

CHAPTER TWO

STUDY AREA PROFILE



This chapter provides important information about the military and civilian entities within the Bay County Joint Land Use Study (JLUS) study area. The chapter presents an overview of the history and current operations at Naval Support Activity Panama City (NSA PC). Profiles and analyses of development trends and growth potential in the jurisdictions within the Bay County JLUS study area are also provided. Figure 2-1 identifies the study area selected for the JLUS.

Identifying and describing the activities performed on the military installation provides valuable insight into the importance of NSA PC as a national strategic asset. This information will enable stakeholders to make informed decisions about the future development and economic growth of their communities, which ultimately impacts the continued existence and future role of NSA PC. It also provides the military with a baseline understanding of the types of activities occurring outside the installation when considering future missions and operations.

2.1 NAVAL SUPPORT ACTIVITY PANAMA CITY

History

NSA PC began in 1942 as a 373-acre tract of land originally supporting a Naval Section Base. This land was redesignated as the United States (U.S.) Naval Amphibious Training Base in 1944 and then again as the U.S. Navy Mine Countermeasures Station in July 1945. During this time, personnel, equipment and other resources were transferred from the U.S. Naval Mine Warfare Test Station in Solomons, Maryland.

In April 1955 the installation was renamed the U.S. Navy Mine Defense Laboratory, and its missions included torpedo countermeasures, helicopter mine countermeasures, and mine hunting and watching operations. Dive operations began a short time after, in the late 1950s.

The installation has undergone many name changes since then, including: the Naval Ship Research and Development Laboratory Panama City in 1967; the Naval Coastal Systems Laboratory in 1972; the Naval Coastal Systems Center in 1978; the Coastal Systems Station in 1992; and ultimately the Naval Support Activity Panama City in 2003.

With the inclusion of the Naval Experimental Diving Unit (NEDU) in 1973 and the Naval Diving and Salvage Training Center (NDSTC) in 1974, the installation became the premier site for Navy diver training and research. NEDU served to independently test and evaluate all diving and hyperbaric operations, while the NDSTC served to provide all aspects of diver training, ship salvage, and submarine rescue. When the installation became NSA PC, the Naval Sea System Command (NAVSEA) component of the Coastal Systems Station became the Naval Surface Warfare Center (NSWC). The NSWC brought expertise in scientific and engineering disciplines in the mission areas of mine warfare, special warfare, expeditionary warfare and diving and life support. This is one of the largest test and evaluation labs in the entire Navy.

Tenant Commands

NSA PC hosts 13 tenants who conduct various activities in support of marine and littoral warfare and operations for the U.S. The following is a description of the major tenant commands at NSA PC:

Naval Surface Warfare Center, Panama City Division



The NSWC, Panama City Division is the largest tenant at NSA PC and is the premier naval systems laboratory for the Department of Defense (DOD). Employing approximately 2,000 civilian and military personnel, it is responsible for researching, developing, testing, and evaluating (RDT&E) a variety of naval operations, including mines, mine warfare, undersea countermeasures, diving and life support systems, littoral warfare, naval special warfare, and amphibious / expeditionary maneuver warfare. The NSWC also pursues scientific disciplines in optics, acoustics and robotics.

Navy Experimental Diving Unit



The NEDU at NSA PC is comprised of approximately 120 personnel working with specialists who range in experience in the fields of explosives ordnance disposal (EOD), diving medicine, salvage, saturation, Sea-Air-Land (SEAL), and various science and engineering degrees. The NEDU's mission is to test and evaluate diving, hyperbaric, and other life support systems, as well as conduct tests and development in biomedical and environmental physiology. All of these procedures are used to determine safety and operational logistics for manned diving systems. The activities and expertise of the NEDU provide technical advice to the Naval Sea Systems Command.

Naval Diving and Salvage Training Center

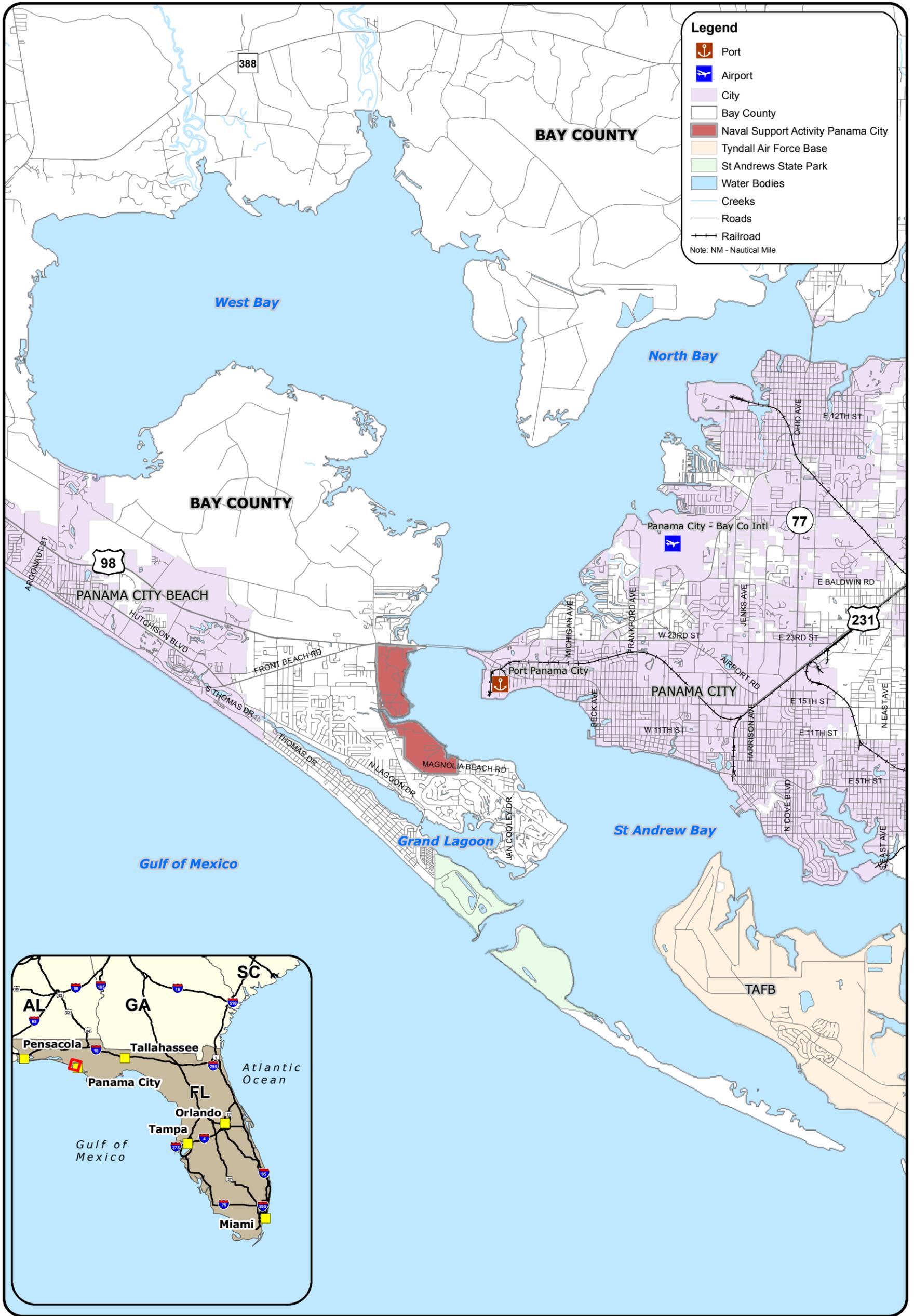


The NDSTC trains all U.S. military divers, with the exception of Navy Special Warfare (SEALs), Special Forces, for the Navy, Army, Air Force, Coast Guard, and Marine Corps Combatant Divers. A limited number of law enforcement, government agency, and Allied Force personnel are also trained at the NDSTC. There are 22 different instructional courses, including submarine rescue, combatant diving, underwater construction, demolition, ship's salvage, and EOD. An average of 300 students are engaged in training at any time, generating a throughput of approximately 1,600 students annually.

Center for Explosive Ordnance Disposal and Diving



The Center for EOD and Diving is charged with ensuring that EOD technicians and divers master the proper skills and knowledge in order to successfully progress in their duties.



**JLUS Study Area
Figure 2-1**



Bay County JLUS

The remaining tenants at NSA PC include:

- Commander, Submarine Development Squadron 5
- Explosive Ordnance Disposal Mobile Units 6 & 12
- Naval Hospital Pensacola Branch Clinic
- Naval Criminal Investigative Service
- NSWC Detachment SEAL Delivery Vehicle
- Naval Computer and Telecommunications Station (NTCS) Jacksonville
- Fleet Industrial Supply Center Detachment
- Public Works Center Jacksonville
- Veterans Administration Clinic

Current Mission Operations

NSA PC is the premier dive training and littoral warfare center for divers from all branches of the U.S. military. The waters in and around St. Andrew Bay provide both rough and calm water training to give students and personnel a variety of different types of training. Each tenant command at the installation adds to the overall mission of NSA PC. Through the operations and missions of the tenants, NSA PC is the consolidated training center for all Navy diving, salvage, research, development and testing for the U.S. and select Allied Forces. The majority of the open water training takes place in 10 designated operational areas, which are further described under the Installation Setting subchapter.

In addition to diver training, there are several swim routes for the various training schools located at NSA PC. Navy SEALs have swim routes that utilize the SEAL Delivery Vehicle (SDV) in Operation Areas Bay-1 (BA-1), Bay-2 (BA-2), and Bay-3 (BA-3) in the waters immediately east of the installation. An SDV is a small transport craft used by SEALs to transport themselves and their gear from an offshore point, such as a submarine, to their destination near the shore. The SDV provides life support for SEALs during missions where they must travel further than they can swim to their objective and still perform effectively, or when they require more gear than they can tow. There are a



SEAL Delivery Vehicle

series of navigation markers in these areas that are used by SEALs to dictate their swim routes. Combat swimmers conduct swim training in Operation Area, Ammo Pier-1 (AP-1), swimming in 500 yard intervals east and west. NDSTC students have a 10,000 yard swim route that starts at NSA PC and travels northeast to North Bay, extending beyond Operation Area North Bay-2 (NB-2) and then returning back to the starting point. Figure 2-2 identifies these swim routes as well as the training areas utilized by NSA PC, that will be discussed later in the chapter.

