Military Housing Privatization Initiative (MHPI)

Eglin AFB, Florida
Hurlburt Field, Florida

Final Environmental Impact Statement

United States Air Force
Air Force Materiel Command
Air Force Special Operations Command

May 2011

PRIVACY ADVISORY

Your comments on this Final Environmental Impact Statement (EIS) are welcome. Letters or other written or oral comments provided will be maintained as part of an administrative record of this document. As required by law, comments on the Draft EIS were addressed in the Final EIS and made available to the public. Any personal information provided is used only to identify your desire to make a statement during the public comment portion of any public meetings or hearings or to fulfill requests for copies of the Final EIS or associated documents. Private addresses were compiled to develop a mailing list for those requesting copies of the Final EIS. However, only the names of the individuals making comments and their specific comments are disclosed. Personal home addresses and phone numbers are not published in the Final EIS.

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COVER SHEET
FINAL ENVIRONMENTAL IMPACT STATEMENT
MILITARY HOUSING PRIVATIZATION INITIATIVE (MHPI)
EGLIN AIR FORCE BASE (AFB) AND HURLBURT FIELD, FLORIDA

a. *Responsible Agency:* U.S. Air Force

b. *Cooperating Agencies*: None

c. *Proposals and Actions*: This Final Environmental Impact Statement (FEIS) describes the potential consequences to the human and natural environment from the implementation of various alternatives for implementing the Military Housing Privatization Initiative (MHPI) at Eglin Air Force Base (AFB) and Hurlburt Field, Florida.

- Proposed Action – The Air Force proposes to implement MHPI at Eglin AFB and Hurlburt Field through conveyance of all existing housing units (up to 1,413) distributed throughout Eglin AFB and Hurlburt Field, including infrastructure, utility connections, and housing offices, to a private development and property management company. The developer would demolish up to 1,404 dwellings and then construct up to 1,477 new units; up to 35 units for Camp Rudder (for all alternatives except Subalternative 2a), up to 548 units for Hurlburt Field (484 units would be constructed at Hurlburt Field for all alternatives), and up to 929 units for Eglin AFB (depending on the alternative selected). The developer would also return units and associated structures within two Historic Districts located at Georgia Avenue and Camp Pinchot to the Air Force for purposes other than residential housing (e.g., offices, meeting places) once replacement units are constructed. At completion of the project, a developer would own and operate 1,477 units on behalf of Eglin AFB and Hurlburt Field. The Hurlburt Family Camping facility would also be relocated. All land areas supporting housing would be leased to the developer for 50 years, except for the parcels with historic housing and those returned to the government after demolition, which would be short-term leases.
- Alternative 1 (White Point Area) – Construction of up to 1,477 housing units with 548 units on Hurlburt Field, 35 units at Camp Rudder, and 894 units on Eglin Main Base utilizing a combination of seven parcels within the White Point Area.
- Alternative 2 (Eglin Main Base/Valparaiso Area) – Construction of up to 1,477 housing units with 484 units on Hurlburt Field, 35 units at Camp Rudder, and 958 units on Eglin AFB utilizing one or a combination of 11 parcels located at Eglin Main Base and in Valparaiso.
- Subalternative 2a (Eglin Main Base): Preferred Alternative – Construction of up to 1,477 housing units with 484 units on Hurlburt Field and 993 housing units on Eglin AFB utilizing Parcel 1 on Eglin Main Base and no Valparaiso parcels. No units would be built at Camp Rudder.
- Alternative 3 (North Fort Walton Beach Area) – Construction of up to 1,477 housing units with 484 units on Hurlburt Field, 35 units at Camp Rudder, and 958 units on Eglin AFB utilizing a combination of five parcels within the North Fort Walton Beach Area.
- Alternative 4 (Mix Alternative) – Construction of up to 1,477 housing units on Eglin AFB through utilization of a combination of parcels within any of the areas identified in Alternatives 1–3.
- No Action Alternative – The Air Force would not implement the Proposed Action at Eglin or Hurlburt Field. Instead, the Air Force would continue to manage/maintain and replace/upgrade military family housing (MFH) in accordance with existing Air Force policy and resources.

d. *Comments and Inquiries*: Comments on this document should be directed to Mr. Mike Spaits, Eglin AFB Public Affairs Office, 101 West D Avenue, Suite 110, Eglin Air Force Base, Florida 32542-5499, phone (850) 882-2836, email: mike.spaits@eglin.af.mil.

e. *Designation*: Final EIS.

f. *Abstract*: This Final EIS has been prepared in accordance with the National Environmental Policy Act. After considering the potential environmental consequences, the U.S. Air Force will decide whether to implement MHPI through one of the alternatives or select the No Action Alternative. Potential adverse impacts associated with the Proposed Action are solid waste generation, changes in land use at the Hurlburt Field Family Camping site, water quality and erosion impacts from demolition and construction, and impacts to plants and wildlife from land clearing.

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EXECUTIVE SUMMARY

This Environmental Impact Statement (EIS) examines the potential environmental impacts resulting from the implementation of the Military Housing Privatization Initiative (MHPI) for Eglin Air Force Base (AFB), Florida, and Hurlburt Field, Florida. It identifies any required environmental permits relevant to the implementation of the Proposed Action and Alternatives (to include the No Action Alternative), as well as any applicable discretionary and non-discretionary mitigations that would avoid, minimize, rectify, reduce, or compensate for potential impacts. The Air Force prepared this EIS in accordance with the requirements of the National Environmental Policy Act (NEPA) (42 United States Code [USC] 4321 et seq.). The regulations for implementing the procedural provisions of NEPA (Title 40 Code of Federal Regulations [CFR] Parts 1500–1508) outline the responsibilities of federal agencies and provide specific procedures for preparing EISs to comply with NEPA. The 32 CFR 989, *Environmental Impact Analysis Process (EIAP)*, defines the steps and milestones in the EIAP.

The Air Force intends to privatize its housing at Eglin AFB and Hurlburt Field (Figure ES-1) under a statutory program to allow it to meet its military housing requirement. This is referred to as the Military Housing Privatization Initiative, or MPHI. This initiative is accomplished by using the National Defense Authorization Act for Fiscal Year (FY) 1996 (Public Law 104-106, 110 St, 186 Section 2801) as amended, which includes a series of authorities that allow the Department of Defense (DoD) to work with the private sector to build and renovate military housing (these authorities were made permanent in FY 2005). The DoD's goal is to obtain private capital to leverage government dollars or land contributions, make efficient use of limited resources, and use a variety of private-sector approaches to build and renovate military housing faster and at a lower cost to American taxpayers. Additional information about housing privatization can be found at: http://www.acq.osd.mil/housing/legislation.htm.

At completion of the project, a developer would own and operate 1,477 housing units on behalf of Eglin AFB and Hurlburt Field. The term "housing unit" is defined as a dwelling that accommodates one family. A four-plex would be considered four housing units. All construction and demolition activities would occur on Eglin AFB and Hurlburt Field (Air Force-owned) property. The Air Force would lease the real property underlying the units proposed for demolition to the developer. For areas not designated for rebuilding, this lease would last only until demolition is complete, at which time the developer's lease would end. For areas designated for rebuilding, the real property parcel would be leased to the developer for a period of 50 years from the date of the transaction. Military family housing (MFH) privatization (10 USC 2871–2885, as amended) is a process wherein the Air Force would receive proposals from interested developers outlining their qualifications and proposals for meeting the development requirements through detailed design and construction, property management, and financial management.

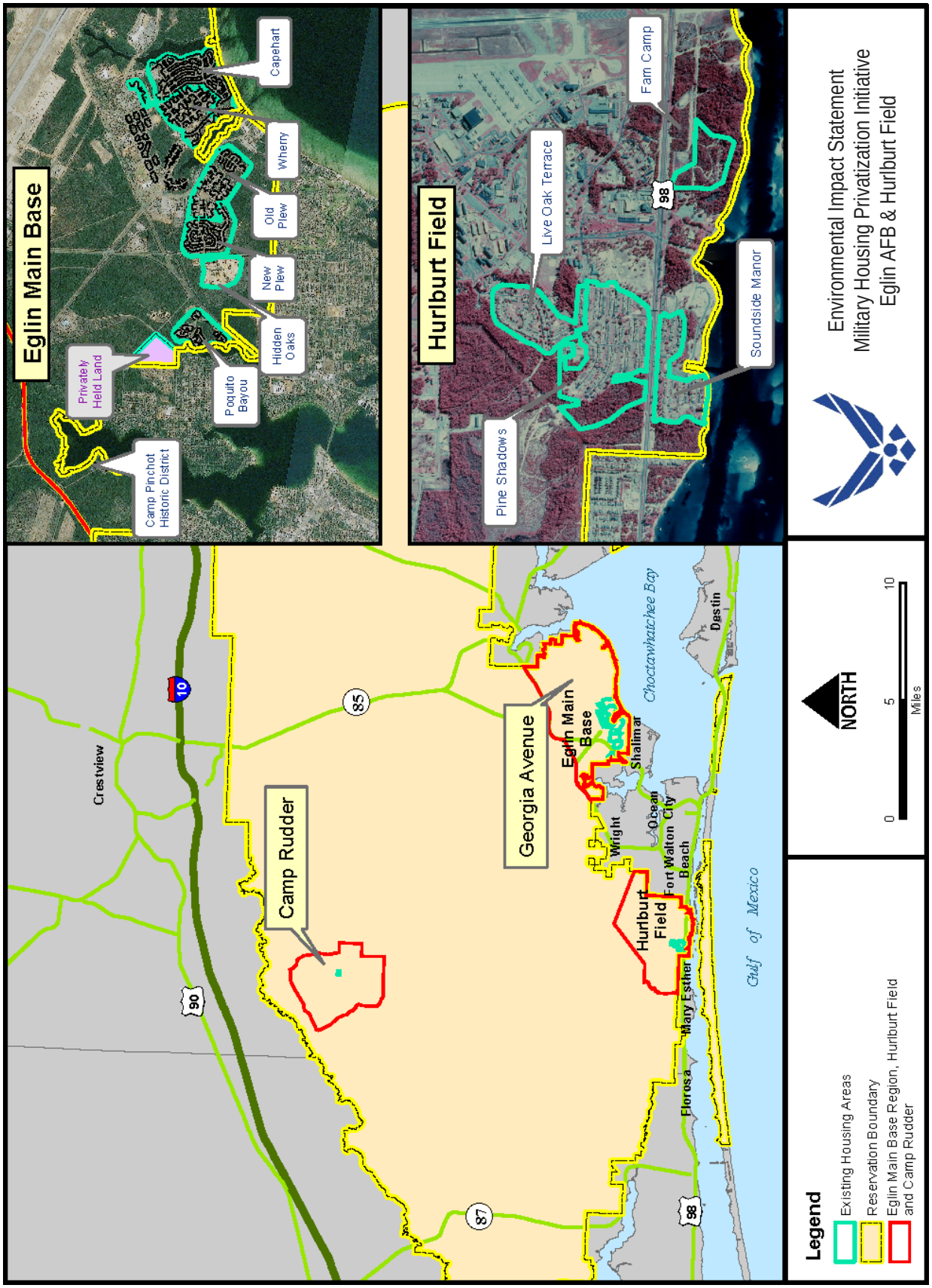

Figure ES-1. Location of Eglin AFB, Hurlburt Field, and Camp Rudder Housing Areas

After evaluating all offerors' proposals, the Government will determine the most advantageous proposal and identify the Highest Ranked Offeror (HRO). The Government will then enter into exclusive negotiations with the HRO to address all of the requirements established in the solicitation documents. At the end of the process, the Air Force will make a source selection decision and, after DoD and Congressional approval of the selection, the lease agreement between the Air Force and the successful developer will be signed.

In addition to providing the required improvements to the housing inventory and neighborhoods, the developer would provide the necessary infrastructure (e.g., roads, utility connections) to support the privatized housing units. The developer would prepare details of specific infrastructure requirements and site plan details for any new privatized housing areas as part of the solicitation process. Even though those details are currently unknown, the analysis of reasonably foreseeable impacts from the project can proceed because the Air Force knows the general locations and construction and demolition activities associated with the proposal. The exact location of each unit within the proposed areas would not significantly alter the outcome of the analysis as long as the developer adheres to all permit/regulatory requirements and Air Force-selected mitigations required by the Air Force.

The Air Force will evaluate the selected proposal to determine whether it is within the scope of the analysis presented in this EIS. Should there be potential for impacts from a selected proposal outside the scope of analysis within this EIS, a supplemental analysis may be required.

EIS Process to Date

This document constitutes the fourth iteration of the EIS. The first iteration of the Draft EIS was published and released to the public in April 2005; the Air Force's Preferred Alternative involved the demolition of the Camp Pinchot Historic District. The Air Force revised the Draft EIS in response to public and agency comments from the initial public hearing process, changing the Preferred Alternative to allow for adaptive reuse of the Camp Pinchot Historic District, and then released that document to the public as the Revised Draft EIS in April 2006. The Air Force received public and agency comments on that iteration. Before the 2006 EIS was finalized, several circumstances arose that caused the Air Force to halt the finalization of the EIS and reevaluate the Proposed Action.

Base realignment and closure (BRAC) decisions resulted in the planned beddown of the Joint Strike Fighter (JSF) (i.e., the F-35 aircraft), the U.S. Army 7th Special Forces Group (Airborne), and a net of approximately 4,000 additional military, civilian, and contractor personnel (not including family members) at Eglin AFB. Many of the additional personnel will be students. As a result, the Air Force needed to conduct a new housing

requirements analysis in light of the changes in personnel. Additionally, rising costs due to recent hurricanes during that period made the utilization of parcels outside the Eglin AFB and Hurlburt Field main base areas (e.g., Camp Pinchot and Poquito Bayou Expansion areas) financially unreasonable. Consequently, the Air Force revised the scope of the MHPI at Eglin AFB and Hurlburt Field to consider these factors. The third iteration of the Draft EIS analyzed the potential consequences from the Proposed Action explained above and in Section 2.1 of that iteration of the EIS. There were no housing alternatives outside the main base areas of Eglin AFB or Hurlburt Field. This was due to a shortfall in project financials associated with hurricane-related increases in construction/insurance costs, as well as reassessment of siting new housing or demolishing historic units at Camp Pinchot due to environmental and historic requirements and public opposition. The total number of housing units was adjusted to reflect the new housing requirements analysis that included changes in personnel associated with the BRAC actions and changes in the local housing market. The Air Force determined that the potential existed for new JSF alternatives introduced during the JSF NEPA process to negatively affect the MHPI Preferred Alternative. Consequently, the Air Force was forced to reevaluate its MHPI concept to identify other housing areas that meet Air Force MHPI housing objectives while those JSF alternatives were examined. In addition, the previous hurricane-related increases in construction/insurance costs started to decline, and previously precluded locations could once again be considered.

This fourth iteration of the EIS describes the changes in the alternative development process, reconsideration of the impacts of current construction costs on alternative feasibility, new alternatives resulting from this process, and the potential impacts to the subsequent affected environment from the MHPI. Table ES-1 provides a summary of the changes in alternatives that are analyzed in this fourth iteration of the MHPI EIS versus the previous three iterations. All alternatives in this iteration include 484 units on Hurlburt Field; up to 35 units at Camp Rudder (except Subalternative 2a); with 958 to 993 units at locations dependent on alternative selection: Alternative 1 – White Point Area (416 acres); Alternative 2 – Eglin Main Base/Valparaiso Area (1,071 acres, including development buffers/setbacks); Subalternative 2a – Eglin Main Base (the Air Force's Preferred Alternative) (673 acres, including development buffers/setbacks); Alternative 3 – North Fort Walton Beach Area (457 acres, including development buffers/setbacks); and Alternative 4 – Mix Alternative (a mix of parcels from any of the previous alternatives). The entire existing housing project area is shown in Figure ES-1.

Table ES-1. Summary of EIS Changes from 2005 to 2010

Eglin AFB / Hurlburt Field Locations Considered	EIS Iteration											
	1st (2005) & 2nd (2006)						*3rd (2008)*		*4th (2010)*			
	Alternatives											
	Alt 1: Poquito Bayou Expansion	**Alt 2: Eglin Main Base**	**Alt 3: Camp Pinchot Expansion / Poquito Bayou Expansion**	**Alt 4: Alt 3 w/ Camp Pinchot Return to Air Force**	**Alt 5: Camp Pinchot / Eglin Main Base**	**Alt 6: Alt 5 w/ Camp Pinchot Return to Air Force**	**Alt 1: Parcel D1**	**Alt 2: Parcel D1 and Parcel B2/B3**	**Alt 1: White Point Area**	**Alt 2 & 2a: Eglin Main Base / Valparaiso (2a is Preferred)**	**Alt 3: North Fort Walton Beach Area**	**Alt 4: Mix**
Associated Activity per Location												
Live Oak Terrace	Demolition (D)								D			Alt 4 is a mix of any of Alts 1–3
Pine Shadows									D / NC			
Soundside Manor	Demolition / Renovation / New Construction (D/R/NC)											
Camp Rudder	D								D/NC	D/NC (Alt 2) D (Alt 2a)	D/NC	
Ben's Lake									D			
Georgia Avenue	Return to Air Force (RAF)											
Hidden Oaks	No Activity (NA = units conveyed as is or area not utilized as part of Alternative)								D			
Wherry	D	D/NC	D		D/NC	D/NC	D		D	D	D	
Capehart	D	D/NC			D/NC	D/NC						
Old Plew	D				D					D/NC		
New Plew	D	D/NC			D/NC	D/NC						
New Plew Expansion Area	NA	NC	NA		NC		NC		NA	NC	NA	
Camp Pinchot	RAF		D/NC	RAF	D/NC	RAF	RAF		RAF			
Poquito Bayou	D		D/NC				D		D			
Camp Pinchot Expansion	NA		NC				Not part of Proposed Action or Alternatives		NA		NC	
Poquito Bayou Expansion	NC	NA	NC		NA							
Valparaiso Parcels	Not part of Proposed Action or Alternatives						Not part of Proposed Action or Alternatives		NA	NC (Alt 2) NA (Alt 2a)	NA	
Wherry/Capehart Areas (Parcels B1, B2, B3)							NA	NC	NA	NC (Alt 2) NA (Alt 2a)	NA	
Hurlburt FAMCAMP Area							NC		NC			
White Point							Not part of Proposed Action or Alternatives		NC	NA		
Fairground Parcels									NA		NC	
Alternative Disposition per EIS Iteration												
1st Draft EIS (2005)	✓	✓	✓	✓	Pref.	✓	Not previously proposed		Not previously proposed	Valparaiso parcels not previously proposed	Fairgrounds Parcels not previously proposed	Not previously proposed
2nd Draft EIS (2006)	✓	✓	✓	✓	✓	Pref.						
3rd Draft EIS (2008)	No longer viable alternatives						✓	✓				
4th EIS (2010)	Areas reevaluated given new screening criteria – reflected in 2010 EIS								✓			

RAF = Return to Air Force; D = demolition; FAMCAMP = family camping; NA = no activity; NC = new construction; R = renovation; Pref. = Preferred

Need for the Proposed Action

Need for Privatization

A Quality of Life Task Force report concluded that the continuing decline in the quality of existing on-base military housing, an increase in the out-of-pocket expenses for service members living in private housing, and increased demands on service members and their families (such as more deployments and family separations) could result in potential adverse impacts to military readiness. The uncertainty of the continued availability of traditional funding (including Military Construction [MILCON] and Operations and Maintenance sources) and increasing doubts as to the economic feasibility of this traditional funding forced the Air Force to meet this need by changing its policy. Congress authorized privatization through the National Defense Authorization Act of 1996, which enabled the DoD to rely on private sector housing developers to renovate or demolish existing housing units, build new ones, provide the infrastructure needed to support such developments, and operate, maintain, and manage the housing development on Air-Force owned or project-funded property for up to 50 years.

Need for Housing Units

The Air Force uses the Housing Requirements and Market Analysis (HRMA) to determine the number of families that the local community can accommodate. Where the HRMA reveals the local economy cannot accommodate all the military families assigned to the installation, that installation must then make up the deficit. Determining the specific number of housing units needed at Eglin AFB and Hurlburt Field involved estimating the number of appropriate adequate and affordable private sector housing units available to military families within 20 miles, or a 60-minute commute (whichever is greater). In 2009, Eglin AFB and Hurlburt Field conducted HRMA studies in order to identify housing units available to military members in the private community. The Air Force factored shortfalls in available private sector housing into the total MFH requirement for Eglin AFB and Hurlburt Field to determine the number of units needed to support its military families. Cumulatively, the Air Force determined that the Eglin AFB and Hurlburt Field FY 2014 housing requirement is 1,477 units. This total does not include the 300 Section 801 leased housing units at Commando Village, located just east of Hurlburt Field on Martin Luther King Boulevard in Fort Walton Beach, Florida. Since the Air Force does not own the 300 Commando Village homes, they are not included in the Proposed Action or alternatives evaluated in this EIS. The lease for the Commando Village homes expires in June 2012, at which time the homes would be considered local market rental units.

Need for Land Area to Support Housing

Unique aspects of the military mission mandate features in military housing neighborhoods that may not be of equally great importance to civilian housing

residents. For instance, due to the nature of the military mission, whether for exercises or real-world incidents, a high percentage of the military workforce must be able to arrive at their duty stations with little notice, while for most civilians it is an expediency to be located near their places of employment.

The *Air Force Family Housing Guide* balances these concerns with the concerns shared by non-military residents, such as noise and traffic avoidance, convenience, aesthetics, and price. Accordingly, it requires the installation to consider all these concerns when arriving at a decision on the housing density and location, and primary among these (as it would be for a civilian landowner) is the ability of the available land to satisfy these concerns. Initially, during the first two iterations of the EIS, the Air Force evaluated the entire Eglin AFB Reservation for housing locations based on a set of housing objectives. These objectives were essential for the MHPI in that the objectives had to be met in order for a particular site to be carried forward for consideration as a potential development location. However, changes in scope under the third (previous) iteration of the EIS required the Air Force to locate housing units within the main base boundaries for financial reasons. As a result, many of the initial objectives, while still met, were no longer applicable to identifying potential housing areas on Hurlburt Field and Eglin AFB main bases and were not deciding factors in identifying potential locations. As an example, since the scope of the project had changed at that time to development within the main base boundaries, such objectives as a "60-minute commute time" were no longer applicable to housing area identification. However, the new scope for the 2010 EIS (the fourth iteration) requires the Air Force to reevaluate the entire Eglin Reservation because potential JSF alternatives may conflict with certain MHPI objectives. As a result, the Air Force has modified slightly the initial objectives and applied them to the entire reservation to identify potential development areas. The following narrative provides a summary of the evaluation process of potential development locations used in this EIS iteration.

Development of MHPI Objectives

The preliminary process to find development locations first sought to determine what general areas throughout the three counties (Okaloosa, Walton, and Santa Rosa) surrounding Eglin AFB might meet the Air Force's MHPI objectives, which are based on MHPI housing requirements and project and mission constraints. These objectives were applied to the entire Eglin Reservation and coordinated through the Eglin AFB Mission Enhancement Committee, the Eglin AFB Range Configuration Control Committee, and the Eglin Range Development Executive Steering Committee.

MHPI Objectives Utilized for Site Selection in 2010

- All potential housing locations must be within a 60-minute commute time of each base's respective headquarters building.
- All potential housing locations must be on Air Force property.
- All potential housing locations must be free of Air Force mission conflicts.
- No construction activities could occur within wetlands or floodplains.
- All potential housing locations must be within a seven-minute response time to emergency services.
- All potential housing locations must be free of unexploded ordnance (UXO) and historic range use.
- All potential housing locations must be clear of installation/environmental restoration program (ERP) sites.

Through evaluation of the Eglin AFB and Hurlburt Field land area utilizing these objectives, the Air Force identified the following areas as meeting MHPI objectives (Figure ES-2):

- **White Point Area** – This area comprises seven parcels: Parcel 1 (49 acres); Parcel 2 (86 acres); Parcel 3 (49 acres); Parcel 4 (56 acres); Parcel 5 (82 acres), Parcel 6 (25 acres), and Parcel 7 (70 acres). The area is located at White Point along the coastline of Choctawhatchee Bay south of Niceville, Florida, adjacent to State Road (SR-) 20.
- **Eglin Main Base/Valparaiso Area** – This area consists of 11 parcels. Parcel 1 is approximately 673 acres and is located in the southwest corner of Eglin Main Base adjacent to the New Plew housing area. While the entire 673 acres would be leased to the developer, only approximately 661 acres would be utilized for construction; a 40-foot buffer (about 12 acres) would be placed between the housing area and the southern and western Eglin Main Base boundary to allow for a vegetated buffer between the privatized housing and neighboring public property. Parcel 2 (29 acres); Parcel 3 (8 acres); Parcel 4 (16 acres); Parcel 5 (2 acres); Parcel 6 (4 acres); Parcel 7 (7 acres); and Parcel 8 (21 acres) are located along the northeast border of Eglin Main Base, near the East Gate and adjacent to Valparaiso. Parcel 9 (212 acres, existing Capehart housing area), Parcel 10 (94 acres, existing Wherry housing area), and Parcel 11 (6 acres, currently undeveloped) are located east of Parcel 1 on Eglin Main Base.

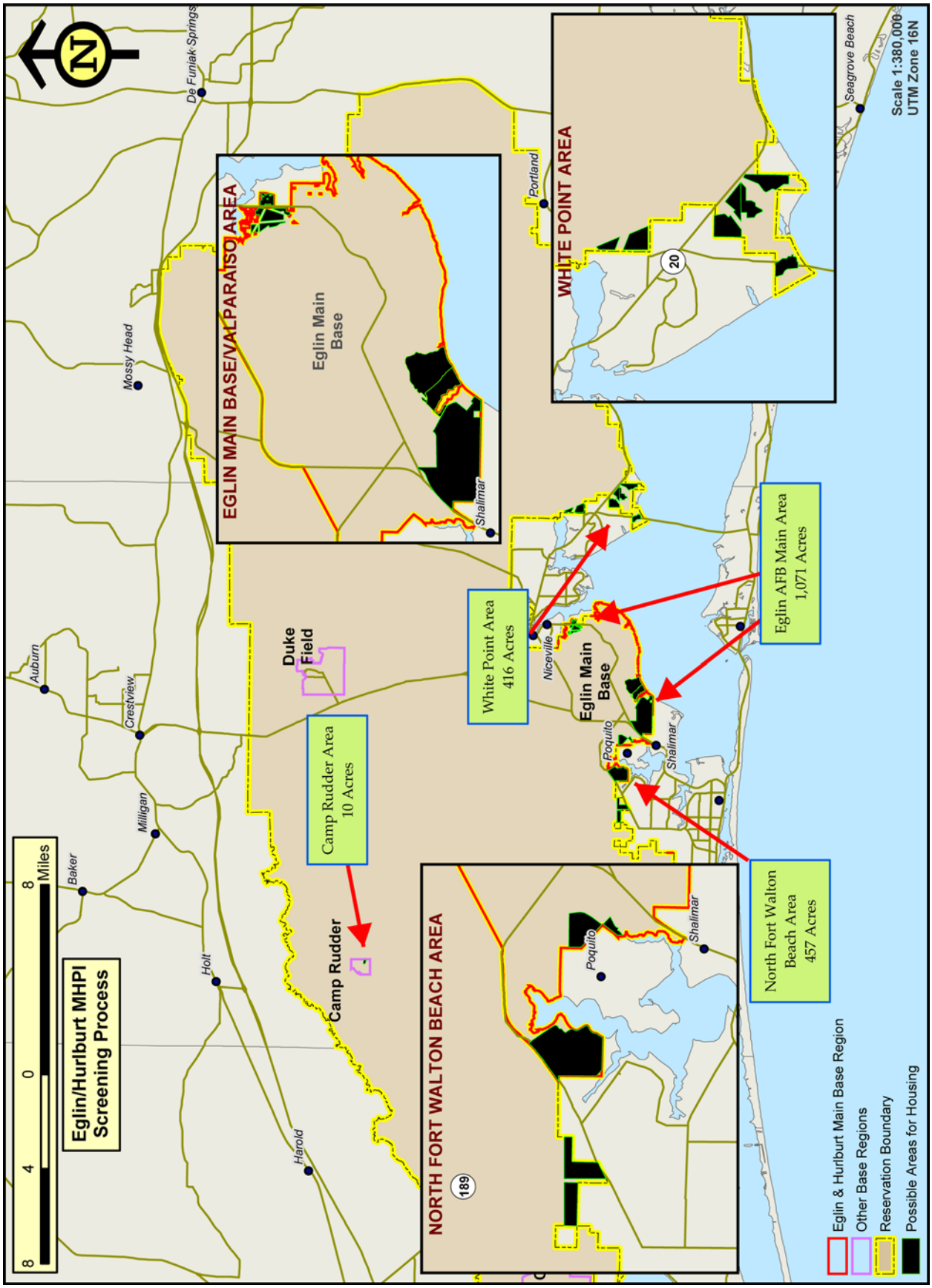

Figure ES-2. Proposed Housing Areas at Eglin AFB

- **North Fort Walton Beach Area –** This area consists of five parcels: Parcel 1 (formerly the "Camp Pinchot Expansion area," 249 acres); Parcel 2 (74 acres); Parcel 3 (51 acres); and Parcels 4 and 5 (formerly part of the "Poquito Bayou Expansion area," 72 and 11 acres, respectively). The Camp Pinchot Historic District is not included in this area. Parcel 1 is located adjacent to the Camp Pinchot Historic District and is bordered on the west by SR-189. For Parcel 1, approximately 199 acres of the total 249 acres would be utilized for construction, while 49 acres would be maintained as a buffer area between the shoreline and the housing development on the eastern side (laying within storm surge category 1–4), with an additional vegetative buffer of approximately 100 feet between the housing development and the Camp Pinchot Historic District and associated entryway, as well as the southern and western boundaries. Parcels 2 and 3 are located along the southern Eglin Reservation boundary in north Fort Walton Beach just north of SR-189, approximately 1 mile west of Parcel 1. Parcels 4 and 5 are located just north of the existing Poquito Bayou housing area.

Proposed Action

The following activities comprise the Proposed Action and would occur across all alternatives (except the No Action Alternative); therefore, this document refers to them as "commonalities." The requirements of the Housing Privatization Request for Qualifications (RFQ), the 2009 HRMA, and future land use and planning needs determine these commonalities. Due to the flexibility provided the developer in creating development proposals that meet Air Force needs, the following project scope is the optimal development scenario. Specific details regarding development will not be available until the Air Force selects a development proposal. As a result, the actual project scope may result in different numbers of units constructed or demolished, or development locations, depending on financial viability and projected Air Force needs; the selected proposal would be evaluated by the Air Force to determine if the proposal fits within the scope of that analyzed in this EIS and if supplemental analysis is required. For planning purposes to address the potential optimal development scenario for the MHPI project at Hurlburt Field and Eglin AFB, it is assumed that all units (with the exception of the historic structures described previously) would be demolished. Figure ES-1 shows the location of existing housing at Eglin AFB and Hurlburt Field, Figure ES-2 shows the locations of proposed housing areas at Eglin AFB, and Figure ES-3 shows the locations of proposed housing areas at Hurlburt Field.

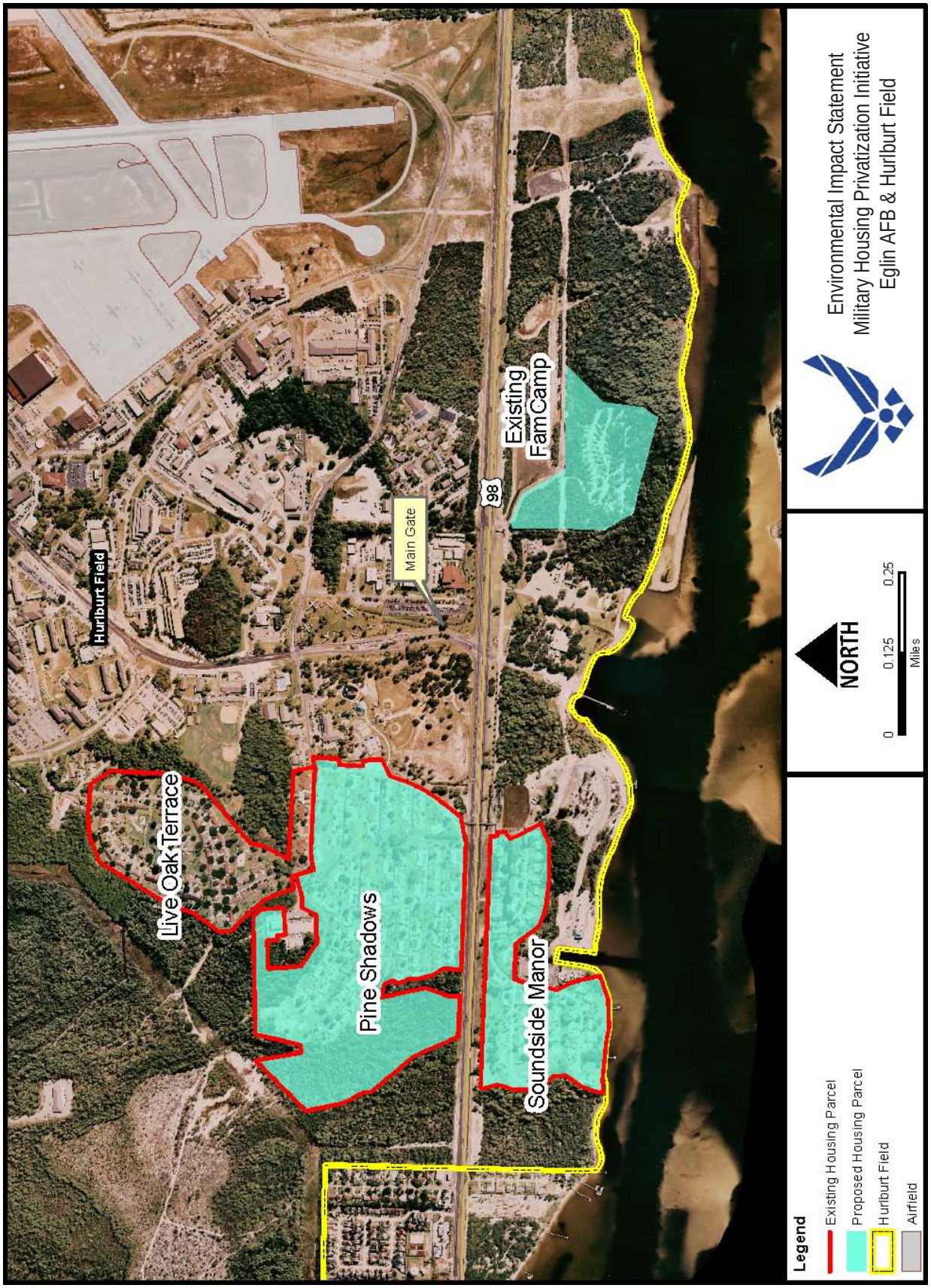

Figure ES-3. Proposed Housing Areas at Hurlburt Field

Commonalities

The Air Force would initially lease all acreage underlying existing housing as well as areas currently undeveloped or utilized for other purposes (i.e., the Family Camping [FAMCAMP] area at Hurlburt Field, housing offices). All alternatives for implementing the Proposed Action include construction of 484 units on Hurlburt Field and up to 35 units at Camp Rudder (except Subalternative 2a). The location utilized for development of the remaining 958 to 993 housing units at Eglin AFB would be associated with whichever alternative is selected. Figure ES-4 and Figure ES-5 show the commonality activities under the Proposed Action.

- The Air Force would lease all existing housing areas to the developer and convey up to 1,413 MFH units (854 at Eglin Main Base, 4 at Camp Pinchot, 150 at Poquito Bayou, 25 at Camp Rudder, and 380 at Hurlburt Field) and housing offices to the developer (these numbers may be fewer at the time of project initiation due to potential hurricane or other unforeseeable natural events). The Air Force then proposes demolition of up to 1,404 housing units (1,413 minus the 9 historic units): 25 at Camp Rudder; 849 at Eglin Main Base; 150 at Poquito Bayou; and 380 at Hurlburt Field. The developer would construct up to 1,477 new units. The number of housing units to be demolished and constructed is the same among the alternatives. Only the potential location of new housing construction would vary. Areas supporting the end-state family housing units would be leased to the developer for a period of 50 years.
- Leasehold interest in parcels not utilized for housing would terminate upon the demolition and removal of all required units and the Air Force's satisfaction with the developer's performance.
- Once replacement units are constructed, the developer will return to the Air Force the historic buildings at Georgia Avenue and Camp Pinchot, at which time the developer's leasehold interest in the parcels would terminate. Subsequently, Eglin AFB will determine the future of the historic buildings. Should the Air Force propose any action that may result in an adverse effect, Eglin AFB will consult with the consulting parties through the National Historic Preservation Act Section 106 and Section 110 process to resolve the adverse effect and either amend the MHPI Programmatic Agreement (PA) or develop a separate agreement document.

