 2005; Jacksonville Planning Department 2001; National Park Service 2001

Ft. George

Inlet

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0.5 0.25 0 0.5 Miles

Resources Production
and Extraction

Services

Trade

APZ Boundary

Church

School

Timucuan
Ecological
and Historical Reserve

Mayport
Village

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Heckscher Drive PRIMARY

CLEAR ZONE

ATLANTIC OCEAN

ZONE

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St. Johns River

SURFACE

NS Mayport

CLEAR

Intercoastal

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Hanna Park

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Wanderway

Atlantic

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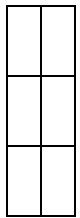


Figure 6-2
Existing Land Use and 2006 APZs
NS Mayport

Air Installations Compatible Use Zones Report
Naval Station Mayport, Florida

medium-density, which allows up to 20 units per acre; however, there is no medium-density existing there currently. Medium-density commercial is anticipated in the future as the City of Jacksonville continues to develop (Lukacovic 2006).

The southern edge of NS Mayport is bordered by State Route SR A1A, Wonderwood Drive, and Kathryn Abbey Hanna Park. Huguenot Park, Little Talbot Island Park, and Fort George Island are north of the St. Johns River. Land uses along the boundaries of the Installation generally provide good buffers between NS Mayport and surrounding communities. Commercial development around NS Mayport is located primarily in the community of Mayport, along SR A1A, and south of the naval complex along Mayport Road. The area around the Installation is part of the beach communities of Atlantic, Neptune, and Jacksonville Beach. The predominant development trends are toward infill along the major arterial roadways. The remainder of the area is almost built out, or is covered by tidal salt marsh. Construction has been completed on the Wonderwood Connector, a limited-access divided highway that connects the Mayport area directly with the City of Jacksonville. The major implication of this divided highway on the area has been in changed traffic patterns for the area (Lukacovic 2006).

Existing land use at NS Mayport is the result of planned incremental development of facilities during station operation. In general, administration, maintenance, and repair functions are located adjacent to the waterfront, providing a logical grouping of activities around the ships and turning basin. The 8,000-foot runway and airfield operations lie to the west of the turning basin between the harbor operations and the community of Mayport. Housing and community facilities are separated from the industrial areas by the roadway network, administration facilities, and the golf course.

Next to port operations, air operations constitutes one of the largest land

use activities at NS Mayport, consisting of Runway 05/23, parking aprons, taxiways, clear zones and APZs. Air operations influence and define other land use activities at the Station, which include administration, community and medical facilities, recreation, family and

Air Installations Compatible Use Zones Report
Naval Station Mayport, Florida

troop housing, supply/storage, training, ordnance storage, and maintenance/utilities. All development on-station has occurred east of the airfield.

Jacksonville/Duval County Population and Growth Trends

The City of Jacksonville is divided into six planning districts; the NS Mayport area is located in the Greater Arlington Planning District. The Greater Arlington Planning District was the second most-populated district in the county in 2000, with a population of 186,072 (City of Jacksonville Department of Planning and Development 2005). The 2000 population represents a 26% increase in population (38,145 people) since 1990.

The City of Jacksonville Department of Planning and Development generated population projections for Duval County and the six planning districts that comprise the City of Jacksonville (Table 6-1). NS Mayport falls within the Greater Arlington Planning District. Table 6-2 provides additional information on estimated changes in population within the District in recent years.

Table 6-1						
Population of Duval County, City of Jacksonville and Greater Arlington Planning District Population Projections						
Population Area	1990	2000	2005	2010	2015	2020
Duval County	672,971	778,879	589,361	910,562	962,943	1,013,469
City of Jacksonville	635,230	735,617	819,210	869,704	921,922	973,104
Greater Arlington Planning District	147,927	186,072	205,341	217,757	231,052	243,609
Source: City of Jacksonville Department of Planning and Development 2005.						

Table 6-2				
Greater Arlington Planning District Population Estimates				
	2003	2004	Annual	% Change

Population	197,579	201,062	3,483	1.8
	2004	2005	Annual	% Change
Population	201,062	205,341	4,279	2.1
Source: City of Jacksonville Department of Planning and Development 2005.				