Some of the training that takes place at NSA PC involves the use of a vehicle called the Landing Craft Air Cushion (LCAC). This high-speed amphibious craft can reach speeds of over 40 knots (approximately



Landing Craft Air Cushion

46 miles per hour) and carry a payload of 60 tons, with a 75-ton overload. The 88-foot long vessel is designed to ride on a cushion of air, and so it is much more versatile than conventional landing craft. This design allows it to access over 70 percent of the world's beaches while avoiding underwater obstructions.

There are approximately 60 to 80 LCAC operations and movements every year at NSA PC. In combat situations, the LCAC is deployed from ships to carry personnel and supplies to their destination. It has a range of 200 nautical miles (over 230 statute miles).

Helicopters stationed at NSA PC under the cognizance of the Naval Surface Warfare Center Panama City include two MH-60S Night Hawks. These helicopters are utilized for various missions, including mine hunting, search and rescue, towing, and Research, Development, Test & Evaluation (RDT&E). The helicopter operation routes are illustrated on Figure 2-3. Navy helicopter squadrons periodically visit NSA PC for training utilizing the MH-60S Night Hawk as well as the MH-53E Sea Dragon. These squadrons utilize the MH-53E Sea Dragon to deploy a tool called the MK-105 Magnetic Influence Minesweeping System, which is a high-speed catamaran hydrofoil platform. This device, commonly referred to as a sled, is towed by a MH-53E Sea Dragon to complete requested mine sweep operations at sea in an expeditious and safe manner (compared to conventional ship sweeps). This training prepares helicopter crews to use these systems in real world deployment and operations. NSA PC also uses the A/N37U mechanical mine sweep system, which is towed by a Sea Dragon and contains sweep wires that extend to a depth of 300 meters to detect counter deepwater, moored mines.

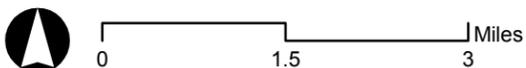
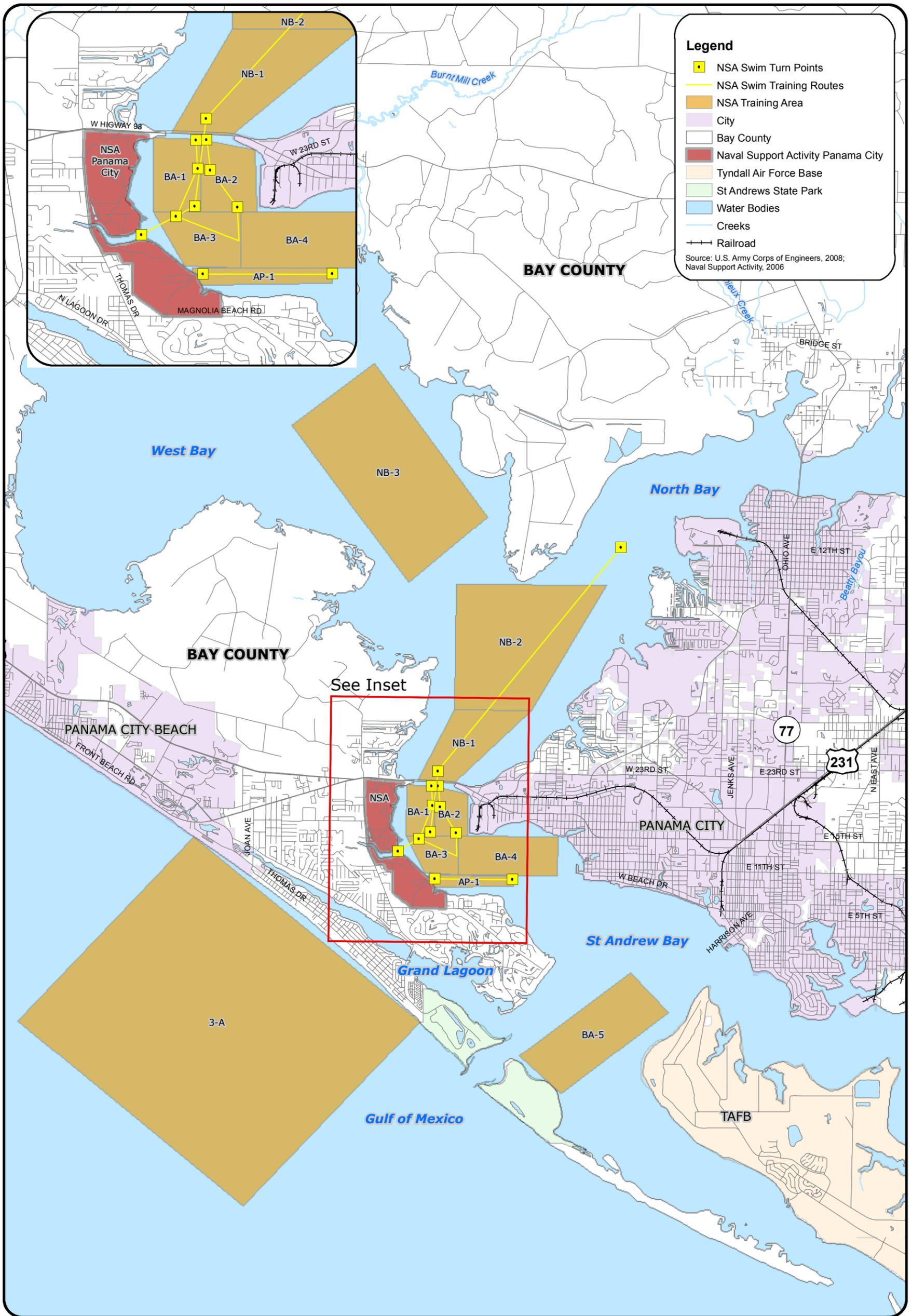


MH-53E Sea Dragon performs mine countermeasure training using the MK-105 sled

The current Panama City-Bay County International Airport is a noise sensitive area. The Navy has entered into a letter of agreement to operate within the established noise abatement patterns which include ascent and decent flight routes over St. Andrew Bay. The agreement additionally specifies that helicopter operations will be at a minimum of one half (1/2) mile from Panama City Beach. This 1/2 mile-buffer from Panama City Beach is shown as a noise sensitive area on Figure 2-3.

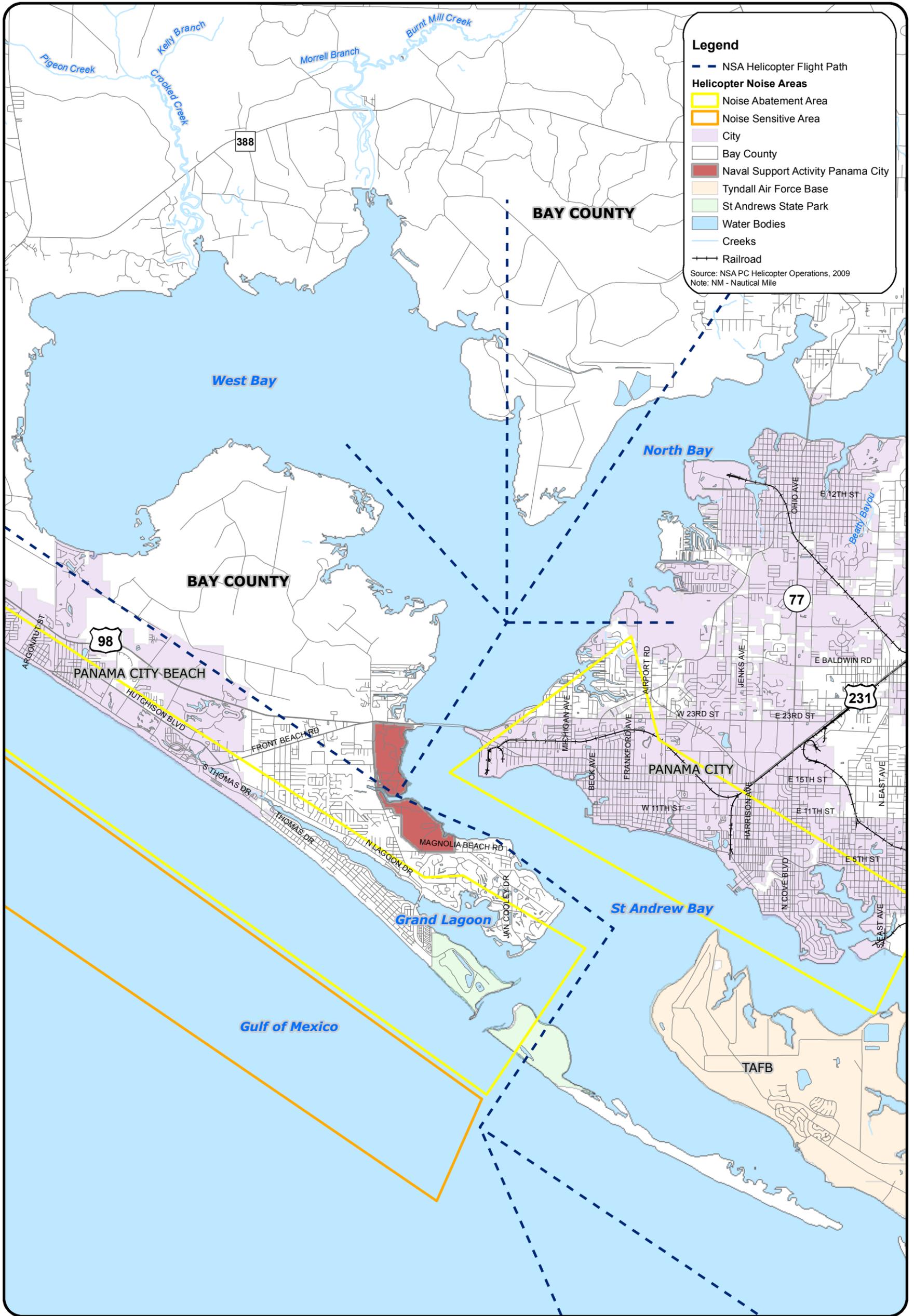
In March 2007, NSA PC became the new home of the Navy FSF-1 Sea Fighter. This high-speed naval craft was designed by the Office of Naval Research and was initially launched in