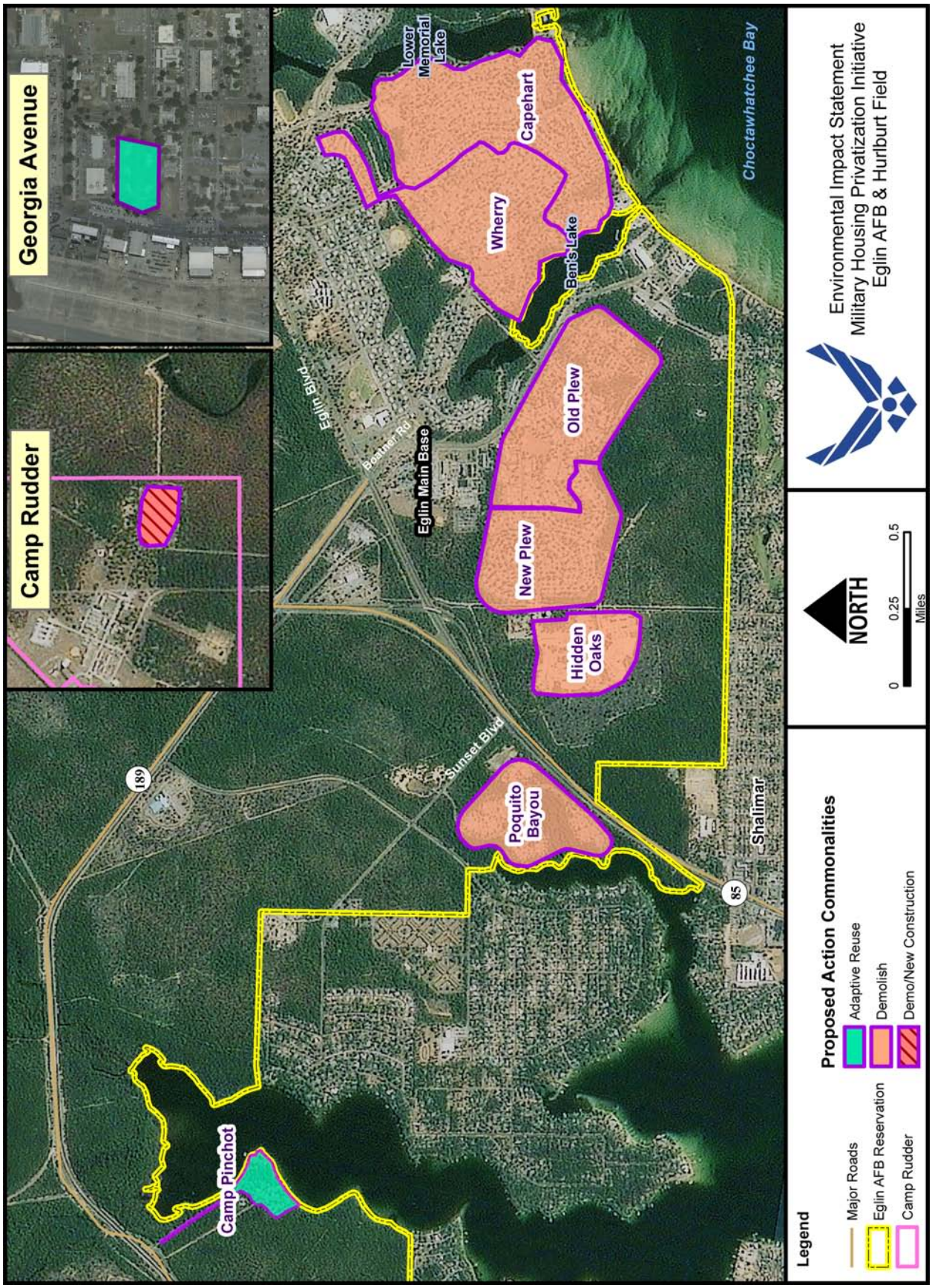

Figure ES-4. Proposed Action/Commonalities at Eglin AFB

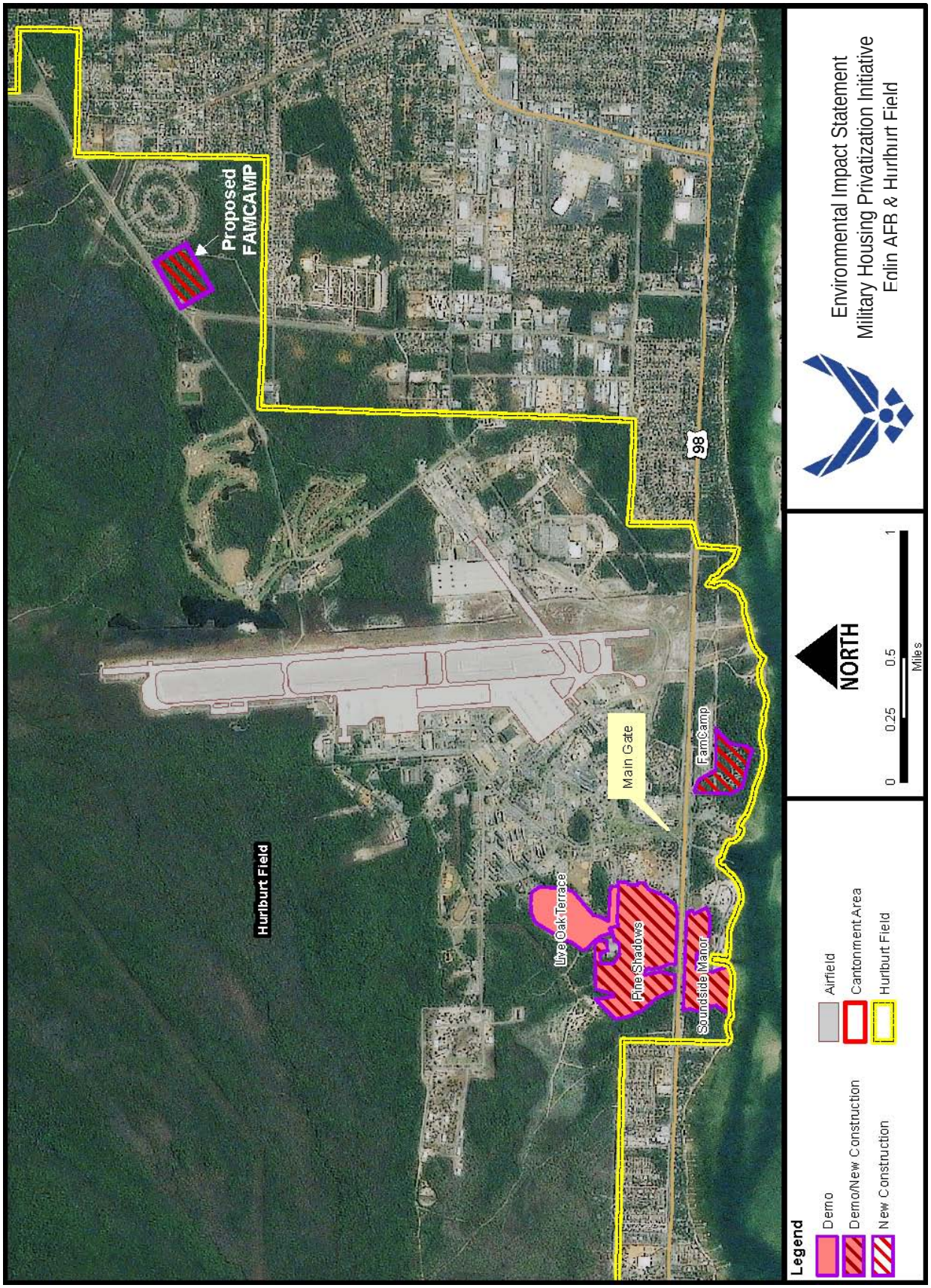

Figure ES-5. Proposed Action/Commonalities at Hurlburt Field

As the exact size and placement of each unit within the alternative areas would be determined through the design review process, the actual construction of new units and infrastructure could take place anywhere within the areas (with the exception of small wetlands and floodplains found in some of the parcels), depending on alternative selection. It is possible that the developer would seek to develop each parcel to the optimal extent possible, and since the density and location of units to be constructed is unknown at this time, it is reasonable to assume that development of each parcel to the optimal extent possible would serve to represent the greatest potential impact to these areas. Table ES-2 provides the estimated square footage of construction and demolition (C&D) based on required housing demographics under the Proposed Action.

Table ES-2. Estimated Total Gross Square Footage of Housing Construction and Demolition for the Proposed Action

# of Bdrms	Pay Grade*		Demolition			Construction					
			# of Units	Total Gross Sq Footage		# of Units			Max Gross Sq Footage		Total Max Gross Sq Ft.
				Add. Surface	Total	HF	CR*	Eglin	Per Unit	Add. Surface	
2	JNCO	E1-E6	384	1,275	3,829,132	0				1,275	4,871,395
	SNCO	E7-E8									
	CGO	O1-O3									
3	JNCO	E1-E6	671			242	0	535	1,760		
	SNCO	E7-E8				34	8	56	2,050		
	CGO	O1-O3				32	11	61			
	Prestige/ FGO	E-9/ O4-O5				23	1	24	2,300		
4	JNCO	E1-E6	349			71	0	158	2,220		
	SNCO	E7-E8				33	6	58	2,500		
	CGO	O1-O3				8	5	15			
	Prestige/ FGO	E-9/ O4-O5				25	4	30	2,700		
	SGO	O6				12	0	18	2,920		
	GO	O7-O10				4	0	3	4,060		
Total			***1,404***			***484***	***35***	***958***			

Source: Eglin AFB and Hurlburt Field Housing Offices, 2010

* Under Subalternative 2a, these units would be constructed on Eglin Main Base.

HF = Hurlburt Field; CR = Camp Rudder; JNCO = Junior Noncommissioned Officer; SNCO = Senior Noncommissioned Officer; CGO = Company Grade Officer; FGO = Field Grade Officer; SGO = Senior Grade Officer; GO = General Officer

Note: These numbers are for planning purposes only and are subject to change depending on developer proposals.

The Air Force will not convey existing utility mains as part of this proposed action and will provide utilities to the current housing units until they are all demolished, whereupon the Air Force will abandon the old lines in-place. Points of demarcation are where the lateral service line connects to the main when there is no meter or shut-off valve, otherwise it is the line side of the meter, disconnect, or junction box. In areas of

new development, the developer will be responsible for obtaining utilities from off-base for newly constructed units. Once construction is complete, the developer can either turn systems over to the local utility or to the Air Force, and all new electrical, natural gas, water and sewer utility systems installed by the developer will be constructed in accordance with all applicable laws and regulations for ownership and operation by the local utility provider or the Government where applicable.

The actual distribution of units that would occur is unknown, as the exact size and placement of each unit within the alternative areas would be determined when the Air Force selects a developer's project concept and concludes exclusive negotiations with such developer. As a result, the actual construction of new units and infrastructure could take place anywhere within the proposed parcels (with the exception of small wetlands and floodplains found in some of the parcels), depending on alternative selection. However, based on the MHPI RFQ requirements, it is reasonable to assume that the actual distribution of units within the proposed parcels would likely be somewhere between 4 and 6 units per acre. It is possible that developer proposals would seek to develop each parcel to the optimal extent possible (6 units per acre), and since the density and location of units to be constructed is unknown at this time, it is reasonable to assume that development of each parcel to the optimal extent possible (unless otherwise noted) would serve to represent the greatest potential impact to these areas. In order to understand the greatest potential for impact posed by the development of the housing areas, analysis assumes the following is inherent to the Proposed Action and is thus the same across alternatives:

- Hurlburt Field:
  - At Hurlburt Field, 484 units would be built on Hurlburt Field and 64 units would be constructed on Eglin AFB at a location to be determined by alternative selection.
  - The following additional nonresidential facilities would be conveyed to the developer "as is" at Hurlburt Field: two recreational courts, seven playgrounds, 10 bus shelters, two boat docks and the seawall at Soundside Manor, the Housing Maintenance Facility and office, and the laundry/latrine building at the FAMCAMP location.
  - The existing FAMCAMP would be relocated to the southwest of existing Commando Village along Martin Luther King Boulevard (SR-189) (Figure ES-5). The proposed FAMCAMP area is approximately 13 acres; conceptual site development calls for 50 recreational vehicle spaces, a new bath house, asphalt roadway, stormwater retention, and an access point along SR-189.

- Camp Rudder:
  - At Camp Rudder, all 25 existing housing units could be demolished and 35 new housing units may be constructed within the existing housing area. Under Subalternative 2a, these units would be constructed on Eglin Main Base.
- Eglin AFB:
  - The Air Force would convey five housing units and a separated garage at Georgia Avenue and four housing units (includes General Officers' Quarters [GOQ] guest house) at Camp Pinchot to the developer. Other aspects at Camp Pinchot to be conveyed include: tennis court, three garages, a storage building, a kitchen, guest house, car port, sea wall, boat house and dock, water pump house and storage tank, portable generator, and security gate. The conveyance documents would include a deed restriction requiring that the developer's interest terminate when suitable replacement housing units are constructed. The Air Force would then adaptively reuse the nine units and associated structures.
  - The following additional nonresidential facilities would be conveyed to the developer "as is" at Eglin AFB: 16 playgrounds, the Housing Maintenance Facility and office, two housing supply and storage facilities, recreational vehicle storage area, grounds facility, and basketball court on Loblolly Drive.

The site development design at both installations would integrate the new housing community, to the extent practicable, with the surrounding community. The site development design would create a network of neighborhoods within the community by creating a full range of compatible private and shared recreation and community-desired facilities. The development design would also provide efficient and separate vehicular and pedestrian traffic patterns. The design would identify constraints such as easements, drainage, and offensive environments (i.e., blight, bright lights, and loud noises) to ensure activities within and surrounding the site are compatible. The site design would provide for common green spaces with native landscaping; recreational areas; appropriate buffer area/screening; street lighting; pedestrian and vehicular circulation; and sidewalks on both sides of the street. These site designs would be consistent with good land use planning, practices, and economics, and would incorporate green space, landscaping, underground utilities, and recreation areas. Offerors may achieve the Proposed Action end-state through a combination of demolition and construction that is different from the combination described above. For the purposes of analysis, the optimal development scenario for each parcel has been assessed to identify potential issues that could arise from a combination of several different possible development proposals.

Alternatives Considered but not Carried Forward

Throughout the alternative development process, several potential alternative locations were identified and considered, but the continued evaluation of these areas with respect to the MHPI objectives resulted in the elimination of these locations due to their inability to meet the purpose and need of the Proposed Action.

The Air Force considered utilization of the former Bayou Village Mobile Home Park on Eglin AFB Main Base. However, the majority of the site is within the 100-year floodplain and does not meet the avoidance of wetlands/floodplains objective.

The Air Force considered construction of new homes on Hurlburt Field north of U.S. Highway 98 (US-98) at Live Oak Terrace but did not carry this option forward due to Hurlburt Field's overcrowded mission and the need to support future expansion of existing and future missions (U.S. Air Force, 2005a).

The Air Force considered two parcels in the Crestview Park/Duke Field area. The area is approximately 1 mile northwest of Duke Field, with the parcels split west and east of SR-85, respectively, and just south of the Yellow River along the northern border of the Eglin Reservation. This area was initially identified as a potential development location during the alternative development process and was listed during the public scoping process as a potential alternative. However, closer scrutiny by weapons release and range safety offices indicated that the proposed parcels would be in the last safety buffer for emergency self destruct of a run-away munition before it left Eglin. Safety of potential residents was the primary concern, especially in the event a member of the general public became a resident. As a result, the Air Force determined that this location does not meet the established objectives for housing and is not being carried forward as a viable alternative.

Four parcels in the Eglin Northeast area were also considered but eliminated by the Air Force. The area is located approximately 1 mile southeast of Mossy Head, Florida, inside the northeastern Eglin Reservation border. This area was initially identified as a potential development location during the alternative development process and was listed during the public scoping process as a potential alternative. However, after further review, it was determined that development of housing at this location would conflict with low level routes and the missile corridor, having an adverse impact on test and training missions on the Eglin range. As a result, the Air Force determined that this location does not meet the established objectives for housing and is not being carried forward as a viable alternative.

Alternatives Carried Forward

Each alternative begins by first incorporating the commonalities as described under the Proposed Action, then identifying the maximum number of potential units the

developer could construct within a new or existing housing area such that each area would be developed to the optimal density possible. Due to the varying densities and sizes of potential development locations, as well as the diverse number of parcels associated with each area, the alternatives represent the largest potential development for each area. The selected proposal will be evaluated to determine whether it is within the scope of analysis presented in this EIS. Should there be potential for impacts from a selected proposal outside the scope of analysis within this EIS, a supplemental analysis may be required.

No Action Alternative

The Council on Environmental Quality (CEQ) regulations (40 CFR Section 1502.14(d)) require the alternatives analysis in the EIS to "include the alternative of no action." "No action" in this case means that the Air Force would not implement the MHPI at Eglin AFB or Hurlburt Field. Instead, the Air Force would continue to manage/maintain and replace/upgrade MFH in accordance with existing Air Force policy and resources, which historically have been inadequate to maintain housing at acceptable levels. As requirements are identified, they would be evaluated through the NEPA process for potential environmental impacts. The No Action analysis provides a benchmark, enabling the Air Force decision maker to compare the magnitude of environmental effects of the action alternatives. Under the No Action Alternative, presently ongoing and reasonably foreseeable future actions must be identified and addressed on housing areas as they exist today and would likely exist under the No Action Alternative, because that scenario represents impacts to existing housing without the influence of MHPI. Conversely, the projects identified here would be addressed under cumulative impacts with respect to the combination of the proposed MHPI project and ongoing and reasonably foreseeable future actions:

- 2005 BRAC Decisions at Eglin AFB
- Road improvements to SR-85, SR-123, US-331, US-98, and Range Road 211
- Florida Army National Guard Relocation from Panama City, Florida, to Eglin AFB
- U.S. Army Corps of Engineers Relocation from Shalimar, Florida, to Eglin AFB
- Establishment of Air Force Cost Analysis Agency Satellite Office
- *Eglin AFB Development Plan*. Based on review of the Eglin Facility Requirements Database, there are more than 50 planned MILCON projects planned beyond FY 2010 at Eglin AFB (Main Base and Duke Field), with a total of more than approximately 2,000,000 square feet.
- *Construct Perimeter Fence.* There are plans to install a new perimeter fence so that the hospital and facilities west of Ben's Lake will be outside the fence. The fence

will start on Pinchot Road just south of the Visitors Center behind the knee wall and run south ending on the shore of Ben's Lake just south of Memorial Trail. Pinchot Road and Boatner Road will be outside the fence. The two new Child Development Centers will be inside the fence at a minimum distance of 148 feet.

- *Hurlburt Field General Plan*. The plan identifies more than 50 transportation and capital improvement projects over the next seven years.
- Development of Emerald Coast Resort on Okaloosa Island, Eglin Test Site A-5
- Development of a Biomass Renewable Energy Facility at Eglin AFB
- Destin/Fort Walton Beach Airport Construction Projects
- DeFuniak Springs Airport Projects

Alternative 1: White Point Area

Under this alternative (Figure ES-6), the Air Force would conduct the following activities:

- Implementation of all commonalities to include the following:
  - Initial conveyance of up to 1,413 housing units at Hurlburt Field, Camp Rudder, and Eglin AFB
  - Return of the Camp Pinchot Historic District and the Georgia Avenue historic buildings to the Air Force once replacement units have been constructed
  - Demolition of up to 1,404 housing units: 25 at Camp Rudder; 150 at Poquito Bayou; 849 at Eglin Main Base; and 380 at Hurlburt Field
  - Conveyance of various nonresidential facilities at both Hurlburt Field and Eglin AFB
  - Construction of 484 new units at Hurlburt Field and up to 35 new units at Camp Rudder
  - Construction of an 8,000-square-foot community center/clubhouse at both Eglin and Hurlburt
  - Construction of up to 958 housing units (894 units for Eglin AFB, 64 units for Hurlburt Field) on Eglin AFB utilizing a combination of several parcels within the White Point Area

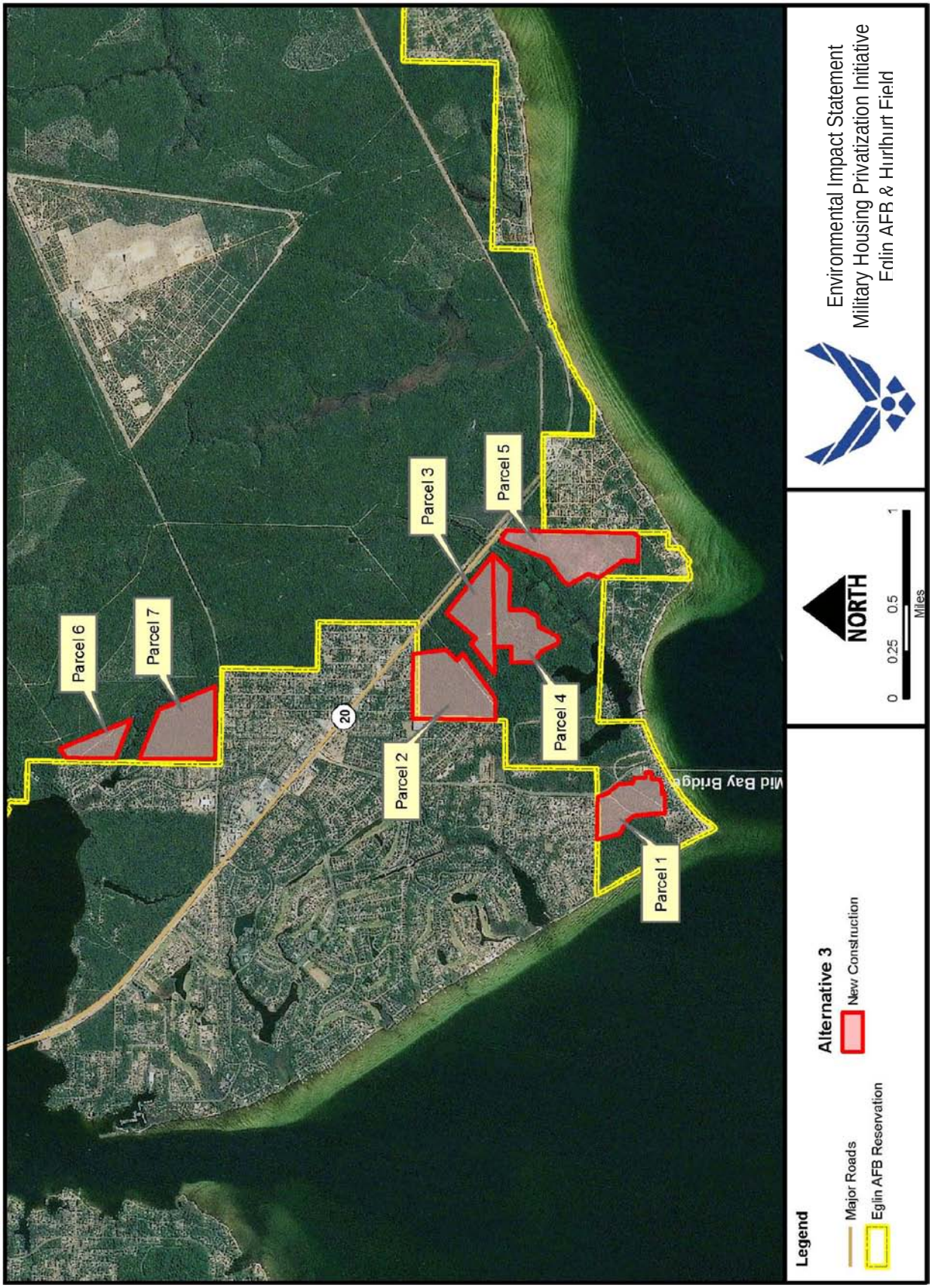

Figure ES-6. Alternative 1 – White Point Area

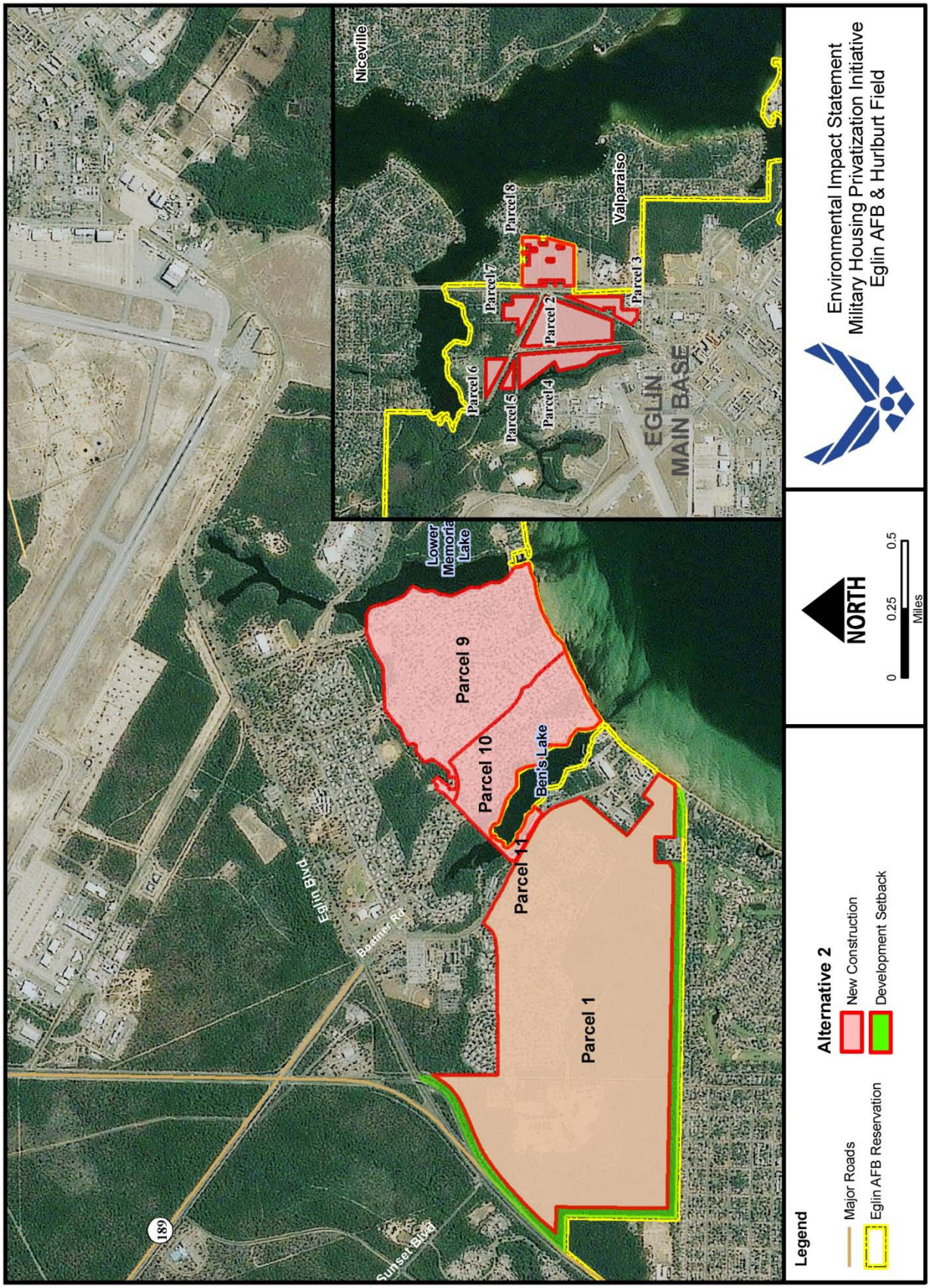

Figure ES-7. Alternative 2 – Eglin Main Base/Valparaiso Area

Alternative 2: Eglin Main Base/Valparaiso

This alternative would involve the same commonalities as described under Alternative 1, except that construction of up to 958 housing units on Eglin AFB would utilize one or a combination of several of the Eglin Main Base and Valparaiso parcels (Figure ES-7). While for Parcel 1 a total of 673 acres may actually be leased, approximately 661 acres are available for development at this parcel. For Parcels 2–11, approximately 399 acres may be leased.

Subalternative 2a: Eglin Main Base (Preferred Alternative)

This alternative would involve the same commonalities as described under Alternative 1, except that construction of up to 993 housing units on Eglin AFB (the 35 units at Camp Rudder are included in this number) would utilize only Alternative 2's Parcel 1 (Figure ES-8). As stated previously, a total of 673 acres may actually be leased for Parcel 1, but approximately 661 acres are actually available for development at that parcel.

Alternative 3: North Fort Walton Beach Area

This alternative would involve the same commonalities as described under Alternative 1, except that construction of up to 958 housing units on Eglin AFB would utilize a combination of several parcels within the North Fort Walton Beach Area (Figure ES-9). While the total amount to be leased would be approximately 457 acres, approximately 49 acres of the total area would be used as buffer space at Parcel 1. As a result, only about 408 acres would actually be available for development.

Alternative 4: Mix Alternative

This alternative would involve construction of up to 958 housing units on Eglin AFB through utilization of a combination of parcels within any of the areas identified in Alternatives 1–3.

Alternatives Summary

Table ES-3 (on page - 26 -) provides a summary of project activities.

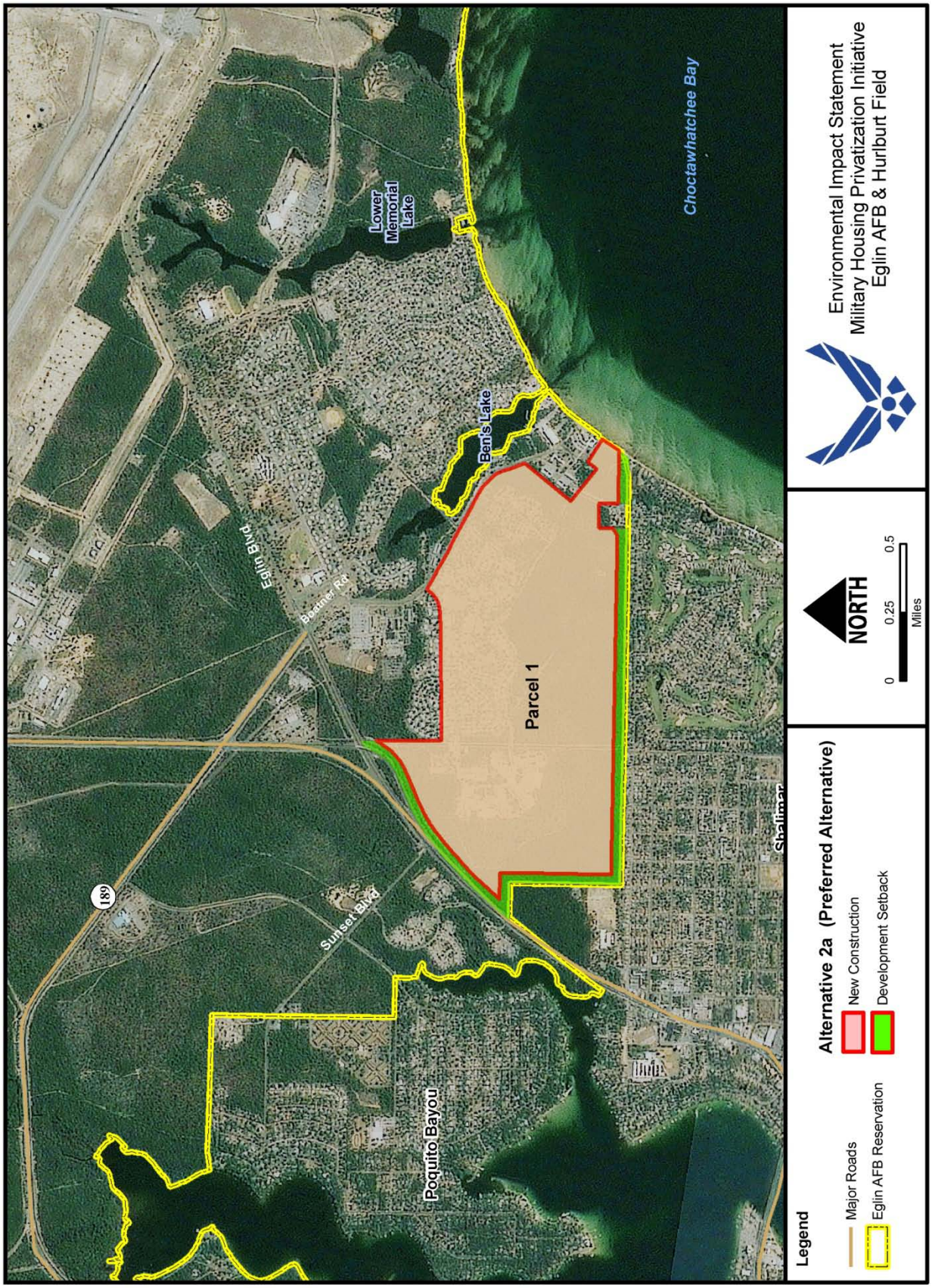

Figure ES-8. Subalternative 2a (Preferred Alternative) – Eglin Main/Valparaiso Area Parcel 1

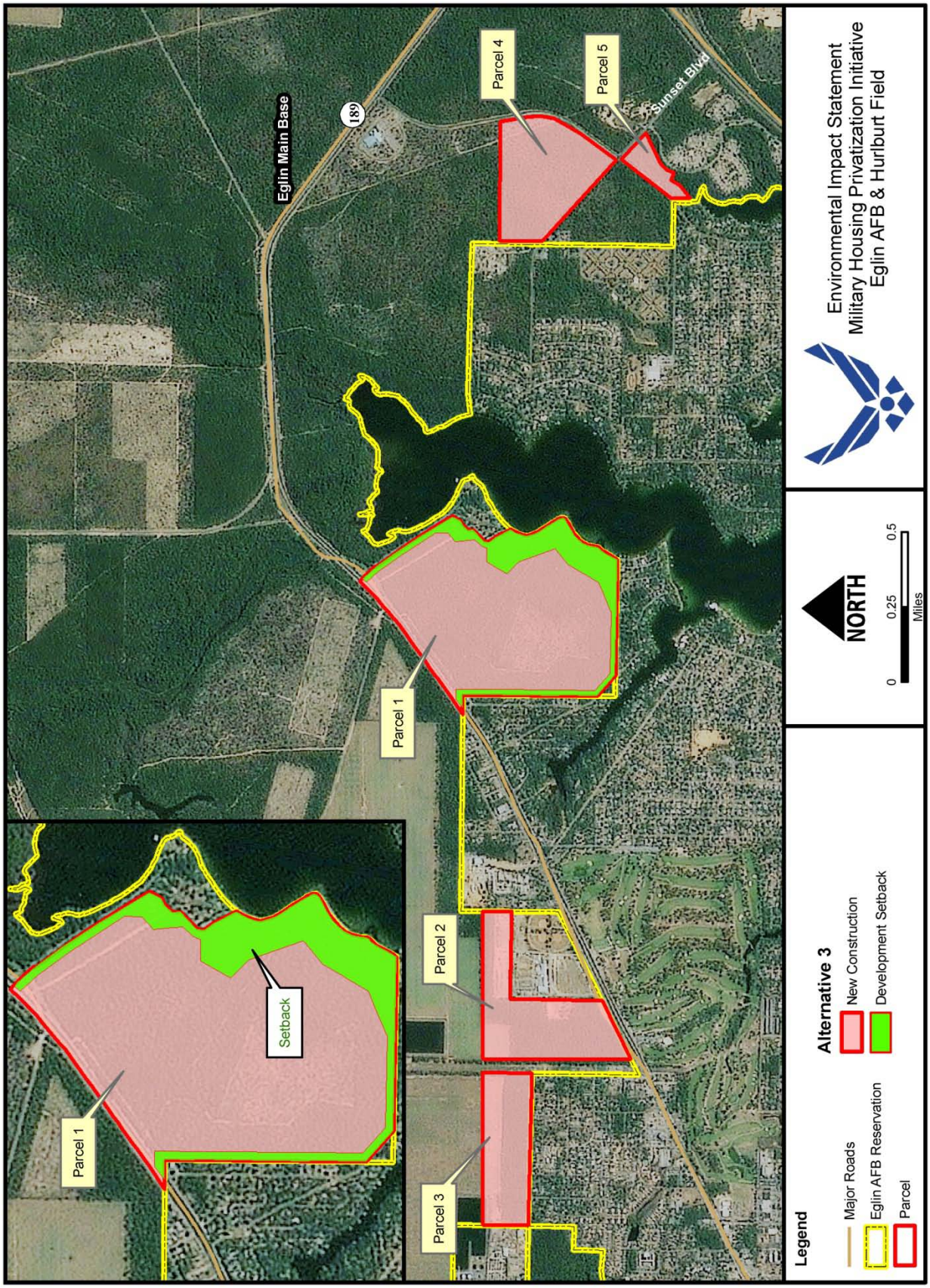

Figure ES-9. Alternative 3 – North Fort Walton Beach Area

Table ES-3. Description of Proposed Project Activities

Parcel		Current Number of Units	Year Built	Commonalities			Max # Units Potentially Constructed*	
Name	Acres			Action for Current Units	# Units Demolished (minimum)	# Units Renovated	Common	Alternative Specific
Eglin AFB								
Wherry Capehart	306	479	1951–1958	Demolition	479	0	0	
Georgia Avenue	3	5	1943	Return to Air Force	0			
Hidden Oaks	651	126	2001	Demolition	126			
Old Plew		58	1966–1968	Demolition	58			
New Plew		186	1968	Demolition	186			
Poquito Bayou	91	150	1976	Demolition	150			
Camp Pinchot	15	4	1912–1940	Return to Air Force	0			
Camp Rudder	10	25	1975	Demolition	25		35**	0
Total	**1,076**	**1,033**	**N/A**		**1,024**		**35**	**0**
White Point Area	416	0	N/A					958/993*** (894/929 for Eglin) (64 for Hurlburt)
EMB/ValP Area	1,072							
NFWB Area	457							
Hurlburt Field								
Live Oak Terrace	35	110	1957 & 1976	Demolition	110	0	0	
Pine Shadows	85	196	1957		196		484	0
Soundside Manor	31	74	1957 & 1997		74			
FAMCAMP	20	0	N/A	N/A	N/A			
Total	**171**	**380**	**N/A**		**380**	**0**	**484**	**0**
Overall Totals	***N/A***	***1,413***			***1,404***	***0***	***519***	***958***
Total End State *(current units (1,413) – return to Air Force (9) – demolition (1,404) + new construction (1,477))*							***1,477 Units***	

Source: Eglin AFB and Hurlburt Field Housing Offices, 2010

*Numbers represent the optimal development scenario at each location based on desired features in the privatization RFQ and are for planning purposes only; actual numbers of units and distribution may vary depending on proposals offered by developers. Existing FAMCAMP would be relocated near Commando Village on Hurlburt Field as part of the Proposed Action. Additionally, the construction of a new FAMCAMP is a separate, but connected action.

** These units are common to all alternatives except Subalternative 2a; ***993 units under Subalternative 2a to account for 35 not constructed at Camp Rudder.

EMB/ValP = Eglin Main Base/Valparaiso; NFWB = North Fort Walton Beach

Decision to be Made

The Air Force will base its decision to construct the new housing on the resource area analysis presented in this EIS. A decision to proceed with the implementation of the Proposed Action or alternatives would result in the conveyance, renovation, and/or demolition of existing housing, the construction of new replacement housing by a developer, return of the historic housing units to the Air Force for purposes other than housing (e.g., offices, conference facilities), the lease of Air Force-owned land and movement of the FAMCAMP area.

Summary of Potential Impacts by Resource Area

The information provided in this chapter essentially summarizes the potential impacts associated with Alternatives 1 through 4 and the No Action Alternative and provides the reader with information necessary to compare Alternative impacts by resource area. Impact analysis throughout the document considers the implementation of standard practices/procedures associated with regulatory requirements (e.g., stormwater construction permits), and other non-discretionary mitigations as part of the Proposed Action or alternatives, because these would be required to be implemented by permit or regulatory requirements. Discretionary mitigations are identified after analysis to identify mitigations that can be implemented to minimize or offset any potential impacts identified despite implementation of regulatory requirements and other non-discretionary mitigations. The actual discretionary mitigations that would be implemented by the Air Force and the privatization developer are alternative-dependent and will not be known until the Air Force selects an alternative. The Air Force will identify in the Record of Decision (ROD) any regulatory requirements and discretionary or non-discretionary mitigations to be implemented. The MHPI RFQ requires that the developer incorporate all mitigations from the MHPI EIS (whether discretionary or non-discretionary), associated ROD, and Mitigation Plan into an Environmental Management Plan (EMP) detailing how the developer will implement and monitor compliance with mitigation requirements. The Air Force will review and approve the EMP prior to any development activities to ensure consistency between the EMP and NEPA requirements. During the EMP review, the Air Force will determine whether additional NEPA analysis is required. While the developer is responsible for acquiring all permits and implementing the associated mitigations, as well as any Air Force-imposed discretionary mitigations, the Air Force is responsible for ensuring that all required permits are acquired and any mitigations are implemented effectively.