Growth in the NS Mayport vicinity has been extensive, especially to the west of the Installation (Salem 2006). Growth patterns in the NS Mayport area can be further illustrated by the residential building statistics for the area. In 2004, a total of 9,574 residential units

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Air Installations Compatible Use Zones Report
Naval Station Mayport, Florida

being for single-family units (City of Jacksonville Department of Planning and Development 2005). The Greater Arlington Planning District accounted for 13% of the total permitted units. An analysis of trends and a comparison with recent historical data indicate that the total amount of new residential units during 2004 was an increase of 16% over residential development in 2003. Growth in the Greater Arlington Planning Area remained fairly constant, with little or no growth from 2003 to 2004.

In terms of new developments occurring or proposed near the Installation, none are currently proposed within the existing AICUZ (Lukacovic 2006). However, a mixed-use development (commercial uses and condominiums) has been proposed for Mayport Village, located outside the existing AICUZ. It will be located near the U.S. Coast Guard base at the southern portion of the village, near the river. Roughly four or five parcels would be developed; the condominiums would be located on the larger parcel of the group (Lukacovic 2006). The developer for the project has only spoken in generalities about the project, but has indicated that 80 units could be the target

Airport Environ Zone Acknowledgement A notice that must be filed upon sale, lease, transfer, development, application for zoning or land use change, or subdivision or platting of property within the Notice Zones which indicates that the property is located in the vicinity of an airport and may be subjected to significant noise levels and/or accident potentials and/or lighting regulations due to the airport operations. were permitted in Jacksonville, the majority

number for condominiums (Lukacovic 2006). The project would be developed using conventional zoning; therefore, no rezoning for the affected parcels would be necessary. There is some concern that if the existing AICUZ area is expanded outward in the future, the parcel of land on which the condominiums are to be developed could be within the AICUZ (Lukacovic 2006). Prospective buyers of the condominiums would not necessarily be aware of the ambient noise from the Installation, as that area is not currently covered under the

notice requirement for the Airport Environ Zone Acknowledgement.

Economy and Employment

As of January 2005, nearly 90% of the non-agricultural labor force was employed in the service-producing sector of the local economy. The Jacksonville Metropolitan Statistical Area unemployment rate was 5.2% for 2004, slightly higher than the overall rate for the state

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Air Installations Compatible Use Zones Report Naval Station Mayport, Florida

economy (Austin 2006). The total economic impact of NS Mayport is approximately \$1.8 billion. This number was derived by the following formula (Austin 2006):

Payroll X 2.5 (economic multiplier) + Goods and Services

Economic Impact NS Mayport provides a significant economic contribution to the City of Jacksonville, with a total economic impact of approximately \$1.8 billion annually. of Florida of 4.1% (City of Jacksonville

Department of Planning and Development 2005). The Navy and the Duval County Public Schools are the top two employers in Jacksonville. NS Mayport employs 16,246 employees and the Duval County Public Schools employ 15,000 (City of Jacksonville Department of Planning and Development 2005). The per capita income for Jacksonville in 2003 was just under \$34,000.

NS Mayport provides a significant economic contribution to the City of Jacksonville. As of January 2004, the military/civilian payroll was \$638.7 million and \$200 million worth of goods and services were purchased in the local

There are also 41,897 DoD retirees and Survivor Benefits recipients with a payroll of \$857 million in the greater Jacksonville area.

6.1.2 Planning Authority

NS Mayport and its AICUZ footprint lie entirely within the incorporated area of Jacksonville/Duval County. The 2010 Comprehensive Plan for Jacksonville/Duval County is the primary public policy document forming the basis for any future land use ordinances. Its intent is to encourage the most appropriate use of land, water, and resources consistent with the public interest, to overcome present limitations and deal effectively with future problems that may result from the use and development of land within the city. The body of

the plan discusses existing conditions, develops future goals/objectives, and recommends implementation strategies for such issues as:

- ③ Future land use;
- ③ Natural resources and water quality;
- ③ Cultural resources;
- ③ Affordable housing;
- ③ Parks, recreation, and open space;

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Air Installations Compatible Use Zones Report Naval Station Mayport, Florida

- ③ Community facilities;
- ③ Transportation; and
- ③ The economy.