February 2005. With an operating crew of 26 personnel, the 262-foot long catamaran-style vessel is constructed of aluminum and can reach speeds in excess of 50 knots (nearly 58 miles per hour). The design allows the vessel to operate in water at minimum depths of 11 feet. The Sea Fighter has a helicopter landing pad large enough for two H-60 Blackhawk helicopters. A multi-purpose ramp located at the stern of the vessel allows for the deployment of manned and unmanned surface and sub-surface vehicles. The Sea Fighter is unique in that it utilizes a "plug and play" modular concept, meaning that it uses interchangeable modules to support a variety of tests and evaluations, depending on the required operation. The ship's mission bay can contain over twelve 20-foot mission modules that allow for quick



Bay County JLUS

**NSA PC Training Areas
and Swim Routes
Figure 2-2**



0 1.5 3 Miles



Matrix Design Group, Inc.
Integrated Design Solutions

Bay County JLUS

**NSA PC Helicopter Operations
Figure 2-3**



FSF-1 Sea Fighter

reorganization to transform its operational capabilities based on revised mission objectives and / or destinations. The modules are outfitted for mine countermeasures, battle force protection, amphibious support, and anti-submarine combat tasks. While at NSA PC, the craft will be used by NSWC and other tenants for experiments including assessing the Littoral Combat Ship mission module, temperature and environmental effects on aluminum fatigue properties, activities involving autonomous underwater vehicle operations, versatility, structural effectiveness, propulsion-system efficiency and mission flexibility of high-speed craft.

Future Mission Operations

The future mission horizon for NSA PC is very positive. Identified as the Center for Diving within the entire DOD, this critical component of military operations will continue to sustain both a robust training requirement and procedures development effort. Operations at NSA PC are expected to increase in the future, increasing in the number of classes and students that will attend the NDSTC from various branches of the military.

As Naval forces modernize, advancements in technology and modern warfare will result in increases in RDT&E. NSA PC's unique role and special weapon and support system programs will sustain the utilization of its specialized assets, along with its use of St. Andrew Bay and the open waters of the Gulf of Mexico.

NSA PC will be receiving a new system as the Navy replaces the aging LCAC with an updated Ship to Shore Connector (SSC). The SSC includes advanced technology, materials, and capabilities (compared to the LCAC) that will provide a water transport vehicle with increased speed, range, and payload. The SSC will also be able to operate in higher sea states with increased obstacle clearance at a reduced operation and maintenance cost.

Installation Setting

NSA PC occupies 657 acres of land on the western shore of St. Andrew Bay in Bay County, Florida. It is bounded by U.S. Highway 98 to the north, Thomas Drive to the west, Magnolia Beach Road to the south, and St. Andrew Bay to the east. The areas surrounding the installation include commercial, residential, with the Port of Panama City directly across the Bay. Development of new facilities at NSA PC could be constrained by current uses on the installation. These restraints include explosive safety distances and helicopter safety zones. The 148-foot Unified Facilities Criteria (UFC) boundary, which is a Department of Defense minimum building setback for anti-terrorism, along with other development constraints, are shown on Figure 2-4. The UFC setback requires all new and existing buildings on the installation to be set back a minimum of 148 feet from parking, roadways, or the controlled perimeter of the installation. Also shown on Figure 2-4 is the NSA restricted water area (Alligator Bayou) and 100 foot buffer zone; both of which are areas restricted only for military use. Alligator Bayou and 100 feet from the highwater mark is owned and controlled by NSA PC.

The northwest corner of NSA PC includes a 280-foot microwave tower. This tower is operated by the Air Force to relay communications between Eglin Air Force Base (AFB) to the west and Tyndall AFB to the south. Maintenance of this corridor is discussed in greater detail in Chapter 3.



Aerial view of northern portion of NSA PC

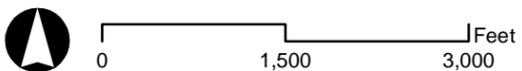
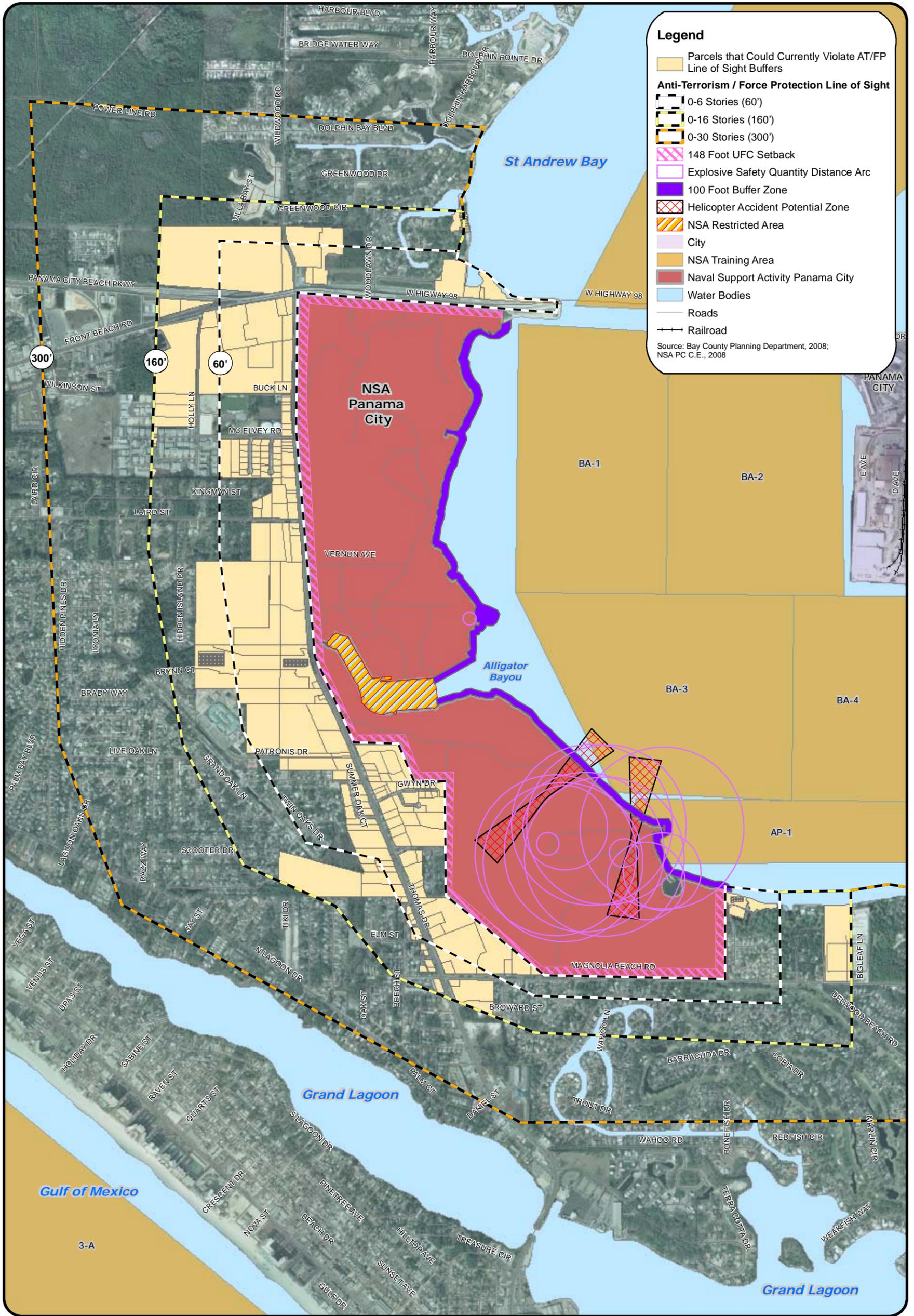
Within St. Andrew Bay, the Navy utilizes nine designated near-shore, open water operation areas, each designated for a specific purpose. Along with the Operation Areas associated with St. Andrew Bay, NSA PC

also utilizes training areas in the Gulf of Mexico. These areas are used by the NSWC for training activities involving ships, aircraft, and underwater systems in support of eight primary RDT&E activities: air, surface, and subsurface operations involving sonar, laser, electromagnetic, live ordnance, and projectile firing. Most of the training occurs in the water training areas of St. Andrew Bay, and in the Gulf of Mexico. The water depths and beach contours of St. Andrew Bay and the Gulf of Mexico provide training areas that simulate over 80 percent of the world's littoral regions. Furthermore, they provide a realistic simulation of the Persian Gulf region.

On October 14, 2008, these areas were federally designated as U.S. Navy Restricted Areas (see appendix for final ruling establishing restricted areas). This measure was enacted to ensure the safety of both the military and the public when training sessions are being conducted. Safety vessels are used in the military operation areas during training to define the specific securitized area that is temporarily unavailable for public use as well as to notify the public of ongoing military operations.

These operation areas are illustrated on Figure 2-2 and include:

- **Operation Area Ammo Pier-1, (AP-1)**, located adjacent to Alligator Bayou: Training includes a 2,000-yard swimming / insertion area, and nearby recompression chamber;
- **Operation Areas Bay Areas 1-5 (BA-1), BA-2, BA-3, BA-4, and BA-5**, located adjacent to shorelines near NSA PC: Training occurs daily in these areas from 6:00 am to 5:00 pm, with occasional night operations occurring until 4:00 am. These areas involve a wide range of testing and training, including LCAC vehicle testing, RDT&E equipment testing (research, development, testing, and evaluation), airborne and surface mine countermeasure training, NSA PC security boat patrols, and submersible SDV surface and sub-surface training;
- **Operation Area North Bay-1 (NB-1)**, located on the channel, north of the Hathaway Bridge: The operational hours for training at this area are from 8:00 am to 4:00 pm daily, with occasional night operations extending until 1:00 am. The sheltered waters and minimal boat traffic and currents allow for various types of training and testing, including the U.S. Marine Corps combat swimmers course, SDV underwater navigation training and systems integration training, and airborne and surface mine countermeasure training;
- **Operation Area North Bay-2 (NB-2)**, located to the north of Operation Area NB-1, between North and West Bays: This training area is used daily from 7:00 am to 4:00 pm, with occasional night operations until 1:00 am. The training that takes place in NB-2 includes minimal LCAC and other air cushion vehicle technology and a wide range of RDT&E equipment activities such as equipment towing and planting test equipment;



**NSA PC Development Constraints
Figure 2-4**

- **Operation Area North Bay-3 (NB-3)**, located in West Bay: This area is used during the same hours as Operation Area NB-2, and supports similar training missions; and
- **Operation Area Alpha 3 (3A)**, located adjacent to the coast in the Gulf of Mexico: This area, known as the Influence Range, is used daily from 8:00 am to 7:00 pm. The activities that take place within this area are much different than those at the other areas. The equipment, facilities, and oceanographic terrain and climate in this area allow for activities such as precise tracking, instrumented target installation, and influence measurements. The types of equipment used in 3A include underwater sound measuring devices called hydrophones, pressure sensors, magnetometers, and offsite monitoring equipment.