Transportation

A number of traffic segments within and surrounding the base are currently operating at less-than-desirable levels of service (LOS). Future roadway improvements can be expected to mitigate some, but not all, of these deficiencies. Roadway traffic is projected to increase under the baseline scenario and will further reduce future LOS.

Commonalities

- **Demolition of existing housing on Eglin Main Base –** This action could result in some improvement to existing on-base roadway LOS. Based on the analysis, the Air Force has not identified a potential for significant impacts.
- **Demolition of existing housing on Poquito Bayou Housing Area –** This action could result in some improvement to adjoining roadways. Based on the analysis, the Air Force has not identified any potential for significant impacts.
- **Camp Pinchot Housing Area –** This action's potential use of housing units for other uses might or might not result in an increase in traffic on adjoining roadways. Based on the analysis, the Air Force has not identified any potential for significant impacts.
- **Camp Rudder Housing Area –** Except with Subalternative 2a, this action's potential demolition of 25 housing units and the construction of 35 new housing units would result in a net increase of 10 housing units. This would result in an increase in traffic on adjoining roadways. Based on the analysis, the Air Force does not expect this impact to be significant.
- **Soundside Manor –** This action's potential demolition of 74 housing units and the construction of new housing units would result in an increase in traffic on adjoining roadways. This traffic would also utilize the Hurlburt Field Main Gate to access the installation, which is operating near capacity. Based on the analysis, however, the Air Force does not expect these impacts to be significant.
- **Existing FAMCAMP redevelopment –** The demolition of the existing FAMCAMP recreational vehicle park and the construction of new units on the FAMCAMP location will increase traffic on roadways between this location and the Hurlburt Main Gate. Based on the analysis, the Air Force does not expect these impacts to be significant, and the impacts can be mitigated.
- **New FAMCAMP Development –** The construction of a 50-unit recreational vehicle campground would result in a small increase in traffic on the adjoining street. Based on the analysis, the Air Force does not expect the addition of a new entrance and this small increase in traffic to be significant.

Alternative 1: White Point Area

Increased traffic from this alternative will impact some sections of SR-20 and SR-85 that are anticipated to have an LOS of F in 2017 and 2022. It is not desirable to increase traffic on roadway segments already operating at LOS F. This alternative would have the least impact on transportation if Parcels 6 and 7 are developed. Parcel 1 would have the most negative impacts on transportation. There would be some slight advantage to developing the most westward of Parcels 2, 3, 4, and 5 first.

Alternative 2: Eglin Main Base/Valparaiso

The development of these parcels would not be expected to have significant impacts to existing base roads, base access gates, or the public roadways. There would be some impacts from the development of Alternative 2's Parcel 8 because this parcel would be anticipated to add additional traffic onto existing collector roads and some additional traffic to the Eglin Main Base East access control point (ACP). In light of the Construct Perimeter Fence project, Parcels 1 and 11 would use the West main ACP to access the Main Base, thus increasing the traffic there as well. All other parcels would not be expected to have significant impacts to existing base roadways. Parcel 1 would be able to reuse existing roadways and roadway entrances onto Eglin Boulevard.

Subalternative 2a: Eglin Main Base (Preferred Alternative)

In light of the Construct Perimeter Fence project, Parcels 1 and 11 would use the West main ACP to access the Main Base, resulting in increased traffic at this ACP. However, the development of this parcel would not be expected to have significant impacts to existing base roads, base access gates, or the public roadways around Eglin Main Base or routes to Camp Rudder.

Alternative 3: Fort Walton Beach

The development of Alternative 3's Parcels 1, 2, or 3 would add additional traffic to SR-189, which has an LOS of F from the parcels to General Bond Boulevard. SR-189 from General Bond Boulevard to SR-85 becomes LOS F under the maximum development of these parcels by 2022. It is not desirable to increase traffic on roadway segments already operating at LOS F. The development of Alternative 3's Parcels 4 and 5 would not have significant impacts on transportation.

Alternative 4: Mix Alternative

The selection of portions of any of the previously discussed alternatives will have impacts similar to the impacts discussed above on a parcel by parcel basis.

Regulatory Requirements/Mitigations

As standard practice/procedure under the Proposed Action and alternatives, all transportation infrastructure would be designed and developed in accordance with federal U.S. Department of Transportation (USDOT) and Florida Department of Transportation (FDOT) requirements, which will help to minimize traffic safety issues. (These requirements ensure proper design of roadways and intersections, use of approved materials for construction, etc.) Okaloosa County and FDOT would need to review and approve any proposed new signals external to the development area. Such approval is possible, but not certain (Showers, 2004). This could include new signals for

some exits at the White Point parcels onto SR-20, and perhaps some of the Fort Walton Beach parcels onto SR-189. The developer would be required per Okaloosa County and FDOT requirements to conduct specific engineering design and traffic studies for related road systems and proposed highway interchanges to gain approval from the FDOT and Okaloosa County for transportation plans.

Discretionary mitigations that would serve to minimize traffic impedance and safety impacts at specific parcels involve utilization of turn lanes, acceleration lanes, and signage. Discretionary mitigations to minimize traffic build-up at the Eglin AFB gates include establishing additional lanes or gates and using tandem processing in the peak morning hour and staggered start times for shifts at the base. Traffic congestion within existing Eglin AFB and Hurlburt Field housing area roadway systems could be reduced and safety would be enhanced through provision of adequate parking on roadways, pedestrian walkways, and roadways designed to terminate at a collector road in less than 0.5 mile if possible and to convey the traffic from the local road system to the arterial road system. The collector road would also provide access to adjoining properties and possibly for the movement of through traffic. Constructing any replacement housing off-base would increase traffic to the base ACPs. The access gates at Hurlburt Field and Eglin AFB may be inadequate by the 2017 to 2022 time period under the No Action Alternative. Alternatives 1 and 3 would increase traffic at the Eglin base gates. To minimize the incremental impacts and to reduce travel delays due to gate capacity issues, it may be necessary as discretionary mitigations for the access gate capacity to be improved to better support the expected increases in traffic. The number of lanes for base entrance gates should be evaluated and increased if necessary.

Socioeconomics

Impacts to socioeconomic resources would be common across all alternatives (with the exception of the No Action Alternative). Eglin AFB has demolished over 60 percent of their housing inventory over recent years. Based on the Housing Requirements and Market Analysis, the Air Force estimates that more than 80 percent of the housing for Eglin AFB and Hurlburt Field families will be provided by the local community with the remainder on the installations. The Proposed Action would only increase the number of housing units by 64 units over existing levels. Thus, the Air Force does not anticipate that the Proposed Action would directly compete with the local housing market. Impacts to employment would be beneficial since the project would induce the creation of jobs that would help sustain low unemployment levels in the local and regional economy. It is most probable that the pool of locally available workers would fill the demand for labor associated with the implementation of the project, thus negating the potential in-migration of workers (and their family members) from outside the region. In the absence of an influx of new residents, negligible change would be expected in regional population or the demand for additional housing as a result of the project. Although a redistribution of persons within the region could result in potential

impacts to the local school district in terms of facility capacity, staffing levels, and revenue sources, these potential impacts would be relatively minor. Alternative 1 has the largest potential for adverse impacts to schools when compared to the other alternatives. The Air Force has not identified any impacts associated with environmental justice under any of the alternatives.

Regulatory Requirements/Mitigations

As standard practice/procedure, the developer would be required to provide adequate measures to restrict access to construction and demolition sites and consider all aspects of child safety during work and nonwork hours. There are some non-discretionary mitigations that could be implemented under the Proposed Action to minimize or offset potential impacts associated with safety of children. Such mitigations include providing safety along shorelines to minimize potential for drowning accidents by erecting signs at the waterfront to warn residents of the potential drowning hazard and emphasizing the need to supervise children up to the age of 14 and for children to use a personal flotation device. Emergency equipment may also be located close to the waterfront area.

Utilities

Potential impacts associated with utility infrastructure are related to the potential for disruption of utility service and the potential for utility use at site-specific locations to exceed the design or permit capacity of the respective utility system. The Air Force has not identified any adverse impacts to utility infrastructure design or permit capacity associated with demolition and construction of any of the units. Although electricity, water, and wastewater on both Hurlburt Field and Eglin AFB may be privatized in the future, the Air Force expects no impacts to infrastructure, service, or capacity based on the analysis.

Regulatory Requirements/Mitigations

As standard practice/procedure, the developer would coordinate with local utility providers for water, sewer, electrical, and natural gas utility hook-ups, and would coordinate with all utility providers prior to ground disturbance activities to identify buried utility lines. In addition, all new construction or major renovation must meet the requirements of Executive Order (EO) 13514, *Guiding Principles for Federal Leadership in High Performance and Sustainable Buildings*, as well as the RFQ's requirement to earn the Energy Star label and its desired feature of eligibility for the Leadership in Energy and Environmental Design (LEED) Silver Certificate, or higher. These requirements would help to minimize utility usage through the development of energy-efficient facilities and use of energy-saving appliances and fixtures.

Air Quality

The Air Force has identified no significant adverse impacts to regional air quality from construction, demolition, or operational activities associated with implementation of the Proposed Action or alternatives.

Regulatory Requirements/Mitigations

As standard practice/procedure, all new construction or major renovation must meet the requirements of EO 13514, *Guiding Principles for Federal Leadership in High Performance and Sustainable Buildings*, as well as the RFQ's requirement to earn the Energy Star label and its desired feature of eligibility for the LEED Silver Certificate, or higher. This means operational emissions from the housing will be minimized because developers are required to use mechanical equipment or fixtures incorporated for heating, cooling, ventilating, lighting, and domestic hot water usage that will meet efficiency ratings to achieve the Energy Star label. As discretionary mitigations to decrease particulate matter emissions during site preparation activities (i.e., grading), the use of water on soil piles and exposed surfaces from grading activities would minimize particulate releases. For hauling soil, particulate matter emissions may be decreased by using at least 2 feet of freeboard and/or a secured cover and driving on watered unpaved roads or on paved roads to the greatest extent possible.

Safety

No specific aspects of the Proposed Action or alternatives would create any unique impacts to safety from housing construction activities, housing operations, or the presence of UXO in MFH areas.

Regulatory Requirements/Mitigations

As standard practice/procedure, all actions would be accomplished by technically qualified personnel and would be conducted in accordance with applicable Air Force safety requirements, approved technical data, and Occupational Safety and Health Administration and Air Force Occupational and Environmental Safety, Fire Protection, and Health standards, thus minimizing potential job-site safety impacts. The developer would restrict access during work hours, site preparation, and nonwork hours and would minimize slip/trip/fall hazards through standard Occupational Safety and Health Administration (OSHA) work-site requirements associated with construction and demolition activities. One non-discretionary mitigation would require the developer to evaluate chlordane concentrations in areas with chlordane-impacted soils prior to disturbing these soils. The developer would then be required to implement measures to prevent fugitive dusts of airborne soil particles in high-concentration areas in order to minimize the potential for inhalation by workers.

Hazardous Materials and Waste

Adverse impacts associated with hazardous materials/waste from demolition of any of the units may result from asbestos and lead-based paint (LBP) exposure and disposal. However, these impacts would be mitigated provided that developers follow established regulations and guidance for handling and disposal.

Overall, various potentially beneficial impacts would result from implementation of the Proposed Action at any of the alternative sites. These benefits are primarily associated with the elimination of potential exposure of MFH residents to asbestos fibers from asbestos-containing building material (ACBM) and lead in LBP, both of which have been determined to be present in older housing units.

Regulatory Requirements/Mitigations

The primary issue associated with hazardous materials and wastes are potential releases of hazardous materials during construction activities. These activities would utilize standard construction methods, limiting the use of hazardous materials to the maximum extent possible. Compliance with Air Force best construction practices, including adherence to the Eglin AFB and Hurlburt Field Spill Prevention, Control and Countermeasure Plans, would be required and would reduce potential spills and improper handling of hazardous materials and waste.

Air Force best construction practices are prescribed in AFI 32-1023, *Design and Construction Standards and Execution of Facility Construction Projects*, and AFI 32-6002, *Family Housing Planning, Programming, Design, and Construction* (U.S. Air Force, 1994; U.S. Air Force, 2008c). These AFIs require that Air Force personnel monitor contractor compliance with all applicable environmental and safety requirements. They also mandate compliance with all applicable federal, state, and local environmental regulations, including any environmental permit requirements. Additionally, AFI 32-6002 requires that for projects to maintain, repair, improve, replace, or construct MFH, appropriate environmental compliance plans be developed and implemented.

The Florida Department of Environmental Protection (FDEP) requires the contractor to notify applicable state and local agencies before demolition or renovation of buildings that contain certain threshold amounts of asbestos. The developer must provide written notification to the FDEP at least 10 working days before beginning the demolition or any asbestos removal project. Consequently, asbestos surveys must be performed on buildings (that have not already undergone survey) prior to renovation/demolition.

The developer would implement the following requirements as part of project activities to minimize improper storage and handling of hazardous materials and waste:

- The developer would be required to submit all construction project programming documents, designs, and contracts to both 96th Civil Engineer Group, Environmental Compliance Branch and 1st Special Operations Civil Engineering Squadron Asset Management Flight for review.
- The developer would be required to conduct LBP surveys for the alteration or demolition of an existing housing structure (unless conducted previously).
- The developer would be required to stipulate appropriate abatement and disposal requirements for LBP in project designs.
- The developer would be required to utilize a certified contractor when removing ACBMs. Project personnel would be required to adhere to established procedures set forth for the safe handling and transport of these materials as outlined in Eglin's Hazardous Materials Management Plan.
- Planned construction activities would avoid all ERP sites, such as water towers in MFH areas. Regardless, should any unusual odor, soil, or groundwater coloring be encountered during development activities in any areas, construction would cease and the Eglin AFB Environmental Management Restoration branch would be contacted immediately.

Noise

Under all alternatives, the relatively low time-averaged noise levels associated with demolition and construction activities indicate that neither activity would be excessively intrusive; noise associated with these activities would be short-term and would conclude upon completion of C&D actions. The Air Force has not identified any significant adverse noise impacts associated with implementation of the Proposed Action under any of the alternatives.

The F-35 aircraft noise would dominate the noise environment. Residents located in areas under noise contours greater than 65 dB may experience varying degrees of annoyance and potential negative health effects depending on the amount of time the residents spend outdoors and noise abatement measures retrofitted on current housing. Noticeable structural vibration may result from low-level F-35 overflights. Physical effects of vibration are generally experienced at peak noise levels of greater than 130 dB. Vibration may add to the annoyance generated by noise-related activity interruption. In general, existing or new housing units in areas falling under elevated noise levels would likely need to be retrofitted with noise-dampening materials to minimize noise impacts to residents.

Regulatory Requirements/Mitigations

Discretionary mitigations that would reduce construction noise levels and minimize the temporary effects of construction noise to on- and off-base communities include phasing demolition and construction in a manner to reduce total noise generation and

conducting demolition and construction activities during normal work days and working hours. The use of a construction noise management buffer (up to 500 feet where practicable) between construction activities and established housing areas would further decrease any potential effects of noise on receptors.

As non-discretionary mitigations, measures to achieve a noise level reduction of 25 dB in areas between 65–69 dB Day-Night Average Sound Level (DNL) must be incorporated into the design and construction of portions of buildings where the public is received, office areas, noise sensitive areas, or where the normal noise level is low. Measures to achieve a noise level reduction of 30 dB in areas of 70–74 dB DNL must be incorporated into the design and construction of portions of these buildings. Areas at 75 dB DNL and above are not normally compatible with residential uses, and use of these areas for such purposes should be restricted (Okaloosa County, 2009). Such mitigations would be required to reduce the noise levels within residential areas on the installation to acceptable levels.

Solid Waste

C&D wastes associated with Military Housing Privatization Initiative (MHPI) and other planned/foreseeable actions will result in an increased demand on solid waste disposal resources within the area. Although the estimated C&D wastes generated are expected to increase waste disposal rates within the counties, sufficient landfill capacity appears to exist within the respective counties to accommodate the wastes. Many landfills also have the capacity for significant expansion, which could further minimize any real or perceived impact to available solid waste disposal resources. As a result, the Air Force's analysis has not identified any potential for significant impacts.

Regulatory Requirements/Mitigations

Standard Air Force solid waste and recycling programs would apply to the MHPI residents to minimize municipal solid waste generation. Discretionary mitigations that would reduce C&D debris waste include recycling and/or reuse of demolition and waste construction materials as practicable, as well as distribution of C&D wastes to multiple landfills to minimize impacts (e.g., over use) to any one particular landfill.

Land Use

In general, activities associated with the Proposed Action and alternatives occurring on Eglin Main Base and/or Hurlburt Field are consistent with installation future land use plans.

All new structures would adhere to local building codes. All alternative locations would involve development on Eglin lands that are adjacent to established Okaloosa County communities (i.e., outside Eglin Main Base). Although Eglin AFB is not required to comply with the *Okaloosa County Comprehensive Plan*, Policy 10.1 of that Plan

designates a maximum gross density of 5 units per acre south of Eglin AFB for the Low-Density Residential classification (DCA, 2010). At densities fewer than 6 units per acre the project would be consistent with surrounding land uses. However, development at 6 units per acre would exceed maximum recommendations for Low-Density Residential designations under the *Okaloosa County Comprehensive Plan*.

Alternative 2: Eglin Main Base/Valparaiso

Under the scenario for JSF Alternative 1I, a small portion of Parcel 1 would be located within the southern accident potential zone (APZ) II for the new runway. Within the APZ II, there is a suggested maximum density of 1 to 2 dwelling units per acre, possibly increased under a Planned Unit Development where maximum lot coverage is less than 20 percent (U.S. Air Force, 1999). According to the Eglin Air Force Base Joint Land Use Study (JLUS) (Okaloosa County, 2009), Parcels 2–8 are located in a Military Influence Planning Area II, which requires sound attenuation for residential uses for areas exposed to 65–75 dB DNL. Areas experiencing noise above 75 dB DNL would not be suitable for residential uses (Okaloosa County, 2009). The use of Parcels 9 and 10 could also require that new housing units incorporate sound attenuation measures due to potential noise exposures above 65 dB DNL from JSF air operations.

Subalternative 2a: Eglin Main Base (Preferred Alternative)

The use of Parcel 1 could require that new housing units incorporate sound attenuation measures due to potential noise exposures above 65 dB DNL from JSF air operations. Development of new housing units on Parcel 1 is expected to be compatible with the existing off-base residential areas, and no adverse impacts are expected. There would be no land use issues associated with not utilizing Camp Rudder for housing.

Alternative 3: North Fort Walton Beach Area

West of Parcel 3 are mixed use and industrial land uses, while to the south is medium-density residential. To the north of both Parcels 2 and 3 are the newly constructed Arbennie Pritchett Water Reclamation Facility and existing Garniers effluent spray field, which could potentially present compatibility issues with any new housing (Okaloosa County, 2009).

A development setback would be established for any new housing construction on Parcel 1 to minimize any potential compatibility issues with the adjacent off-base low-density residential areas. Development of new housing units on Parcels 4 and 5 is expected to be compatible with the adjacent off-base residential, commercial, and recreational areas, and no adverse impacts are expected.

Regulatory Requirements/Mitigations

According to Eglin AFB's Air Installation Compatible Use Zone (AICUZ) study (U.S. Air Force, 2006b) residential housing is "discouraged in DNL 65–69 dB" and "strongly discouraged in DNL 70–74 dB"; and measures to achieve a noise level reduction (NLR) of 25 and 30 dB, respectively, inside residential housing in such areas must be incorporated into the design and construction. Under the AICUZ program, Air Force policy requires new on-base development to follow the same compatibility criteria that are recommended to surrounding communities, to the maximum extent practical. It should be noted that these NLR criteria for indoor sound attenuation have no effect on outdoor noise and, therefore, measures that reduce outdoor noise should be used whenever practical. Outdoor noise mitigation measures such as site planning and design and the use of berms, barriers, and/or vegetation are practical and useful for ground-level noise, such as jet engine run-ups, motor vehicles, and motorized equipment, but will not reduce overhead noise. Thus, avoiding areas within 65 dB DNL, or greater, for new residential housing is the preferred course of action whenever practical.

In addition, areas at 75 dB DNL and above are not normally compatible with residential uses, and use of these areas for such purposes should be restricted. The outdoor-to-indoor sound attenuation for housing in areas within 65–74 dB DNL and avoidance of areas within 75 dB DNL and above would be considered nondiscretionary mitigations to minimize noise levels inside and outside housing units in residential areas. Other non-discretionary mitigations would include compliance with lighting standards to reduce glare (which can be problematic for pilots at night), such as standards adopted by the surrounding community pursuant to the Eglin AFB JLUS 2009 involving the use of "full-cutoff fixtures" for exterior lighting to prevent illumination above the horizontal plane. The Eglin Energy Office preference for reducing glare is induction lighting or light-emitting diode (LED) or plasma lighting that achieves a high color index with high lumens per watt, and/or use of 35-watt or less low-pressure sodium or amber LED lamps. These mitigations would apply at both Eglin AFB and Hurlburt Field.

Implementation of the following discretionary mitigations would lessen perceived aesthetic impacts and result in the minimization of potential adverse impacts to the surrounding communities. Additionally, according to the *Okaloosa County Comprehensive Plan for 2020* (DCA, 2010), land use compatibility issues can be minimized through:

- Variable buffers, combining land and landscaping to achieve adequate separation of uses, appropriate open space, reduction of potential noise, light, glare, and/or pollution, and screening of physical features of a proposed development;
- Variable setbacks, based upon degree of difference in proposed density, intensity, scale, mass, or height;

- Placement and effective screening or shielding of site features such as lights, signs, dumpsters, loading areas, parking areas, outdoor storage, or other features with potential negative impacts;
- Effective transitions of on-site densities, intensities, scale, mass, or height; and
- Other innovative site design features that effectively achieve compatibility and effectively mitigate potential negative impacts.

In addition, local neighborhoods may have their own restrictive housing covenants. As an example, according to local residents, when neighborhoods in the Poquito Bayou area were first established, they adopted restrictive covenants calling for "no boat ramps" or boat houses on the water and maintenance of the water's edge to maintain a "natural" look as much as possible. These covenants have long since expired, but residents say they still adhere to them (Nabors, 2004). As a discretionary mitigation, the Air Force would ensure that, when possible, the chosen developer would utilize "smart growth" concepts, such as maintenance of natural areas and use of compact building designs, in the design and construction of the housing developments. This would reduce perceived aesthetic impacts and compatibility issues with surrounding residential areas.

Cultural Resources

The Air Force negotiated and signed a PA among Eglin Air Force Base, Hurlburt Field, the Florida State Historic Preservation Officer (SHPO), the Advisory Council on Historic Preservation, the National Trust for Historic Preservation, the Florida Trust for Historic Preservation, National Forests in Florida, and five federally recognized tribal governments for management, maintenance, and repair guidelines for the care of historic improvements, as well as guidelines for the protection of the archaeological sites. The developer will be required to execute, as a Concurring Party, the PA with the Government, the Florida SHPO and other required parties to the PA. Archaeological monitoring by a qualified third-party firm will be required for all ground-disturbing activities on or near archaeological sites.

Regulatory Requirements/Mitigations

Any action with the potential to adversely affect historic properties that may result from the Proposed Action or alternatives would be resolved pursuant to the project-specific PA signed in compliance with Section 106 of the National Historical Preservation Act (NHPA). Under the NHPA, management actions would be reflected as mitigations and would be required as a result of consultation. Implementation and adherence to the PA requirements is considered non-discretionary.

Section V of the PA describes specific procedures for resolution of adverse effects to project-related resources (U.S. Air Force, 2011). Section V of the PA is presented below:

V. Resolution of Adverse Effects

A. The Air Force shall meet its responsibilities under 36 CFR 800.6 by ensuring that once the Record of Decision is issued and a preferred alternative is selected the Preferred Offeror (PO), at its expense, resolves the adverse effects of the undertaking to historic properties at each installation in accordance with the following stipulations.

B. Eglin AFB

1. Project Commonalities

a. Camp Pinchot Historic District

(i) The PO shall conduct routine maintenance of buildings 1551, 1552, 1553, 1555, 1556, 1557, 1558, 1559, 1561 and 1562 in accordance with Stipulation V[A]. Any activity that is not routine maintenance will be an adverse effect. PO will ensure that any adverse effects to these buildings will be treated prior to the proposed activity. The PO, in consultation with Eglin AFB, shall follow the treatment recommendations of the Camp Pinchot Historic Preservation Plan in accordance with the procedures in Stipulation VLB.

(ii) Building 1564, potentially National Register eligible for its association with the military use of Camp Pinchot, is not included in the Camp Pinchot Historic Preservation Plan. The PO will consult with Eglin AFB prior to conducting routine maintenance and repair of building 1564. Any activities that Eglin AFB determines will have an adverse effect to building 1564 will require treatment in accordance with the procedures in Stipulation VLB.

(iii) The PO will maintain the existing trees in accordance with the general treatment recommendations for landscaping in the Camp Pinchot Preservation Plan. Planting new trees or removing existing trees anywhere on the property will be an adverse effect subject to prior consultation with Eglin AFB.

(iv) Once the property and buildings at Camp Pinchot are returned by the PO to the Air Force, the Air Force will determine the future of the buildings in accordance with Stipulation V.D.

b. Georgia Avenue (Eglin Field Historic District)

(i) The PO shall conduct routine maintenance of buildings 25, 26, 27, 28, and 29 in accordance with Stipulation VLA.2. Any activity that is not routine maintenance will be an adverse effect. The PO will ensure that

any adverse effects to these buildings will be treated prior to the proposed activity. The PO, in consultation with Eglin AFB, shall follow the treatment recommendations of the Georgia Avenue Housing Historic Preservation Plan in accordance with the procedures in Stipulation VLB.

(ii) Once the property and buildings at Georgia Avenue are returned by the PO to the Air Force, the Air Force will determine the future of the buildings in accordance with Stipulation V.D.

c. Archaeological Site 80K871 at Camp Pinchot

With the temporary conveyance of Camp Pinchot, archaeological site 80K871 will become the management responsibility of the PO until returned to the Air Force. The PO shall consult with Eglin AFB prior to the initiation of any ground disturbing activities within the site's limits as follows.

(i) Any ground disturbing activity, including but not limited to planting or removal of trees and other vegetation, affecting intact portions of the site will require archaeological testing and or data recovery following an approved plan developed in accordance with Stipulation VLD.

(ii) Any ground disturbing activity affecting previously disturbed portions of the site, including but not limited to the in-place removal and replacement of utilities or planting or removing trees or other vegetation, which is strictly limited to previously disturbed soil, shall be monitored by a professional archaeologist in accordance with Stipulation VLC. Discovery of intact archaeological deposits during archaeological monitoring will be treated as an unanticipated discovery under Stipulation VIII.

d. Archaeological Sites 80KI07 and 80K952 at Poquito Bayou. The PO shall, whenever possible, avoid all ground disturbances within the recorded limits of archaeological sites 80KI07 and 80K952. This includes crossing over and parking on the sites with work vehicles. To ensure avoidance, the PO shall leave in place all building slabs, sidewalks and other hardscape features, as well as all utilities that are located within the sites' limits. The PO shall also ensure that all demolition activities are monitored by a professional archaeologist in accordance with Stipulation VLC. If and when it is not possible to avoid ground disturbance within the limits of the sites, and adverse effects will occur, the PO shall conduct archaeological testing and or data recovery following the procedures in Stipulation VLD.

2. Project Alternative I (White Point)

a. If the Air Force selects Alternative I, the PO shall avoid affecting site 80KI006 by following the procedures for archaeological monitoring in Stipulation VI.C for all demolition and construction activities within 50 meters of the site.

b. If the Air Force selects Alternative I, the PO shall conduct archaeological testing and data recovery at site 80K2627 following the procedures in Stipulation VI.D prior to demolition and construction activities.

3. Project Alternative 3 (North Fort Walton Beach)

If the Air Force selects Alternative 3, the PO shall avoid affecting the Camp Pinchot Historic District by defining a development setback at least 100 feet wide along the District's property boundary. All new construction shall be prohibited within the development setback.

4. Project Alternative 4 (Mix)

Selection of this project alternative may result in adverse effects to one or more of the historic properties described above and will be resolved as described in Alternatives 1 and 3.

C. Hurlburt Field

The PO shall avoid affecting archaeological sites 80KI33 and 80K061 by following the procedures for archaeological monitoring in Stipulation VI.C for all demolition and construction activities within a 50-meter buffer area around each site.

D. Return of Historic Properties

Once replacement MFH units are constructed, the PO will return to the Air Force, in equal or better condition than received, the buildings and structures at Georgia Avenue and Camp Pinchot as stated in Stipulation II.A.I.b. At that time, Eglin AFB will determine the future of these properties. Should the Air Force propose any action that may result in adverse effects to the Eglin Field or Camp Pinchot Historic Districts, including but not limited to adaptive reuse, Eglin AFB will consult with the consulting parties to resolve the adverse effects and either amend the PA in accordance with Stipulation XIII or develop a separate agreement document.

Water

Potential impacts associated with water resources are related to the potential for increased rate and volume of stormwater runoff, increased amounts of sediment and pollutant runoff during construction and demolition, turbidity and leaching from dock construction, and polluted stormwater runoff from everyday operations within the

housing areas post-construction. Each of these has the potential to adversely affect aquatic systems mainly through the degradation of water quality. The developer would adhere to all applicable regulatory requirements, which would serve to either offset or minimize potential impacts to water quality from demolition, construction, and housing operations. The permitting process would identify specific non-discretionary mitigations. Maintenance of a shoreline green space at Alternative 3's Parcel 1 would serve to reduce the amount of runoff associated with construction at this site. Demolition of some units at Live Oak Terrace would occur in a floodplain, and there are some drainage ditches in the Pine Shadows location identified as jurisdictional wetlands by the FDEP that may require culverts in order to provide parcel access. A Finding of No Practicable Alternative is required for these activities, and an FDEP Environmental Resource Permit is required for actions within the drainage ditches. However, no other actions would occur either in a floodplain or wetland area. Impacts to water quality associated with construction and demolition of housing units would be temporary, and the Air Force does not anticipate any significant, long-term impact.

Regulatory Requirements/Mitigations

As standard practice/procedure, to reduce the rate and volume of stormwater runoff, stormwater management controls and development of a Storm Water Pollution Prevention Plan (SWPPP) would be a part of the site designs to minimize pollutants. The developer must ensure that these controls are in place prior to any construction activity. The SWPPP would include (1) site evaluation of how and where pollutants may be mobilized by stormwater, (2) a site plan for managing stormwater runoff, (3) identification of appropriate erosion and sediment controls and stormwater mitigations, (4) a maintenance and inspection schedule, (5) the record-keeping process, and (6) identification of stormwater exit areas. When preparing the SWPPP, developers would follow the guidance provided in the U.S. Environmental Protection Agency (USEPA) publication, *Stormwater Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices* (USEPA, 1992). Potential actions that the developer may be required to implement through the SWPPP process as a component of site design to minimize potential stormwater, erosion, and pollution impacts and facilitate environmental compliance would be:

- Limit slope for runoff from housing units near water bodies to no greater than approximately 15 percent to allow for natural percolation versus sheet flow.
- Use porous asphalt allowing water to infiltrate into the subsurface areas versus significant increase to new/existing storm drainage systems.
- Provide appropriate retention, drainage and discharge of flows from larger storms where it is needed (e.g., a minimum storage capacity for rain precipitation from a 24-hour, 25-year storm, or 5 or more inches).
- Use vegetation buffer strips to slow stormwater runoff and trap particulate pollutants.

- Minimize the overall development footprint to reduce stormwater runoff.
- Areas that are slated for demolition with no reconstruction should be returned to a natural vegetated landscape to decrease stormwater runoff and benefit surrounding water resources.
- Consider multiple stormwater treatment management ponds with rate attenuation to reduce potential erosion and downstream flooding.
- Conduct appropriate surveys for rare or imperiled plant and wildlife species prior to completing the development proposal.

Also as standard practice/procedure, developers must abide by all requirements included in the Municipal Separate Storm Sewer System (MS4) permits. Appendix G, *Water Resources*, provides these mitigations, goals, schedules, and names. As part of the non-discretionary mitigations detailed in their MS4 permits, Eglin AFB and Hurlburt Field have committed to the following with respect to construction: (1) developing contractual language requiring mitigation usage at construction sites, (2) reviewing construction site plans for potential stormwater quality impacts through the comprehensive environmental impact analysis review program, (3) formalizing a method of tracking construction projects and control measures, and (4) performing periodic inspections of construction sites to ensure that mitigations are in place and operational.

A discretionary mitigation to further minimize any potential impacts to water resources associated with specific parcels would be to restrict development activity within 100 feet of all water bodies. This would serve to reduce the potential for stormwater and erosion flow to nearby surface water bodies and enhance SWPPP and MS4 mitigations.

Soils

All soils at the Eglin AFB and Hurlburt Field within the proposed housing areas are considered to have severe limitations for wind erosion but not, in general, for water erosion. All soils within the region of influence (ROI) are rated as moderately to severely corrosive to steel, while approximately one-quarter of the soils are corrosive to concrete—the primary building material that would be in contact with the soil. The design and selection of building materials, such as coated steel, should take these limitations into account to ensure that the facilities would not adversely affect soils and would minimize maintenance needs. Under the Proposed Action and alternatives, direct adverse impacts on soils can be expected from surface disturbance and construction due to the alteration of the soil profile and loss of soil productivity. However, these impacts would not be considered significant, and off-site impacts can be minimized through implementing mitigation measures in compliance with laws and regulations. Use of appropriate wind-erosion control best management practices (BMPs), such as application of water or chemical dust palliatives, as necessary, prevents

or alleviates dust nuisance. In addition, soil stabilization practices such as the preservation of existing vegetation, hydraulic mulch, hydroseeding, soil binders, or erosion control mats may be necessary.

As a result, while soils would be changed by earthmoving activities, the effects would be localized and would not result in indirect impacts to water resources or air quality because BMPs, erosion and sediment controls, and stormwater management measures would be implemented, in compliance with the requirements of the National Pollutant Discharge Elimination System (NPDES) Construction General Permit. Therefore, the Air Force expects minimal impacts to soils from the proposed activities, given the attainment of the required permits and the implementation of BMPs defined in the SWPPP.

Regulatory Requirements/Mitigations

The Air Force will comply with the stormwater requirements of Florida Administrative Code, Chapter 62-346, *Environmental Resource Permitting in Northwest Florida*. Additionally, as standard practice/procedure, construction activities associated with the Proposed Action and alternatives would require a General Permit for Construction Activities according to the rules established under the Florida NPDES. Compliance with the permit is intended to improve or maintain water quality by minimizing pollutants in stormwater runoff that is discharged into the drainage system. The permit guidelines include issuance of a Notice of Intent, development and implementation of a site-specific SWPPP that includes erosion and sediment control measures, and implementation and maintenance of BMPs to minimize off-site erosion and sediment yield during and after construction. These permit-related BMPs would be considered non-discretionary mitigations. Specific BMPs/mitigations would be alternative-dependent and would be developed during the permit process; as a result, it is unknown at this time what specific requirements would be implemented. However, typical BMPs/mitigations associated with the SWPPP include annual monitoring and assessment of potential stormwater pollution sources, well maintained silt fences, detention basins, daily site inspections, and other mitigations that may be used to limit or eliminate soil movement, stabilize runoff, and control sedimentation. Following construction, disturbed areas not covered with impervious surfaces like roofs and paved areas would be reestablished with appropriate vegetation or other ground cover and managed to minimize erosion. Appropriate excavation practices would reduce the chance for sides to cave during excavation of trenches for such structures as footers and utility lines.

Biological Resources

The primary potential impacts to biological resources that might occur under the No Action Alternative would be associated with noise, stormwater runoff, excess sedimentation, and habitat loss. Almost all of the predictable actions that are to occur at Eglin AFB and Hurlburt Field through 2015 would be located either on main base sites, at established test areas, or in degraded habitats where wildlife habitat quality is poor.

Impacts would continue from daily activities at existing MFH areas, and occasional renovations or replacement of old MFH units in accordance with existing Air Force policy and resources. Given that almost all of the areas that would be affected under the No Action Alternative are either unsuitable for or in very poor condition to support wildlife or sensitive species, impacts to biological resources from the No Action Alternative would not be significant.

Consultation was conducted with the U.S. Fish and Wildlife Service (USFWS) to comply with Section 7 of the Endangered Species Act (U.S. Air Force, 2010a). Eglin received concurrence supporting the No Effect determination (USFWS, 2010a). Requirements from this consultation are included as part of the Discretionary and Non-discretionary Mitigations section.

Demolition, land clearing, and construction may have a localized effect on native wildlife species such as squirrels, raccoons, and rabbits. The potential exists for impacts to wildlife from noise and direct encounters (e.g., crushing) with vehicles and equipment. However, almost all of the proposed areas are already developed, with little wildlife value. Additionally, due to fire suppression, invasive species, and proximity to developed areas, any undeveloped habitats at the sites where new construction would occur have become degraded and are poor quality wildlife habitat. The proposed areas represent less than 0.1 percent of the total land area that Eglin AFB and Hurlburt Field maintain; thousands of forested acres would continue to be managed for wildlife value. Also, existing wildlife are already exposed and habituated to visual and noise disturbances from nearby developed areas, roads, and aircraft activity. Given the abundance of better quality wildlife habitat on other portions of Eglin AFB and Hurlburt Field, and the current loud noise environment, impacts to wildlife would not be significant. After review of the Proposed Action and analysis presented in this EIS, the Florida Fish and Wildlife Conservation Commission (FWC) agrees that while some negative impacts may occur due to construction related to the Proposed Action, the mitigation requirements identified in this EIS should have a positive effect on listed species and their habitats (FWC, 2011).

Invasive nonnative species tend to be more common in urban areas due to constant disturbances and the introduction of invasive species by humans. Because the majority of the MFH area would be covered by buildings, pavement, or landscaped areas, there would not be many areas with the proper environment for the establishment of invasive nonnative plants. However, the developer would remove any invasive nonnative plant species identified during the project at any location in coordination with Eglin AFB's Natural Resources Section, Wildlife (96 CEG/CEVSNW). The developer would be required to coordinate with 96 CEG/CEVSNW to ensure the utilization of native vegetation for landscaping. Management actions are available to reduce the potential for invasive nonnative species infestations. Impacts from invasive nonnative plant species to biological resources would not be significant.