The comprehensive plan implements its goals and objectives through a set of land development regulations. Jacksonville/Duval County adopted an AICUZ ordinance to its comprehensive zoning regulation in 1991: Zoning and Development Standards, Ordinance 91- 59-148.

The zoning regulation is currently being updated for 2006.

Chapter 656, Part 10 of the updated draft zoning code addresses elements of the AICUZ Program, as well as FAA regulations. The AICUZ ordinance was established to protect future development from the effects of aircraft noise and accident potential, and to prevent obstruction to air navigation. The regulations that appear in Part 10 apply to all land within the delineated airport noise zones, APZs, clear zones, runway safety areas, runway protection zones, and airspace height and hazard zones. These regulations override and supersede other regulations in the zoning code.

6.2 Land Use Compatibility Guidelines and Classifications

The Navy has developed land use compatibility recommendations for APZs and noise zones. These recommendations, which are found in OPNAVINST 11010.36B, Air Installations Compatible Use Zones Program (Navy 2002), are intended to serve as guidelines for both the placement of APZs and noise zones, and the development of land uses around military air installations. The guidelines assume that noise-sensitive land uses (e.g., houses, churches, amphitheaters) will be placed outside high-noise zones and that people intensive uses (e.g., regional shopping malls, theaters) will not be placed in APZs. Certain land uses are considered incompatible with APZs and high-noise zones, while other land uses may be considered compatible,

or conditionally compatible (i.e., compatible under certain conditions).
The land use compatibility analysis conducted for NS Mayport was

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Air Installations Compatible Use Zones Report **Naval Station Mayport, Florida**

2005). The information obtained from the department's database is current through late 2004.

Within the County's database, each parcel of land in the county is classified using the Florida Land Use Classification Code (FLUCC). The FLUCC is a four-digit land use coding system for existing land use in Duval County. Based on the existing land use(s), a four-digit number has been assigned to each parcel of land in the county. Each number in the FLUCC classification can be equated to a corresponding number and associated land use categories of the Standard Land Use Coding Manual (SLUCM).

FLUCC
Florida Land Use Classification Code

OPNAVINST 11010.36B suggests the use of the SLUCM as guidance for determining land use compatibility for noise and APZs. Like the FLUCC, the SLUCM relies on a two- to four-digit land use coding system. In many cases, the land use categories and identification numbers in the county's FLUCC varied from the SLUCM. In most of these instances, the variation was a result of the county expanding upon the number of SLUCM land use categories, or choosing slightly different land use classification names. In a few cases, where SLUCM distinguishes among land use categories by adding decimal places to the numbers, the County combined the categories into one FLUCC number. Table 6-3 presents a composite of the Navy's land use compatibility recommendations for noise zones and APZs. The complete table of Land Use Compatibility Guidance can be found in Appendix B.

SLUCM
Standard Land Use Coding Manual
based on the Navy's land use compatibility recommendations and are presented in Appendix B. To determine land use compatibility within NS Mayport noise zones and APZs, the Navy examined both existing and planned land uses near the Installation.

6.2.1 Existing Land Use Data

The Jacksonville/Duval County Planning and Development Department was the primary source for existing land use information and associated data for determining land use compatibility within noise zones and APZs associated with NS Mayport (Killingsworth

Air Installations Compatible Use Zones Report
Naval Station Mayport, Florida

Table 6-3						
Land Use Compatibility Recommendations						
	Land Use Compatibility Noise Zone (DNL)			Land Use Compatibility With APZs		
	65-70	70-75	75-80	Clear Zone	APZ 1	APZ 2
Single-family residential						
Multi-family residential						
Assembly areas, churches, auditoriums						
Schools						
Office, retail						
Manufacturing/Industrial						
Outdoor parks and recreation						
Key: APZ = Accident potential zone. DNL = Day-night average sound level. Compatible Conditionally Compatible Incompatible						

For each land use activity assigned a FLUCC number in the County's database that is not reported in the SLUCM system, the Navy conducted a similarity analysis. In order to use the unreported FLUCC APZs of the SLUCM land use category it most closely matched and incorporated into the Navy land use compatibility guidance. Table 6-4 shows existing land use classifications and the SLUCM numbers associated with each land use classification.