Installation Demographics

NSA PC is comprised of approximately 379 military personnel, 1,579 DOD civilians, and 546 contractors. Approximately 1,600 students are trained annually at the installation.

Installation Economic Impact

In Fiscal Year (FY) 2008, the total economic impact of NSA PC to the local communities was over \$590 million, with approximately \$654 million being provided through contracts and over \$238 million in payroll. The installation contributes to the local economy by purchasing local goods, contracting services, and maintaining active construction projects.

Family Housing

Family housing at NSA PC is operated and maintained by the private firm Balfour Beatty Communities (formerly GMH Military Housing). The contract was awarded in 2007 as part of an expanded effort to privatize military family housing at 11 Southeast Region Navy bases in five states. There are a total of 65 family housing units at NSA PC, which are separated into three neighborhoods (see Table 2-1). These neighborhoods, Peacock Drive, Pelican Lane, and Osprey Lane, are located at the northern end of the installation. Family housing at NSA PC includes a variety of recreational amenities and opportunities located throughout the community in areas from open space for team activities to shaded spaces for playgrounds and picnic areas.

Table 2-1. NSA Panama City Family Housing

Neighborhood	Rank-Grade	Number of Bedrooms / Home	Number of Homes
Osprey Lane	O-1 to O-3	3	7
	O-1 to O-3	4	1
	O-4 to O-6	3	3
	O-4 to O-6	4	4
Subtotal			15
Pelican Lane	E-1 to E-9	3	20
Subtotal			20
Peacock Drive	E-1 to E-9	2	4
	E-1 to E-9	3	22
	E-1 to E-9	4	4
Subtotal			30
TOTAL			65

Source: www.nsapanamacityhomes.com

Privatized housing is also referred to as Public / Private Venture (PPV) housing in the Navy. PPV housing is owned by a private entity and administered through a business agreement in which the Navy has limited rights and responsibilities. The private entity is entirely responsible for the construction, renovation, maintenance and day-to-day management of the housing. PPV housing may be located on or off government property and may be former military housing.

2.2 STUDY AREA PROFILE AND GROWTH TRENDS

Study Area Overview

The land area immediately to the north, south and west of NSA PC is composed of land under the jurisdiction of unincorporated Bay County. There are several docks, piers, and marinas located adjacent to the open water training areas in St. Andrew Bay. Port of Panama City and the Panama City-Bay County International Airport have been instrumental in helping the area to grow by providing transportation of goods and people. The area surrounding NSA PC has experienced significant growth in recent years, both in permanent residents and seasonal vacationers. The water areas in and around St. Andrew Bay that are used for military training are used by boaters and vacationers, and include many marinas where boats are moored. As mentioned earlier in the Chapter, the overall extent of the study area for the NSA PC JLUS is illustrated in Figure 2-1.

Study Area Trends

The following sections discuss the various aspects attributable to growth trends within the study area, including population growth, building permits, and housing values.

Population Growth Trends

In April 2008, Bay County exhibited an estimated population of 169,307 people, producing an increase of 14.2 percent from the 2000 population of 148,217. Bay County’s growth rate was slightly less than the State of Florida (17.7 percent) during the same timeframe. Panama City experienced the least amount of growth in the study area from 2000 to 2008, with an estimated April 2008 population of 37,457 people. The City’s increase only translated to a 2.9 percent growth rate from 2000’s population of 36,417. On the other hand, Panama City Beach experienced explosive growth. Its 2000 population of 7,671 grew an astonishing 75.3 percent to its estimated April 2008 population of 13,453. This is due in large part to the housing boom experienced during the first half of this decade and the attraction to beautiful Gulf beaches.

Table 2-2 shows historic population growth trends as well as the forecasted population estimates for the State of Florida, Bay County, the City of Panama City, and the City of Panama City Beach.

Table 2-2. Historic Populations and Long Range Population Forecasts, 1980-2030

Jurisdiction	Population					
	1980	1990	2000	2010	2020	2030
Florida	9,746,961	12,938,071	15,982,824	19,308,066	22,477,886	25,340,717
Percent Change from Previous Date	N / A	33%	24%	21%	16%	13%
Bay County	97,740	126,994	148,217	176,742	218,934	284,634
Percent Change from	N / A	30%	17%	16%	20%	24%

Jurisdiction	Population					
	1980	1990	2000	2010	2020	2030
Previous Date						
Panama City	33,346	34,396	36,417	38,184	39,570	40,423
Percent Change from Previous Date	N / A	3%	6%	5%	4%	2%
Panama City Beach	2,148	4,051	7,671	10,765	14,149	17,276
Percent Change from Previous Date	N / A	89%	89%	40%	31%	22%

Source: Florida Demographic Estimating Conference, February 2008 and the Florida Demographic Database, August 2008; <http://edr.state.fl.us/population.htm>; <http://flhousingdata.shimberg.ufl.edu>; Matrix Design Group, 2009; 2006 Bay County Evaluation and Appraisal Report.

Figure 2-5 illustrates the graphical representation of the estimated population growth change trends, identifying the annual percentage change in population. In each graph, the orange line represents the growth trend of the jurisdiction in which it is located. The only jurisdiction that will grow at a greater rate than the State of Florida is Panama City Beach. Due to the growth that has already taken place this decade, which exceeds projections, it could be even greater than shown in Table 2-2 and Figure 2-5.

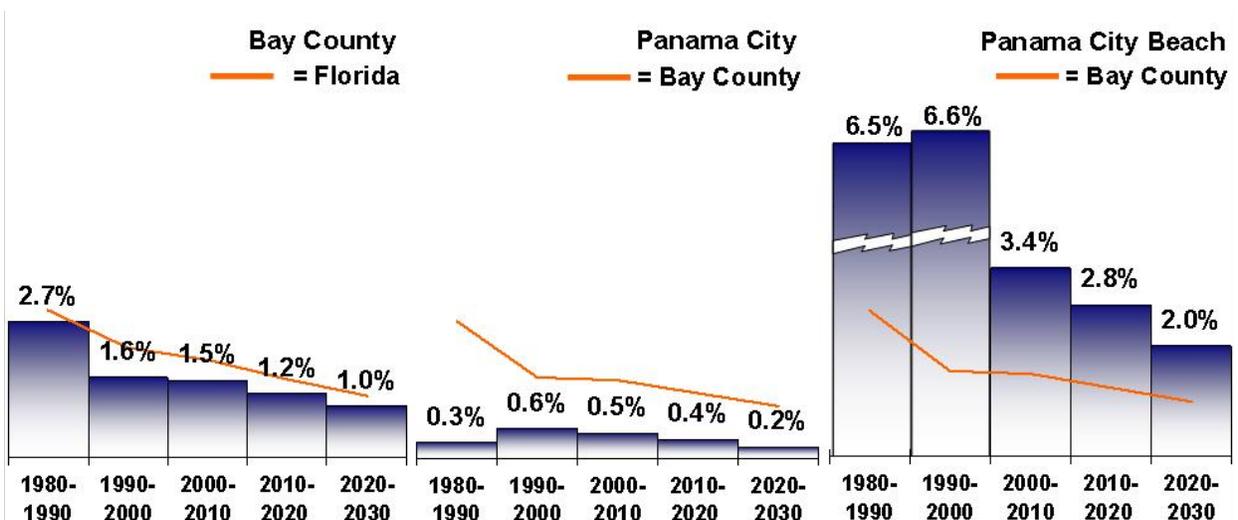


Figure 2-5. Annual Percent Population Change by Decade

Residential Building Permit Trends

Analyzing the increase in building trends within the study area provides additional insight into the amount of growth that is taking place. Figure 2-6 illustrates the trends for building permits issued for residential units in Bay County and Panama City Beach for the years 1999 to 2007. Building permits for Panama City are issued by Bay County, and so are included in the total for Bay County. In Bay County, there was a steady increase in building permits issued from the year 2000 to 2005. This indicates that the housing boom peaked in Bay County during 2005; however, it peaked in Panama City Beach in 2004. Housing construction experienced significant decline in 2006 due to national and regional economic conditions that reduced housing construction.