Discretionary and Non-discretionary Mitigations

The developer (through lease agreement) would implement all permitting requirements and discretionary and non-discretionary mitigations developed through coordination with regulatory agencies, such as utilization of stormwater management techniques (refer to Section 3.11, *Water Resources*, for a more detailed discussion of mitigations). All landscaping and plantings of vegetation would conform to the Presidential Memorandum dated April 26, 1994, *Environmentally and Economically Beneficial Practices on Federal Landscaped Grounds*, and EO 13112, *Invasive Species*, both of which require the planting of regional natives in landscaping; selection of natives must be coordinated with Eglin Natural Resources. Additionally, all requirements resulting from consultation with the USFWS (USFWS, 2010) (summarized below) would be implemented across all alternatives as non-discretionary mitigations:

- Maintain at least a 50-foot vegetated buffer around all wetlands and water bodies on Eglin Main Base, with a suggested minimum of 100 feet to minimize stormwater and erosion impacts to wetlands and water bodies.
- Do not clear any new areas along the sound shoreline or around wetlands at the Hurlburt Field parcels to minimize stormwater and erosion impacts to wetlands and water bodies.
- Avoid construction in jurisdictional wetlands.
- Control suspended sediments and increases in turbidity through management practices such as sediment curtains to minimize stormwater and erosion impacts to wetlands and water bodies.
- Implement the highest standards possible for stormwater management.
- Limit the number of access points to the water to maintain the vegetated buffer such that it would filter most runoff from the MFH, thus minimizing stormwater and erosion impacts to wetlands and water bodies.
- Temporarily close and rehabilitate any access point that begins to become an erosion problem to minimize sedimentation issues in nearby waters.
- Designate swimming areas to minimize disturbance to shoreline vegetation and resulting turbidity in the water column.
- Provide educational materials (i.e., signs, brochures) to residents on the importance of protecting water quality and shoreline vegetation to reduce human disturbance of sensitive shoreline vegetation.
- One month prior to land clearing, demolition, or construction activities, conduct rare or imperiled plant and wildlife species surveys, and relocate any animals in accordance with FWC guidelines to eliminate direct physical impacts to these species.

- Provide project personnel with a description of the eastern indigo snake, its habitat, and protection under federal law. Instruct personnel not to injure, harm, or kill this species.
- Direct project personnel and residents to cease any activities if an eastern indigo snake or gopher tortoise were sighted, and to allow the animal sufficient time to move away from the site on its own before resuming such activities.
- Direct project personnel and residents to report any sightings of eastern indigo snakes or gopher tortoises to the Eglin Natural Resources Section.
- Direct personnel to contact Natural Resources staff if a gopher tortoise burrow is discovered during demolition, land clearing, or construction. All activities should be avoided within 25 feet of the burrow until Natural Resources personnel have had a chance to examine the burrow and relocate the animal and any commensal species if necessary.
- To minimize the effect of urban glow on sea turtles and hatchlings on Santa Rosa Island, exterior lighting (outside building lights including houses, recreational facilities and all street lights) at Soundside Manor and new housing at the old FAMCAMP site must be sea turtle friendly lighting. In addition, at Pine Shadows, full cut-off low-pressure sodium street lighting only is needed.

Additional discretionary mitigations would serve to reduce or remove impacts to biological resources from MFH activities.

- Maintain natural areas within MFH locations to minimize the reduction of foraging habitat for native species.
- Require the developer to remove any invasive nonnative species within the MFH areas to avoid competition with native species.
- Minimize clearing of maritime hammock habitat, which would provide habitat for native species, particularly migratory birds.
- Instruct equipment operators to stay out of wet areas and off of steep slopes to minimize erosion impacts and ground disturbance.
- Educate workers and residents on the need to contain their household wastes in a manner so as to not attract bears, to avoid human-bear interactions.
- Educate vehicle/equipment operators and residents on the need to stop the vehicle or equipment if a bear is sighted and to allow the bear to move away from the site before resuming activities to reduce bear injuries/mortalities.

- Direct personnel and residents to report any sightings of black bears to the Eglin Natural Resources Section so that staff can address any nuisance issues and enter sightings into the bear database.
- Avoid construction of any new roads or conduct utility work in rights of way that would impact federally listed species.
- Require off-site equipment to be cleaned for invasive nonnative species prior to first-time use on Eglin to minimize potential transport of nonnative species onto the installation.
- Coordinate with Eglin Natural Resources to monitor the MFH areas during demolition, construction, and post-construction to catch any nonnative species infestations early so that they can be treated.
- Instruct maintenance workers and residents not to disturb soils or vegetation within the stream buffer, to prevent erosion and excess sedimentation.
- Address erosion issues near water bodies immediately with erosion control measures and rehabilitation.

In addition to the mitigations/management actions identified above that would apply to all alternatives, the following would be associated with a particular alternative:

Alternative 1 Site:

- Minimize tree-clearing within the White Point Outstanding Natural Area to preserve as much of the natural habitat as possible within this unique area and avoid adverse impacts to the area.
- Conduct prescribed burns at least every two to three years at the White Point Outstanding Natural Area to maintain the natural character and function of this rare habitat.

Alternative 2 Sites:

- Leave a minimum 100-foot vegetated buffer for Okaloosa darter streams to treat stormwater runoff, and protect the instream and riparian habitat.
- Install a fence between the Valparaiso housing areas and Tom's Creek (Okaloosa darter stream); fencing should not be installed on the stream slope. Fencing would serve to prevent erosion and excess sedimentation that would result from foot trails to the stream.
- Provide educational materials (i.e., signs, brochures) to residents on the importance of protecting the darter stream and streamside buffer area.

Alternative Comparison

The following Table ES-4 provides a graphical summary of the impacts by resource area associated with all proposed alternatives for the Proposed Action, as well as the No Action Alternative. Impacts are generally summarized using a color code as follows:

- Blue – Beneficial impact (Note: no *significant* beneficial impacts have been identified for any resource area.)
- Green – No beneficial or adverse impact
- Yellow – Potential for adverse impact, but not significant; management actions or mitigations are required to minimize impacts
- Red – Potential for significant adverse impacts

This is a summary of detailed tables provided at the end of each respective resource discussion in Chapter 4 of the EIS; specific details regarding significance determinations associated with color ratings for each resource area are provided in each respective Chapter 4 resource discussion. In some sections several subissues are discussed. For purposes of this summary, the greatest potential for impact is summarized. If there is the potential for adverse impact under one subissue then the entire rating for that resource area would be yellow, even if all the other subissues had no impacts. As an example, subissues under Biological Resources consist of such categories as threatened and endangered species, sensitive habitats, flora and fauna, etc. While there may be no adverse impacts associated with flora and fauna for a particular parcel, there may be adverse impacts associated with endangered species. As a result, Biological Resources would be rated as yellow in the summary table. Specific, detailed ratings per parcel for each subissue can be found in the respective EIS Chapter 4 resource area discussion.

The No Action Alternative impact rating includes impacts to existing housing areas for resource area ROIs associated with all the actions identified under the No Action Alternative, while the Alternatives 1–3 impact ratings include only impacts from MHPI activities on the proposed alternative locations. The potential impacts associated with Alternative 4 (Mix Alternative) can generally be derived from comparing the impact ratings associated with the individual parcels under each alternative.

Table ES-4. Summary of Impacts by Resource Area

Alternative / Parcel	Resource Area												
	Transportation	Socioeconomics	Utilities	Air Quality	Safety	Hazmat/Waste	Noise	Solid Waste	Land Use	Cultural Resources	Water	Soils	Bio Resources
Commonalities													
Eglin Housing Areas	Green	Blue	Blue	Yellow	Yellow	Yellow	Yellow	Green	Green	Yellow	Green	Yellow	Yellow
Hurlburt Field	Yellow	Blue	Green	Yellow	Yellow	Yellow	Yellow	Green	Green	Yellow	Yellow	Yellow	Yellow
Camp Rudder	Green	Blue	Green	Yellow	Yellow	Yellow	Yellow	Green	Green	Green	Yellow	Yellow	Yellow
Camp Pinchot	Yellow	Blue	Green	Yellow	Green	Yellow	Green	Green	Green	Yellow	Green	Yellow	Yellow
Poquito Bayou	Green	Blue	Blue	Yellow	Yellow	Yellow	Yellow	Green	Blue	Yellow	Green	Yellow	Yellow
Alternative 1 – White Point Area													
1	Red	Yellow	Yellow	Yellow	Green	Green	Yellow	Green	Yellow	Green	Yellow	Yellow	Yellow
2	Red	Yellow	Yellow	Yellow	Green	Green	Green	Green	Yellow	Yellow	Yellow	Yellow	Yellow
3	Red	Yellow	Yellow	Yellow	Green	Green	Green	Green	Yellow	Green	Yellow	Yellow	Yellow
4	Red	Yellow	Yellow	Yellow	Green	Green	Green	Green	Yellow	Green	Yellow	Yellow	Yellow
5	Red	Yellow	Yellow	Yellow	Green	Green	Yellow	Green	Yellow	Yellow	Yellow	Yellow	Yellow
6	Red	Yellow	Yellow	Yellow	Green	Green	Yellow	Green	Yellow	Yellow	Yellow	Yellow	Yellow
7	Red	Yellow	Yellow	Yellow	Green	Green	Yellow	Green	Yellow	Green	Yellow	Yellow	Yellow
Alternative 2 – Eglin Main Base/Valparaiso													
1	Green	Blue	Green	Yellow	Yellow	Yellow	Yellow	Green	Yellow	Green	Yellow	Yellow	Yellow
2	Green	Blue	Yellow	Yellow	Green	Green	Red	Green	Red	Green	Yellow	Yellow	Yellow
3	Green	Blue	Yellow	Yellow	Green	Green	Red	Green	Red	Green	Yellow	Yellow	Yellow
4	Green	Blue	Yellow	Yellow	Green	Green	Red	Green	Red	Green	Yellow	Yellow	Yellow
5	Green	Blue	Yellow	Yellow	Green	Green	Red	Green	Red	Green	Yellow	Yellow	Yellow
6	Green	Blue	Yellow	Yellow	Green	Green	Red	Green	Red	Green	Yellow	Yellow	Yellow
7	Green	Blue	Yellow	Yellow	Green	Green	Red	Green	Red	Green	Yellow	Yellow	Yellow
8	Yellow	Blue	Yellow	Yellow	Green	Green	Red	Green	Red	Green	Yellow	Yellow	Yellow
9	Green	Blue	Green	Yellow	Yellow	Yellow	Red	Green	Red	Green	Yellow	Yellow	Yellow
10	Green	Blue	Green	Yellow	Yellow	Yellow	Red	Green	Red	Green	Yellow	Yellow	Yellow
11	Green	Blue	Yellow	Yellow	Green	Green	Yellow	Green	Yellow	Green	Yellow	Yellow	Yellow
Subalternative 2a – Eglin Main Base (Preferred Alternative)													
1	Green	Blue	Green	Yellow	Yellow	Yellow	Yellow	Green	Yellow	Green	Yellow	Yellow	Yellow
Alternative 3 – North Fort Walton Beach Area													
1	Red	Blue	Yellow	Yellow	Green	Green	Green	Green	Green	Yellow	Yellow	Yellow	Yellow
2	Red	Blue	Yellow	Yellow	Green	Green	Yellow	Green	Yellow	Green	Yellow	Yellow	Yellow
3	Red	Blue	Yellow	Yellow	Green	Green	Yellow	Green	Yellow	Green	Yellow	Yellow	Yellow
4	Yellow	Blue	Yellow	Yellow	Green	Green	Yellow	Green	Green	Green	Yellow	Yellow	Yellow
5	Yellow	Blue	Yellow	Yellow	Green	Green	Yellow	Green	Green	Yellow	Yellow	Yellow	Yellow
No Action	Green	Blue	Green	Yellow	Green	Green	Red	Green	Red	Yellow	Yellow	Green	Yellow

Blue = Beneficial impact; Green = No beneficial or adverse impact; Yellow = Potential for adverse impact, but not significant; Red = Potential for significant adverse impacts

Note: The impacts associated with the No Action Alternative include potential impacts associated with implementation of projects identified under the No Action Alternative as they relate to the ROI for that particular resource.

Impact analysis throughout the document considers the implementation of standard practices/procedures associated with regulatory requirements (e.g., stormwater construction permits), and other non-discretionary mitigations as part of the Proposed Action or alternatives, because these would be required to be implemented by permit or regulatory requirements. Discretionary mitigations are identified after the presentation

of the analysis to identify mitigations that can be implemented to minimize or offset any potential impacts identified despite implementation of regulatory requirements and other non-discretionary mitigations. The effect of these discretionary mitigations is then described in terms of how each mitigation would affect the outcome of impact analysis.

Therefore, the color coding in Table ES-4 reflects the degree of impact without consideration of discretionary mitigations so that a true assessment of the impacts associated with the Proposed Action and alternatives can be made. The actual discretionary mitigations that would be implemented by the Air Force and the privatization developer are alternative-dependent and will not be known until the Air Force selects an alternative. All mitigations identified in this document, whether discretionary or non-discretionary, that would be implemented as a result of the Air Force choosing an alternative for implementation will be identified in the ROD and subsequent mitigation plan. While the developer is responsible for acquiring all permits and implementing the associated mitigations, as well as any Air Force-imposed discretionary mitigations, the Air Force is responsible for ensuring that all required permits are acquired and any mitigations are implemented effectively.

CUMULATIVE IMPACTS

According to CEQ regulations, cumulative effects analysis in an EIS should consider the potential environmental impacts resulting from "the incremental impacts of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions" (40 CFR 1508.7).

Cumulative effects may occur when there is a relationship between a proposed action or alternative and other actions expected to occur in a similar location or during a similar time period. This relationship may or may not be obvious. The effects may then be incremental (increasing) in nature and result in cumulative impacts. Actions overlapping with or in proximity to the proposed action or alternatives can reasonably be expected to have more potential for cumulative effects on "shared resources" than actions that may be geographically separated. Similarly, actions that coincide temporally will tend to offer a higher potential for cumulative effects.

In this EIS, the Air Force has made an effort to identify actions on or near the action areas associated with each alternative that are under consideration and in the planning stage at this time. These actions are included in the cumulative analysis sections to the extent that details regarding such actions exist and the actions have a potential to interact with the Proposed Action and alternatives. Although the level of detail available for those future actions varies, this approach provides the decision maker with the most current information to evaluate the consequences of the alternatives. The EIS

addresses cumulative impacts in order to assess the incremental contribution of the alternatives to impacts on affected resources from all factors.

Analysis is conducted by first identifying past, present, and reasonably foreseeable actions as related to the ROI for the particular resource. Cumulative impacts are then identified if the combination of proposed MHPI actions and past, present, and reasonably foreseeable actions interact with the resource to the degree that incremental or additive effects occur.

Past, Present, and Reasonably Foreseeable Future Actions

Past, present, and reasonably foreseeable actions are the same as those identified for the No Action Alternative as described in Section 2.3.1 in the EIS.

Transportation

Programmed and planned improvements in the Okaloosa Walton County area may affect the study area. The 2030 Transportation Master Plan identifies several projects that will positively impact roadways in the study area. From a cumulative perspective, impacts would be relatively minor from the standpoint that the MHPI would not appreciably affect the transportation impacts resulting from other reasonably foreseeable future activities. The planned 2030 roadway projects may partially address some of the needed improvements identified in these analyses. However, these projects may not be funded until after the Proposed Action is complete. The bypass projects may also have an impact on the needed improvements; however, they are still conceptual in nature, and exact impacts are unknown. Any of these projects would help in addressing the roadway needs identified in these analyses and would have a positive impact on the roadway network in general. The results of the analyses indicate that there are many roadways operating deficiently in the study area today, and the number of deficient roadway segments would increase by 2017 when area growth is taken into consideration.

Socioeconomics

The implementation of the MHPI at Eglin AFB and Hurlburt Field would have minimal incremental socioeconomic impacts to the ROI when combined with the present and reasonably foreseeable actions. Based on the analysis, the Air Force has not identified any potential for the implementation of the MHPI to result in cumulative socioeconomic impacts.

Utilities

Of the actions described as potentially creating cumulative impacts, several pertain to utilities on Eglin Main Base. None of the regional development projects would create

cumulative impacts to the utilities that would be utilized under the MHPI. Since the overall use of electricity and natural gas is projected to be less than current capacity, it is not expected that the relevant reasonably foreseeable actions would have a cumulative impact when combined with other actions. Likewise, the Proposed Action would result in only a slight increase in water use and wastewater generation and should not have a cumulative impact when combined with the BRAC-related actions and other building demolition/construction projects anticipated to occur on Eglin AFB.

Air Quality

Implementation of the projects listed under the No Action Alternative and the MHPI would result in a net increase in emissions. Also, the construction activities occurring around the base would cause a temporary net increase in greenhouse gas (GHG) emissions from construction vehicles and worker commutes. Overall these projects are expected to cause temporary increases in regional air emissions but would not cause significant adverse impacts to regional air quality or GHG emissions from a cumulative perspective.

Safety

Based on the analysis, the Air Force does not anticipate cumulative impacts to safety from implementing the Proposed Action or alternatives and the activities identified under the No Action Alternative as past, present, or reasonably foreseeable.

Hazardous Materials

Based on the analysis, the Air Force does not anticipate cumulative impacts to hazardous materials and hazardous wastes from implementing the Proposed Action or alternatives and activities identified under the No Action Alternative as past, present, or reasonably foreseeable.

Noise

Cumulative impacts would occur wherever noise impacts from proposed MHPI actions would overlap with noise impacts resulting from other reasonably foreseeable actions planned to occur at Eglin AFB. The projects that would have the greatest cumulative noise impacts are the BRAC-related actions at Eglin AFB, including the JSF aircraft flight training operations. At this time it is unknown which F-35 beddown and training alternative would be selected. However, based on analysis in the *Eglin BRAC Supplemental EIS for F-35 Beddown at Eglin AFB* (the "F-35 SEIS"), only parcels associated with MHPI Alternative 2, Subalternative 2a, and Alternative 3 – Parcel 4 would potentially be impacted by F-35 noise depending on the F-35 SEIS alternative selection. Under any of the JSF flight training action alternatives, time-averaged aircraft noise levels at several known noise-sensitive locations would increase to a level that may be considered by the public to be significant. Alternative 2 Parcels 2, 3, 4, 5, 6, 7, 9, 10, and

11 would be located in areas exposed to sound levels ranging from 65 to 75 dB DNL for the 59 aircraft scenario where Eglin Main Base is the primary airfield used by the JSF. The developer would be required to construct any units in the affected areas with proper noise abatement (e.g., additional insulation, double-paned windows). New facilities proposed to be constructed on Eglin AFB may be exposed to high noise levels due to aircraft overflight and munitions use, depending on where the facilities are sited. Where practicable, new on-base structures should be located outside of areas exposed to 65 dB DNL or higher noise impacts. Where that is not practical, the new structures must incorporate noise attenuation measures in accordance with the Air Force noise guidelines published in *U.S. Air Force Family Housing Guide for Planning, Programming, Design, and Construction* (August 2004) and Air Force Handbook (AFH) 32-7084, *AICUZ Program Managers Guide*.

Solid Waste

Additional planned and foreseeable projects at Eglin AFB will contribute to overall C&D generation within the ROI when combined with the MHPI. The exact quantity of debris generated from these additional projects is difficult to accurately determine due to uncertainties with regard to the specific amount of construction or demolition that would occur and when such activities may be conducted. These factors impact actual C&D debris to be generated on a given project and how much debris is generated on an annual basis. Although the generation rate will be raised during the construction phase of the project (assumed to be approximately five years), the overall impact to landfill resources within the area is approximately 1.6 years of existing capacity from all planned or foreseeable projects within the ROI. The exact impact to a given landfill within the ROI is difficult to ascertain as the increase assumes that waste generation and disposal rates will remain the same within the respective counties, which is unlikely as these rates are impacted by generation activities associated with construction within the communities and natural events such as hurricanes, which result in increased construction and demolition. In addition, it is considered unlikely that all projects included within the evaluation will overlap for the entire five-year period of the MHPI, and the estimated increase does not take into account any recycling of construction materials such as concrete or asphalt, which could be reutilized.

Land Use

Land use changes associated with the majority of the activities identified under the No Action Alternative would incrementally contribute to the changing character of the area. Although potential land use compatibility impacts have been identified for various MHPI parcel alternatives, the Air Force does not anticipate that the Proposed Action, when considered with other reasonably foreseeable future projects, would have any cumulative land use impacts on Eglin AFB, including Hurlburt Field, or the surrounding community beyond those that have been identified previously for the MHPI alone.

Cultural Resources

The loss of integrity of cultural resources can have a cumulative impact if that loss or impact is compounded by other events with the same end result. The demolition of historic structures or removal of archaeological artifacts may incrementally impact the historical landscape of Eglin AFB. Any potential adverse effects to NRHP-eligible or listed cultural resources that may result from the MHPI Proposed Action or alternatives will be presented and mitigated via the project-specific PA (U.S. Air Force, 2011). Based on the analysis, the Air Force does not anticipate any reasonably foreseeable cumulative effects to cultural resources from the Proposed Action or alternatives.

Water

Direct and indirect impacts to water resources can have a cumulative impact when viewed on a regional scale if that loss or impact is compounded by other events with the same end result. Although negative impacts would occur to some water resources, the proposed activities, coupled with other foreseeable future activities, would not pose a significant impact to water resources given uniform application of non-discretionary stormwater management measures. Cumulatively, impacts to water resources would not be significant. If all projects include implementation of site-specific management non-discretionary mitigations, it is unlikely that adverse cumulative impacts to water resources would occur.

Soils

Past development (e.g., housing developments) in the areas surrounding the alternative locations have likely contributed to erosion and soil loss in the vicinity due to inadequate stormwater management. However, the extent to which this has occurred is difficult to determine. Implementation of the Proposed Action would involve the utilization of nondiscretionary erosion control and stormwater management mitigations to minimize the potential to adversely impact adjacent wetland areas and water quality. Implementation of the Proposed Action would not likely contribute in any appreciable manner to erosion that has occurred in the past. Generally, impacts can be avoided or minimized if proper construction techniques, erosion control measures, and structural engineering designs are incorporated into project development. If all projects include implementation of site-specific non-discretionary mitigations associated with permit requirements, it is unlikely that adverse cumulative impacts to soil resources would occur.

Biological Resources

Localized loss of habitat, degradation of habitat, noise impacts, or direct physical impacts to species can have a cumulative impact when viewed on a regional scale if that loss or impact is compounded by other events with the same end result. Analysis of potential impacts from the Proposed Action and alternatives has identified minimal potential for direct physical impacts or noise impacts to sensitive species, provided that

Eglin and Hurlburt user groups implement discretionary and non-discretionary mitigations. Although negative impacts would occur to some biological resources, overall, upcoming MHPI actions, in concert with other regional and upcoming future activities, would not threaten the continued existence of any biological resources; thus, impacts would not be significant. Implementation of discretionary and non-discretionary mitigations and an increase in Eglin and Hurlburt prescribed fire support would further reduce the potential for negative impacts to biological resources.

Relationship between Short-Term Uses and Long-Term Productivity

The assessment of effects on long-term productivity is related to whether the project is consistent with long-term regional and local planning objectives. Across all alternatives there would be a short-term increase in employment, income, and net fiscal benefits and revenues to the surrounding community during the construction period. Additionally, there would be a short-term increase in the amount of local building supplies needed to execute the project. Nevertheless, this increase would not necessarily result in a significant short-term or long-term decrease in the availability of these resources for other users. Local short-term impacts to resources from all alternatives would be consistent with the regional, state, and local long-term planning objectives

Irreversible and Irretrievable Commitment of Resources

NEPA requires that environmental analysis identify any irreversible and irretrievable commitments of resources involved in the implementation of the Proposed Action or alternatives. Irreversible and irretrievable resource commitments are related to the use of nonrenewable resources and the effects that the use of these resources have on future generations. Irreversible effects primarily result from the use or destruction of a specific resource (e.g., energy and minerals) that cannot be replaced within a reasonable time frame. Irretrievable resource commitments involve the loss in value of an affected resource that cannot be restored as a result of the action (e.g., extinction of a threatened or endangered species or the disturbance of a cultural site).

Implementing the Proposed Action through any of the alternatives would require a commitment of natural, physical, human, and fiscal resources. In all of these categories, irreversible and irretrievable commitments of resources would occur, with these commitments similar in nature across all alternatives. Land required for new construction would be irreversibly committed during the functional life of the facilities; in some cases land uses would change from undeveloped to developed.

Considerable amounts of fossil fuels and construction materials such as steel, cement, aggregate, and bituminous material would be expended under the action alternatives. However, these physical resources should generally be in sufficient supply during the proposed project that their commitment would not have an adverse effect on the resources' local, regional, or national continued or future availability.

Some biological resources would be irreversibly and irretrievably lost with construction of the proposed project, and some areas of wildlife habitat would be lost. However, based on the amount of open areas at the installation compared to the amount of acreage that would be used for housing, the loss would be minimal. Significant or sensitive habitat areas would be avoided to the extent practicable, and impacts to sensitive species would be mitigated as discussed in the EIS.

In terms of human resources, labor would be used in preparation, fabrication, and construction related to the project. Labor is generally not considered to be a resource in short supply, and commitment to the project would not have an adverse effect on the continued availability of these resources. Project construction would require a substantial expenditure of funds. It is anticipated that businesses, employees, and residents of the local area would benefit from improved economics resulting from implementation of the Proposed Action.

Unavoidable Adverse Impacts

Temporary unavoidable adverse impacts associated with construction and demolition would occur under all alternatives.

Construction and demolition activities would temporarily increase noise, dust pollution, personnel, and traffic density. Noise levels and air emissions would increase around the action areas. Water quality and soil erosion impacts may also occur. In addition, loss of relatively undisturbed areas at Hurlburt Field and Eglin AFB would occur due to land-clearing activities.

Management actions and permitting requirements would mitigate all of the abovementioned impacts. Normal construction and demolition management would mitigate noise or dust impacts. Air quality impacts would be minor due to the vast ROI of this resource; any additional air emissions would be distributed over such a wide area as to be negligible. The developer would handle and dispose of all hazardous materials in accordance with applicable laws, regulations, and Air Force management action requirements. Stormwater management designs and erosion control measures would minimize the potential for erosion and water quality impacts. The maintenance of natural areas as parks and recreational areas, as well as maintaining a minimal unit density in these areas, may somewhat offset the loss of natural areas.

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Military Housing Privatization Initiative
(MHPI)
Eglin AFB, Florida
Hurlburt Field, Florida

FINAL
ENVIRONMENTAL IMPACT STATEMENT

Prepared By

96th Air Base Wing, Eglin Air Force Base
Air Force Materiel Command
and
1st Special Operations Wing, Hurlburt Field
Air Force Special Operations Command

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ACRONYMS, ABBREVIATIONS, AND SYMBOLS

1 SOCES/CEA	1st Special Operations Civil Engineering Squadron Asset Management Flight
33 FW	33rd Fighter Wing
7SFG(A)	7th Special Forces Group (Airborne)
96 ABW	96th Air Base Wing
96 CEG/CEVSNW	Eglin AFB's Natural Resources Section, Wildlife
96 CEG/CEVC	96th Civil Engineer Group, Environmental Compliance Branch
AADT	Average Annual Daily Traffic
AASHTO	American Association of State Highway and Transportation
ACAM	Air Conformity Applicability Model
ACBM	Asbestos-containing Building Material
ACM	Asbestos-containing material
ACP	Access Control Point
AFB	Air Force Base
AFCAA	Air Force Cost Analysis Agency
AFH	Air Force Handbook
AFI	Air Force Instruction
AFOSH	Air Force Occupational and Environmental Safety, Fire Protection, and Health
AFPD	Air Force Policy Directive
AFSOC	Air Force Special Operations Command
AICUZ	Air Installation Compatible Use Zone
APE	Area of Potential Effect
APZ	Accident Potential Zone
ASCE	American Society of Civil Engineers
AST	Aboveground Storage Tank
ATSDR	Agency for Toxic Substances and Disease Registry
ATV	All-terrain Vehicle
BMP	Best Management Practice
BRAC	Base Realignment and Closure
C&D	Construction and Demolition
CAA	Clean Air Act
CD	Compact Disc
CDNL	C-weighted Day-Night Sound Level
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
cfs	Cubic Feet per Second
CGO	Company Grade Officer
CH_4	Methane
CHELCO	Choctawhatchee Electric Cooperative, Inc.
CO_2	Carbon Dioxide
CO_2(e)	Carbon Dioxide-equivalent
COC	Community of Comparison
CR	County Road
CWA	Clean Water Act
CY	Calendar Year
CZ	Clear Zone
CZMA	Coastal Zone Management Act
dB	Decibels
dBA	A-weighted Decibels
dBC	C-weighted Decibels
DBCRC	Defense Base Closure and Realignment Commission

ACRONYMS, ABBREVIATIONS, AND SYMBOLS, CONT'D

DEIS	Draft EIS
DNL	Day-Night Average Sound Level
DNL_{mr}	Onset-Rate Adjusted Monthly Day-Night Average Sound Level
DoD	Department of Defense
DoDI	U.S. Department of Defense Instruction
EDC	Economic Development Council
EFH	Essential Fish Habitat
EIAP	Environmental Impact Analysis Process
EIS	Environmental Impact Statement
EMB/ValP	Eglin Main Base/Valparaiso
EMP	Environmental Management Plan
EO	Executive Order
ERP	Environmental Restoration Program
ESA	Endangered Species Act
ESQD	Explosive Safety Quantity Distance
FAA	Federal Aviation Administration
FAC	Florida Administrative Code
FAMCAMP	Hurlburt Field Family Camping Area
FDEP	Florida Department of Environmental Protection
FDOT	Florida Department of Transportation
FE	Federally Endangered
FEIS	Final Environmental Impact Statement
FEMA	Federal Emergency Management Agency
FFS	Free Flow Speed
FGO	Field Grade Officer
FICUN	Federal Interagency Committee on Urban Noise
FLARNG	Florida Army National Guard
FONPA	Finding of No Practical Alternative
FT	Federally Threatened
ft^3	Cubic Feet
FWC	Florida Fish and Wildlife Conservation Commission
FY	Fiscal Year
GCTS	Ground Combat Training School
GHG	Greenhouse Gas
GIS	Geographic Information System
GO	General Officer
GOQ	General Officers' Quarters
HCM	Highway Capacity Manual
HF	Hurlburt Field
HRMA	Housing Requirements and Market Analysis
HRO	Highest Ranked Officer
Hz	Hertz
IJTS	Initial Joint Training Site
IMPLAN	Impact Analysis for Planning
in	Inches
IRP/ERP	Installation/Environmental Restoration Program
ITE	Institute of Transportation Engineers
ITS	Intelligent Transportation System
IWR	Impaired Waters Rule
JLUS	Joint Land Use Study
JNCO	Junior Noncommissioned Officer

ACRONYMS, ABBREVIATIONS, AND SYMBOLS, CONT'D

JSF	Joint Strike Fighter
LBP	Lead-based Paint
lbs/ft^2	Pounds per Square Foot
LED	Light-emitting Diode
LEED	Leadership in Energy and Environmental Design
$L_{eq(8)}$	Equivalent Noise Level Over an Eight-Hour Period
L_{max}	Maximum Sound Level
LOS	Level of Service
LRTP	Long Range Transportation Plan
µg/m	Micrograms per Cubic Meter
MFH	Military Family Housing
MGD	Million Gallons per Day
MHPI	Military Housing Privatization Initiative
MILCON	Military Construction
MLS	Multiple Listing Service
MS4	Municipal Separate Storm Sewer System
MSL	Mean Sea Level
N_2O	Nitrous Oxide
NAAQS	National Ambient Air Quality Standards
NEI	National Emissions Inventory
NEPA	National Environmental Policy Act
NESHAP	National Emission Standards for Hazardous Air Pollutants
NFA	No Further Action
NFWB	North Fort Walton Beach
NHPA	National Historic Preservation Act
NIPTS	Noise-Induced Permanent Threshold Shift
NMFS	National Marine Fisheries Service
NOA	Notice of Availability
NPDES	National Pollutant Discharge Elimination System
NRC/NAS	U.S. Nuclear Regulatory Commission
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NVOC	Niceville, Valparaiso, Okaloosa County
NWFWMD	Northwest Florida Water Management District
OEDR	Office of Economic and Demographic Research
OFW	Outstanding Florida Waters
OSD	Office of the Secretary of Defense
OSHA	Occupational Safety and Health Administration
OWTPO	Okaloosa-Walton Transportation Planning Organization
PA	Programmatic Agreement
PCB	Polychlorinated Biphenyl
PHV	Peak Hourly Volume
PM	Particulate Matter
$PM_{2.5}$	Particulate Matter with a Diameter of Less Than or Equal to 2.5 Microns
POL	Petroleum, Oils, and Lubricants
PSA	Public Service Announcement
PSD	Prevention of Significant Deterioration
PWS	Potable Water System
RAF	Return to Air Force
RCNM	Roadway Construction Noise Model
RCRA	Resource Conservation and Recovery Act

ACRONYMS, ABBREVIATIONS, AND SYMBOLS, CONT'D

RCW	Red-cockaded Woodpecker
RFQ	Request for Qualifications
ROD	Record of Decision
ROI	Region of Influence
SARA	Superfund Amendments and Reauthorization Act
SE	State-Endangered
SEIS	Supplemental Environmental Impact Statement
SEL	Sound Exposure Level
SER	Significant Emissions Rate
SGO	Senior Grade Officer
SHPO	State Historic Preservation Officer
SNCO	Senior Noncommissioned Officer
SOF	Special Operations Forces
SR	State Road
SSC	State Species of Special Concern
ST	State-threatened
SWPPP	Stormwater Pollution Prevention Plan
TIP	Transportation Improvement Program
TRB	Transportation Research Board
U.S.	United States
US-98	U.S. Highway 98
USACE	U.S. Army Corps of Engineers
USC	U.S. Code
USDA	U.S. Department of Agriculture
USDOT	U.S. Department of Transportation
USEPA	U.S. Environmental Protection Agency
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UST	Underground Storage Tank
UXO	Unexploded Ordnance
VPD	Vehicles Per Day
WRCA	Water Resource Caution Area
WRF	Water Reclamation Facility
WWTP	Wastewater Treatment Plant

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1. PURPOSE OF AND NEED FOR ACTION

1.1 INTRODUCTION

This Environmental Impact Statement (EIS) examines the potential environmental impacts resulting from the implementation of the Military Housing Privatization Initiative (MHPI) for Eglin Air Force Base (AFB), Florida, and Hurlburt Field, Florida. It identifies any required environmental permits relevant to the implementation of the Proposed Action and alternatives (to include the No Action Alternative), as well as any applicable discretionary and non-discretionary mitigations that would avoid, minimize, rectify, reduce, or compensate for potential impacts. The Air Force prepared this EIS in accordance with the requirements of the National Environmental Policy Act (NEPA) (42 United States Code [USC] 4321 et seq.). The regulations for implementing the procedural provisions of NEPA (Title 40 Code of Federal Regulations [CFR] Part 1500–1508) outline the responsibilities of federal agencies and provide specific procedures for preparing EISs to comply with NEPA. The Environmental Impact Analysis Process (EIAP) as promulgated at 32 CFR 989, defines the steps and milestones in the EIAP. The Air Force intends to privatize its housing at Eglin AFB and Hurlburt Field (Figure 1-1) under a statutory program to allow it to meet its military housing requirement. This is referred to as the MPHI. This initiative is accomplished by using the National Defense Authorization Act for Fiscal Year 1996 (Public Law 104-106, 110 St, 186 Section 2801) as amended, which includes a series of authorities that allow the Department of Defense (DoD) to work with the private sector to build and renovate military housing (these authorities were made permanent in Fiscal Year [FY] 2005). DoD's goal is to obtain private capital to leverage government dollars or land contributions, make efficient use of limited resources, and use a variety of private-sector approaches to build and renovate military housing faster and at a lower cost to American taxpayers. Additional information about housing privatization can be found on the Internet at: http://www.acq.osd.mil/housing/legislation.htm.

Under MHPI, the Air Force would convey up to 1,413 housing units located on Eglin AFB and Hurlburt Field (these numbers may be fewer at the time of project initiation due to potential hurricane or other unforeseeable events), including roadways, and other non-housing related buildings and other items within the housing areas that would be used to support housing, to a real estate development and property management company. Of the existing units, the developer would demolish up to 1,404 dwellings and would construct up to 1,477 new housing units in phases; up to 35 units for Camp Rudder (depending on the alternative selected), 548 units for Hurlburt Field (484 units would be constructed at Hurlburt Field), and up to 929 units for Eglin AFB (depending on the alternative selected). As part of the MHPI, and included in initial conveyance, are two Historic Districts (five housing units and a garage located at Georgia Avenue on Eglin AFB and four housing units and eight structures at Camp Pinchot). The developer would return all structures within the districts to the Air Force once replacement units are constructed. How the Air Force would utilize the structures within the Historic Districts would be determined at the time they are returned to the Air Force.