GIS
 Geographic Information System
 land use categories in the Geographic Information Systems (GIS) data analysis, the unreported FLUCC land use activity was given the land use compatibility ratings for noise and

Table 6-4	
SLUCM Numbers and Land Use Classifications	
SLUCM Land Use Classification	SLUCM Numbers
Residential	11 through 19
Manufacturing	20 through 29, 31 through 35, and 39

Transportation, Communication, and Utilities	40 through 49
Trade	36, 37, 38, 50 through 59
Service	30, 60 through 69
Cultural, Entertainment, and Recreation	10, 70 through 80
Resources Production and Extraction	81 through 85, and 89
Vacant/Undeveloped	91, FLUCC #'s: 9500 ,9600, 9900
Key: SLUCM = Standard Land Use Coding Manual. FLUCC = Florida Land Use Classification Code.	

Air Installations Compatible Use Zones Report
Naval Station Mayport, Florida

6.3 Land Use Compatibility Assessment

To determine whether existing land use is compatible with aircraft operations at NS Mayport, the 2006 noise zones and APZs were overlaid on Jacksonville/Duval County's existing land use map (Figures 6-1 and 6-2, respectively), and existing land uses were compared to the land use compatibility recommendations shown in Table 6-4. Figure 6-3 shows areas of compatible, conditionally compatible, and incompatible existing land uses within high-noise zones surrounding NS Mayport. It shows that over the next 5- to 10-year period, within high-noise zones, there will be 1,024 acres of compatible lands (of which 401.3 acres are submerged land and 547.5 acres are military land), 41.7 acres of conditionally compatible lands, and no land uses of potentially incompatible lands.

Table 6-5 presents a breakdown of land use compatibility by land use classification and noise zone. Almost all existing land uses (96%) are compatible within NS Mayport noise zones (Table 6-6). Only 41.7 acres, or less than 4%, are conditionally compatible, and none of the land area is incompatible. It is worthwhile to point out that the majority of land use considered compatible within the noise contours is classified as vacant/undeveloped, wetland/marsh, roads, or military.

Figure 6-4 illustrates areas of compatible, conditionally compatible, and incompatible land uses within NS Mayport's APZs. Within the APZs, there are 540 acres of compatible lands (this is either submerged or military land), 49.4 acres of conditionally compatible land use within the Clear Zone, and 13.7 acres that are incompatible. The