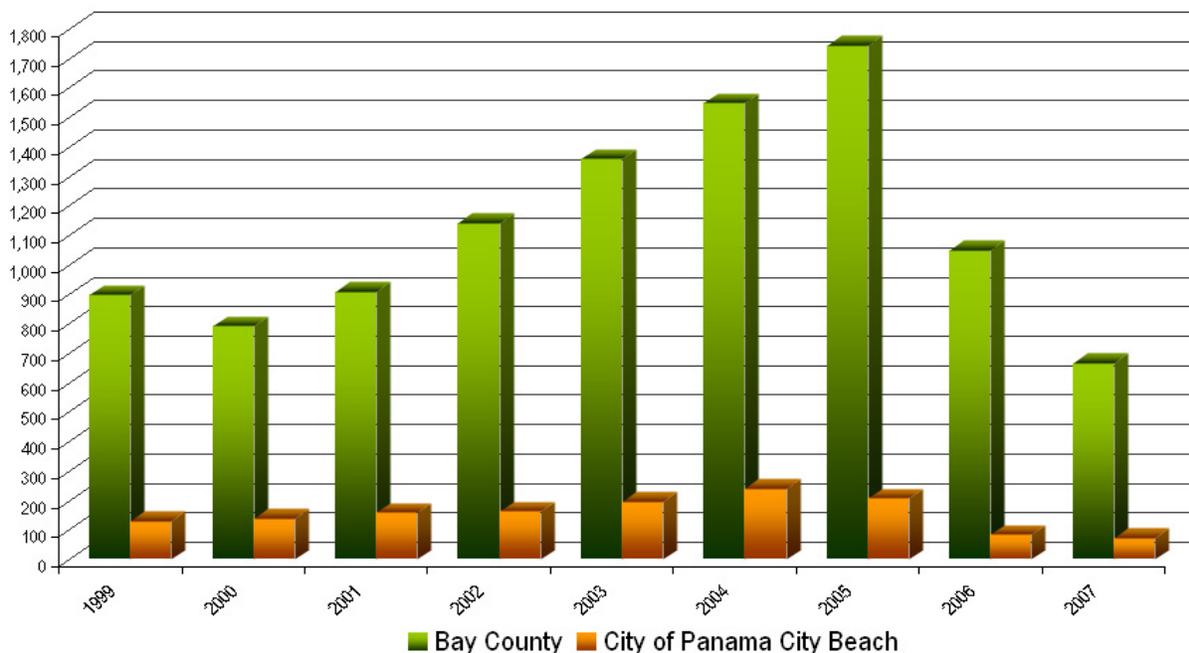


Figure 2-6. Building Permit Trends for Bay County and Panama City Beach, 1999-2007

Source: www.census.gov/const/www/permitsindex.html

Housing Value

When examining regional growth trends, the cost of housing can provide insight into areas that may be more attractive to certain residents. Housing values increased significantly within the JLUS study area between 2000 and 2007. Table 2-3 shows the numerical changes in housing value for Florida, Bay County, Panama City, and Panama City Beach. Bay County saw the lowest increase of the three jurisdictions, both monetarily and in terms of percentage. However, at nearly a 100 percent increase, this is still very significant. Panama City and Panama City Beach both increased in price by approximately 122 percent, almost 4 percent higher than the State of Florida. Panama City Beach experienced the highest monetary increase at \$142,900, which was \$18,000 higher than the statewide increase. The housing value increases of the study area indicate that the cities and lands around NSA PC are areas where people are willing to pay more to live, which typically corresponds with an increase in population.

Nationally, housing values have dropped in amounts ranging from moderate to significant over the past year. The impact of this trend on housing values within the Bay County JLUS study area remains to be seen, as updated information is not currently available.

Table 2-3. Median Housing Values

Jurisdiction	2000	2007	Percent Change	Value Change
Florida	\$105,500	\$230,400	118.4%	\$124,900
Bay County	\$93,500	\$185,900	98.8%	\$92,400
Panama City	\$75,800	\$168,400	122.2%	\$92,600
Panama City Beach	\$117,000	\$259,900	122.1%	\$142,900

Source: <http://quickfacts.census.gov> and <http://www.city-data.com>

2.3 COUNTY AND CITY PROFILE

Bay County

Bay County covers an area of approximately 1,033 square miles in the panhandle of northwest Florida, of which 763 square miles are land and 270 square miles are water. The name for the County comes from the local St. Andrew Bay. St. Andrew Bay is part of a larger inland body of water made up of St. Andrew Bay proper, West Bay, North Bay, East Bay, and associated tributaries. The land in Bay County is relatively flat, ranging in elevation from sea level to approximately 200 feet above sea level. The County was created on July 1, 1913 from portions of Washington, Calhoun, and Walton counties. It is bordered by Walton County to the west, Washington and Jackson counties to the north, Calhoun and Gulf counties to the east, and the Gulf of Mexico to the south. The county seat and largest city in Bay County is Panama City.

Bay County has a strong military presence, with not only NSA PC, but also Tyndall Air Force Base operating in the area. Tyndall AFB is one of the largest air force bases in the U.S., covering almost 49 square miles of land along the coast of the Gulf of Mexico, in the southern portion of the County. These two military installations are among the top three major employers in Bay County, with the third being Bay District Schools. Other economic and employment drivers in Bay County include aviation and aerospace, financial services, manufacturing, construction, real estate, medical, and tourism.

Bay County has a total of 27 miles of gulf and bay coastline and an average of 320 days per year of sunshine, which makes it a popular vacation destination. During the seasonal months, which peak in July, the population of Bay County almost doubles with tourists and seasonal residents. The majority of this growth is focused in Panama City Beach and the surrounding unincorporated county lands to the west of NSA PC. Additionally, yacht clubs and marinas contribute 2,194 boat slips, 1,888 of which are currently occupied in Bay County. These figures are compounded by residents and tourist utilizing personal boat slips, local boat launches, and vessels visiting from other areas. The County's main east-west vehicular transportation corridors include U.S. Highway 98, County Highway 388, and State Road (SR) 30. U.S. Highway 98 and SR 30 extend southeast to northwest along the coastal areas. The primary north-south roadway corridors include SR 79 to the west of West Bay, SR 77 to the east of West Bay, and U.S. Highway 231 east of North Bay.

City of Panama City



View of Panama City

Incorporated in 1909, the City of Panama City is located adjacent to St. Andrew Bay on its eastern shore, directly across the Hathaway Bridge from NSA PC. The City covers approximately 28 square miles on land, and 35 square miles of land and water.

Although the population increase in Panama City has not been as robust as other surrounding areas, new development and residential infill activity has recently occurred in the City, particularly in the downtown area. With a population of 36,417 in 2000, the 2008 estimate only increased by 1,040 to a total of 37,457. The Panama City-Bay County (PC-BC) International Airport is located in Panama City. This is a common entry point for tourists and seasonal residents during the peak summer months.

The portion of Panama City located south of U.S. Highway 98 is primarily developed along the shoreline to service a variety of marine activities. The Sun Harbor Marina provides multiple sized slips for watercraft. Port Panama City is also located in this area. The Panama City Marina and Marina Civic Center are located in downtown Panama City. This marina has recently been renovated and includes a 240-slip facility designed to lodge vessels ranging from 30 to 120 feet in length with drafts up to 10 feet. A diverse selection of restaurants, art galleries, and other attractions are located within walking distance of the marina.

City of Panama City Beach



Panama City Beach Coastline

The City of Panama City Beach is located about two miles to the west of NSA PC and covers an area of approximately 18 square miles. It was incorporated in 1977 and currently extends about 12 miles along the coast of the Gulf of Mexico.

The sugary white sand beaches of Panama City Beach draw hundreds of thousands of tourists every year. Approximately 4.5 million to 6 million people visit Panama City Beach annually, including more than 100,000 college and high school students during the spring break months of March and April. A construction boom, starting in 2001, has resulted in a very different skyline for the City, which now includes many high-rise condominiums and hotels. In November 2006, the City was declared the number one real estate market in America for the next five years by CNN / Money. Development has slowed in the past year due to the national and regional constriction of the economy.

The population of fulltime residents living in Panama City Beach in 2000 totaled 7,671 people. Estimates for 2008 show 13,453 fulltime residents, which is an increase of 75 percent in the eight-year period. During the summer months, daily population estimates for the City increase to approximately 90,000 people. U.S. Highway 98 north of NSA PC, the major arterial connecting Panama City-Bay County International Airport, experiences heavy congestion during the tourist season. The existing airport is scheduled to be closed in 2010 and replaced with a new facility located in western Bay County. The existing airport site will be redeveloped as a mixed-use complex comprised of over 3,000 residential dwelling units and 700,000 square feet of office space and marina.

2.4 CURRENT DEVELOPMENT OVERVIEW WITHIN THE STUDY AREA

Existing Land Use

The lands directly adjacent to NSA PC along Thomas Drive are mainly utilized by commercial businesses. Although these areas are primarily planned for commercial use, there are a significant number of vacant, undeveloped parcels located directly adjacent to the installation. Some pockets of single family residential and multifamily residential are mixed into these areas directly adjacent to the installation, most significantly along its southern and southeastern boundaries. A large multifamily condominium building, Marina Landing, was constructed on the north side of Highway 98 directly adjacent to the north boundary of the installation. The areas north of Highway 98, beyond the development along the



Marina Landing

highway, are mainly undeveloped or developed with low density residential uses. A few high rise condominium structures with associated marinas are located along the shore of St. Andrew Bay, north of NSA PC.

The City of Panama City Beach is located approximately two miles west of the installation. This area has developed as a tourist beach destination including high rise hotel, condominium, and timeshare structures and associated entertainment complexes catering to the seasonal tourism industry. The areas of unincorporated Bay County located immediately west of NSA PC between the installation and Panama City Beach, north of the Grand Lagoon, are mainly comprised of single family residential neighborhoods.

Existing Zoning

The pattern of existing zoning is an important component in understanding the regulations associated with land development adjacent to, and surrounding NSA PC. The zoning in the study area closely reflects the existing land uses with the exception of the vacant land. Vacant land in the study area is mainly zoned commercial. Should proposed developments meet the floor area ratio (FAR) requirement of the R-5, C-3A, C-3, SR-1, SR-1A, SR-2 and C-4 zones, a finished building height over the allowable 3,500 foot line-of-sight buffer.

Existing zoning information was compiled from data provided by Bay County. The existing zoning districts established by Bay County are illustrated on Figure 2-7 and have been quantified in Table 2-4.

For the purposes of analyzing existing zoning around NSA PC, the acreages for each zoning category were calculated at distances of approximately 3,500 feet (which accounts for the outermost line-of-sight buffer that is further described in Chapter 3), as well as one mile, and five miles.

Adjacent to NSA PC, within the 3,500 foot Line-of-Sight buffer, zoning is primarily comprised of single family residential (accounting for 35.5 percent), general commercial (accounting for 21.4 percent), and other types of residential (accounting for 18.8 percent). The line-of-sight buffer is significant because it defines a height, established by the military, at which structures pose a security risk. This risk will be detailed in chapter 3 as a compatibility factor between NSA PC and the community. Zoning within one mile of the installation is comprised of a similar mix of zones, including 38.7 percent single family residential, 21.6 percent other types of residential, and 16.8 percent general commercial. Within five miles of NSA PC, the dominant existing zoning types change significantly. The major zoning categories are agricultural/timber (accounting for 24.2 percent), conservation/preservation (accounting for 20.1 percent), and single family residential (accounting for 16.9 percent). At the five-mile range, more area becomes less urbanized as these lands extend further away from the tourist beach areas.