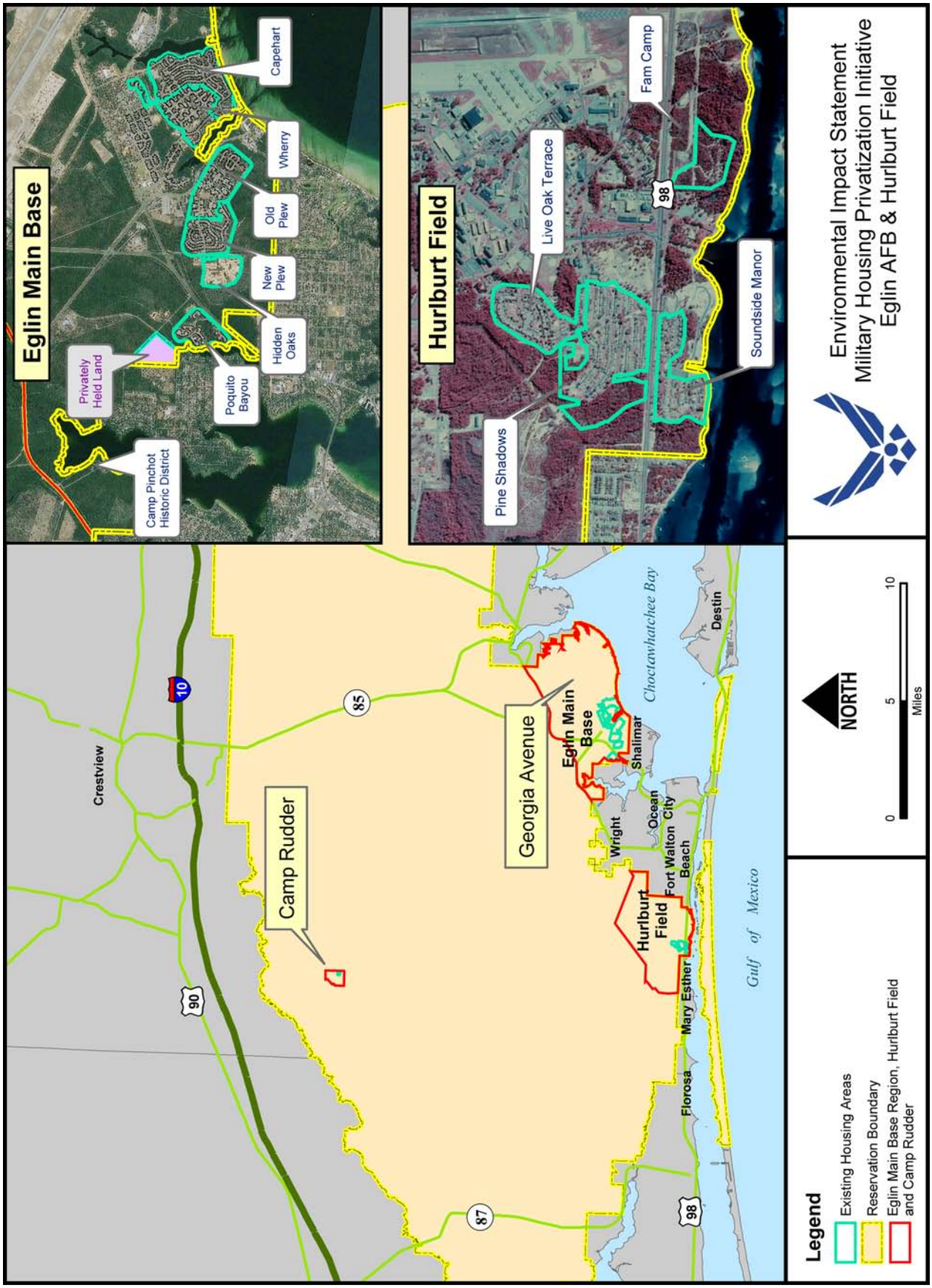

Figure 1-1. Location of Eglin AFB, Hurlburt Field, and Camp Rudder Housing Areas

At completion of the project, a developer would own and operate 1,477 housing units on behalf of Eglin AFB and Hurlburt Field. The term "housing unit" is defined as a dwelling that accommodates one family. A four-plex would be considered four housing units. All construction and demolition activities would occur on Eglin AFB and Hurlburt Field (Air Force-owned) property. The Air Force would lease the real property parcels underlying the units proposed for demolition to the developer. For areas not designated for rebuilding, this lease would last only until demolition is complete, at which time the developer's lease would end. For areas designated for rebuilding, the real property would be leased to the developer for a period of 50 years from the date of the transaction.

1.2 BACKGROUND

Eglin AFB is located in northwest Florida and comprises 724 square miles of land area and approximately 142,000 square miles of airspace overlying land and water ranges. Eglin AFB's "Main Base" is located adjacent to Valparaiso, Florida, and about 10 miles east of Fort Walton Beach, Florida. Hurlburt Field is located within the south-southwest area of the base a few miles west of Fort Walton Beach, Florida. For purposes of this EIS, the proposed project involves a real estate transaction with a developer in which the Air Force would convey all existing family housing units distributed among several parcels located on Eglin AFB and Hurlburt Field, and certain associated improvements including infrastructure to a developer. The Air Force will not convey existing utility mains as part of this proposed action and will provide utilities to the current housing units until they are all demolished, whereupon the Air Force will abandon the old lines in-place. Points of demarcation are where the lateral service line connects to the main when there is no meter or shut-off valve, otherwise it is the line side of the meter, disconnect, or junction box. In areas of new development, the developer will be responsible for obtaining utilities from off-base for newly constructed units. Once construction is complete, the developer can either turn systems over to the local utility or to the Air Force, and all new electrical, natural gas, water and sewer utility systems installed by the developer will be constructed in accordance with all applicable laws and regulations for ownership and operation by the local utility provider or the Government where applicable. The Air Force would also provide a long-term lease for land parcels utilized for housing privatization divided among Eglin AFB Main Base, Hurlburt Field, and Camp Rudder. The Hurlburt housing area known as Commando Village which is leased housing is not included as part of the MHPI.

1.2.1 Military Housing Privatization Initiative (MHPI)

Military Family Housing (MFH) privatization (10 USC 2871-2885, as amended) is a process wherein the Air Force would receive proposals from interested developers outlining their qualifications and proposals for meeting the development requirements through detailed design and construction, property management, and financial management. After evaluating all offerors' proposals, the Government will determine the most advantageous proposal and identify the Highest Ranked Offeror (HRO). The Government will then enter into exclusive negotiations with the HRO to address all of the requirements established in the Solicitation Documents. At the end of the process, the Air Force will make a source selection decision and, after DoD and Congressional approval of the selection, the lease agreement between the Air Force and the successful developer will be signed.

In addition to providing the required improvements to the housing inventory and neighborhoods, the developer would provide the necessary infrastructure (e.g., roads, utility connections) to support the privatized housing units. The developer would prepare details of specific infrastructure requirements and site plan details for any new privatized housing areas as part of the Solicitation process. While that information is unavailable, it does not preclude analysis of reasonably foreseeable impacts from the project, as the Air Force knows the general locations and construction and demolition activities associated with the proposal. The exact location of each unit within the proposed areas would not significantly alter the outcome of the analysis as long as the developer adheres to all permit/regulatory requirements and discretionary/non-discretionary mitigations required by the Air Force. The Air Force will evaluate the selected proposal to determine whether it is within the scope of analysis presented in this EIS. Should there be potential for impacts from a selected proposal outside the scope of analysis within this EIS a supplemental analysis may be required.

1.2.2 EIS Process to Date

This document constitutes the fourth iteration of the EIS. The first iteration of the Draft EIS was published and released to the public in April 2005; the Air Force's Preferred Alternative involved the demolition of the Camp Pinchot Historic District. The Air Force revised the Draft EIS (DEIS) in response to public and agency comments from the initial public hearing process, changing the Preferred Alternative to allow for return of the Camp Pinchot Historic District to the Air Force for uses other than housing once replacement units are constructed, and then released that document to the public as the Revised DEIS in April 2006. The Air Force received public and agency comments on that iteration. Before the 2006 EIS was finalized, several circumstances arose that caused the Air Force to halt the finalization of the EIS and reevaluate the Proposed Action.

Base realignment and closure (BRAC) decisions resulted in the planned beddown of the Joint Strike Fighter (JSF) (i.e., the F-35 aircraft), the U.S. Army 7th Special Forces Group (Airborne), and a net of approximately 4,000 additional military, civilian, and contractor personnel (not including family members) at Eglin AFB. Many of the additional personnel will be students. As a result, the Air Force needed to conduct a new housing requirements analysis in light of the changes in personnel. Additionally, rising costs due to recent hurricanes during that period made the utilization of parcels outside the Eglin AFB and Hurlburt Field main base areas (e.g., Camp Pinchot and Poquito Bayou Expansion areas) financially unreasonable. Consequently, the Air Force revised the scope of the MHPI at Eglin AFB and Hurlburt Field to consider these factors. The third iteration of the DEIS analyzed the potential consequences from the Proposed Action explained above and in Section 2.1 of that iteration of the EIS. There were no housing alternatives outside the main base areas of Eglin AFB or Hurlburt Field. This was due to a shortfall in project financials associated with hurricane-related increases in construction/insurance costs. The total number of housing units was adjusted to reflect the new housing requirements analysis that included changes in personnel associated with the BRAC actions and changes in the local housing market. Due to new JSF alternatives introduced during the JSF NEPA process, it was determined the potential existed for these alternatives to negatively affect the MHPI preferred alternative. Consequently, the Air Force was forced to reevaluate its concept to identify other housing areas that meet Air Force MHPI housing objectives while these JSF alternatives were examined. In addition, the previous hurricane-related increases in construction/insurance costs started to decline, so that previously precluded locations could once again be considered.

This fourth iteration of the EIS describes the changes in the alternative development process, reconsideration of the impacts of current construction costs on alternative feasibility, new alternatives resulting from this process, and the potential impacts to the subsequent affected environment from the MHPI. Table 1-1 provides a summary of the changes in alternatives that are analyzed in this fourth iteration of the MHPI EIS versus the previous three iterations. All alternatives include 484 units on Hurlburt Field; up to 35 units at Camp Rudder; and the remaining 958 units would be placed depending on alternative selection: Alternative 1 - White Point Area (416 acres); Alternative 2 - Eglin Main Base/Valparaiso Area (1,071 acres including development buffers/setbacks); Subalternative 2A - Eglin Main Base (the Air Force's Preferred Alternative) (673 acres including development buffers/setbacks); Alternative 3 - North Fort Walton Beach Area (457 acres including development buffers/setbacks); and Alternative 4 - Mix Alternative (a mix of parcels from any of the previous alternatives. The entire existing housing project area is shown in Figure 1-1. Chapter 2 details the site-specific locations proposed for development divided among five proposed areas.

Table 1-1. Summary of EIS Changes from 2005 to 2010

Eglin AFB / Hurlburt Field Locations Considered	EIS Iteration											
	1st (2005) & 2nd (2006)						*3rd (2008)*		*4th (2010)*			
	Alternatives											
	Alt 1: Poquito Bayou Expansion	**Alt 2: Eglin Main Base**	**Alt 3: Camp Pinchot Expansion / Poquito Bayou Expansion**	**Alt 4: Alt 3 w/ Camp Pinchot Return to Air Force**	**Alt 5: Camp Pinchot / Eglin Main Base**	**Alt 6: Alt 5 w/ Camp Pinchot Return to Air Force**	**Alt 1: Parcel D1**	**Alt 2: Parcel D1 and Parcel B2/B3**	**Alt 1: White Point Area**	**Alt 2 & 2a: Eglin Main Base / Valparaiso (2a is Preferred)**	**Alt 3: North Fort Walton Beach Area**	**Alt 4: Mix**
Associated Activity per Location												
Live Oak Terrace	Demolition (D)								D			Alt 4 is a mix of any of Alts 1–3
Pine Shadows									D / NC			
Soundside Manor	Demolition / Renovation / New Construction (D/R/NC)											
Camp Rudder	D								D/NC	D/NC (Alt 2) D (Alt 2a)	D/NC	
Ben's Lake									D			
Georgia Avenue	Return to Air Force (RAF)											
Hidden Oaks	No Activity (NA = units conveyed as is or area not utilized as part of Alternative)								D			
Wherry	D	D/NC	D		D/NC	D/NC	D		D	D	D	
Capehart	D	D/NC			D/NC	D/NC						
Old Plew	D				D					D/NC		
New Plew	D	D/NC			D/NC	D/NC						
New Plew Expansion Area	NA	NC	NA		NC		NC		NA	NC	NA	
Camp Pinchot	RAF		D/NC	RAF	D/NC	RAF	RAF		RAF			
Poquito Bayou	D		D/NC				D		D			
Camp Pinchot Expansion	NA		NC				Not part of Proposed Action or Alternatives		NA		NC	
Poquito Bayou Expansion	NC	NA	NC		NA							
Valparaiso Parcels	Not part of Proposed Action or Alternatives						Not part of Proposed Action or Alternatives		NA	NC (Alt 2) NA (Alt 2a)	NA	
Wherry/Capehart Areas (Parcels B1, B2, B3)							NA	NC	NA	NC (Alt 2) NA (Alt 2a)	NA	
Hurlburt FAMCAMP Area							NC		NC			
White Point							Not part of Proposed Action or Alternatives		NC	NA		
Fairground Parcels									NA		NC	
Alternative Disposition per EIS Iteration												
1st Draft EIS (2005)	✓	✓	✓	✓	Pref.	✓	Not previously proposed		Not previously proposed	Valparaiso parcels not previously proposed	Fairgrounds Parcels not previously proposed	Not previously proposed
2nd Draft EIS (2006)	✓	✓	✓	✓	✓	Pref.						
3rd Draft EIS (2008)	No longer viable alternatives						✓	✓				
4th EIS (2010)	Areas reevaluated given new screening criteria – reflected in 2010 EIS								✓			

RAF = Return to Air Force; D = demolition; EIS = Environmental Impact Statement; FAMCAMP = family camping; NA = no activity; NC = new construction; R = renovation; Pref. = Preferred

1.3 PURPOSE AND NEED

1.3.1 Purpose of the Proposed Action

The purpose of the Proposed Action is to replace Eglin AFB and Hurlburt Field's on-base MFH through implementation of the MHPI. Privatization utilizes private sector investment and efficiency to accelerate the improvement of base housing. It makes efficient use of limited resources for building and renovating military housing faster and at a lower cost—the result being quality, affordable housing for Eglin AFB and Hurlburt Field service members. In evaluating its current stock of housing units, the DoD has determined that the current condition of DoD-owned housing is poor. About 60 percent of DoD units need to be renovated or replaced (Office of the Secretary of Defense [OSD], 2004). At Eglin AFB and Hurlburt Field, approximately 88 percent of housing units do not meet current Air Force housing standards as established by MFH size standards.

1.3.2 Need for the Proposed Action

Need for Privatization

A Quality of Life Task Force report concluded that the continuing decline in the quality of existing on-base military housing, an increase in the out-of-pocket expenses for service members living in private housing, and increased demands on service members and their families (such as more deployments and family separations) could result in potential adverse impacts to military readiness (OSD, 2004). The majority of service members that live in local communities are enlisted personnel whose salaries are at the lower end of the military pay scale. This makes it difficult for them to find quality, affordable housing within a reasonable commuting distance from their duty station. To compound this problem, some communities do not have enough affordable, quality rental housing to accommodate all service members and their families (OSD, 2004). These factors create the need to supply service members with quality, affordable housing to compensate for shortfalls in the local community.

The uncertainty of the continued availability of traditional funding (including Military Construction [MILCON] and Operations and Maintenance sources) and increasing doubts as to the economic feasibility of this traditional funding forced the Air Force to meet this need by changing its policy. At one time, the Air Force used the occupancy rate to gauge the suitability of its housing inventory (for instance, if the occupancy rate was 20 percent, the inventory may have needed a downward adjustment, while an occupancy rate of 99 percent tended to indicate the current inventory was either adequate or in need of supplementation). Additionally, in this project as well as in other Air Force privatization projects, it appeared the private sector could fund the homes at a lower cost to the federal government. This uncertainty and expense forced the Air Force to shift its emphasis away from traditional means of providing military homes to focus first on the local economy and then only to provide homes, most often

through privatization, for those military families who could not be accommodated by local landlords and landowners. Congress authorized such privatization through the National Defense Authorization Act of 1996, which enabled the DoD to rely on private sector housing developers to renovate or demolish existing housing units, build new ones, provide the infrastructure needed to support such developments, and operate, maintain, and manage the housing development on Air-Force owned or project-funded property for up to 50 years. The DoD's objective was to revitalize MFH by 2007.

Need for Housing Units

The Air Force uses the Housing Requirements and Market Analysis (HRMA) to determine the number of families that the local community can accommodate. Where the HRMA reveals the local economy cannot accommodate all the military families assigned to the installation, that installation must then make up the deficit. Whether it does so through privatization or some other means, however, the purpose and need of such military housing remains as it has been for decades. So while the emphasis on funding for military housing has shifted from MILCON to the private sector, the military's intended use of its resources to facilitate military housing has the same purpose it has always had—to provide for military families. The purpose remains not only to provide homes, but also to provide the sense of community that is of vital importance to military cohesion. When the military expends resources or leases land to support military family housing, the military does so to provide its members with a traditional military community. This means, as much as possible, a strong preference for a neighborhood where at least one member of every household is active-duty military. It also means, where possible, there remain divisions between ranks, houses sized by rank and family size, accommodations (such as parks and sidewalks) for children, and at least some handicapped-accessible homes. These measures seek to improve the community atmosphere and provide the military member with a greater sense of unit cohesion.

Determining the specific number of housing units needed at Eglin AFB and Hurlburt Field involved estimating the number of appropriate adequate and affordable private sector housing units available to military families within 20 miles, or a 60-minute commute (whichever is greater). In 2009, Eglin AFB and Hurlburt Field conducted HRMA studies in order to identify housing units available to military members in the private community. The Air Force factored shortfalls in available private sector housing into the total MFH requirement for Eglin AFB and Hurlburt Field to determine the number of units needed to support its military families. Cumulatively, the Air Force determined that the Eglin AFB and Hurlburt Field FY2014 housing requirement is 1,477 units. The HRMA includes existing personnel at both Eglin and Hurlburt Field, BRAC requirements, 59 F-35 aircraft requirements, and other factors. The Eglin AFB and Hurlburt Field HRMA documents provide more detailed information regarding how these numbers were derived. These documents are available on the project website at http://www.jllpress.com on the Base due diligence pages.

This total (1,477 units) does not include the 300 Section 801 leased housing units at Commando Village, located just east of Hurlburt Field on Martin Luther King Boulevard in Fort Walton Beach, Florida. Since the Air Force does not own the 300 Commando Village homes they are not included in the Proposed Action or alternatives evaluated in this EIS. The lease for the Commando Village homes expires in June 2012, at which time the homes would be considered local market rental units.

Through privatization, the housing units would be an investment for the developer, who would own the units on land leased from the Air Force, collect rent from service members, and provide maintenance and management. In return, the Air Force would be able to house their military families in quality, affordable housing. However, the Government does not direct or order any military members (other than key and essential personnel) to rent from the developer, and the Government does not guarantee rental income. With no guarantees of military rental income, the developer must compete directly with other rental properties within the private sector by offering desirable homes that meet Air Force housing standards in a local market which is increasingly expensive and up-scale. The MHPI includes a policy known as the "Waterfall Policy." The MHPI allows "Other Eligible Tenants" to occupy the privatized housing when occupancy remains below a specified percentage for an extended period of time. The developer, in concurrence with the government, may allow other active duty military, military retirees, DoD civilians, and DoD contractors, and the general public (in that order) an opportunity to apply for privatized housing. Non-military members would be required to undergo security background checks, and the base can bar someone from base if they are deemed a security risk. All military members (with the exception of those Key and Essential personnel required to be on-base) will have the option of living on-base or off-base. The Air Force requires that 28 Eglin AFB and 19 Hurlburt Field Key and Essential personnel live on-base for operational and mission requirements.

Need for Land Area to Support Housing

Unique aspects of the military mission mandate features in military housing neighborhoods that may not be of equally great importance to civilian housing residents. For instance, due to the nature of the military mission, military communities are composed of far more shift workers than civilian neighborhoods, and early-morning recalls, routinely conducted by any one of Eglin AFB's or Hurlburt Field's many organizations, are an integral part of most military exercises. Whether for exercises or real-world incidents, a high percentage of the military workforce must be able to arrive at their duty stations upon immediate notice, while for civilians it is an expediency to be located near their places of employment.

The Air Force Family Housing Guide balances these concerns with the concerns shared by non-military residents, such as noise and traffic avoidance, convenience, aesthetics, and price. Accordingly, it requires the installation to consider all these concerns when

arriving at a decision on the housing density, and primary among these (as it would be for a civilian landowner) is the ability of the available land to satisfy these concerns. Eglin AFB has relatively large land areas readily available at no cost to the government that do not impede the military mission. Such areas may be designated as "rural" and allows for lower densities established in the Air Force Family Housing Guide for rural areas, which is averaged for analysis purposes at 4 to 6 units per acre; the Air Force permits multistory, multifamily homes up to 6 housing units per building.

Initially, during the first two iterations of the EIS, the Air Force evaluated the entire Eglin AFB Reservation for housing locations based on a set of housing objectives. These objectives were essential for the MHPI in that the objectives had to be met in order for a particular site to be carried forward for consideration as a potential development location. However, changes in scope under the third (previous) iteration of the EIS required the Air Force to locate housing units within the main base boundaries for financial reasons as well as reassessment of Camp Pinchot due to environmental and historic requirements and public opposition. As a result, many of the initial objectives, while still met, were no longer applicable to identifying potential housing areas on Hurlburt Field and Eglin AFB main bases and were not deciding factors in identifying potential locations. As an example, since the scope of the project had changed at that time to development within the main base boundaries, such objectives as a "60-minute commute time" were no longer applicable to housing area identification. However, the new scope for the 2010 EIS (the fourth iteration) requires the Air Force to reevaluate the entire Eglin Reservation because potential JSF alternatives may conflict with certain MHPI objectives. As a result, the Air Force has modified slightly the initial objectives and applied them to the entire reservation to identify potential development areas. The following narrative provides a summary of the evaluation process of potential development locations used in this EIS iteration.

Development of MHPI Objectives

The preliminary process to find development locations first sought to determine what general areas throughout the three counties (Okaloosa, Walton, and Santa Rosa) surrounding Eglin AFB might meet the Air Force's MHPI objectives, which are based on MHPI housing requirements and project and mission constraints. These objectives were applied to the entire Eglin Reservation and coordinated through Eglin AFB Mission Enhancement Committee, the Eglin AFB Range Configuration Control Committee, and the Eglin Range Development Executive Steering Committee.

Previous MHPI Objectives Not Carried Forward

- **Areas more than 100 Acres** – As discussed in Section 1.3 (Need for the Proposed Action), wherever the military provides funds or leases property for the purpose of military housing, it does so with the intent to provide its members with a

community of military families. Accordingly, numerous isolated developments would fail to achieve this purpose as effectively as fewer large developments. Given these concerns, the Air Force initially determined that 100 acres was a reasonable minimum size for new housing on previously undeveloped properties. At that time, the local leadership also planned a maximum density of 3 units per acre for this project. Under those objectives, scenarios involving parcels smaller than 100 acres were not carried forward for detailed analysis. However, under the new change in scope, parcels under 100 acres are now being considered since several smaller parcels that are near each other could be utilized as part of a larger "area of development." Consequently, the objective for areas over 100 acres for site selection has been eliminated under the new/current scope of MHPI.

- **Community Service Access** – Initially, the Air Force considered that community services should be within close proximity to housing areas so that residents are not impeded by great distances or excessive effort to acquire such services. However, this criterion was determined to be too limiting under the new/current scope and was therefore eliminated as part of the alternative identification process.

MHPI Objectives Modified and Carried Forward for Site Selection

- **60-minute Commute Time** – Within the HRMAs (U.S. Air Force, 2009a; U.S. Air Force, 2009b), the housing market area is defined as the further of 20 miles from the installation's headquarters building or a one-hour commute from the headquarters, assuming normal weather conditions. This criterion is based on the DoD requirement to ensure that all personnel can reach the base from housing within 60 minutes (DoD, 1993). Since both Eglin AFB and Hurlburt personnel would be living in the same area, the Air Force could not place units more than 60 minutes away from *either* Eglin AFB or Hurlburt. The Air Force initially identified the 60-minute commute area for both Eglin AFB and Hurlburt to the tri-county area using the Geographic Information System (GIS) to determine overlap between the two areas. Areas outside the combined 60-minute commute boundary for Eglin or Hurlburt Field were then eliminated from consideration.
- **Air Force Property** – Given the project's requirements, mission constraints, and the limited funds for the Eglin AFB/Hurlburt Field housing effort, neither the purchase of private property nor land swapping would be reasonable. The MHPI program under 10 USC 2871-2885 (as amended) allows use of government provided property in these circumstances. The Air Force has numerous parcels of property available to it that meet the statutory requirements for MHPI program. Potential areas outside Eglin AFB Reservation boundary were therefore eliminated from consideration.

- **Areas with Mission Conflicts** – This criterion involved several different factors associated with current and future mission activities on Eglin AFB:
  - ***Minimize Mission Impact*** – Evaluated overall impact to current test and training capabilities. Most factors are related to specific test/training capabilities or facilities but some are concerned with more general topics such as mission disruption, facility/activity relocation costs, and overall airfield operations.
  - ***Maximize Strategic Capability of the Range*** (e.g., preserve large footprint weapons capability, airfield approaches, low-level training routes) – Evaluated various capabilities that are essential to maintaining the flexibility and capacity for future test and training missions on the range.
  - ***Preserve Restricted Airspace*** – Evaluated the use of land areas under existing restricted airspace. Generally, any effective loss of restricted airspace resulting from siting a nonhazardous operation/activity inside existing restricted airspace was considered unacceptable. Restricted airspace was established and approved by the Federal Aviation Administration to enable the military to exclude civilian aircraft from areas where the military needs to conduct hazardous operations. Therefore, if a permanent nonhazardous activity/facility is sited inside existing restricted airspace, the military agency is effectively relinquishing its need for that portion of restricted airspace. Given the growing need for more land mass and restricted airspace to accommodate testing and training involving long range standoff weapons, any ineffective use or relinquishment of existing restricted airspace for nonhazardous operations was considered unacceptable.
  - ***Minimize Impact on Current and Future Military Operations*** (i.e., noise restrictions, tall structures, lighting, from MFH; and impacts to MFH from current and projected future mission activities) – Evaluated various impacts of MFH on adjacent military operations and of current and future military operations on potential MFH. Noise sources (e.g., small arms training, training activities at Test Areas D-51 and C-52W, training missions on Test Area C-52) were qualitatively considered, but specific noise levels were not available for detailed analysis. Mission impact analysis also used F-35 noise based on the BRAC EIS for a general evaluation of mission noise impact on the potential MFH areas (See Noise and Land Use Sections of this EIS for more detail).
- **Wetland/Floodplains** – Under Executive Order (EO) 11988, *Floodplain Management* (1977, 42 Federal Register 26951), federal agencies are prohibited from the occupancy and modification of floodplains and floodplain development unless there is no practicable alternative. Additionally, EO 11988 requires federal agencies to make every effort to reduce the risk of flood loss, minimize the impact of floods on human health, safety, and welfare, and preserve the natural beneficial value of floodplains. The order stipulates that federal agencies

proposing actions in floodplains consider alternative actions to avoid adverse effects, avoid incompatible development in the floodplains, and provide opportunity for early public review of any plans or proposals. Under EO 11990, *Protection of Wetlands* (1977, 42 Federal Register 26961), federal agencies are prohibited from undertaking or providing assistance for activities, including new construction, located in wetlands unless there are no practicable alternatives and all practicable measures to minimize harm to wetlands have been implemented. It also precludes federal entities from leasing space in wetland areas unless there are no practicable alternatives. Given these EO requirements, the Air Force added Florida Department of Environmental Protection (FDEP) wetland data and Federal Emergency Management Agency (FEMA) floodplain data and Overland Surges from Hurricanes storm surge data from the National Hurricane Center to the GIS analysis. Areas with large portions of floodplain or wetland were removed from consideration. However, areas with small pockets of wetlands or floodplains were included; development in these areas would avoid the wetlands and floodplains within the proposed parcel boundaries. At Hurlburt Field, portions of Live Oak Terrace and Soundside Manor are covered by floodplain, and approximately 0.7 acre of wetlands associated with drainage ditches exists within the Pine Shadows location; demolition would occur for the units within these areas, and culverts may be required across these drainage ditches to allow for parcel access. No other ground-disturbing activities are planned within floodplains or wetlands. A Finding of No Practicable Alternative (FONPA) in accordance with EO 11990 and EO 11988 would be required.

- **Emergency Response** – The Air Force also considered proximity to emergency services during the site screening process. Sites could not be so remote that Eglin emergency services (fire and security) could not reach them within a reasonable response time. The National Fire Protection Association Code 1710 provides a national guideline of four minutes or less for fire or emergency medical services first responders to arrive on scene (Brown, 2004). In addition, Okaloosa County Emergency Management maintains an average first response time of six to seven minutes, with any responses greater than 10 minutes considered unacceptable and requiring investigation as to the cause of the delay (McDaniel, 2004). DoD Instruction 6055.06, DoD Fire and Emergency Services Program, requires a 7 minute response time (includes dispatch time, turnout time, and the remainder travel time) for structural fire; this instruction applies to non-DoD activities operating on DoD installations. The distance that an emergency vehicle could travel under normal conditions from its stationed location is approximately six to seven minutes, which equates to about 6 miles. While municipalities exceed the response guideline when faced with rapid growth, the Air Force did not deem it reasonable to do so. The Air Force therefore considered areas outside a seven-minute emergency response time unacceptable. Camp Rudder currently has a fully-staffed fire station, which was considered as part of this objective.

- **Unexploded Ordnance (UXO)/Historic Range Use** – The Air Force would consider small scale and/or minor clean-up of UXO as an option. However, the Air Force considers areas identified as ranges historically used for weapon testing and training to have exceptional safety hazards due to the potential presence of large amounts of UXO. These areas would not be compatible for housing developments. As a result, areas within major test range areas utilized over the past 30 years were eliminated from consideration.
- **Installation/Environmental Restoration Program** – The Air Force eliminated areas with active sites (including Areas of Concern and Points of Interest) for housing development.

The Air Force utilized these objectives to identify potential locations that would fulfill its purpose and need for housing privatization. These potential locations are described in detail in Chapter 2: Description of Proposed Action and Alternatives.

1.4 DECISION TO BE MADE

The Air Force will base its decision to construct the new housing on the resource area analysis presented in this EIS. A decision to proceed with the implementation of the Proposed Action or alternatives would result in the conveyance, renovation, and/or demolition of existing housing, the construction of new replacement housing by a developer, return of historic housing units to the Air Force for purposes other than housing (e.g., offices, conference facilities, etc.), the lease of Air Force-owned land and movement of the Hurlburt Family Camping (FAMCAMP) area. If the Air Force selects the No Action Alternative, the Government will have to maintain and operate the current inventory of housing. No capital improvements have been programmed for replacement housing and no funds have been programmed or are available to maintain/upgrade housing units at Eglin or Hurlburt. As determined by the most recent Housing Community Profile, the majority of Eglin and Hurlburt housing does not meet current Air Force housing standards and is in need of demolition.

1.5 ENVIRONMENTAL IMPACT ANALYSIS PROCESS

Congress enacted NEPA (Public Law 91-190, 42 USC 4321-4347, as amended) to establish a national policy for the protection of the environment. It requires federal agencies to assess the environmental consequences of a proposed action and alternatives systematically as part of the decision-making process. The intent of NEPA is to protect, restore or enhance the environment through well-informed decisions by the federal decision maker. The President established the Council on Environmental Quality (CEQ) under NEPA to implement the provisions of the Act and review and appraise federal programs and activities in light of NEPA policy. The CEQ promulgated regulations for implementing the procedural provisions of NEPA (40 CFR

1500–1508). These regulations outline the responsibilities of federal agencies and provide specific procedures for preparing EISs to comply with NEPA.

This EIS assesses the environmental impacts resulting from implementation of the Proposed Action or alternatives for the MHPI and location of housing at Eglin AFB and Hurlburt Field. It also identifies and describes the affected environment and evaluates the potential environmental impacts that could result from the implementation of the Proposed Action and alternatives (to include the No Action Alternative). The analysis identifies environmental permits, specific mitigation measures associated with those permits, and Air Force-developed management actions to prevent or minimize environmental impacts, if required.

1.6 INTRODUCTION TO THE ORGANIZATION OF THE DOCUMENT

This EIS is organized into 13 chapters. Chapter 1 identifies the purpose of and need for the Proposed Action. Chapter 2 describes the Proposed Action and alternatives. Chapter 3 describes the environment that the Proposed Action or alternatives could potentially affect. Chapter 4 presents an analysis of potential environmental consequences. Chapter 5 provides a summary of and comparison of potential impacts associated with the action alternatives. Chapter 6 provides an analysis of potential cumulative impacts. Chapter 7 discusses the relationship between short-term use and long-term productivity of environmental resources. Chapter 8 presents a discussion of irreversible and irretrievable commitment of resources. Chapter 9 identifies any unavoidable adverse impacts and considerations that would offset those impacts. Chapter 10 discusses the public participation process. Chapter 11 lists the preparers of this document. Chapter 12 lists the references used in the preparation of this document. Chapter 13 provides an index.

The appendices to this EIS are provided as an attachment to this document in electronic format (*EIS Resource Appendices*). Appendix A lists the agencies and associated contact information, as well as persons who requested copies of the EIS for review and who received copies of the EIS for review and comment. Appendix B includes information on the public scoping process, including correspondence received from government agencies and the public during the scoping period. Appendix C lists pertinent laws and regulations associated with the Proposed Action and alternatives. Appendix D provides a glossary of terms. Appendices E through H provide more detailed information regarding the resource areas discussed in Chapter 3 of this EIS. Appendix I provides a copy of the Coastal Zone Consistency Determination submitted to the FDEP in compliance with the Florida Coastal Zone Management Program. Appendix J includes a statement acknowledging that the preparers of this EIS do not have a conflict of interest.

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2. DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

This chapter presents a detailed description of the Proposed Action to privatize Eglin Air Force Base (AFB) and Hurlburt Field's Military Family Housing (MFH) through the implementation of the Military Housing Privatization Initiative (MHPI). The details of the Proposed Action form the basis for the analyses of potential environmental impacts. This chapter also includes a discussion of the considerations used to identify candidate alternatives and addresses the No Action Alternative.

2.1 PROPOSED ACTION

The following activities comprise the Proposed Action and would occur across all alternatives (except the No Action Alternative); therefore, this document refers to them as "commonalities." The requirements of the Housing Privatization Request for Qualifications (RFQ), the 2009 Housing Requirements Market Analysis (HRMA) for both Eglin AFB and Hurlburt Field, and future land use and planning needs determine these commonalities. Due to the flexibility provided the developer in creating development proposals that meet Air Force needs, the following project scope is the optimal development scenario. Specific details regarding development will not be available until the Air Force selects a development proposal. As a result, the actual project scope may result in a higher or lower requirement depending on financial viability and projected Air Force needs; the selected proposal would be evaluated by the Air Force to determine if the proposal fits within the scope of that analyzed in this EIS and if supplemental analysis is required. Figure 2-1 shows the location of existing housing at Eglin AFB, Figure 2-2 shows the locations of proposed housing areas at Eglin AFB, and Figure 2-3 shows the locations of existing and proposed housing areas at Hurlburt Field. The Air Force would initially lease all acreage underlying existing housing as well as areas currently undeveloped or utilized for other purposes (i.e., Family Camping area at Hurlburt Field). All alternatives for implementing the Proposed Action include construction of 484 units on Hurlburt Field and up to 35 units at Camp Rudder. The location utilized for development of the remaining 958 housing units at Eglin AFB would be associated with alternative selection.

- Leasehold interest in land areas not utilized for housing would terminate upon the demolition and removal of all required units and the Air Force's satisfaction with the developer's performance—this would constitute a "short-term" lease and the developer would return these areas to the Air Force. The Camp Pinchot and Georgia Avenue Historic Districts would be returned to the government once replacement units are constructed.