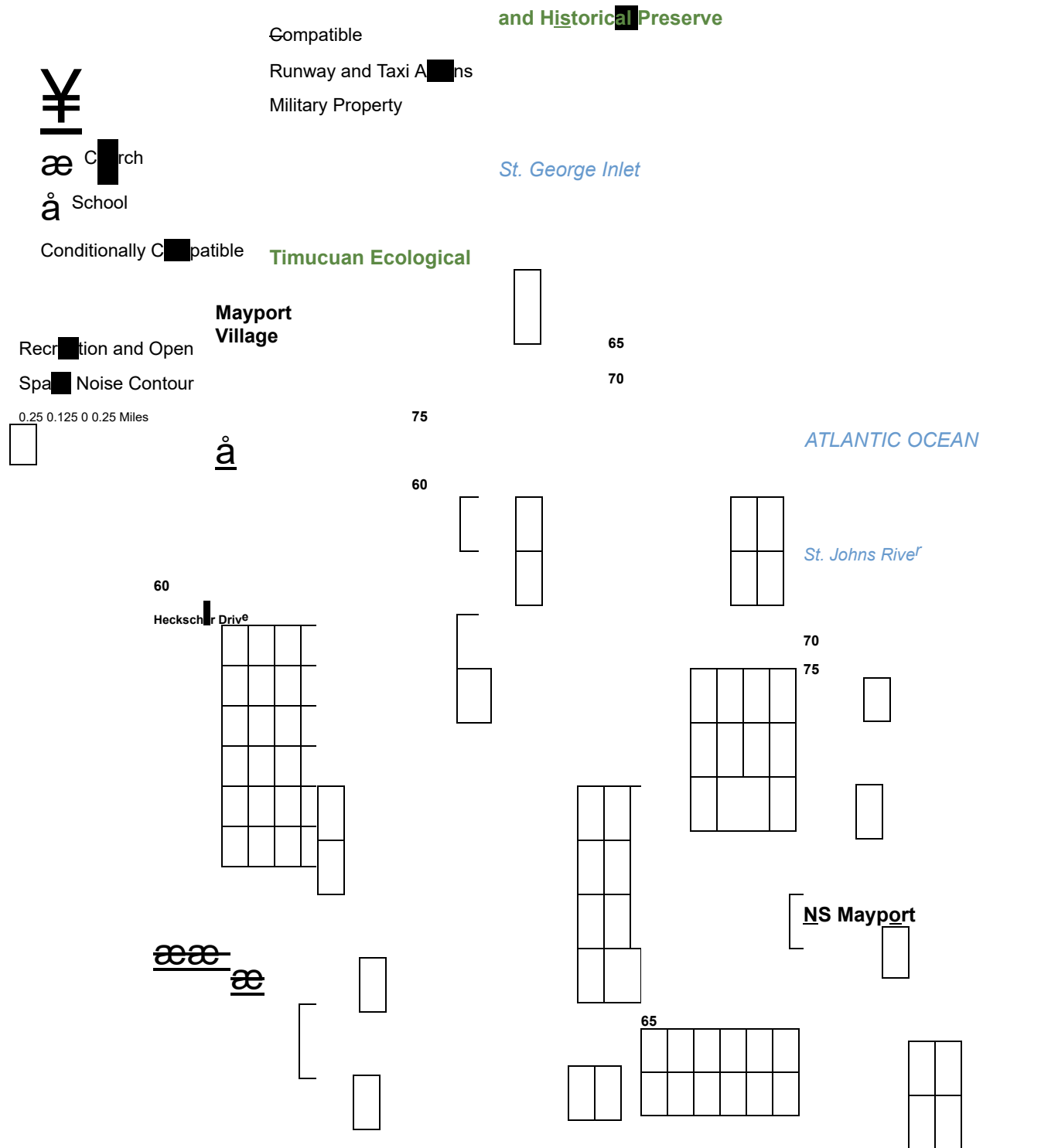
incompatible land use within the Clear Zone is associated with the portion of the Timucuan Ecological and Historic Preserve located within the Clear Zone.

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© Ecology & Environment, Inc. GIS Department Project #02:000822-SZ02-0
 \\BUFSDL4\GIS\Tallahassee\Mayport\Mayport2006\Maps\MXD\AICUZRptfigure_lucompat_noise.mxd

Source: Ecology & Environment, Inc. 2005; Wyle 2005; Naval Station Mayport 2000; National Park Service 2001

1/22/2006 **Land Use Compatibility**



Transportation	0.2	-	-	-	-	-	-	-	-	-	-	-	0.2
Trade	2.2	-	-	-	-	-	-	-	-	-	-	-	2.2
Services	47.5	3.7	-	5.4	-	-	-	-	-	-	-	-	56.6
Cultural and Recreation	-	25.5	-	-	0.4	-	-	-	-	-	-	-	25.9
Resource Production	-	-	-	-	-	-	-	-	-	-	-	-	-
Vacant/ Undeveloped	5.3	-	-	-	0.1	-	-	-	-	-	-	-	5.4
Wetland/Marsh	326.6	-	-	70.6	-	-	3.7	-	-	0.4	-	-	401.3
Military	250.5	-	-	174.8	-	-	109.1	-	-	13.1	-	-	547.5
Roads	12	-	-	2.9	-	-	-	-	-	-	-	-	14.9
Total Areas	645.8	41.2		252.7	0.5	0	112.8	0	0	13.5	0	0	1,067.0

Note: Due to rounding, totals in the table may not match.

Key:

- = Existing land use not within the area.

CC = Conditionally compatible.

DNL = Day-night average sound level.

N = Incompatible.

Y = Compatible.

Table 6-6
Compatibility of All Land Use Activities within the AICUZ Footprint
Using Existing Land Uses

Compatibility	NOISE ZONES		APZ	
	Acres	%	Acres	%
Compatible	1,025.3	96%	540.21	90%
Conditionally Compatible	41.7	4%	46.85	7.8%
Incompatible	0	0%	13.8	2.2%
Total	1,067.0	100%	600.8	100%

Note: Due to rounding, totals in the table may not match.