There is a modest amount of municipal land that is part of Panama City and Panama City Beach that are located within one mile and five miles of NSA PC. They account for 23 acres within one mile and 7,410 acres within five miles.

Table 2-4. Existing Zoning in Acres Within Proximity of NSA PC

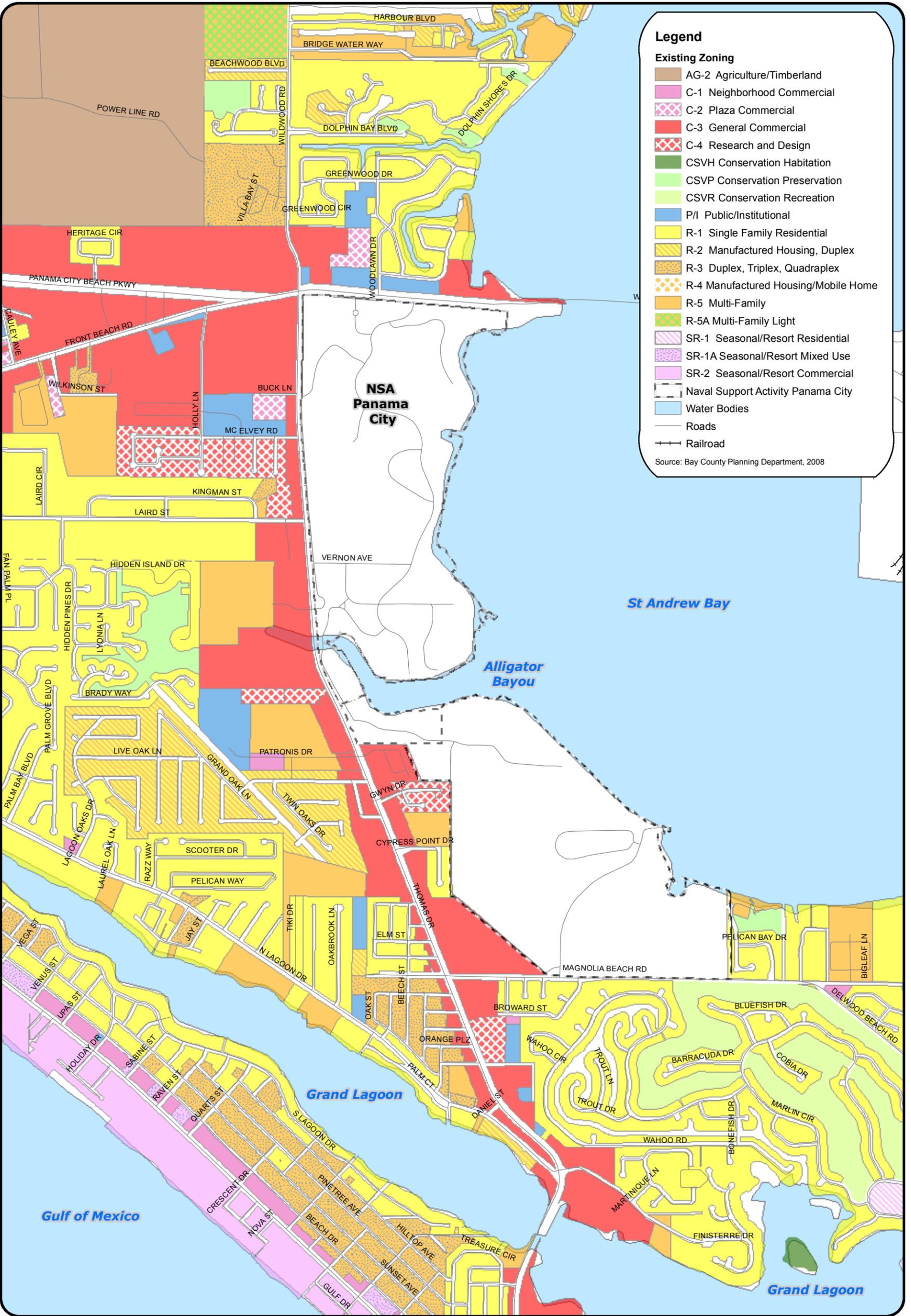
Bay County Zoning Category	Distance from NSA PC		
	Line-of-Sight Buffer (Within 3,500 Feet)	1 Mile	5 Miles
Agricultural (AG-1)	0	0	242
Agricultural / Timberland (AG-2)	113	236	4,014
Neighborhood Commercial (C-1)	8	10	63
Plaza Commercial (C-2)	14	17	118
General Commercial (C-3)	408	506	1,139
General Commercial, Low (C-3A)	0	0	8
Research and Design (C-4)	64	64	69
Conservation Habitation (CSVH)	0	4	672
Conservation Preservation (CSVP)	37	48	3,333
Conservation Recreation (CSVSR)	100	135	1,401
Public / Institutional (P/I)	92	98	1,116
Single Family Residential (R-1)	678	1,164	2,797
Manufactured Housing, Duplex (R-2)	123	167	403
Duplex, Triplex, Quadraplex (R-3)	80	171	261
Manufactured Housing / Mobile Home (R-4)	0	21	34
Multi-Family (R-5)	157	250	380
Multi-Family Light (R-5A)	0	42	42
Seasonal / Resort Residential (SR-1)	0	12	159
Seasonal / Resort Mixed Use (SR-1A)	0	0	21
Seasonal / Resort Commercial (SR-2)	0	0	227
Unknown	36	68	100
TOTAL	1,910	3,011	16,599

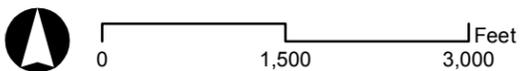
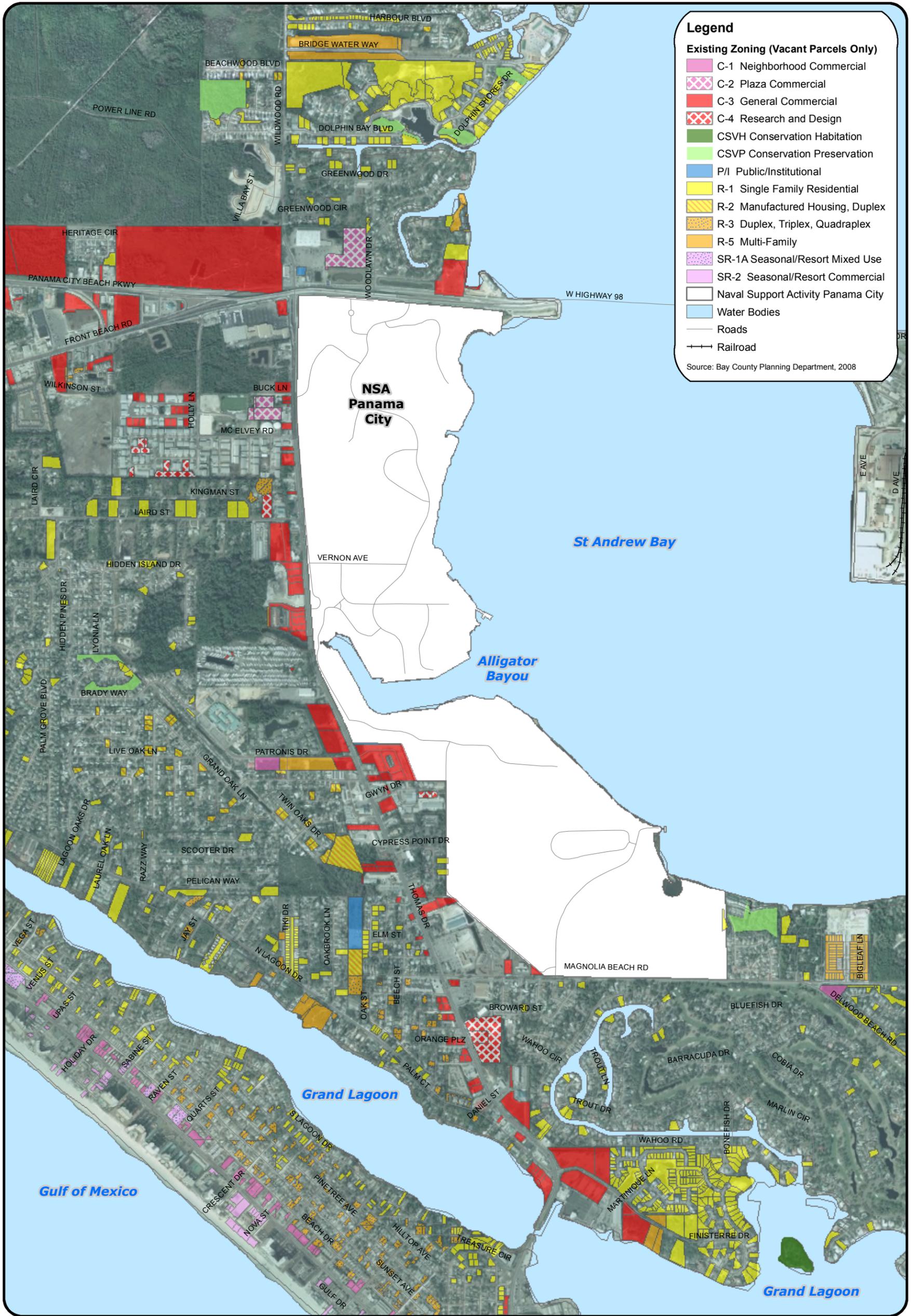
Source: Bay County Planning and Zoning Division, 2008; and Matrix Design Group, 2009

Vacant Land

During the inventory and analysis of adjacent and proximate lands, it is important to also quantify the opportunities and constraints associated with parcels that are not currently developed or are considered vacant. Vacant parcels within proximity to NSA PC have been identified on Figure 2-8 along with the zoning category into which they are designated. Table 2-5 illustrates the number of acres of vacant parcels for each zoning category that are currently located within the 3,500 foot line-of-sight buffer, as well as within the one mile and five mile distances from the installation.