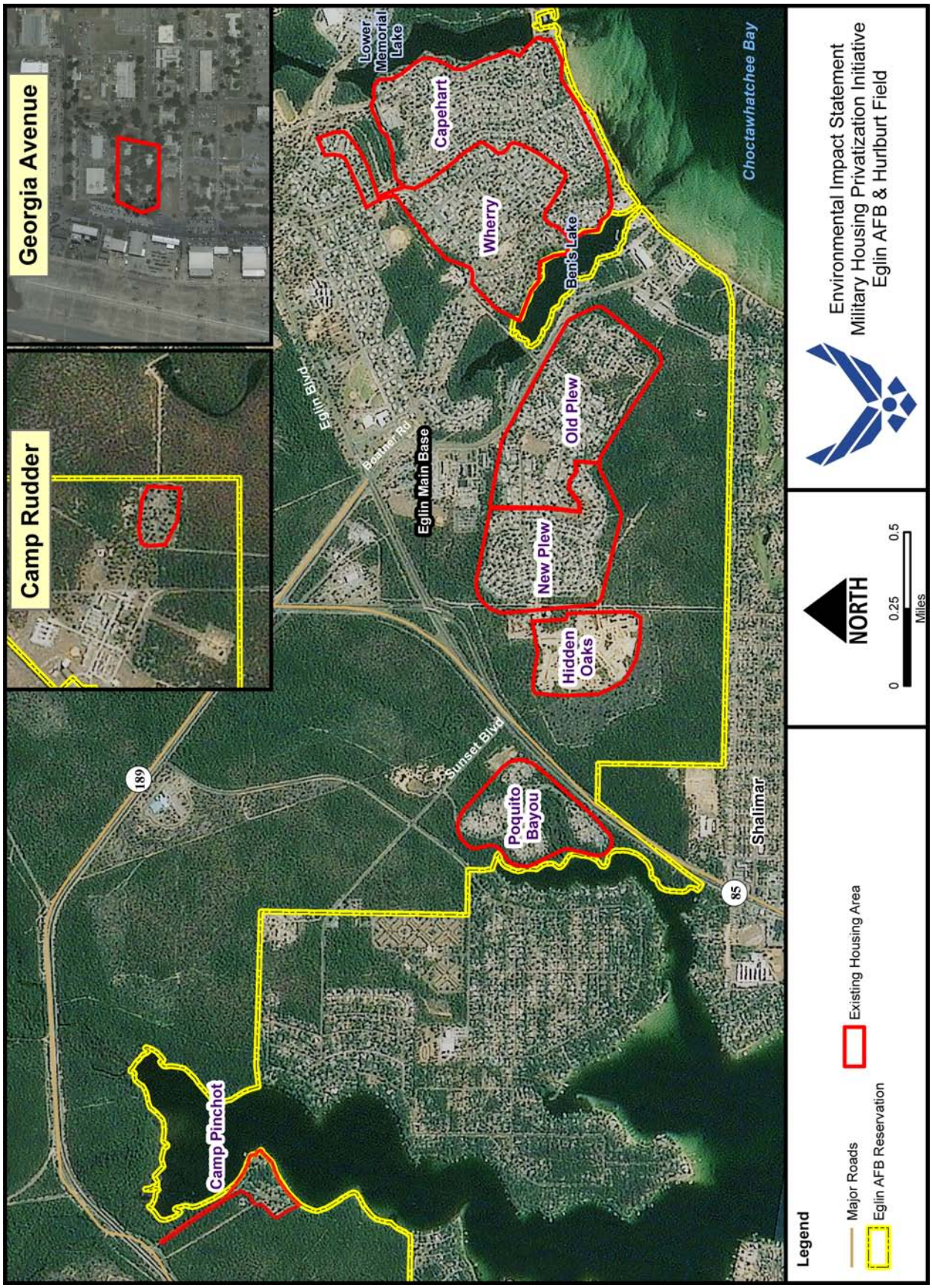

Figure 2-1. Existing Housing Areas at Eglin AFB

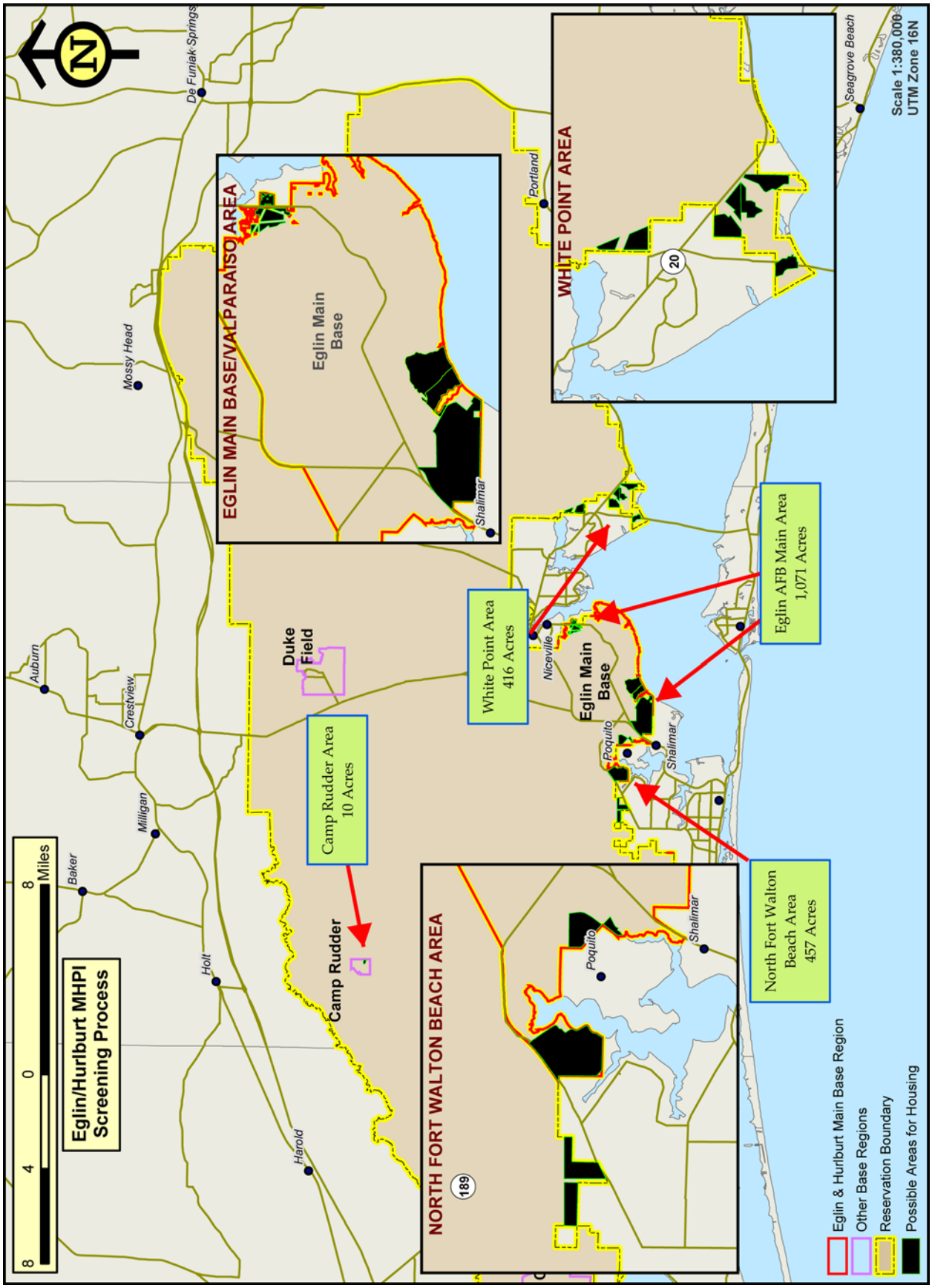

Figure 2-2. Proposed Housing Areas at Eglin AFB

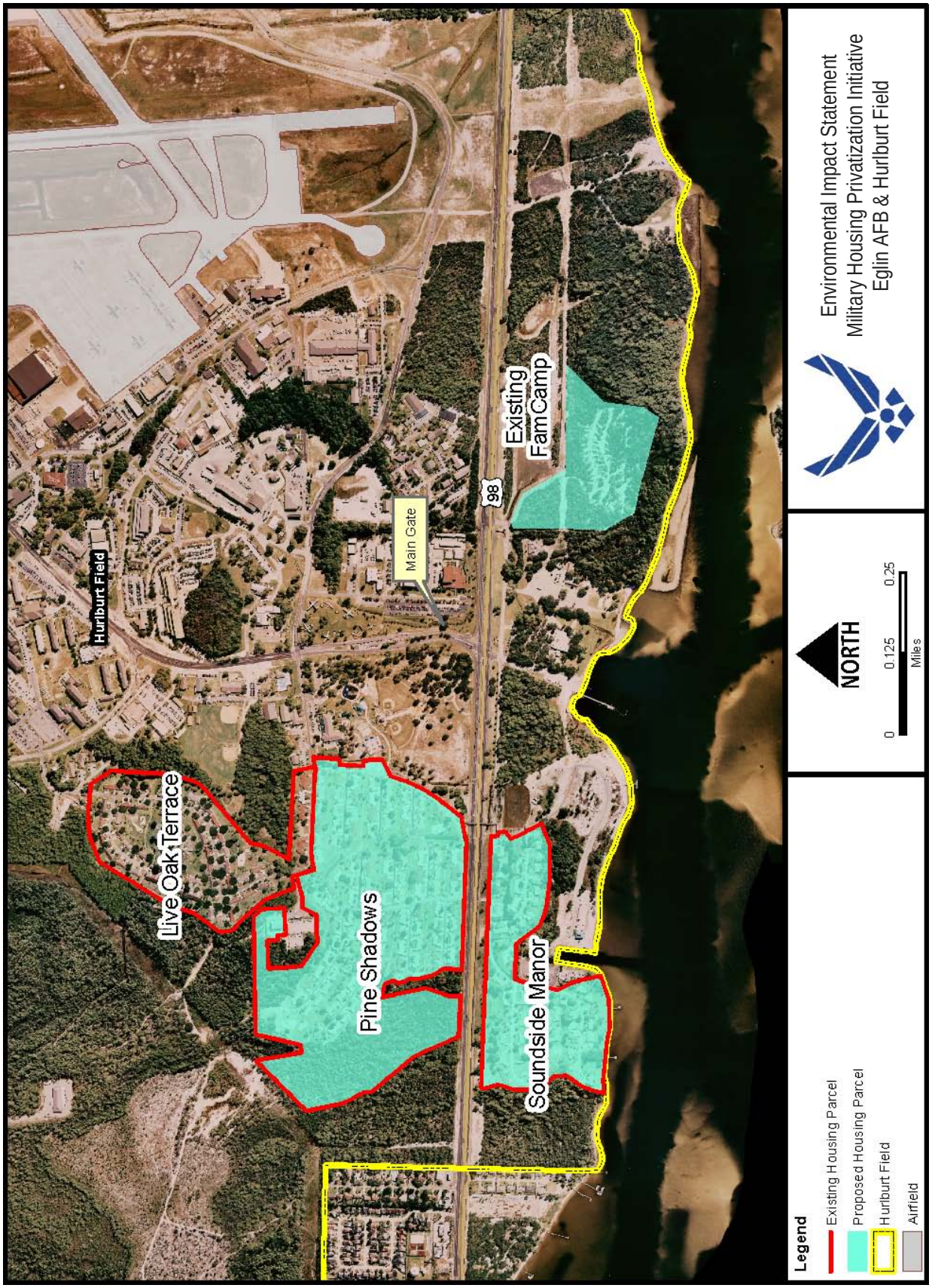

Figure 2-3. Existing and Proposed Housing Areas at Hurlburt Field

- As is current Air Force housing privatization policy, and as is consistent with the housing privatization statutes, the Air Force would lease all areas supporting the end-state family housing units to the developer for a period of 50 years. At the end of the lease period, the project owner would either remove all of the improvements (housing units) from the land and restore the land to the satisfaction of the government or the government may retain all or a portion of the improvements in lieu of removal and restoration. The MHPI transaction documents will include provisions for ongoing life-cycle maintenance and repair, as well as mid-term renovations (typically at the 25-year point) to keep the houses competitive with local market rental quality standards.
- Under the Proposed Action the Air Force would convey up to 1,413 MFH units (854 at Eglin Main Base, 4 at Camp Pinchot, 150 at Poquito Bayou, 25 at Camp Rudder, and 380 at Hurlburt Field) to a developer (these numbers may be fewer at the time of project initiation due to potential hurricane or other unforeseeable events). The number of housing units to be demolished and constructed is the same among the alternatives; however, these numbers may be fewer at the time of project initiation due to potential hurricane or other unforeseeable events. Only the potential location of new housing construction would vary.
- Once suitable replacement housing has been developed, nine historic units (four at Camp Pinchot, to include a guest house as part of the General Officers' Quarters (GOQ), and five at Georgia Avenue) and associated facilities within the Historic Districts would be returned to the Air Force for uses other than housing (e.g., meeting facilities, offices). The extent of this use has yet to be determined and is part of a separate action, which would be coordinated through the Florida State Historic Preservation Office once a proposed use has been determined.
- Due to the age and condition of the majority of Air Force housing at Eglin AFB and Hurlburt Field, the Air Force proposes demolition of up to 1,404 housing units (1,413 minus the 9 historic units): 25 at Camp Rudder; 849 at Eglin Main Base; 150 at Poquito Bayou; and 380 at Hurlburt Field. While some units at both Hurlburt Field and Eglin AFB have been constructed within the last 10 years, developers sometimes propose demolition and reconstruction of newer units as part of their offer. So, for planning purposes to address the potential optimal development scenario for the MHPI project at Hurlburt Field and Eglin AFB, it is assumed that all units (with the exception of the historic structures described previously) would be demolished.
- Based on HRMA requirements and project financials (discussed in Section 1.3), the developer would construct up to 1,477 new units (548 units for Hurlburt Field, 929 units for Eglin AFB). While the HRMA identifies 2-bedroom requirements for some pay grades, Eglin and Hurlburt's desire is for a mixture of 3- and 4-bedroom single-family structures and multiplex units. As a result, for purposes of analysis, all HRMA 2-bedroom requirements have been upgraded to 3-bedroom, and all HRMA 3-bedroom requirements have been upgraded to 4-bedroom. This represents the optimal scenario for MHPI.

- It is anticipated that the developer would complete all phases of the transition/demolition/construction portion of the project within five years of transaction closing. As the exact size and placement of each unit within the alternative areas would be determined through the design review process, the actual construction of new units and infrastructure could take place anywhere within the areas (Figure 2-2 and Figure 2-3), depending on alternative selection. It is possible that the developer would seek to develop each parcel to the optimal extent possible, and since the density and location of units to be constructed is unknown at this time, it is reasonable to assume that development of each parcel to the optimal extent possible would serve to represent the greatest potential impact to these areas. In order to understand the greatest potential for impact posed by the development of the housing areas, analysis assumes the following is inherent to the Proposed Action and is thus the same across alternatives:
    - The Air Force assumes that, of the total acreage for each parcel, approximately 80 percent of the total acreage of each parcel or area would be available for housing units while the remaining 20 percent would be utilized for infrastructure and ancillary facilities. As an example, a 100-acre parcel would have 80 acres (80 percent) of its area available for actual units while 20 acres would be utilized for infrastructure, with 10 acres used for roads and 10 acres utilized for recreation and support facilities potentially constructed by the developer.
    - The Air Force assumes that the average impervious surface area associated with each unit (includes driveways, patios, sidewalks, etc.) would be approximately 1,275 square feet. This square footage is therefore added to the total square footage constructed for each unit.
    - Table 2-1 provides the estimated square footage of construction and demolition based on required housing demographics under the Proposed Action.
    - A community center/clubhouse is included in the RFQ as a desired feature for both Hurlburt Field and Eglin. Since the dimensions of this facility are unknown at this time and would be determined at the time of Air Force selection of a developer proposal, the Air Force estimates the size of the facility to be approximately 8,000 square feet.
    - The developer would have the option of proposing single family units or multiplex units; all Senior Grade Officer, and General Officer, would be single-family units, while Prestige, Field Grade Officer, and Company Grade Officer units could be either single-family or multiplex units developed at unit density of between 4 and 6 units per acre. All other housing units would be developed at no more than 6 multiplex units per acre, with desirable densities at no more than 4 single-family units per acre.

Table 2-1. Estimated Total Gross Square Footage of Housing Construction and Demolition for the Proposed Action[1]

# of Bdrms	Pay Grade*		Demolition			Construction					
			# of Units	Total Gross Sq Footage		# of Units			Max Gross Sq Footage		Total Max Gross Sq Ft.
				Add. Surface	Total	HF	CR*	Eglin	Per Unit	Add. Surface	
2	JNCO	E1-E6	384	1,275	3,829,132	0				1,275	4,871,395
	SNCO	E7-E8									
	CGO	O1-O3									
3	JNCO	E1-E6	671			242	0	535	1,760		
	SNCO	E7-E8				34	8	56	2,050		
	CGO	O1-O3				32	11	61			
	Prestige/ FGO	E-9/ O4-O5				23	1	24	2,300		
4	JNCO	E1-E6	349			71	0	158	2,220		
	SNCO	E7-E8				33	6	58	2,500		
	CGO	O1-O3				8	5	15			
	Prestige/ FGO	E-9/ O4-O5				25	4	30	2,700		
	SGO	O6				12	0	18	2,920		
	GO	O7-O10				4	0	3	4,060		
Total			***1,404***			***484***	***35***	***958***			

Source: Eglin AFB and Hurlburt Field Housing Offices, 2010

* Under Subalternative 2a these units would be constructed at Eglin.

HF = Hurlburt Field; CR = Camp Rudder; JNCO = Junior Noncommissioned Officer; SNCO = Senior Noncommissioned Officer; CGO = Company Grade Officer; FGO = Field Grade Officer; SGO = Senior Grade Officer; GO = General Officer

Note: These numbers are for planning purposes only and are subject to change depending on developer proposals.

- The Air Force will not convey existing utility mains as part of this proposed action and will provide utilities to the current housing units until they are all demolished, whereupon the Air Force will abandon the old lines in-place. Future privatization of utilities is an action separate from MHPI and is not detailed in these documents, although specific points of demarcation for each system are provided. Points of demarcation are where the lateral service line connects to the main when there is no meter or shut-off valve, otherwise it is the line side of the meter, disconnect, or junction box. In areas of new development, the developer will be responsible for obtaining utilities from off-base for newly constructed units. Once construction is complete, the developer can either turn systems over to the local utility or to the Air Force, and all new electrical, natural gas, water and sewer utility systems installed by the developer will be constructed in accordance with all applicable laws and regulations for ownership and operation by the local utility provider or the Government where applicable. Any user-requested or latent site conditions discovered subsequent to the transaction closing will go through a rigorous review process and an established Air Force approval process. Project specific solicitation documents can be found at http://jllpress.com/."

Specifics concerning utilities will be included in a Utility Services Agreement, which is included with the transactions documents at the project closing. The Utility Services Agreement will not be signed until the conclusion of the EIS process and a Record of Decision (ROD) is issued.

The actual distribution of units that would occur is unknown, as the exact size and placement of each unit within the alternative areas would be determined when the Air Force selects a developer's project concept. As a result, the actual construction of new units and infrastructure could take place anywhere within the proposed parcels (with the exception of small pockets of wetlands and/or floodplains), depending on alternative selection. However, it is reasonable to assume that the actual distribution of units within the proposed parcels would likely be somewhere between 4 and 6 units per acre. It is possible that developer proposals would seek to develop each parcel to the optimal extent possible (6 units per acre), and since the density and location of units to be constructed is unknown at this time, it is reasonable to assume that development of each parcel to the optimal extent possible (unless otherwise noted) would serve to represent the greatest potential impact to these areas. In order to understand the greatest potential for impact posed by the development of the housing areas, analysis assumes the following is inherent to the Proposed Action and is thus the same across alternatives:

- Hurlburt Field:
  - At Hurlburt Field, 484 units of the total 548 unit requirement would be built on Hurlburt Field; the remaining 64 units would be constructed on Eglin AFB at a location to be determined by alternative selection.
  - Hurlburt Field has an estimated total of approximately 135 acres to accommodate approximately 1,610,120 square feet of housing units and associated additional surface area (see Figure 2-1), infrastructure, and ancillary facilities.
  - The Soundside Manor location, set aside at 4 units per acre, is approximately 31 acres; with a 20 percent reduction in available acreage to account for infrastructure, approximately 25 acres remain. As a result, under an optimal development scenario, approximately 100 units could be placed at this location at 4 units per acre.
  - At the Hurlburt Field Family Camping Facility (FAMCAMP) area (20 acres) and Pine Shadows (85 acres) locations, given the 20 percent reduction in area available for units associated with infrastructure needs, there would be approximately 16 acres at the FAMCAMP location and 68 acres at Pine Shadows remaining for unit construction. As a result, the maximum number of units (6 units per acre) that could be placed in the FAMCAMP location would be 96, and the maximum number that could be placed at Pine Shadows would be 406; this represents the optimal development scenario for these two parcels.

- The following additional nonresidential facilities would be conveyed to the developer "as is" at Hurlburt Field: two recreational courts, seven playgrounds, 10 bus shelters, two boat docks and the seawall at Soundside Manor, the Housing Maintenance Facility and office, and the laundry/latrine building at the FAMCAMP location.
- The existing FAMCAMP would be relocated to the southwest of existing Commando Village along Martin Luther King Boulevard (State Road [SR-] 189) (Figure 2-4).

  The proposed FAMCAMP area is approximately 13 acres; conceptual site development calls for 50 recreational vehicle spaces, a new bath house, asphalt roadway, stormwater retention, and an access point along SR-189.

- Camp Rudder:
  - At Camp Rudder, all 25 existing housing units could be demolished and 35 new housing units may be constructed within the existing housing area.
    - The Camp Rudder location (Figure 2-5) has approximately 10 acres available to accommodate approximately 124,175 square feet of housing units and associated additional surface area (see Table 2-1), infrastructure, and ancillary facilities. While this area may be developed at densities between 4 and 6 units per acre, for purposes of analysis it is assumed that this location would be developed at 6 units per acre to represent the optimal development scenario.
- Eglin AFB:
  - The Air Force would convey five housing units and a separated garage at Georgia Avenue and four housing units (including a guest house as part of the GOQ) at Camp Pinchot to the developer. Other aspects at Camp Pinchot to be conveyed include: tennis court, three garages, a storage building, a kitchen, guest house, car port, sea wall, boat house and dock, water pump house and storage tank, portable generator, and security gate. The conveyance documents would include a deed restriction requiring that the developer's interest terminate when suitable replacement housing units are constructed. Once replacement units are constructed the developer will return to the Air Force the historic buildings at Georgia Avenue and Camp Pinchot. Subsequently, Eglin AFB will determine the future of the historic buildings. Should the Air Force propose any action that may result in an adverse effect, Eglin AFB will resolve the adverse effect through National Historic Preservation Act Section 106 and 110 consultation and either amend the MHPI Programmatic Agreement or develop a separate agreement document.

Figure 2-4. Proposed FAMCAMP Area at Hurlburt Field

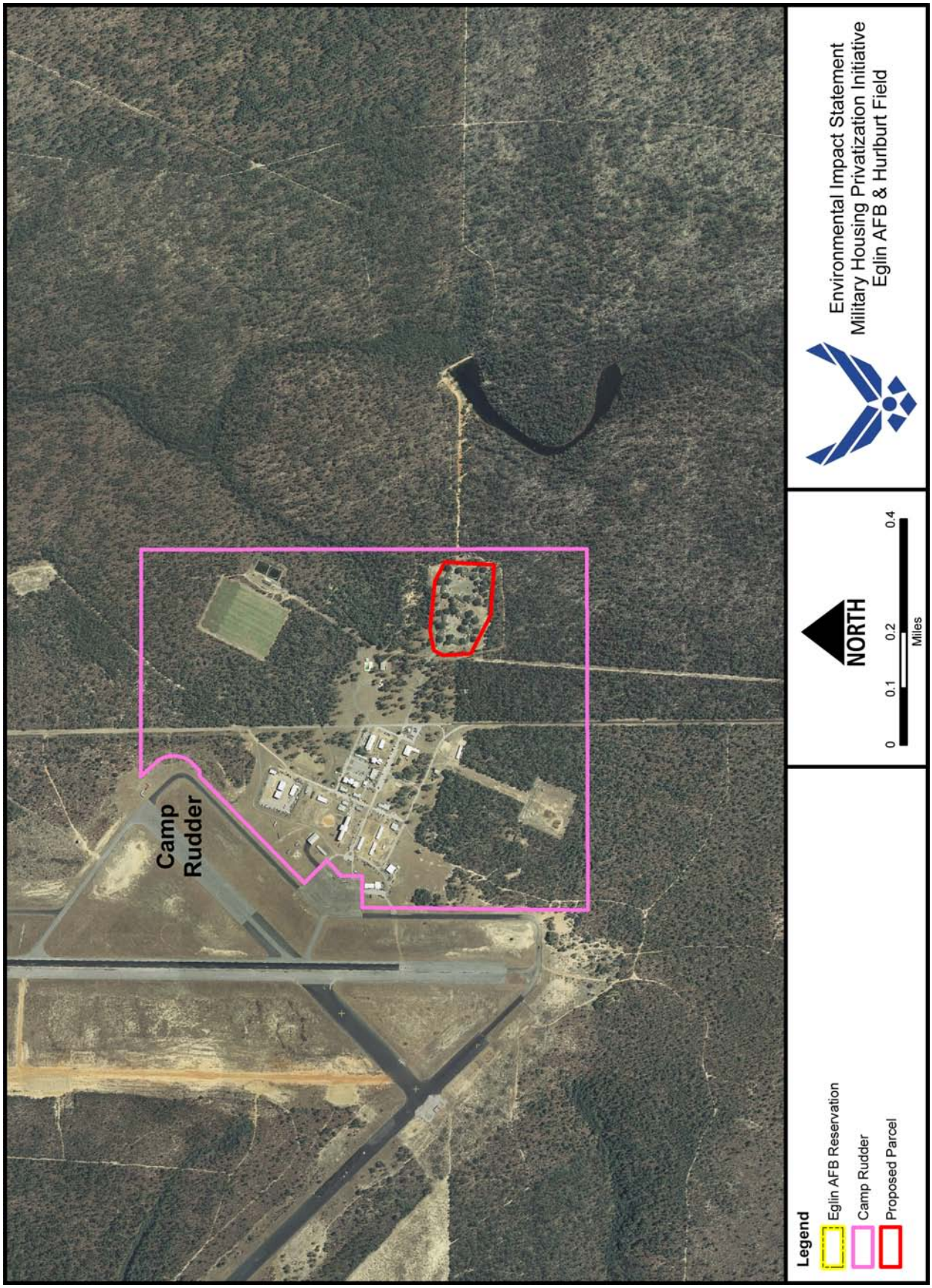

Figure 2-5. Camp Rudder Housing Area

- The total estimated acreage available at Eglin AFB to accommodate approximately 3,137,100 square feet of housing units and associated additional surface area (see Table 2-1), infrastructure, and ancillary facilities varies depending on alternative. Each location would be developed at densities between 4 and 6 units per acre. For purposes of analysis, the optimum development scenario of 6 units per acre was utilized for each parcel.
- The following additional nonresidential facilities would be conveyed to the developer "as is" at Eglin AFB: 16 playgrounds, the Housing Maintenance Facility and office, two housing supply and storage facilities, recreational vehicle storage area, grounds facility, and basketball court on Loblolly Drive.

The site development design at both installations would integrate the new housing community, to the extent practicable, with the surrounding community. The site development design would create a network of neighborhoods within the community by creating a full range of compatible private and shared recreation and community-desired facilities, and would provide efficient and separate vehicular and pedestrian traffic patterns. The design would identify constraints such as easements, drainage, and offensive environments (i.e., blight, bright lights, and loud noises) to ensure activities within and surrounding the site are compatible. The site design would provide for common green spaces with native landscaping; recreational areas; appropriate buffer area/screening; street lighting; pedestrian and vehicular circulation; and sidewalks on both sides of the street. These site designs would be consistent with good land use planning, practices, and economics, and would incorporate green space, landscaping, underground utilities, and recreation areas.

Construction and demolition of the proposed housing units would be phased throughout the initial development period of the project (i.e., a certain number of units would be constructed and demolished each year). In addition, it is expected that the housing would be renovated or replaced at mid-project around timeframe approximately 25 to 30 years after project closing. The Air Force-selected developer would identify the exact phasing of the project, so it is unknown at this time how the phasing would be conducted. Table 2-2 provides an estimated timeline scenario for the Proposed Action. The timeline scenario is based on the assumption that all activities would be completed within five years of project initiation, with 40 percent of demolition and construction activities completed within the first year, and 15 percent per year thereafter. While it is possible that the developers would submit a more aggressive schedule, it is unlikely that difference would result in environmental impacts significantly different from those presented in the Air Force's scenario. However, should there be such a difference, the Air Force would consider the necessity of supplemental environmental documentation in accordance with the National Environmental Policy Act (NEPA).

Table 2-2. Projected Timeline Scenario for Housing Demolition and Construction Activities Under the Proposed Action

Activity	Estimated Total Gross Square Footage/Project Year*					Total
	1	2	3	4	5	
Demolition	1,531,653	574,370	574,370	574,369	574,369	3,829,132
Construction	1,948,558	730,709	730,709	730,709	730,709	4,871,395

* Includes housing units, impervious surface area, and recreation and support facilities.

Offerors may achieve the Proposed Action end-state through a combination of demolition and construction that is different from the combination described above. For the purposes of analysis the optimal development scenario for each parcel has been assessed to identify potential issues that could arise from a combination of several different possible development proposals.

2.2 ALTERNATIVES CONSIDERED BUT NOT CARRIED FORWARD

Throughout the alternative development process, several potential alternative locations were identified and considered, but the continued evaluation of these areas with respect to the MHPI objectives resulted in the elimination of these locations due to their inability to meet the purpose and need of the Proposed Action.

As an example, areas outside the Eglin AFB Reservation boundary, such as the Crestview and Florosa areas, were initially considered for potential development as they fell within the 60-minute commute objective. However, given the financial constraints of the Eglin AFB/Hurlburt Field MFH privatization effort, the purchase of non-federal property is not financially feasible. In addition, the Air Force does not consider "land-swapping" with private landowners a viable option, as Eglin AFB has no "surplus" property to utilize for such purposes. Accordingly, the Air Force identified the need to utilize Eglin AFB property as an objective, which eliminated privately held land as an alternative.

The Air Force considered utilization of the former Bayou Village Mobile Home Park on Eglin AFB Main Base. However, the majority of the site is within the 100-year floodplain and does not meet the avoidance of wetlands/floodplains objective.

The Air Force considered construction of new homes on Hurlburt Field north of U.S. Highway 98 (US-98) at Live Oak Terrace but did not carry this option forward due to Hurlburt Field's overcrowded mission and the need to support future expansion of existing and future missions (U.S. Air Force, 2005a). According to the *Hurlburt Field General Plan*, the Air Force has designated this area for base administrative and support areas. Specifically, plans for this area includes expansion of temporary lodging facilities and construction of a new child development center, 1st Special Operations Contracting Squadron facility, Airmen Leadership School, library/education center, and billeting

facility (U.S. Air Force, 2002a). Therefore, this area would not support housing under the current *General Plan*.

The Air Force considered two parcels in the Crestview Park/Duke Field area: Parcel 1 (303 acres) and Parcel 2 (265 acres). The area is approximately 1 mile northwest of Duke Field, with the parcels split west and east of SR-85, respectively, and just south of the Yellow River along the northern border of the Eglin Reservation. This area was initially identified as a potential development location during the alternative development process and was listed during the public scoping process as a potential alternative. However, closer scrutiny by weapons release and range safety offices indicated that while the proposed parcels would not have been directly under flight paths of self guided munitions, it would place them in the last safety buffer for emergency self destruct of a run-away munition before it left Eglin. Safety of potential residents was the primary concern, especially in the event a member of the general public became a resident. Weapons safety guidelines require a safety margin when dealing with public safety. The areas ultimately failed to meet the safety margin required by Eglin live fire tests. As a result, the Air Force determined that this location does not meet the established objectives for housing and is not being carried forward as a viable alternative.

Four parcels in the Eglin Northeast area were also considered but eliminated by the Air Force. The area is located approximately 1 mile southeast of Mossy Head, Florida, inside the northeastern Eglin Reservation border. The four parcels were 824 acres, 475 acres, 506 acres, and 654 acres, respectively. This area was initially identified as a potential development location during the alternative development process and was listed during the public scoping process as a potential alternative. However, after further review, it was determined that development of housing at this location would conflict with low level routes and the missile corridor, having an adverse impact on test and training missions on the Eglin range. As a result, the Air Force determined that this location does not meet the established objectives for housing and is not being carried forward as a viable alternative.

2.3 ALTERNATIVES CARRIED FORWARD

Potential Development Locations

Through evaluation of the Eglin AFB and Hurlburt Field land area as described in Section 1.2, the Air Force identified the following areas as meeting MHPI objectives (Figure 2-2):

- White Point Area – This area is comprised of seven parcels: Parcel 1 (49 acres); Parcel 2 (86 acres); Parcel 3 (49 acres); Parcel 4 (56 acres); Parcel 5 (82 acres), Parcel 6 (25 acres), and Parcel 7 (70 acres). The area is located at White Point along the coastline of Choctawhatchee Bay south of Niceville, Florida, adjacent to SR-20.

- **Eglin Main Base/Valparaiso Area** – This area consists of eleven parcels. Parcel 1 is approximately 673 acres and is located in the southwest corner of Eglin Main Base adjacent to the New Plew housing area. While the entire 673 acres would be leased to the developer, only approximately 661 acres would be utilized for construction; a 40-foot buffer (about 12 acres) would be placed between the housing area and the southern and western Eglin Main Base boundary to allow for a vegetated buffer between the privatized housing and neighboring public property. Parcel 2 (29 acres); Parcel 3 (8 acres); Parcel 4 (16 acres); Parcel 5 (2 acres); Parcel 6 (4 acres); Parcel 7 (7 acres); and Parcel 8 (21 acres) are located along the northeast border of Eglin Main Base, near the East Gate and adjacent to Valparaiso. Parcels 9 (212 acres – existing Capehart housing area), 10 (94 acres – existing Wherry housing area), and 11 (6 acres – currently undeveloped) are located east of Parcel 1 on Eglin Main Base.
- **North Fort Walton Beach Area** – This area consists of five parcels: Parcel 1 (formerly the "Camp Pinchot Expansion Area," 249 acres); Parcel 2 (74 acres); Parcel 3 (51 acres); and Parcels 4 and 5 (formerly part of the "Poquito Bayou Expansion Area," 72 and 11 acres, respectively). The Camp Pinchot Historic District is not included in this area. Parcel 1 is located adjacent to the Camp Pinchot Historic District and is bordered on the west by SR-189. For Parcel 1, approximately 199 acres of the total 249 acres would be utilized for construction, while 49 acres would be maintained as a buffer area between the shoreline and the housing development on the eastern side (laying within storm surge category 1–4), with an additional vegetative buffer of approximately 100 feet between the housing development and the Camp Pinchot Historic District and associated entryway, as well as the southern and western boundaries. Parcels 2 and 3 are located along the southern Eglin Reservation boundary in north Fort Walton Beach just north of SR-189, approximately 1 mile west of Parcel 1. Parcels 4 and 5 are located just north of the existing Poquito Bayou housing area.

Each alternative begins by first incorporating the commonalities as described under Section 2.1, then identifying the maximum number of potential units the developer could construct within a new or existing housing area at 6 units per acre such that each area would be developed to the optimal density possible. Due to the varying densities and sizes of potential development locations, as well as the diverse number of parcels associated with each area, the alternatives represent the largest potential development for each area.

Since it is unknown at this time how a developer would choose to develop a particular area (or combination of areas), it would be impractical to try and assess the potential maximum development of each individual parcel within each area. Alternatives are therefore based on development of the area as a whole, with subsequent impact analyses based on identification of impacts, issues, and constraints associated with individual parcels within each area, while still addressing development of the entire area. This provides a reasonable representation of the potential impact that could be experienced at each location from an optimal development scenario, with the notion that if a particular area is developed to a

lesser extent than that analyzed the impacts would be reduced accordingly. As a result, the alternatives differ primarily in the location and number of units that could be constructed within each housing area. The selected proposal will be evaluated to determine whether it is within the scope of analysis presented in this EIS. Should there be potential for impacts from a selected proposal outside the scope of analysis within this EIS, a supplemental analysis may be required.

2.3.1 No Action Alternative

The Council on Environmental Quality regulations (40 Code of Federal Regulations Section 1502.14(d)) require the alternatives analysis in the EIS to "include the alternative of no action." "No action" in this case means that the Air Force would not implement the MHPI at Eglin AFB or Hurlburt Field. Instead, the Air Force would continue to manage/maintain and replace/upgrade MFH in accordance with existing Air Force policy and resources, which historically have been inadequate to maintain housing at acceptable levels. As requirements are identified, they would be evaluated through the NEPA process for potential environmental impacts. The No Action analysis provides a benchmark, enabling the Air Force decision maker to compare the magnitude of environmental effects of the action alternatives.

To this end, under the No Action Alternative, presently ongoing and reasonably foreseeable future actions must be identified and addressed on housing areas as they exist today and would likely exist under the No Action Alternative, because that scenario represents impacts to existing housing without the influence of MHPI. Conversely, the projects identified here would be addressed under cumulative impacts with respect to the combination of the proposed MHPI project *and* ongoing and reasonably foreseeable future actions.

The description of the "No Action" alternative was developed by evaluating predictable actions that would occur even if the MHPI is not implemented. As an example, the majority of activities associated with the MHPI consist of demolition and construction activities, and similar activities under other projects may occur under the No Action Alternative. However, other actions such as ground training activities may occur under the No Action Alternative and would have no bearing on MHPI. Consequently, actions that would have no bearing on MHPI are not included in the No Action Alternative. As a result, comparison of the No Action Alternative to the Proposed Action alternatives can be specifically tailored to relevant actions.

Present/Ongoing Relevant Changes in Personnel and Facilities/ Infrastructure

While these are only actions that have been currently approved by Eglin AFB through 2010, they are representative of the types of actions that are expected to occur over time. There would likely be other minor personnel (less than or equal to 50) changes that have not yet been identified. These would be the result of new or expanded programs

to support existing missions and would likely involve the renovation or expansion of existing facilities on Eglin AFB.

2005 Base Realignment and Closure (BRAC) Decisions at Eglin AFB. An MHPI No Action decision would not affect the actual BRAC decisions regarding locating and training additional military missions at Eglin AFB. However, the MHPI No Action would result in insufficient housing to accommodate the BRAC personnel. On 8 September 2005, the 2005 Defense Base Closure and Realignment Commission (DBCRC) completed its review of initial BRAC recommendations made by the Secretary of Defense and forwarded a Final Report with a list of recommended base closures and realignments to the President (DBCRC, 2005). The President approved the Commission's recommendations and forwarded them to Congress. Since Congress did not disapprove the recommendations within the time period provided under law, the recommendations are required by law to be implemented. Therefore, those 2005 BRAC recommendations associated with Eglin AFB must be implemented as stated in the Final Report without any deviation or consideration of alternate locations. BRAC actions at Eglin AFB currently being implemented include:

- Relocating the 7th Special Forces Group (Airborne) (7SFG(A)) to Eglin AFB from Fort Bragg, North Carolina
  - Relocation is anticipated to bring approximately 6,000 people to the area (including personnel and family members).
  - The 7SFG(A) is currently constructing a Special Operations Forces Compound, which will contain the cantonment area or main base for the 7SFG(A), including approximately 30 facilities and associated infrastructure. Total square footage of construction is expected to be approximately 3,000,000 over approximately 300 acres.
  - The 7SFG(A) will construct 13 new weapons training ranges over approximately 1,000 acres.
- Establishing a Joint Strike Fighter (JSF) Initial Joint Training Site (IJTS).
  - Relocation The JSF IJTS would bring nearly 5,000 new people associated with the IJTS to the area (including personnel and family members).
  - A ROD signed in February 2009 allows 59 F-35 aircraft by 2016. (This action is being evaluated in a separate NEPA document).
  - The JSF Program anticipates that the IJTS would require approximately 200 acres and approximately 23 buildings that would require either renovation of existing facilities or new construction. Depending on the alternative selected, establishing the IJTS would involve:
    - Facility renovation up to 581,670 square feet.
    - New construction of buildings and roadways up to 3,386,316 square feet.

- Additional 506,000 square feet of road construction.
- 1,410,658 square feet of renovation to the West Apron and 1,006,000 square feet of road and pavement renovation.

State Road Improvements. Currently, the Florida Department of Transportation is upgrading part of SR-85 from four to six lanes. This project will affect the stretch of highway from General Bond Boulevard to SR-123 and its interchange at the Okaloosa County Regional Airport. Other projects currently underway or in the planning stages included widening SR-123, developing a Mid-Bay Bridge connector road and Mid-Bay Bridge toll booth, a SR-85 overpass near Duke Field/7SFG(A) cantonment area, and improved access to Camp Rudder, which may involve upgrading (re-engineering, design, bridges, straightening and security upgrades) Range Road 211 or building a bridge across Shoal River north of Camp Rudder. U.S. Highway 331 is also being evaluated for a widening project.

Reasonably Foreseeable Relevant Changes in Personnel and Facilities/Infrastructure

Florida Army National Guard (FLARNG). The FLARNG has requested that Company C, 3rd Battalion, 124th Infantry, which currently trains at Eglin AFB, be relocated from Panama City, Florida, to Eglin AFB. Information was provided by the Air Base Wing Planning Office regarding the proposed FLARNG beddown at Eglin (Talley, 2007). FLARNG submitted a formal beddown request (December 2002) with the following initial notional requirements:

- 5 officers, 155 enlisted, 0 civilians
- 3 full-time support personnel
- Approximately 25,000 square feet of facilities (drill hall, offices, weapons vault, etc.)
- Parking for 100 personal vehicles covering approximately 25 acres
- Subsequent to the initial request (January 2004), the FLARNG changed their request of 25 acres to 3 to 5 acres on the cantonment to build a permanent facility of approximately 2,400 square feet to house three to five full-time support personnel. They requested 2,600 square feet for warehouse storage for their 136-member unit, 5,500 square feet of paved parking for vehicles, and 328 square feet for an arms vault with secure fencing. Eglin recommends that building 30 be provided as a temporary facility, with a later evaluation of a permanent beddown.

U.S. Army Corps of Engineers. The Department of the Army requested to relocate the Gulf Coast Area Office, located in Shalimar, Florida, and co-locate with the Eglin Resident Office on base in building 50519. The Gulf Coast Area Office manages the military construction (MILCON) programs for Eglin AFB, Tyndall AFB, and Hurlburt Field. The Eglin Resident

Office manages the MILCON contracts at Eglin AFB, Duke Field, and Santa Rosa Island. Co-locating the two offices would enable more timely support to Eglin projects and would allow economies of scale, thus reducing the cost of doing business. No information is available on the number of personnel to be relocated onto base.

Air Force Cost Analysis Agency (AFCAA). To improve the Air Force cost analysis capability, the Air Force proposed establishing a new satellite office for the AFCAA in building 11 at the Air Armament Center.