Key:

% = Percent.

AICUZ = Air Installations Compatible Use Zones.

APZ = Accident potential zone.



Church

School

Incompatible

Conditionally Compatible

Compatible

Runway and Taxi Aprons

Military Pro

Timucuan Ecological

Mayport Village

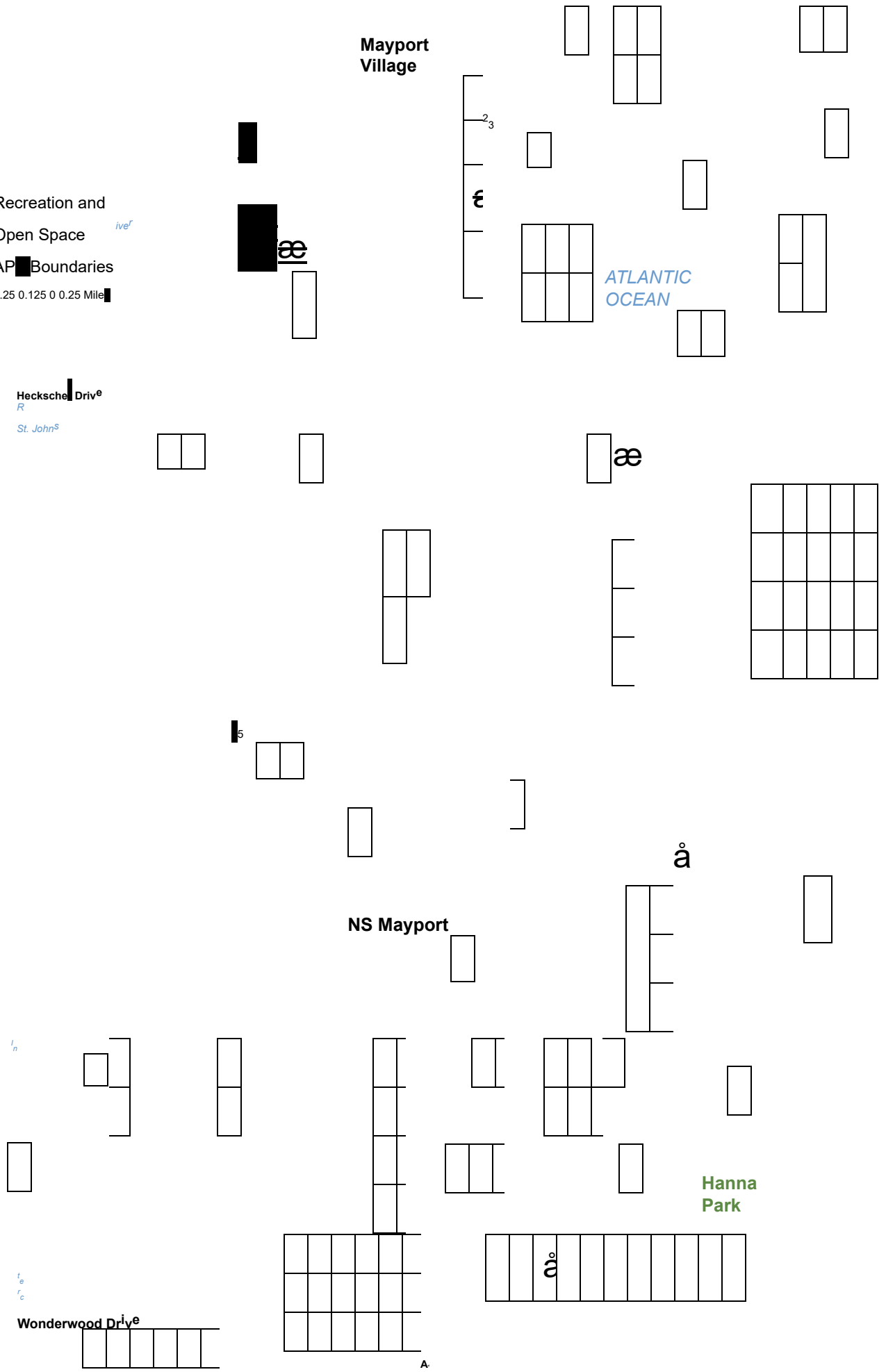
Recreation and Open Space
AP Boundaries
0.25 0.125 0 0.25 Mile