There are three existing zoning categories that account for the majority of the vacant parcels within the three measurement areas. In the 3,500 foot line-of-sight buffer, 36.9 percent of the vacant parcels are zoned for general commercial, 32.0 percent for single family residential, and 15.0 percent for other types of residential. Within one mile of the installation, 46.1 percent of vacant parcels are zoned for single family residential, 22.5 percent are general commercial, and 14.4 percent are other types of residential. Similarly, within five miles, 47.0 percent of vacant parcels are zoned for single family residential, 18.0 percent are zoned for general commercial, and 14.4 percent are designated for other types of residential uses.





Bay County JLUS

**Vacant Parcel Zoning
Figure 2-8**

It is also important to note that parts of the cities of Panama City and Panama City Beach are located within one and five miles of NSA PC and contain vacant zoned areas as well. One acre of vacant land associated with Panama City is located within one mile of NSA PC, while 820 acres of vacant land are located within five miles for the two cities combined.

Table 2-5. Vacant Land Summary in Acres for Unincorporated Bay County

Bay County Zoning Category	Distance from NSA PC		
	Line-of-Sight Buffer (Within 3,500 Feet)	1 Mile	5 Miles
Agricultural (AG-1)	0	0	12
Agricultural / Timberland (AG-2)	6	6	18
Neighborhood Commercial (C-1)	0	0	23
Plaza Commercial (C-2)	150	152	272
General Commercial (C-3)	5	5	6
General Commercial, Low (C-3A)	0	4	73
Research and Design (C-4)	37	47	109
Conservation Habitation (CSVH)	0	0	7
Conservation Preservation (CSVP)	0	0	10
Conservation Recreation (CSVSR)	130	311	711
Public / Institutional (P/I)	16	22	53
Single Family Residential (R-1)	12	32	61
Manufactured Housing, Duplex (R-2)	0	7	12
Duplex, Triplex, Quadraplex (R-3)	33	52	85
Manufactured Housing / Mobile Home (R-4)	0	0	7
Multi-Family (R-5)	0	0	1
Multi-Family Light (R-5A)	0	0	18
Seasonal / Resort Residential (SR-1)	16	35	35
TOTAL	406	675	1,513

Source: Bay County Planning and Zoning Division, 2008; and Matrix Design Group, 2009

2.5 REGIONAL ASSESSMENT

Transportation

The Bay County Transportation Planning Organization (TPO) is the federally established association responsible for recommending priorities for the expenditure of state and federal funds within Bay County. It works in conjunction with the Florida Department of Transportation (FDOT), local governments, and local transit, airport, and seaport authorities to develop projects that best serve the needs of the communities.

The Bay County 2030 Long Range Transportation Plan (LRTP) was prepared for the Bay County TPO and finalized in August 2007. It serves to analyze and direct needed transportation infrastructure improvements to guide Bay County into the future and maintain adequate vehicular mobility. The plan is composed of several elements, including a needs plan, a financial plan, a cost feasibility plan, a bicycle pedestrian plan, and a transit development plan. The update to the LRTP is based on a projected population of 238,504 by the year 2030 in Bay County. This is an increase of 54 percent from the estimated population in the year 2003 that was used as the baseline for the future projections.

The plan identified several road improvement projects in the study area, consisting of widening portions of Thomas Drive and SR 30 near NSA PC to provide more east-west travel lanes.

Roadways

There are several major highways that support transportation mobility within the NSA PC study area. The major east-west highways include U.S. Highway 98 and SR 30. U.S. Highway 98 extends from southern Florida to western Mississippi. In the study area, it travels through Panama City and crosses St. Andrew Bay via the Hathaway Bridge just north of NSA PC and continues west through Panama City Beach. During tourist season, Hathaway Bridge experiences a large amount of congestion mainly associated with tourists driving into the area via U.S. Highway 231 and additional tourism related travel from the airport in Panama City to beaches and hotels in Panama City Beach. SR 30 was formerly U.S. Highway 98 alternate, and travels along the Gulf of Mexico coastline through Panama City Beach. It begins and ends at U.S. Highway 98. The two roadways are less than a mile apart for their entire length.

The western boundary of NSA PC is bordered by Thomas Drive. This street also experiences a large amount of traffic as it connects U.S. Highway 98 to St. Andrews State Park and beaches located along the gulf coast. The main entrance to NSA PC is located along this road, which can cause delays to personnel during peak travel periods of the day. In 2006, a flyover project was completed that added elevated lanes connecting traffic from SR 30 to U.S. Highway 98 to ease traffic congestion and improve travel times along U.S. Highway 98 and the Hathaway Bridge.



Hathaway Bridge

Water-Based Transportation

Located just south of Hathaway Bridge in Panama City is Port Panama City. This facility serves as one of the major deep-water ports for the entire northwest portion of Florida. This Port has been very influential in the economic and industrial growth of both Bay County and northwest Florida by providing a variety of services and activities, including break bulk cargo and terminal service, dry bulk products, Foreign Trade Zone (FTZ) operations, and industrial development. The major trading partners are Central and South



Port of Panama City

America, Europe, and China. Major exports include linerboard, woodpulp, and machinery, while the major imports include steel, lumber, copper, and bulk aggregates. The projected throughput of cargo for FY 2008 / 2009 was 1.5 million tons.

Port Panama City has grown from one deep-water berth, when it was established in 1967, to six deep-water berths and 4,200 feet of deepwater berthing facilities now. The mean depth of the water is 36 feet. The Panama City Port Authority, which operates and manages Port Panama

City, also operates FTZ 65. There are three major industrial areas that are associated with this FTZ. These are the 125-acre Port Panama City Industrial Complex, the 175-acre Hugh Nelson Industrial Park, and the 260-acre Bay Industrial Park. The Panama City Port Authority is also in the process of developing a new Intermodal Distribution Center, which will utilize 200 acres. Port Panama City is also evaluating the

possibility of including cruise operations, which, if approved, will result in an increase in tourist traffic in the area.

Air Transportation

There is one major airport located in the JLUS study area. Panama City-Bay County (PC-BC) International Airport is a public use airport that comprises 745 acres in the City of Panama City. It has two asphalt-paved runways that measure approximately 6,300 by 150 feet and 4,900 by 150 feet. The airport has six gates in the terminal and serves five major airlines, including Delta and Northwest.

In the year 2007, there were approximately 84,300 aircraft operations, for an average of 231 per day, at Panama City-Bay County International Airport. Of these, 36 percent were transient general aviation, 33 percent were local general aviation, 14 percent were air taxi, 13 percent were military, and 4 percent were commercial. A total of 337,738 passengers passed through this airport, totaling 169,660 enplanements and 168,078 deplanements. This is the lowest passenger count for the years between 1999 and 2007, with the number peaking in 2004 at 386,661 total passengers and declining since then. Currently the airport has non-stop service to Atlanta, Memphis, Orlando, and Cincinnati. From these locations, connecting flights can be reached to many major cities across the U.S.



Panama City-Bay County International Airport

Community officials and the Airport Authority in Bay County and Panama City have been seeking improvements to the Panama City-Bay County International Airport for decades. In the late 1990s, the Airport Authority began to consider the possibility of relocating the airport to an area where it could expand without significant impacts to the local community or environment. A series of feasibility and environmental impact studies have been conducted over the years since that time, and in September 2006 the Federal Aviation Administration (FAA) issued a Record of Decision (ROD) that approved the relocation of the airport to an area north of West Bay. Once the airport is relocated to western Bay County, the current airport site will be redeveloped as a mixed-use site.



Graphical illustration of the new PC-BC International Airport

A groundbreaking ceremony was held in 2007 and construction began on the new Panama City-Bay County International Airport in January 2008. This new airport is the first international airport to be built in the U.S. since September 11, 2001 and will serve as a test site for several security innovations that have been designed by the NSWC at NSA PC. It will have a 10,000 by 150 foot runway, a 5,000 by 150 foot runway, and a 7-gate terminal. The airport will utilize approximately 1,300 acres of a 4,000-acre site, enabling the excess area to be reserved for future expansion. The new airport is estimated to open in May 2010 and is not expected to increase boat activity in St. Andrew Bay.

The new airport will be a centerpiece for the West Bay Area Sector Plan. The West Bay Sector Plan encompasses approximately 75,000 acres surrounding West Bay. This sector plan includes land use

categories such as residential, business centers, commercial, and over 40,000 acres of preservation area. The preservation areas consist largely of the areas immediately adjacent to West Bay wetlands.

Railway

Railway service within Bay County is provided by the Bay Line Railroad. Formerly known as the Atlanta and St. Andrew Bay Railway, it was acquired by the company Genesee & Wyoming Inc. in 2005. This short-line railroad extends 82 miles from Panama City to Dothan, Alabama. Its primary function is the transportation of goods and cargo to and from the Port Panama City and other nearby areas along its route where they can be transferred to other lines and be transported to other parts of the country.

Environmental Resources

St. Andrew Bay covers approximately 108 square miles and provides an important ecosystem to the local wildlife in the JLUS study area. More than 2,100 marine dependent species live in and around the Bay, and it contains the largest area of seagrass beds in the Florida panhandle. Small amounts of freshwater enter the Bay from small spring-fed streams and creeks.

St. Andrews State Park opened in 1951, and today covers over 1,260 acres of land. The uplands of the park consist of rolling sand dunes, pine flats, and marshes. The park has over one and a half miles of beachfront. Many nature trails can be found throughout the area, and local wildlife includes a variety of species such as herons and egrets, alligators, sea turtles, and other small animals.

The St. Andrews State Park Aquatic Preserve was established in 1972 and covers 25,000 acres of water. This preserve surrounds the entrance from the Gulf of Mexico to St. Andrew Bay, including West Pass, East Pass, Shell Island, and portions of St. Andrews State Park. Important habitat is found throughout the preserve's salt marshes and seagrasses, where tides flow through when entering the bay from the Gulf of Mexico, which support spawning areas for a variety of fish and shellfish species, including gulf sturgeon and salt marsh topminnow. The beach and dune lands associated with the preserve are host to several rare and / or federally protected species, as described below. A complete listing of both Federal and State listed Threatened and Endangered Species can be found in the JLUS Appendix.

Threatened and Endangered Species

There are several federally listed threatened and endangered species that are found within the JLUS study area. The majority of these species are found in and around the St. Andrews State Park Aquatic Preserve. There are currently no federally listed threatened or endangered species located within the boundaries of NSA PC. A representative sample of the most common federally listed threatened and endangered species that have been recorded in the study area are outlined below. A complete listing of both Federal and State listed threatened and endangered species can be found in the JLUS Appendix.