Eglin Plan. Based on review of the Eglin Facility Requirements Database, there are more than 50 planned MILCON projects planned beyond Fiscal Year 2010 at Eglin AFB (Main Base and Duke Field) with a total of more than approximately 2,000,000 square feet. Major projects include:

- *Precision Measurement Equipment Facility.* On Eglin AFB there are plans to build a new 28,330-square-foot Precision Measurement Equipment Laboratory Facility for the 46th Maintenance Squadron Test, Measurement, and Diagnostic Equipment Flight to the east of building 613, off Eighth Street. In addition to the facility, construction would include a stormwater retention pond or swales.
- *Ground Combat Training School (GCTS).* Future plans to develop the area north of the intersection of SR-189 and SR-85 as the new location for GCTS. The new GCTS location will include administrative offices, classrooms, barracks, and storage buildings as well as training field areas.
- *Flightline Fire Station.* There are plans to construct a new crash/ fire/administration station on Eglin AFB. The new fire station will be located on the 33rd Fighter Wing side of the flight line. It will house fire/rescue personnel as well as fire administration staff.
- *Fitness Center.* There are plans to construct a new fitness center on Eglin AFB. The fitness center will include cardio and weight areas, administration, multi-purpose courts, a pool, elevated track, and locker rooms. The new fitness center will be located north of the current fitness center location on Main Base.
- *Dormitory Replacement.* A complete replacement of the bachelor dorms on Main Base is underway. One dorm building has been replaced with three other buildings to be replaced in the future. A total of approximately 750 rooms will be new when construction is complete.
- *Construct Perimeter Fence.* There are plans to install a new perimeter fence so that the hospital and facilities west of Ben's Lake will be outside the fence. The fence will start on Pinchot Road just south of the Visitor's Center behind the knee wall and run south ending on the shore of Ben's Lake just south of Memorial Trail. Pinchot Road and Boatner Road will be outside the fence. The two new Child Development Centers (CDCs) will be inside the fence at a minimum distance of 148 feet.

Hurlburt Field General Plan. The plan identifies more than 50 transportation and capital improvement projects (U.S. Air Force, 2002a) over the next seven years. These projects include demolition and new construction of facilities and roadways on Hurlburt Field. Specific information on each project and the potential impacts associated with the *General Plan* can be found in the *Environmental Assessment for the Hurlburt Field General Plan* (U.S. Air Force, 2005a).

Reasonably foreseeable facilities planned outside Eglin Main Base on the Reservation would include:

- *Emerald Coast Resort.* A resort is being planned to benefit Active Service Members and their families, retirees, Department of Defense (DoD) employees and families, and the general public as a recreation resort and commercial complex. The resort will be located at Eglin Test Site A-5 on Santa Rosa Island. The resort will be a multi-floor, commercial, office and parking lot space. Also included could be a personnel "Walk over" from the resort to the existing Okaloosa Convention Center, directly across US-98.

Development of a Biomass Renewable Energy Facility. The proposed biomass energy plant requires approximately 30 acres near the Alternative 3 location, and will produce an estimated 30 megawatts of electricity daily. Of the overall acreage, the plant facility will require approximately 24,000 square feet; the fuel source stock area will require approximately 9 acres; the remainder is utilized for roadway, parking, administrative, and storage space. The facility is proposed to assist Eglin AFB meet DoD goals for renewable energy.

Developments of Regional Impact (DRIs). Review of the active West Florida Regional Planning Council DRIs within the MHPI region of influence includes Contrada Hills (formerly Jubilee) in Santa Rosa County.

Destin/Fort Walton Beach Airport Construction Projects. The Destin/Fort Walton Beach Airport is planning many new construction projects over the next few years. Plans include constructing an air traffic control tower, overlaying the runway with asphaltic concrete, installing an approach lighting system for Runway 32/14, and installing a global positioning system approach and acquiring a strip mall for a south approach.

DeFuniak Springs Airport Projects. At the DeFuniak Springs Airport new overlaying for the taxiway has been completed. Upcoming projects include constructing an apron and expanding an apron, expanding the taxiway and constructing T-hangars, installing guidance signs, and constructing additional terminal parking and terminal facility expansion.

2.3.2 Alternative 1: White Point Area

Under this alternative (Figure 2-6, Figure 2-7, and Figure 2-8) the Air Force would conduct the following activities:

- Implementation of all commonalities described in Section 2.1 to include:
  - Initial conveyance of up to 1,413 housing units at Hurlburt Field, Camp Rudder, and Eglin AFB.
  - Once suitable replacement units are constructed, return of the Camp Pinchot Historic District and the Georgia Avenue historic buildings to the Air Force for uses other than housing.
  - Demolition of up to 1,404 housing units: 25 at Camp Rudder; 150 at Poquito Bayou; 849 at Eglin Main Base; and 380 at Hurlburt Field.
  - Conveyance of various nonresidential facilities at both Hurlburt Field and Eglin AFB.
  - Construction of 484 new units at Hurlburt Field and 35 new units at Camp Rudder.
  - Construction of an 8,000-square-foot community center/clubhouse at both Eglin and Hurlburt.
- Construction of up to 958 housing units (894 units for Eglin AFB, 64 units for Hurlburt Field) on Eglin AFB utilizing a combination of several parcels within the White Point Area.

2.3.3 Alternative 2: Eglin Main Base/Valparaiso

This alternative would involve the same commonalities as described under Alternative 1, except that construction of up to 958 housing units on Eglin AFB would utilize one or a combination of several of the Eglin Main Base and Valparaiso parcels (Figure 2-6, Figure 2-7, and Figure 2-9). While for Parcel 1 a total of 673 acres may actually be leased, approximately 661 acres are available for development at this parcel. For Parcels 2–11, approximately 399 acres may be leased and developable at these parcels.

2.3.4 Subalternative 2a: Eglin Main Base (Preferred Alternative)

This alternative would involve the same commonalities as described under Alternative 1, except that construction of up to 993 housing units on Eglin AFB (958 units plus 35 units not constructed at Camp Rudder) would utilize only Alternative 2's Parcel 1 (Figure 2-6, Figure 2-7, and Figure 2-10). As stated previously, a total of 673 acres may actually be leased for Parcel 1, but approximately 661 acres are actually available for development at that parcel.

2.3.5 Alternative 3: North Fort Walton Beach Area

This alternative would involve the same commonalities as described under Alternative 1, except that construction of up to 958 housing units on Eglin AFB would utilize a combination of several parcels within the North Fort Walton Beach Area (Figure 2-6, Figure 2-7, and Figure 2-11). While the total amount to be leased would be

approximately 457 acres, approximately 49 acres of the total area would be used as buffer space at Parcel 1. As a result, only about 408 acres would actually be available for development.

2.3.6 Alternative 4: Mix Alternative

This alternative would involve construction of up to 958 housing units on Eglin AFB through utilization of a combination of parcels within any of the areas identified in Alternatives 1–3.

2.4 ALTERNATIVE SUMMARY

Table 2-3 (on page 2-29) provides a summary of project activities.

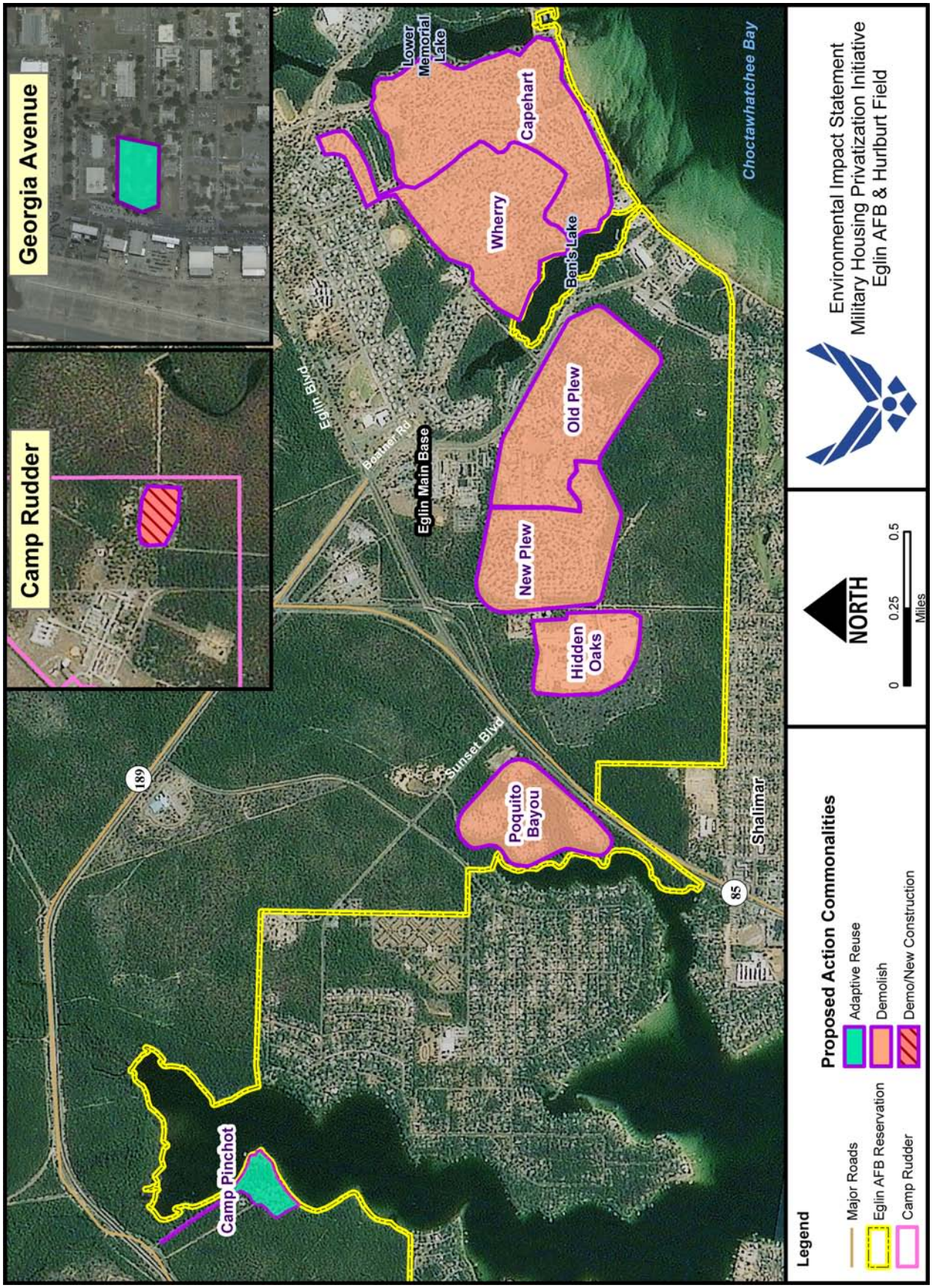

Figure 2-6. Proposed Action/Commonalities at Eglin AFB

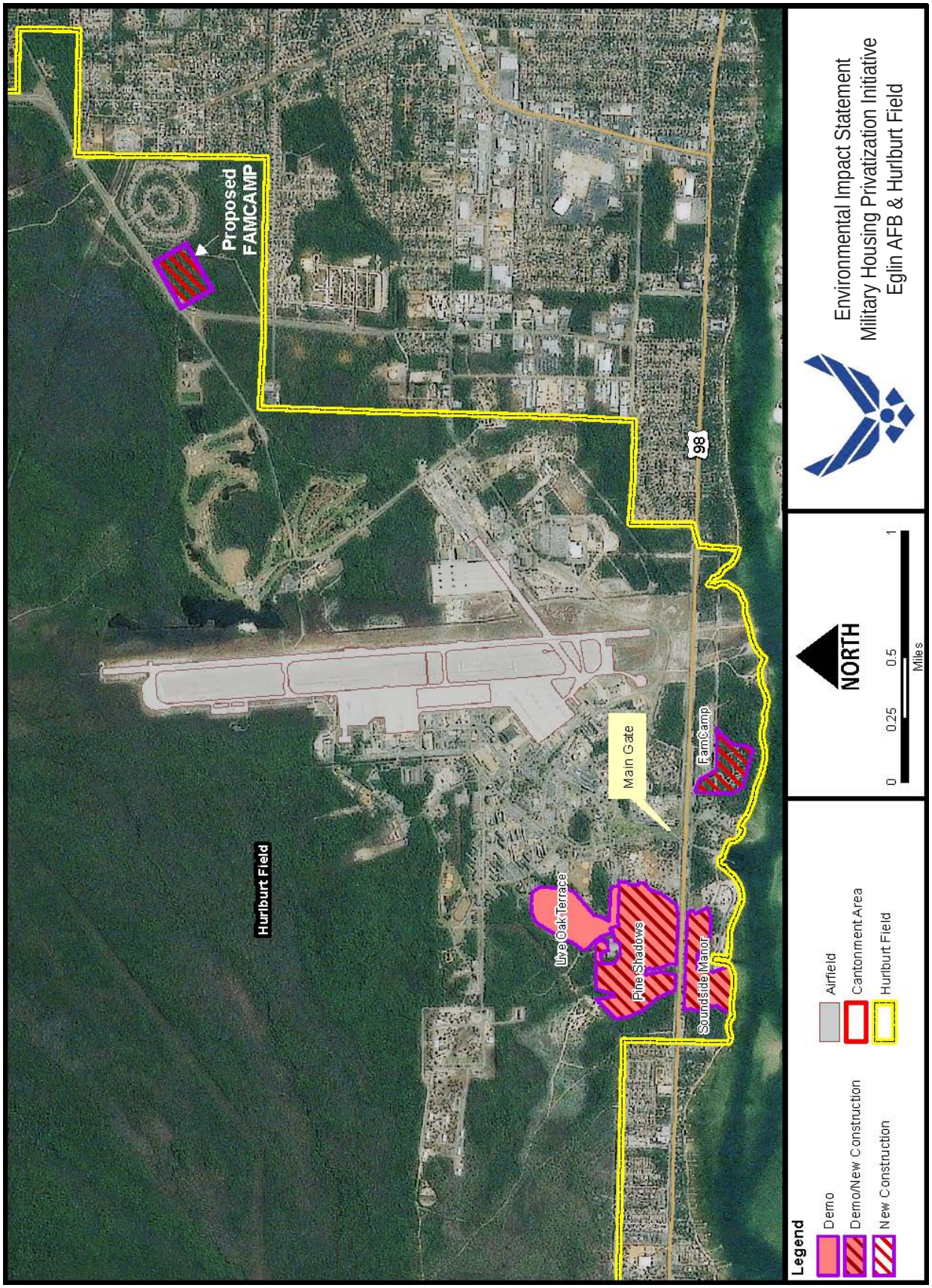

Figure 2-7. Proposed Action/Commonalities at Hurlburt Field

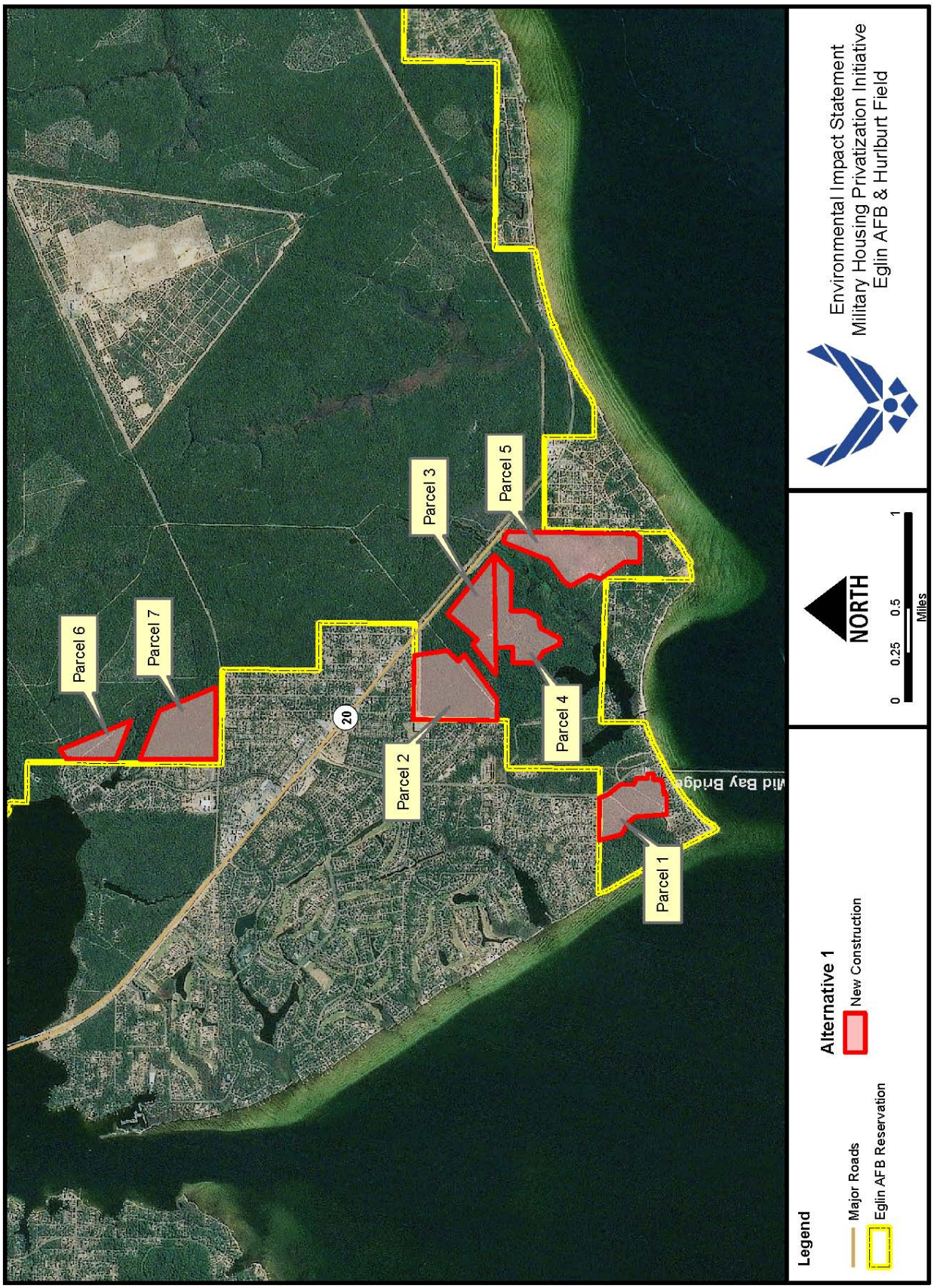

Figure 2-8. Alternative 1 – White Point Area

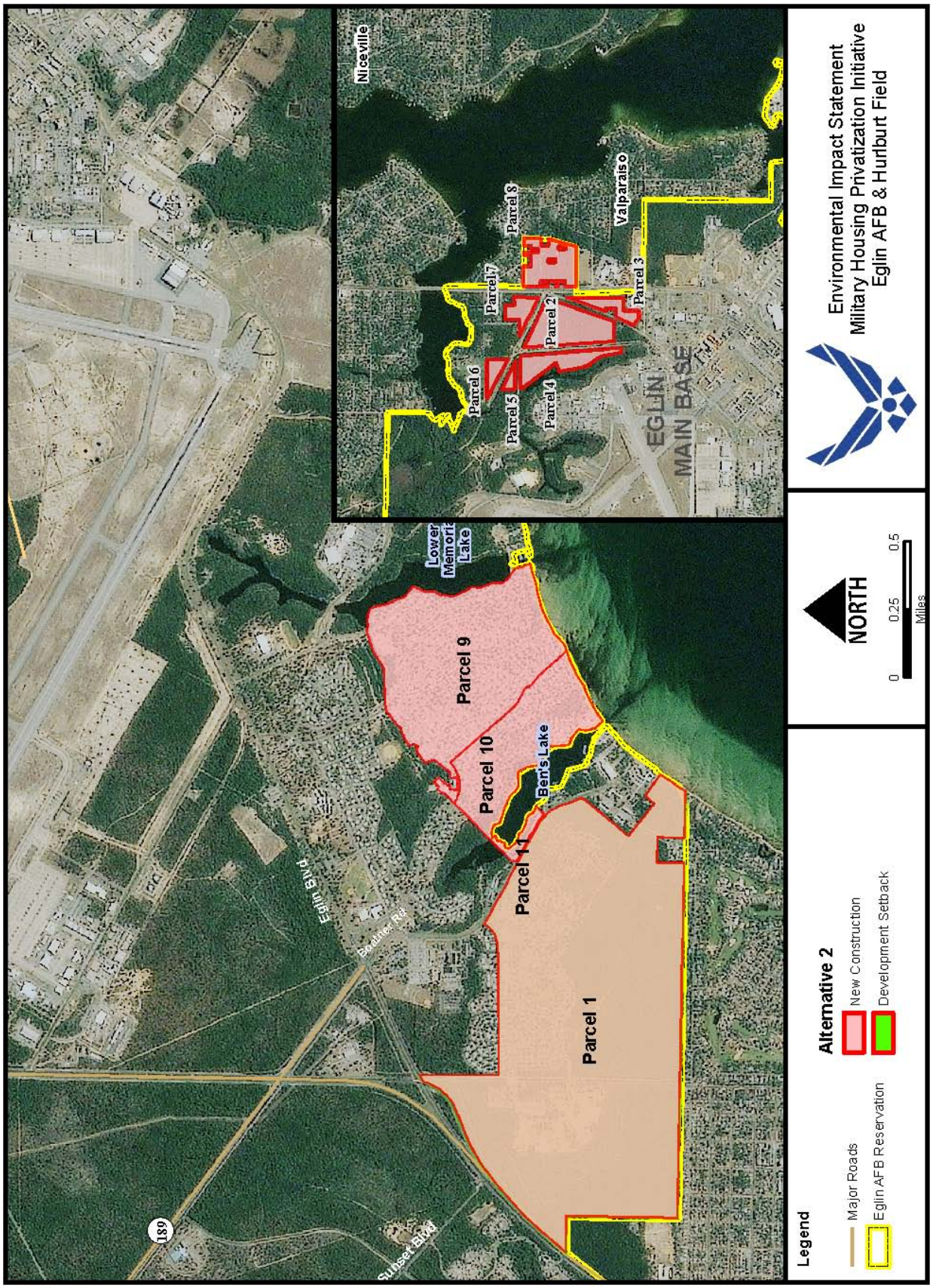

Figure 2-9. Alternative 2 – Eglin Main Base/Valparaiso Area

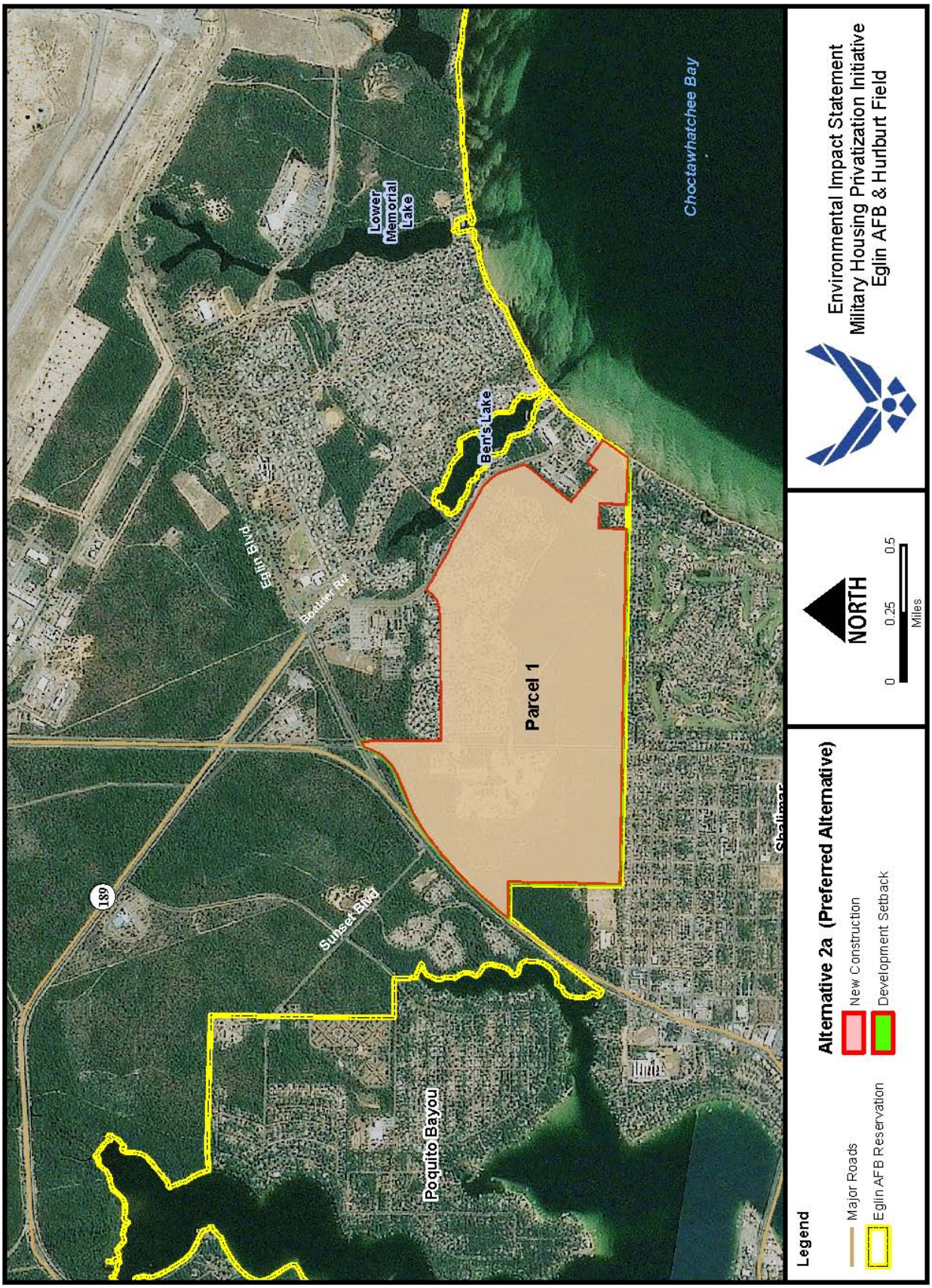

Figure 2-10. Subalternative 2a (Preferred Alternative) – Eglin Main/Valparaiso Area Parcel 1

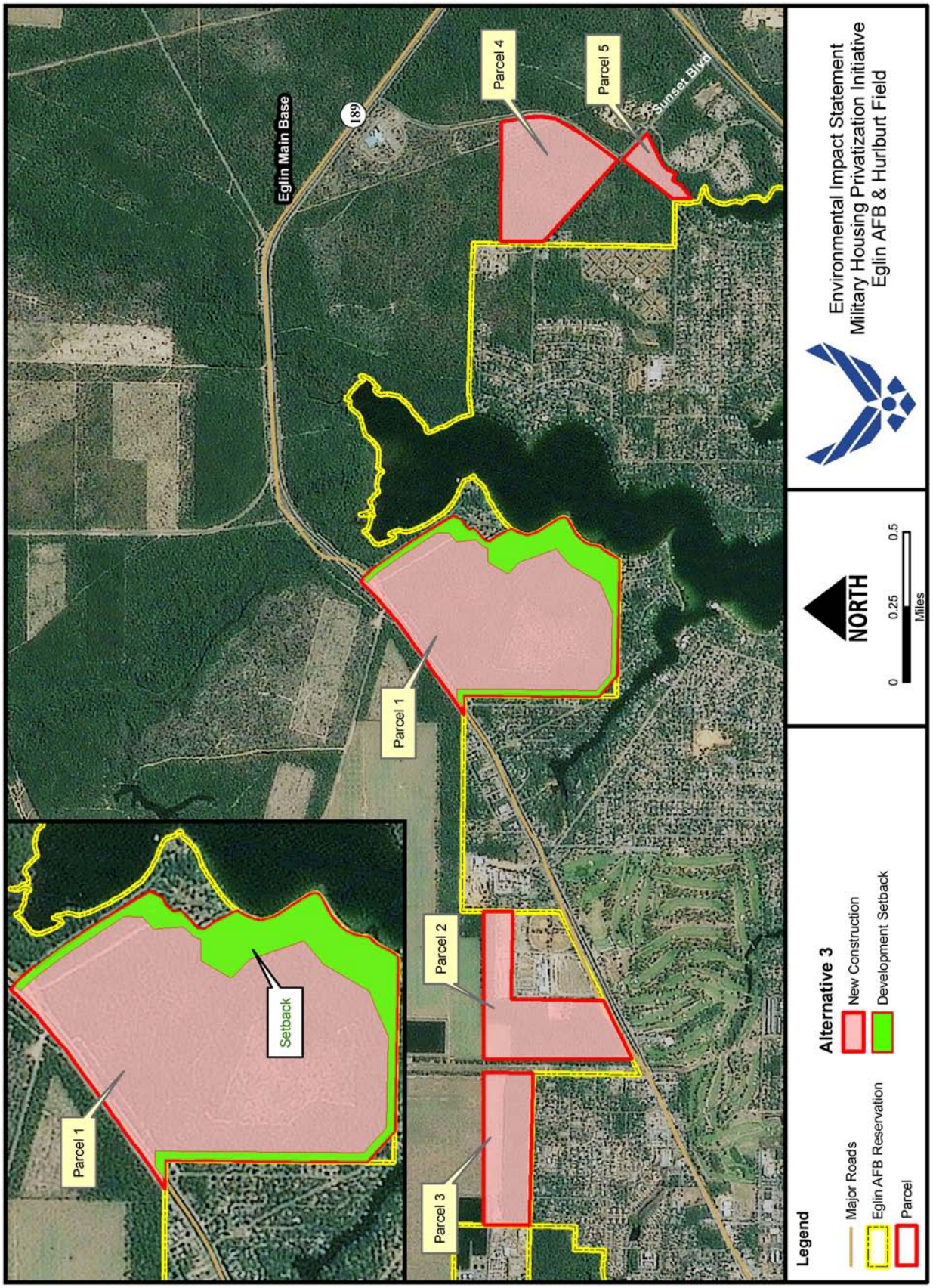

Figure 2-11. Alternative 3 – North Fort Walton Beach Area

Table 2-3. Description of Proposed Project Activities

Parcel		Current Number of Units	Year Built	Commonalities			Max # Units Potentially Constructed*	
Name	Acres			Action for Current Units	# Units Demolished (minimum)	# Units Renovated	Common	Alternative Specific
Eglin AFB								
Wherry Capehart	306	479	1951–1958	Demolition	479	0	0	
Georgia Avenue	3	5	1943	Return to Air Force	0			
Hidden Oaks	651	126	2001	Demolition	126			
Old Plew		58	1966–1968	Demolition	58			
New Plew		186	1968	Demolition	186			
Poquito Bayou	91	150	1976	Demolition	150			
Camp Pinchot	15	4	1912–1940	Return to Air Force	0			
Camp Rudder	10	25	1975	Demolition	25		35	0
Total	**1,076**	**1,033**	**N/A**		**1,024**		**35****	**0**
White Point Area	416	0	N/A					958/993*** (894/929 for Eglin) (64 for Hurlburt)
EMB/ValP Area	1,072							
NFWB Area	457							
Hurlburt Field								
Live Oak Terrace	35	110	1957 & 1976	Demolition	110	0	0	
Pine Shadows	85	196	1957		196		484	0
Soundside Manor	31	74	1957 & 1997		74			
FAMCAMP	20	0	N/A	N/A	N/A			
Total	**171**	**380**	**N/A**		**380**	**0**	**484**	**0**
Overall Totals	***N/A***	***1,413***			***1,404***	***0***	***519***	***958***
Total End State (current units (1,413) – return to Air Force (9) – demolition (1,404) + new construction (1,477))							***1,477 Units***	

Source: Eglin AFB and Hurlburt Field Housing Offices, 2010

*Numbers represent the optimal development scenario at each location based on desired features in the privatization RFQ and are for planning purposes only; actual numbers of units and distribution may vary depending on proposals offered by developers. Existing FAMCAMP would be relocated near Commando Village on Hurlburt Field as part of the Proposed Action. Additionally, the construction of a new FAMCAMP is a separate, but connected action.

** These units are common to all alternatives except Subalternative 2a; ***993 units under Subalternative 2a to account for 35 not constructed at Camp Rudder.

EMB/ValP = Eglin Main Base/Valparaiso; NFWB = North Fort Walton Beach

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3. AFFECTED ENVIRONMENT

3.1 TRANSPORTATION

3.1.1 Definition of the Resource

Transportation infrastructure includes the public roadway network, public transportation systems, airports, railroads, pedestrian/bicycle facilities, and waterborne transportation. The Proposed Action will impact road segments in the public roadway network, access control points (ACPs or gates) to the bases, and the internal roadway systems of the bases. This section discusses impacts on the level of service (LOS) of public roadways and the impacts on internal base roadways and ACPs. LOS is a measure of a roadway's operational characteristics; in general, it reflects the amount of congestion and ease of use of a roadway segment by individual drivers.

Generally, the desired LOS for urban arterial roadways is LOS D or better, although short periods of time with LOS E or even LOS F are sometimes acceptable in urban areas. The Eglin and Hurlburt Transportation Plans include the programmed LOS for many roadway segments near Eglin AFB and Hurlburt. The Transportation Research Board's Highway Capacity Manual (HCM) (TRB, 2000) discusses the characteristics of urban arterial roadways and defines the LOS for urban roadways as follows:

> "LOS A describes free flowing traffic at average travel speeds, usually about 90 percent of the free flow speed for the given street class. Vehicles are completely unimpeded in their ability to maneuver within the traffic stream. Control delay at signalized intersections is minimal" (TRB, 2000). Drivers find the roadway relatively stress free.
>
> "LOS B describes reasonably unimpeded operation at average travel speeds, usually about 70 percent of the free flow speed. The ability to maneuver within the traffic stream is only slightly restricted, and control delays at signalized intersections are not significant" (TRB, 2000). Drivers begin to experience some stress driving the roadway.
>
> "LOS C describes stable operations however the ability to maneuver and change lanes in midblock locations may be more restricted than in LOS B, and longer queues, adverse signal coordination, or both may contribute to lower average travel speeds of about 50 percent of the free flow speed (FFS)" (TRB, 2000). Drivers find the roadway somewhat stressful to drive.
>
> "LOS D borders the range in which small increases in flow may cause substantial increases in delay and decreases in travel speed. LOS D may be due to adverse signal progression, inappropriate signal timing, high volumes,

or a combination of these factors. Average travel speeds are about 40 percent of FFS" (TRB, 2000). Drivers find the roadway stressful to drive.

"LOS E is characterized by significant delays and average travel speeds of 33 percent or less of the FFS. Such operations are caused by a combination of adverse progression high signal density, high volumes, extensive delays at critical intersections, and inappropriate signal timing" (TRB, 2000). Drivers find the roadway very stressful to drive.

"LOS F is characterized by urban street flow at extremely low speeds, typically one third to one-fourth of the FFS. Intersection congestion is likely at critical signalized locations, with high delays, high volumes, and extensive queuing" (TRB, 2000).

3.1.2 Affected Environment

The location of arterial roadways and ACPs are shown in Figure 3-1.

Using information provided in the Master Plan, the fiscal year (FY) 2008–2013 Florida Department of Transportation (FDOT) work program, the Okaloosa-Walton Transportation Planning Organization (OWTPO) Transportation Improvement Program (OWTPO, 2010a) and Long Range Transportation Plan (OWTPO, 2007) identify some road upgrades that will impact the roadway segments serving Eglin Main Base and Hurlburt Field.

The projects currently committed and programmed to being built include (HDR, 2008):

- Intersection improvements at General Robert M. Bond Boulevard (General Bond Boulevard) and State Road (SR)-189
- Improve SR-20 from two lanes to four lanes between Rocky Bayou Road and SR-293
- Improve SR-20 to add additional lanes between SR-293 and the Mid Bay Bridge Connector
- SR-85 upgrades to Okaloosa Regional Airport entrance
- Improve SR-85 from four to six lanes between south of General Bond Boulevard and north of the Okaloosa Regional Airport entrance
- Improve SR-85 with additional lanes between SR-397 and SR-85.
- Improve SR-85 with additional lanes between General Bond Boulevard and the Okaloosa Regional Airport
- Bicycle and pedestrian projects per the OWTPO Bicycle and Pedestrian Plan
- Intelligent Transportation System Master Plan projects

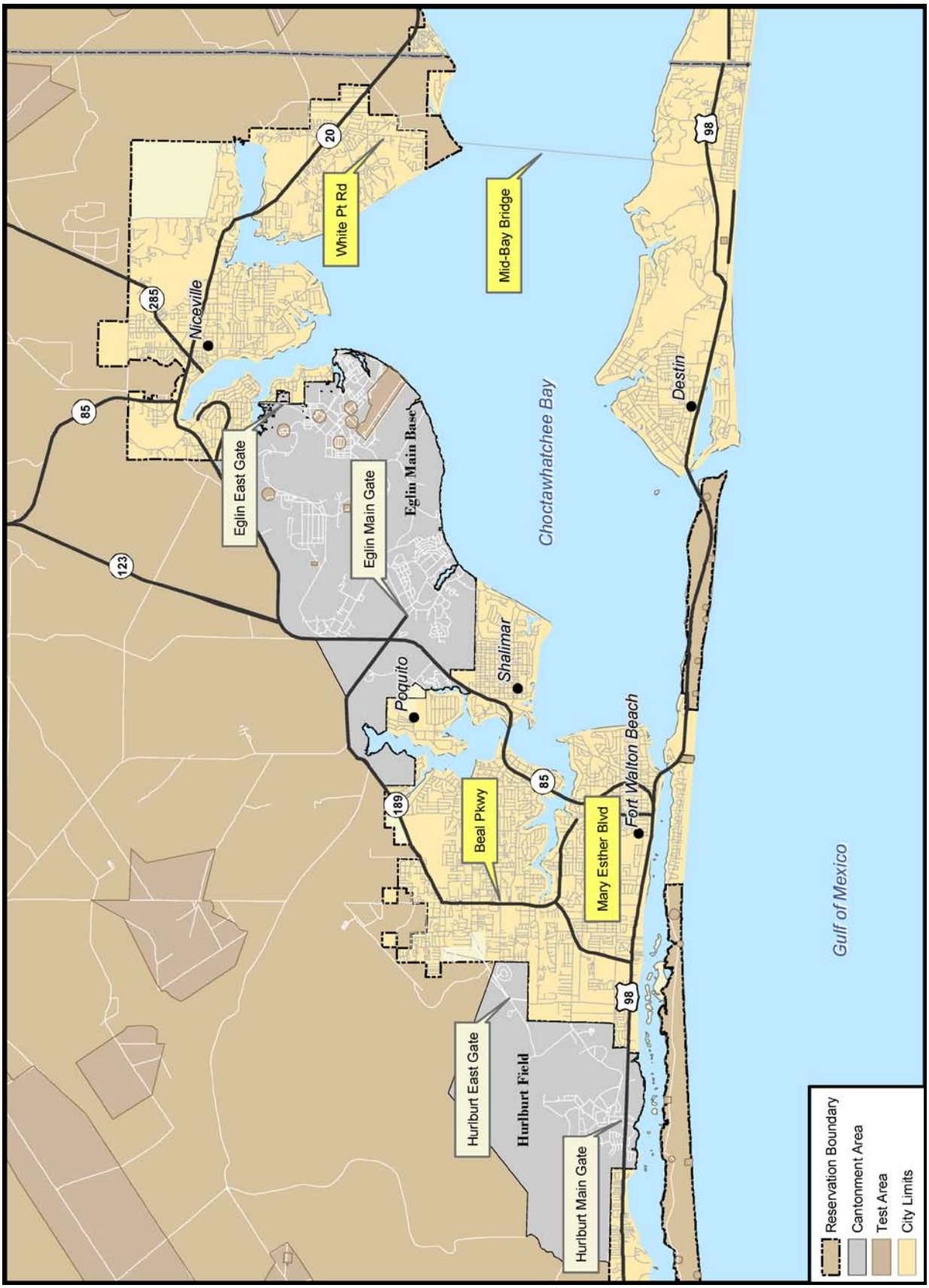

Figure 3-1. Location of Gates and Access Roads – Eglin and Hurlburt Field

Other upgrades that have been identified as being needed by the OWTPO (OWTPO, 2010b), but that have not been funded, include the following (HDR, 2008):

- Widening SR-30 (U.S. Highway [US-]98) to six lanes, from the Santa Rosa County line to the Hurlburt Field Gate
- Construction of interchange on US-98 at the Hurlburt Field Gate
- Widening SR-85 to six lanes from 12th Avenue to SR-189.
- Widening SR-85 to six lanes from SR-123 Avenue to SR-189.
- Widening SR-189 to six lanes from SR-85 to Mooney Road.
- Widening Eglin Boulevard to six lanes from SR-85 to Eglin Main Gate
- Widening US-331 to six lanes from Santa Rosa Island to DeFuniak Springs.