Hecksche Drive
St. John

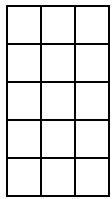
NS Mayport

Hanna Park

Wonderwood Drive

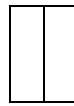


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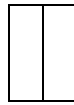


Figure 6-4

Existing Land Use Compatibility and 2006
APZs NS Mayport

Air Installations Compatible Use Zones Report
Naval Station Mayport, Florida

Table 6-7 presents a breakdown of land use compatibility by land use classification and APZ. The vast majority (89%) of existing land uses within NS Mayport’s APZs are compatible. Approximately 8% are conditionally compatible and 3% are incompatible. Compatible land uses are primarily the land use classifications of wetland/marsh and military. The only incompatible land use is the portion of Huguenot Park (Timucuan Ecological and Historic Preserve), which lies within the Clear Zone for Runway 23. The land use classification for this parcel is Park/Recreation.

Table 6-7
Existing Land Uses within NS Mayport Primary Surface and Clear Zones (acres)

Land Use	Primary Surface			Clear Zone			Total
	Y	CC	N	Y	CC	N	
Residential	–	–	–	–	–	–	0
Manufacturing	–	–	–	–	–	–	0
Transportation	–	–	–	–	5.2	–	5.2
Trade	–	–	–	–	–	–	0
Services	–	–	–	–	39	–	39
Cultural and Recreation	–	–	–	–	–	13.7	13.7
Resource Production	–	–	–	–	–	–	0
Vacant/Undeveloped	–	–	–	1	–	–	1
Wetland/Marsh	1.3	–	–	163.4	–	–	164.7
Military	288	–	–	87.3	–	–	375.3
Roads	–	–	–	–	5.2	–	5.2
Total Areas	289.3	0	0	250.7	49.4	13.7	604.1

Key:
 – = Existing land use not within the area.
 CC = Conditionally compatible.
 N = Incompatible.
 Y = Compatible.

6.4 Summary of Land Use Compatibility

6.4.1 Installation Land Use Compatibility Concerns

The majority of development at the Installation occurs in the core areas east and south of the airfield. The core areas are a mixture of land use and are the most populated areas of the Station. Development within the core areas is not encumbered by Clear Zones, but small portions of the harbor basin and port facilities fall within the “greater than 60” DNL. Most of the on-station land use, with the exception of

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Air Installations Compatible Use Zones Report Naval Station Mayport, Florida

housing, community facilities and recreational activities, is considered conditionally compatible within the 75 to 80 DNL. These land uses are incompatible at greater than 80 DNL. Areas of the Station outside the cores are generally undeveloped wetlands or developed with land use activities that would be more or less consistent with the APZs and noise zones in which the activities occur.

Research of the most recently proposed military construction projects for

NS Mayport revealed no proposed land use activities that are inconsistent with APZs. No significant land use/noise incompatibilities would be expected from the proposed military construction projects. The significance of noise impacts would be similar to existing conditions.

6.4.2 Community Land Use Compatibility Concerns

Three churches are located within the “greater than 65” DNL (Figure 6-3). These churches are concentrated near the northwest boundary of the Installation within the Village of Mayport. Churches within high-noise zones are generally compatible with noise-level reduction; however, measures to achieve noise reduction do not necessarily solve noise difficulties. As shown on Figure 6-3, there are no institutional land use encroachments on the APZs outside the Installation.

While not totally built-out, the land area surrounding NS Mayport is dominated by mature development. For off-Installation properties, the land use compatibility analysis identifies a few properties that are currently undeveloped or vacant, or have an identified additional

development potential. These properties are identified on Figure 6-5; the properties identified as “1” through “4” are currently vacant residentially zoned properties within the 2006 noise contours. As vacant land, they are compatible with the Navy’s land use compatibility guidance (Table 6-4). However, should these properties be developed to their fullest potential, depending on the noise attenuation implemented during construction, they may not remain compatible with the Navy’s land use recommendations.