Fish



Gulf sturgeon (*Acipenser oxyrinchus desotoi*), Listed Threatened on September 30, 1991 – The Gulf sturgeon lives in coastal rivers from Louisiana to Florida during summer months, and spends winters in bays, estuaries, and the Gulf of Mexico. They breed in freshwater areas after migrating from saltwater environments. Adults range from four to eight feet in length, with a cylindrical body and a head that ends in an

extended, pointed snout. Reduction in numbers is mainly associated with overfishing and disruption of habitats due to construction along waterways. Critical habitat is designated for this species along the entire Gulf of Mexico coastline of Bay County.

Reptiles

Loggerhead sea turtle (*Caretta caretta*), Listed Threatened on July 28, 1978 – Loggerhead sea turtles are known to occur in the majority of the coastal states, as well as Guam, Puerto Rico, the Virgin Islands, and other coastal or island areas. The subspecies that is found in the JLUS study area is the Northwest Atlantic Loggerhead Sea Turtle. Their name is derived from the shape of their heads, which are fairly large with powerful jaws that are used to break through hard-shelled animals that are food sources. The top of adult shells, the carapace, is typically reddish-brown and heart-shaped, while the bottoms, the plastron, are usually pale yellow. The colors of the neck and flippers generally correspond to their shells. Adults usually reach a shell length of three feet and weigh approximately 250 pounds.



Green sea turtle (*Chelonia mydas*), Listed Endangered on July 28, 1978 – Green sea turtles are characterized by their smooth carapace, four pairs of lateral scutes, and a single pair of elongated prefrontal scales located between their eyes. Hatchlings usually have a black carapace and white plastron that typically becomes light to dark brown with dark mottling on the carapace and whitish to light yellow on the plastron during adulthood. Adults have a heart-shaped shell and reach a maximum length of four feet and a weight of 440 pounds. Their decline in population has been due largely to hunting and the collection of adult turtles and eggs.



Leatherback sea turtle (*Dermachelys coriacea*), Listed Endangered on June 2, 1970 – The leatherback is the largest and deepest diving known sea turtle. It is also the widest ranging and most migratory. They are found throughout the coastal regions of the U.S. and its territories, as well as in other countries. Unlike most other turtles, the leatherback has a slightly flexible carapace that has a rubber-like texture. It has seven longitudinal ridges on the center of the carapace. Colors of the leatherback are typically black with some pale spotting, and a prominent pink spot on adult heads. Adult leatherbacks range in size from four to eight feet in length, and can weigh up to 2,000 pounds.

Hawksbill sea turtle (*Eretmochelys imbricata imbricata*), Listed Endangered on June 2, 1970 – The hawksbill sea turtle is found in coastal regions throughout the U.S., its territories, and other parts of the world. They are among the smaller species of sea turtles, ranging from 30 to 36 inches long and 100 to 200 pounds in weight for adults. They are characterized by two pairs of prefrontal scales, four pairs of costal scutes, two claws on each flipper, and their namesake beak-like mouth. They walk with an alternating gait while on land. Carapace colors are typically dark brown with some light yellow streaks and blotches, while the plastrons are yellow. Younger turtles display a heart-shaped carapace that becomes elongated as they mature.





Kemp's Ridley sea turtle (*Lepidochelys kempii*), Listed Endangered on December 2, 1970 – Kemp's ridley sea turtles are found throughout the eastern coastal areas of the U.S. and in coastal regions of eastern Mexico. Reaching a length of approximately two feet and a weight of 100 pounds, they are one of the smallest species of sea turtle. Their oval carapace is almost as wide as it is long, and is characterized by five pairs of costal scutes, five vertebral scutes, and twelve pairs of marginals. They have a triangular-shaped head with two pairs of prefrontal scales and a hooked beak.

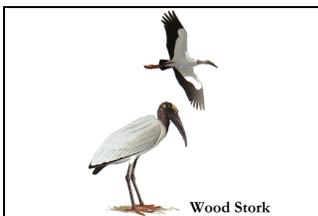
Hatchlings are colored grey-black and change to a grey-olive carapace and cream-white or yellow plastron as they mature.

Birds



Piping plover (*Charadrius melodus*), Listed Threatened on December 11, 1985 – During the summer and breeding season months, the piping plover is found along the northern Atlantic coast from North Carolina to the beaches of Newfoundland. The winter months are spent from North Carolina south to the Gulf of Mexico and the Caribbean. This North American shorebird usually measures about 7 inches long with a wingspan of around 15 inches. Coloration for these birds varies between winter and breeding season.

During breeding season, they display pale brown on the upper body, white under parts and rump, light beige back and crown, black upper tail with a white edge, orange legs and bill with a black tip on the bill, and a single black breastband and bar on the forehead. These bars are more pronounced on breeding males than females. During winter, the black bands disappear, the legs fade to a pale yellow, and the bills turn black. Critical habitat is designated for this species in areas around the opening to St. Andrew Bay from the Gulf of Mexico and south along the Gulf coast near the Bay County boundary.



Wood stork (*Mycteria americana*), Listed Endangered on February 28, 1984 – The wood stork is a wading bird that nests, feeds, and roosts in freshwater and estuarine wetlands in Alabama, Florida, Georgia, South Carolina, and Texas. With their long legs, adults usually measure around 50 inches tall and have a wingspan of 60 to 65 inches. At maturity, their plumage is mainly white, with a short, black tail and black primary and secondary wing feathers. Their heads are unfeathered and are usually grey-

black. They have dark legs, dull pink feet, and black bills. Juveniles up to age three display yellowish or straw colored bills and have some feathers on their head and neck.

Mammals



Choctawhatchee beach mouse (*Peromyscus polionotus allophrys*), Listed Endangered on June 6, 1985 – The Choctawhatchee beach mouse is one of several species of endangered beach mice that are found in coastal areas of Florida. This nocturnal mouse's habitat includes coastal dunes between Choctawhatchee Bay and St. Andrew Bay. Its back typically ranges in color from orange-brown to yellow-brown with a white stomach, face, and nose. Its head and body measures between 2.7 and 3.5 inches long and its haired tail

ranges from 1.7 to 2.5 inches long.

It has fairly large ears and protuberant eyes. Critical habitat is designated for this species around the opening to St. Andrew Bay from the Gulf of Mexico and south along the Gulf coast adjacent to Tyndall AFB.

West Indian manatee (*Trichechus manatus latirostris*), Listed Endangered on March 11, 1967 – The West Indian manatee, also known as the Florida manatee, is found in freshwater, brackish, and marine habitats primarily in waters around Florida, but also in Georgia, Texas, and Puerto Rico. Winter months are spent mostly around the Florida peninsula, while in summer they expand their range into the Atlantic and Gulf of Mexico coastal regions. The biggest threats to this species are created through injuries that occur from boat strikes as they drift near the surface of the water and the degradation of their habitat. The manatee is characterized by its sparsely haired, rubberlike dark grey skin, paddle-like forelimbs, and horizontally flattened tail. Their muzzles contain a large amount of bristles and their eyes and outer ears are very small. Adults reach an average length of nearly 10 feet and weigh up to 2,200 pounds. Newborns are an average length of 4 to 4.5 feet and weigh around 66 pounds.



Water Resources

Water is supplied for Bay County by the Bay County Water Division. The source of the drinking water provided by Bay County is surface water transported from the Deer Point Reservoir. The reservoir was created in 1961 through the construction of a dam across North Bay. It has a surface area of approximately 4,700 acres and receives approximately 58 percent of its water from the Econfina Creek. Roughly 36 percent of the water is supplied from Bear Creek, and the remaining 6 percent is provided by Cedar Creek and Bayou George. Bay County and the Northwest Florida Water Management District have consummated an agreement that establishes the total amount of water that can be withdrawn from the reservoir. According to the agreement, Bay County can withdraw an average of 65,900,000 gallons per day, with a maximum on any given day of 82,000,000 gallons through the year 2010. Through the year 2040, an annual daily average not to exceed 98,000,000 gallons, with a maximum withdrawal on any given day of 107,000,000 gallons is allowed.

The 1998 District Water Management Plan stated that the region (Region III) in which Bay County is located (and is the only county within that region) had an adequate water supply to meet its current and future water needs for the next 20 years. Updates since that time have indicated similar analysis and stated that Bay County will continue to have an adequate water supply for all reasonable-beneficial uses until the year 2025. Since 2006, three water supply development projects have been identified for Region III. The projects include:

- **Inland Ground Water Source Development & Water Supply Source Protection:** This project provided for the development or a detailed engineering analysis and construction of an alternative water supply including facilities development. The timeframe for this project is 2008-2012;
- **Utility Interconnections and Infrastructure Enhancements:** This project is the development of additional utility infrastructure to support the interconnection of water supply infrastructure. The purpose of this project is to reduce the regional vulnerability to drought and is part of the overall alternative water supply development project; and

- **Water Reuse Facilities:** This project includes the development of facilities which can reclaim and reuse water to offset the demand on potable water supplies from non-potable sources. This project additionally contributes to the development of the alternative water supply for the region.

One issue that has been identified as an Area of Special Concern is focused on the coastal areas of the county where saltwater intrusion can cause problems during periods of extreme drought. As a result, it was recommended by the District Water Management Plan for Region III that Panama City Beach withdraw its potable water supply from the Deer Point Reservoir and discontinue use of groundwater. This transition in water supply sources took effect in 2002 when Panama City Beach connected to Bay County utility lines.

Cultural Resources

Cultural surveys conducted over the years at NSA PC have identified ten archaeological sites within the installation. Through a combination of natural events and human activities, four of these sites have been destroyed. The remaining six sites show enough integrity and archaeological significance to be considered for listing on the National Register of Historic Places. One of the more prominent sites is the “Marina Site”. This is a fairly well preserved gravesite and prehistoric habitation site that dates to around 500 to 1000 AD. The Environmental Department at NSA PC has worked with local Native American tribes to assist them in recovering previously surfaced human remains. Additionally, there is an agreement between the installation and the tribes that allows them access to cultural sites located at NSA PC. Each culturally significant site or mound has a 100 to 300 foot buffer around it that restricts development.