The widening of SR-30 (US-98) to six lanes from the Santa Rosa County line to the Hurlburt Field Gate, and the construction of an interchange on SR-30 (US-98) at Hurlburt Field Gate are included in the list of the OWTPO's addendum projects. The addendum projects are the projects considered most needed. An analysis that assumes widening of SR-30 (US-98) to six lanes from the Santa Rosa County line to the Hurlburt Field Gate is included, as the roadway could be widened sometime before the years 2017 and 2022 (HDR, 2008).

The major roadways associated with the potential project and surrounding areas as discussed above are shown in Figure 3-1. Generally, the road segments serving the new housing (Table 3-1) would be the most directly impacted by the Proposed Action. More distant road segments would be expected to be less impacted by the Proposed Action, as the traffic generated is diffused among alternative branch routes. Traffic on roadways serving base ACPs may also be impacted by some alternatives. Typically on many road segments, greater volumes of traffic may occur only in one direction during peak traffic hours. For example, traffic into a city center may be heavier coming into the city in the morning and heavier going out of the city in the afternoon.

Table 3-1. Roadways Served by MHPI Common Areas

Common Area	Roads Servicing the Common Area
Camp Rudder	Served by Military Road 257 – 2010 LOS A
Poquito Bayou	Served by Sunset Lane (collector) and SR-85 – 2010 LOS F
Eglin Main Base	Served by Eglin Main Base roads – 2010 LOS C, SR-189 – 2010 LOS B and SR-397 – 2010 LOS B
Hurlburt Field	Served by US-98 – 2010 LOS D
Camp Pinchot Housing	Served by SR-189 2010 LOS F and Camp Pinchot Road

3.1.2.1 Proposed Action Commonalities

Eglin Main Base Housing Areas

At Eglin AFB, traffic changes would impact the Main (West) Gate, the East Gate, and other gates to the base, as well as the public roadways providing access to those gates. From the Main East Gate, traffic must either travel northwest on SR- 189 or southwest on SR 85 (Eglin Parkway). In 2008, the FDOT reported the average annual daily traffic (AADT) on the following road segments:

- SR-189 between the Eglin East Gate and the intersection of SR-189 and SR-85 had 16,600 vehicles per day (VPD); SR-397 between the Eglin West Gate and the intersection of SR-85 and SR-397 had 11,800 VPD. Both road segments intersect SR-85.
- The section of SR-85 located northeast of the intersection of SR-189 and SR-85 had 30,500 VPD.
- The section of SR-85 to the southeast of this intersection had 16,100 VPD.
- The section of SR-189 located northwest of the intersection of SR-85 and SR-189 had 20,500 VPD.
- The portion of Eglin Boulevard extending from the Eglin Main Gate to SR-85 had 11,200 VPD.
- Access to the Eglin East Gate is provided by SR-397 (John Sims Parkway) which had 17,900 VPD (FDOT, 2008).

The East and West Gates at Eglin AFB are connected by SR-397 which is the main arterial roadway on the base. All of the road segments listed above are four-lane highways (two lanes in each direction) and most of these roadways are also divided roadways.

Figure 3-2 provides a representation of the roadways providing access to the Eglin West Main Gate.

The Eglin AFB Master Plan contains information and LOS modeling for the roadways on the base and the arterial roadways serving the base. The traffic counts collected were expressly for the Master Plan in 2006. The 2006 traffic count information is significantly higher, in most cases, than the 2008 FDOT traffic information on adjoining roadway segments. The 2006 FDOT traffic information is also generally higher than that reported by FDOT in 2008. It is thought that the change is attributable to the downturn in the economy; it was assumed that the decline in traffic is temporary, and the worst case LOS from this information was listed for each roadway segment. The Master Plan found only three roadway segments on Eglin AFB operating at or worse than LOS D (HDR, 2008). Those roadways were:

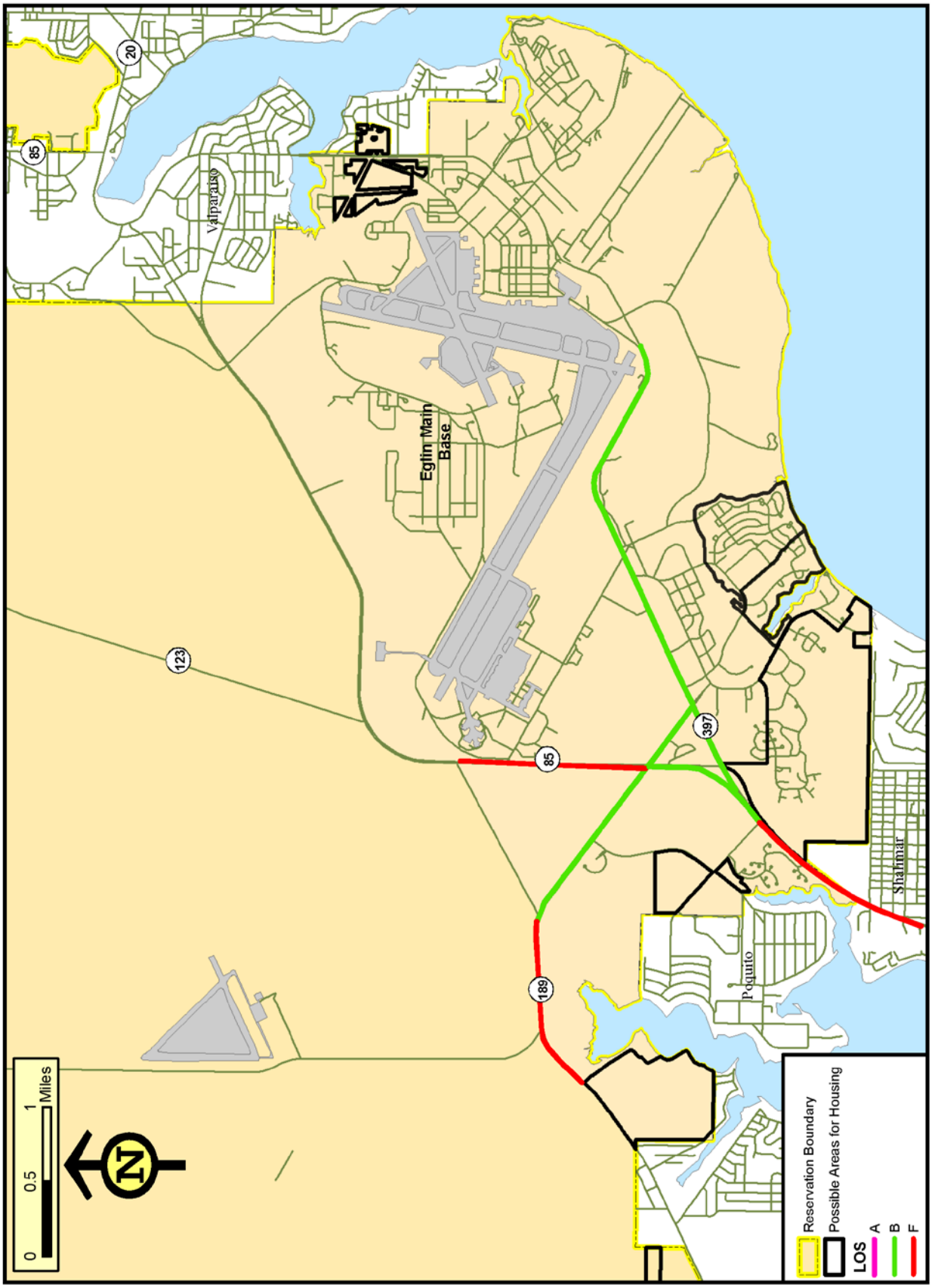

Figure 3-2. Eglin West Main Gate and Roadway System

- Boatner Road between Hatchee Road and the Hospital.
- Chinquapin Drive between Minor Drive and Memorial Trail.
- Museum Drive between SR-397 and Minor Drive.

The Master Plan also found that most of the roadway segments outside of Eglin AFB were operating within acceptable standards except for the following six segments (HDR, 2008):

- SR-85 between SR-20 and SR-397
- SR-85 between the Air Combat Command Gate at Nomad Way and SR 189
- SR-85 between SR-189 and 12th Avenue
- SR-85 between Interstate 10 and PJ Adams Parkway
- SR-189 between General Bond Boulevard and County Road (CR)-85 C (Mooney Road)
- SR-123 between SR-85 near the Okaloosa Walton Regional Airport and SR-85 approximately 5 miles to the north of the airport (about 8 road miles on SR-85)

Table 3-2 provides the existing condition LOS for major arterial roadways that provide access to Eglin AFB (HDR, 2008).

Table 3-2. 2010 LOS for Eglin AFB

Primary Road Segments	Number of Lanes	Peak Hour Peak Direction LOS (2010)
SR-189 between Eglin Main Gate and SR-85	4	B
SR-189 between SR-85 and General Bond Boulevard	4	B
SR-397 between SR-189 and SR-85	4	B
SR-85 between SR-189 and General Bond Boulevard	4	F
SR-85 between SR-189 and Sunset Blvd	4	A

Poquito Bayou Housing Area

This housing area is served by Sunset Lane and SR-85.

Camp Pinchot Housing Area

This housing area is south of SR-189 west of Camp Pinchot Road. Camp Pinchot Road is not anticipated to be impacted by the proposed housing; a new entrance onto SR-189 is anticipated. SR-189 has a projected 2017 LOS of F.

Camp Rudder Housing Area

The housing area at Camp Rudder is served by Range Road 257. This is a public access roadway and accesses the Camp Rudder area from one direction only and would not be expected to have any traffic passing through Camp Rudder to other destinations.

The locations of the Poquito Bayou, Camp Pinchot, and Camp Rudder housing is shown in Figure 3-3.

Hurlburt Field Housing Areas

The Hurlburt Field Main Gate provides access to SR-30 (US-98), with an AADT of 45,000 VPD. The Hurlburt East Gate provides access to Martin Luther King Boulevard, with an AADT of 24,500 VPD (FDOT, 2008). SR-30 is a divided, four-lane highway (two lanes in each direction). Martin Luther King Boulevard is a divided, four-lane street (two lanes in each direction) in the north direction and an undivided four-lane street in the south direction.

The Transportation Plan describes the existing conditions of intersections and ACPs at Hurlburt Field (Figure 3-4). The Transportation Plan found the following intersections were operating at unacceptable standards (Black & Veatch, 2008):

- US-98 and Cody Avenue
- Martin Luther King Jr. Boulevard and Freedom Way
- Cody Avenue and Independence Road
- Cody Avenue and Simpson Avenue
- Independence Road and Brimms Road
- Tully Street and Terry Avenue
- Independence Road and O'Neil Avenue
- Independence Road and Terry Avenue
- Independence Road and Tully Street

The Transportation Plan found the ACPs at Hurlburt to work at an acceptable level; however, the intersections connecting the ACPs to the public roadway system do not have an acceptable LOS. The public roadways near the base have poor LOS. Most of the internal base roadways have adequate LOS, although some intersections could be improved. The Hurlburt entrance is under review for upgrade and an Environmental Assessment (EA) is being conducted for proposed improvements to the US-98/Hurlburt Main Gate.

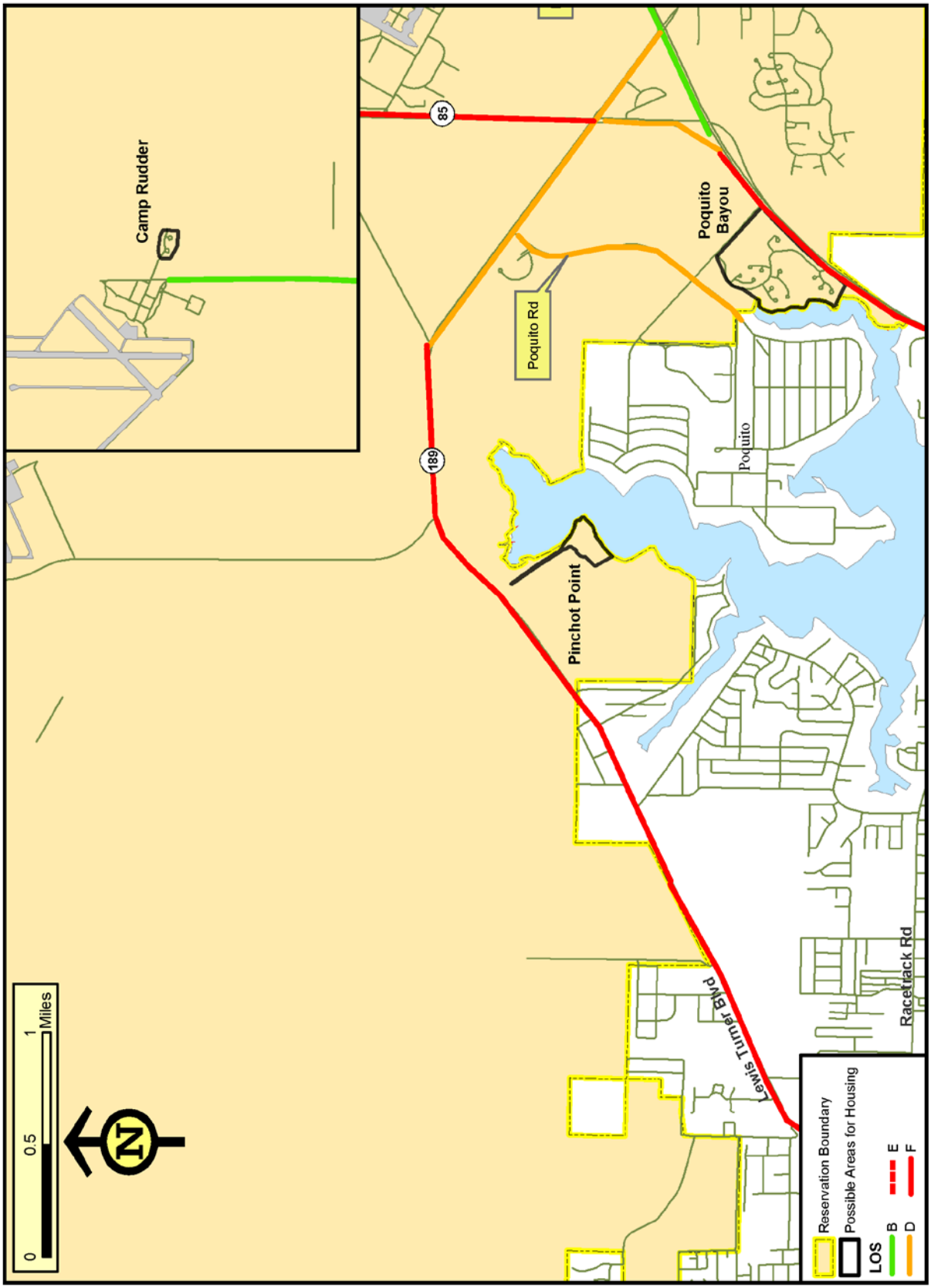

Figure 3-3. Locations of Poquito Bayou, Camp Pinchot and Camp Rudder Public Road Systems

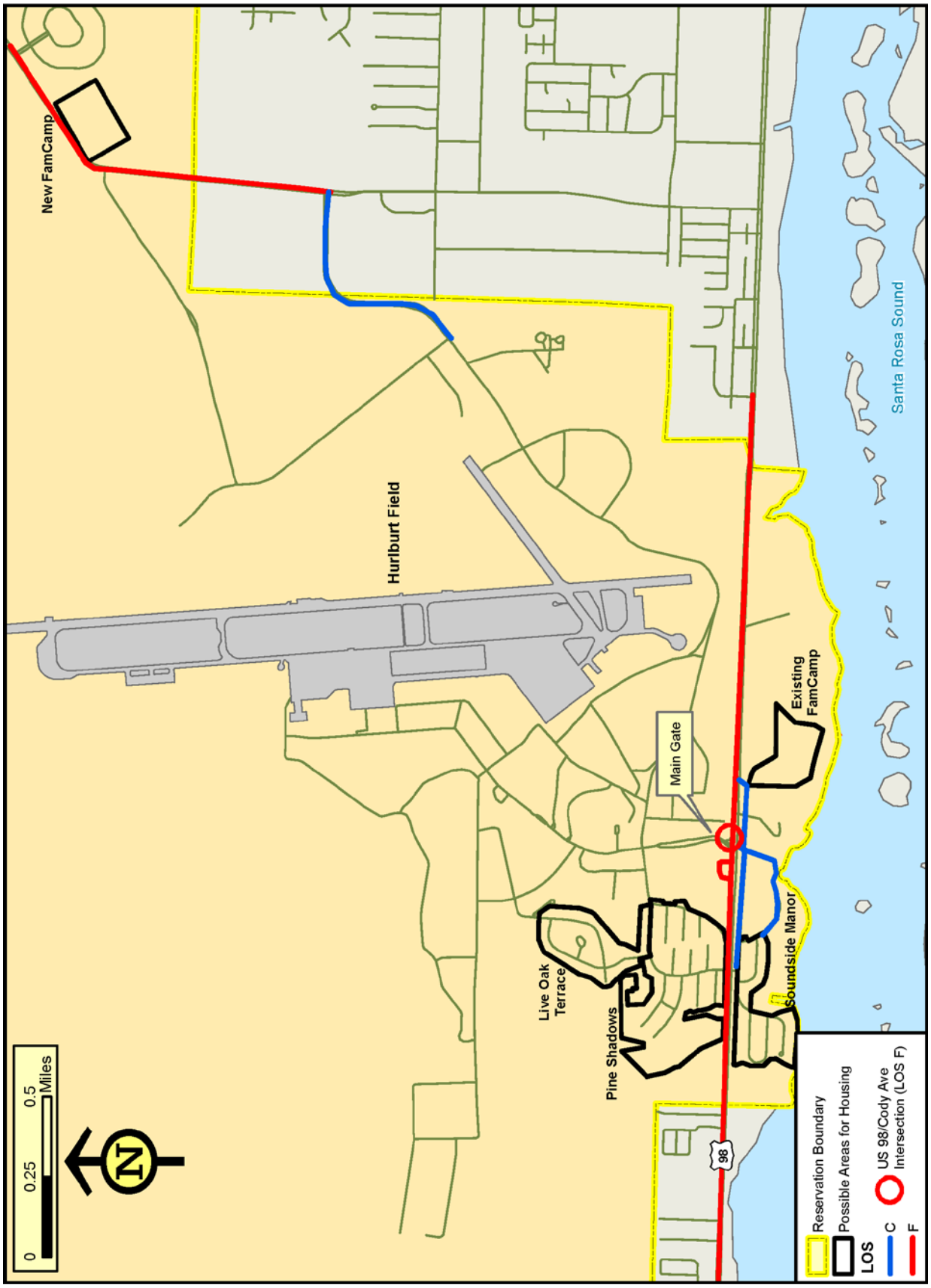

Figure 3-4. Hurlburt Field – Existing Level of Service

Table 3-3 provides the existing condition LOS for major arterial roadways that provide access to Hurlburt Field (Black & Veatch, 2008).

Table 3-3. 2010 LOS for Hurlburt Field

Primary Road Segments	Number of Lanes	Peak Hour Peak Direction LOS (2010)
SR-30 (US-98) west of Hurlburt Main Gate	4	F
Martin Luther King Boulevard near Hurlburt East Gate	4	D
Hurlburt Field Road	4	A

Public Transit

There are no public bus routes in the Eglin Main Complex or at Hurlburt Field. Public bus transportation in the regional area is provided by Okaloosa County Transit, which provides scheduled service on some fixed routes. The routes will deviate up to three-quarters of a mile from the fixed route with advance notice. Current routes do not appear to serve the locations of any of the proposed alternative locations for housing units.

School Bus Routes

One school district services the alternative housing areas, the Okaloosa County School District. The alternative housing areas are all within existing school attendance zones, and school buses pick up students at designated pickup points throughout the ROI. Several schools in the immediate vicinity of Eglin are currently light on attendance. Busing the students from the new housing areas to those schools would bring additional students and potentially help to keep those schools open. For Alternative 2, including Subalternative 2a, the school bus routes would not change, and for the other alternatives, existing school bus routes that serve the adjacent communities can be adjusted for the new developments. All Alternatives would actually enhance conditions on the Range transportation system by removing dependent and school bus traffic from range roads servicing Camp Rudder. This would reduce to a minimum the current level of conflict between the family housing on Camp Rudder and the inherent activities of an active DoD Test & Training Range. For major developments in new areas, coordination with the school district to provide school bus services would be desirable. The impact of additional school buses on the arterial road system would be minimal, and the LOS experienced by those buses would mirror that experienced by other traffic. School bus stops should be limited to collector and local service roadways. School bus stops on arterial roadways should be avoided, if possible, both for traffic and safety reasons.

Bicycle and Pedestrian Facilities

Some existing bicycle and pedestrian facilities are known to exist in the proposed locations for housing units. According to the Transportation Master Plan, SR-189 between Roberts Boulevard and the Eglin Main Base West Gate has paved shoulders or bike lanes with a bicycle LOS of C.

3.1.2.2 Alternative 1: White Point Area

This alternative consists of seven parcels located near SR-20 (Figure 3-5). Primary access to this area would be provided by SR-20, which has a 2010 LOS of C. SR-20 would provide access to the Eglin Main Gate by way of SR-85 and SR-397. SR-85 between SR-20 and SR-397 has a 2010 LOS of F and SR-397 has a 2010 LOS of B.

There is a proposed highway project that would have a major impact on this alternative. This project, sometimes referred to as the Choctawhatchee Bridge to Eglin Bypass, is listed in the *Okaloosa-Walton Transportation Planning Organization 2030 Long Range Transportation Plan* (OWTPO, 2007) in three phases. As shown on the 2030 Okaloosa-Walton Long Range Transportation Map, this project consists of: Phase (1) Four-lane Mid-Bay Bridge Connector from Mid-Bay Bridge north approach to Range Road; Phase (2) Four-lane Mid-Bay Bridge Connector from Range Road to SR-285; Phase (3) Four-lane Mid- Bay Bridge Connector from SR-285 to SR-85. If all three phases of this project were constructed, it would provide an alternative route around much, but not all, of the existing roadways that have an LOS of F between the White Point Area and the Eglin East Gate. To access the Eglin East ACP, traffic from the White Point Area would still need to use a segment of SR-85 anticipated to have an LOS of F. That project is not listed as a currently committed project in the Okaloosa-Walton Transportation Planning Organization Fiscal Years 2011–2015 Project Priorities Amended January 21, 2010 (OWTPO, 2010b) or in the Okaloosa-Walton Transportation Planning Organization Fiscal Years 2010–2014 Transportation Improvement Program (OWTPO, 2010a). Since that project is currently not funded and not included in the projects to start in the next five years, it is unlikely to be in existence in a 2017 and 2022 time frame and would not be available to housing developed on the White Point Area during that timeframe. Also while that project is listed in the OWTPO *2030 Long Range Transportation Plan*, the projects contained in that Plan are subject to change and may not be constructed.

Table 3-4 presents 2008 traffic count information from the FDOT (FDOT, 2008).

The LOS on the main arterial roadways between the proposed housing area and the Eglin East Gate was determined for the years 2010, 2017, and 2022. Table 3-5 shows the expected LOS for arterial roadways that would be impacted by Alternative 1.

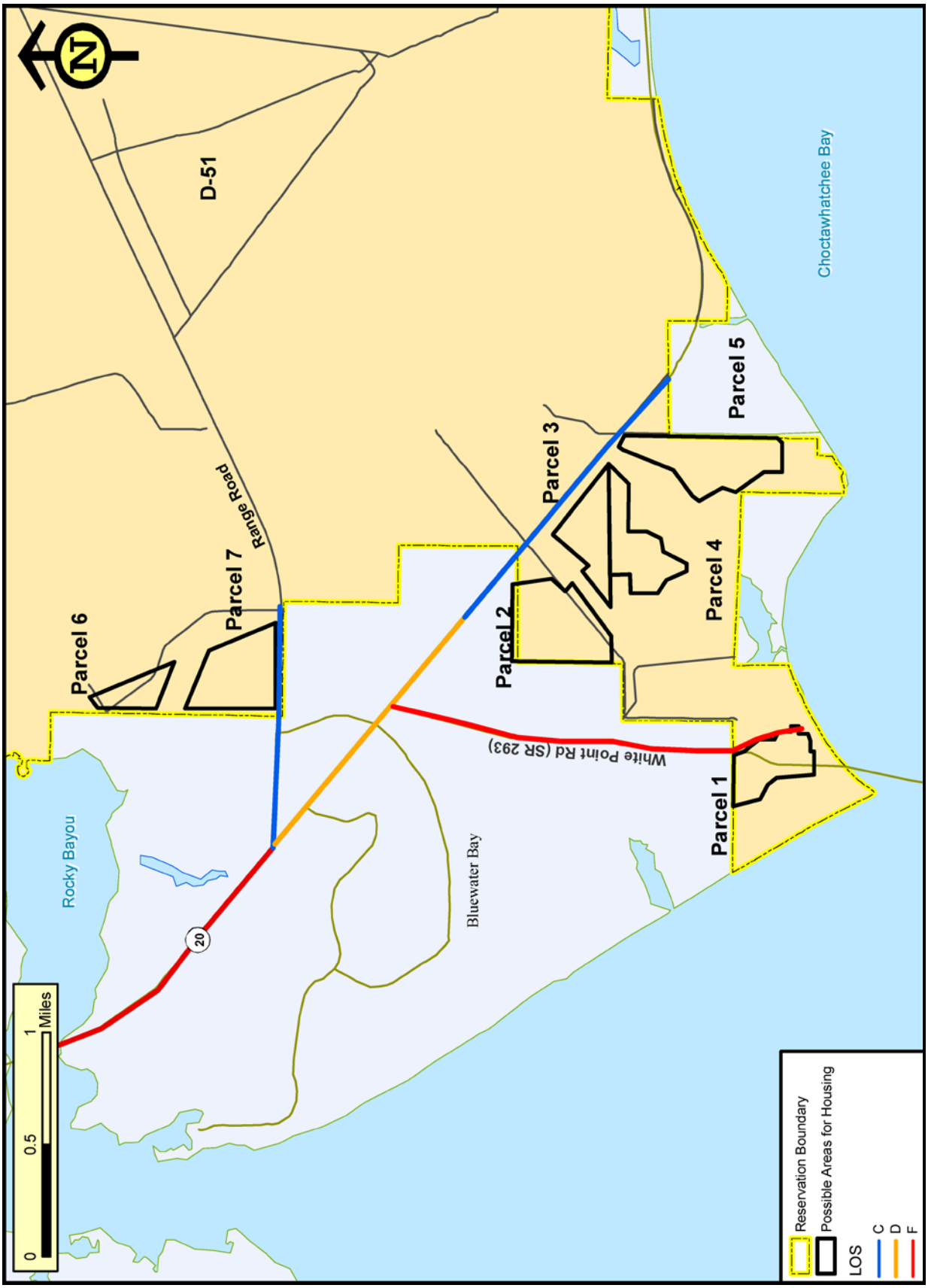

Figure 3-5. Alternative 1: White Point Area – Existing Level of Service

Table 3-4. 2008 Arterial Traffic Volume Affected Roadways – High and Low Directions – for Alternative 1

Site	Description	Direction 1	Direction 2	AADT Two Way	"K" Factor	"D" Factor	"T" Factor
0110	SR-20 - Okaloosa – Walton County Line	E 4,400	W 4,200	8,600	11.41	63.65	7.85
0295	SR-293 - (White Point Road) 500′ south of SR 20	N 9,800	S 9,700	19,500	9.65	59.89	3.87
0294	SR-20 - 1,000′ east of Bay Drive, east of Niceville	E 15,000	W 16,000	31,000	11.02	51.99	5.49
0298	SR-20 - east end of Rocky Bayou Bridge	E 20,000	W 19,500	39,500	11.02	51.99	4.39
1502	SR-20 - 50′ west of Swift and Sanders Creek Bridge	E 19,000	W 19,000	38,000	11.02	51.99	5.49
5073	SR-20 - 300′ east of Palm Boulevard	E 19,000	W 19,500	38,500	11.02	51.99	4.23
5076	SR-20 - 300′ east of SR-285 (Partin Drive)	E 19,000	W 19,000	38,000	11.02	51.99	5.49
5010	SR-20 - 150′ east of CR 285A (Davis Street)	E 23,000	W 25,000	48,000	11.02	51.99	5.49
5009	SR-20 - 150′ east of SR-285 (Bayshore Drive)	E 26,000	W 21,500	47,500	11.02	51.99	5.49
1510	SR-85 - south end of Boggy Bayou Bridge, Niceville	N 27,000	S 25,000	52,000	11.02	51.99	5.49
5081	SR-85 - 150′ west of SR 397 (Leg D)	N 9,000	S 9,300	18,300	11.02	51.99	5.50
1507	SR-85 - 0.2 mile north of SR-190 (Niceville city limits)	N 8,500	S 8,600	17,100	11.02	51.99	6.49
0306	SR-30 - 500′ west of Hurlburt Field Main Gate	E 26,950	W 18,500	45,000	9.65	59.89	4.10

′ = feet; CR = County Road; SR = State Road

The columns have the following meanings:

Site = Location where traffic count was taken. See column description or mapping available on Florida Department of Transportation web site

Description = Describes location of site, typically in terms of distance from nearby intersections

Direction 1 and Direction 2 = Directional split of average annual daily traffic

AADT two way = Average annual daily traffic in both directions

"K" factor = The ratio of AADT to the peak hour traffic (AADT divided by K equals peak hour traffic

"D" factor = The directional factor used to split peak hour traffic into heavier and lighter directions

"T" factor = The percentage of large trucks in the traffic stream - trucks affect the LOS on a roadway to a greater degree than cars

Table 3-5. Expected LOS Baseline/No Action Arterial Roadways Impacted by Alternative 1

Site	Description	2010 Heavy Direction LOS	2010 Light Direction LOS	2017 Heavy Direction LOS	2017 Light Direction LOS	2022 Heavy Direction LOS	2022 Light Direction LOS
110	SR-20 - Okaloosa – Walton County Line	C	C	C	C	D	D
295	SR-293 - (White Point Road) 500′ south of SR 20	D	C	E	E	F	F
294	SR-20 - 1000′ east of Bay Drive, east of Niceville	D	C	C	C	D	C
298	SR-20 - east end of Rocky Bayou Bridge	F	D	C	C	C	C
1502	SR-20 - 50′ west of Swift and Sanders Creek Bridge	F	F	F	F	F	F
5073	SR-20 - 300′ east of Palm Blvd	F	F	F	F	F	F
5076	SR-20 - 300′ east of SR-285 (Partin Drive)	F	F	F	F	F	F
5010	SR-20 - 150′ east of CR 285A (Davis Street)	D	D	F	F	F	F
5009	SR-20 - 150′ east of SR-285 (Bayshore Drive)	D	D	F	F	F	F
1510	SR-85 - south end of Boggy Bayou Bridge, Niceville	F	F	F	F	F	F
5023	SR-397 - (John Sims Parkway) 300′ north of Bayshore Drive North	B	B	B	B	B	B
5024	SR-397 - (John Sims Parkway) 50′ north of Eglin AFB East Gate	B	B	B	B	B	B
1505	SR-397 - (John Sims Parkway) 0.240 mile South of SR-8	B	B	B	B	B	B

′ = feet; Blvd = Boulevard; LOS = Level of Service; SR = State Road

3.1.2.3 Alternative 2: Eglin Main Base/Valparaiso Area

The Eglin Main Base Parcels 1, 9, 10, and 11 locations were discussed previously under the commonalities section. The Valparaiso area, approximately 87 acres, is located near the northeast border of Eglin Main Base near the Eglin AFB East Gate. Access to the public road system for the 11 parcels under this alternative would be expected through utilization of the following collector roadways to the arterial roadway Eglin Boulevard:

- Parcel 1: Boatner Road, Hatchee Road, and Memorial Trial to Eglin Boulevard and Eglin West Gate
- Parcel 2: Eglin Boulevard and Eglin East Gate
- Parcel 3: Eglin Boulevard and Eglin East Gate
- Parcel 4: Eglin Boulevard and Eglin East Gate
- Parcel 5: Eglin Boulevard and Eglin East Gate
- Parcel 6: Eglin Boulevard and Eglin East Gate
- Parcel 7: Eglin Boulevard and Eglin East Gate
- Parcel 8: Eglin Boulevard and Eglin East Gate
- Parcel 9: Chinquapin Drive and Nakina Road to Hatchee Road to Eglin Boulevard
- Parcel 10: Ben's Lake Road and Choctaw Road to Hatchee Road to Eglin Boulevard
- Parcel 11: Boatner Road and Hatchee Road to Eglin Boulevard

Parcels 2–8 would also be served by North Gate Road, with a 2010 LOS of C, and Daytona Road, with a 2010 LOS of C.

3.1.2.4 Subalternative 2a: Eglin Main Base (Preferred Alternative)

This alternative would construct all of the new units on Eglin Main Base Parcel 1 and would not utilize the Valparaiso parcels or Parcels 8, 9, and 10. The Eglin Main Base Parcel 1 location was discussed previously under the commonalities section and Alternative 2 discussion.

Table 3-6 presents 2008 traffic count information from the FDOT (FDOT, 2008).

Table 3-6. 2008 Arterial Traffic Volumes - High and Low Direction – Alternatives 2 and 2a

Site	Description	Direction 1	Direction 2	AADT Two Way	"K" Factor	"D" Factor	"T" Factor
0190	SR-189 - 300′ south of SR-397 (Lewis Turner Blvd) near Eglin Main Gate	N 5,500	S 5,700	11,200	11.02	51.99	1.93
0307	SR-85 - 500′ south of SR-189 (Lewis Turner Blvd)	N 8,500	S 8,100	16,600	11.02	51.99	5.50
0260	SR-85 - 500′ north of SR-189 (Lewis Turner Blvd)	N 20,500	S 10,000	30,500	11.02	51.99	6.22
0290	SR-189 (Lewis Turner Blvd) 300′ Northwest of SR-85	N 15,500	S 5,000	20,500	11.02	51.99	4.90
0291	SR-397 (Lewis Turner Blvd) 300 southeast of SR-85	N 5,900	S 5,800	11,700	11.02	51.99	5.22
0306	SR-30 (US-98) - 500′ west of Hurlburt Field Main Entrance	E 22,500	W 22,500	45,000	9.65	59.89	4.10

′ = feet; AADT = Average Annual Daily Traffic; Blvd = Boulevard; SR = State Road; US = U.S. Highway

Table 3-7 shows the expected LOS for arterial roadways that would be impacted by Alternatives 2 and 2a. Figure 3-6 depicts the LOS on roadways affected by Alternative 2 (including Subalternative 2a).

Table 3-7. Expected LOS Baseline/No Action Arterial Roadways Impacted by Alternatives 2 and 2a

Site	Description	2010 Heavy Direction LOS	2010 Light Direction LOS	2017 Heavy Direction LOS	2017 Light Direction LOS	2022 Heavy Direction LOS	2022 Light Direction LOS
190	SR-189 - 300′ south of SR-397 (Lewis Turner Blvd near Eglin Main Gate	B	B	B	B	B	B
307	SR-85 - 500′ south of SR-189 (Lewis Turner Blvd)	B	B	B	B	C	B
260	SR-85 - 500′ north of SR-189 (Lewis Turner Blvd)	F	F	F	F	F	F
290	SR-189 (Lewis Turner Blvd) -300′ northwest of SR-85	B	B	B	B	C	B
291	SR-397 (Lewis Turner Blvd) – 300′ southeast of SR-85	B	B	B	B	B	B
306	SR-30 (US-98) - 500′ west of Hurlburt Field Main Entrance	D	D	E	D	F	D
306	SR-30 (US-98) - 500′ west of Hurlburt Field Main Entrance with increase to 6 lanes by 2017	D	D	C	B	D	C

′ = feet; Blvd = Boulevard; LOS = Level of Service; SR = State Road; US = U.S. Highway

3.1.2.5 Alternative 3: North Fort Walton Beach Area

Alternative 3 consists of five parcels that would be expected to access the public road system by using the following connector roadways:

- Parcel 1: New Access Point to SR-189
- Parcel 2: Roberts Boulevard to SR-189
- Parcel 3: Roberts Boulevard to SR-189
- Parcel 4: Sunset Land and Poquito Road to SR-189
- Parcel 5: Sunset Land and Poquito Road to SR-189

Table 3-8 presents 2008 traffic count information from the FDOT (FDOT, 2008).

Figure 3-6. Alternative 2 and Subalternative 2a – Existing Level of Service

Table 3-8. 2008 Arterial Traffic Volumes - High and Low Direction – Alternatives 3

Site	Description	Direction 1	Direction 2	AADT Two Way	"K" Factor	"D" Factor	"T" Factor
5024	SR-397 (John Sims Parkway) - 50′ north of Eglin AFB East Gate	N 8,800	S 9,100	17,900	11.02	51.99	4.97
5023	SR-397 (John Sims Parkway) - 300′ north of Bayshore Drive North	N 9,600	S 9,200	18,800	11.02	51.99	2.79
1505	SR-397 (John Sims Parkway) - 0.240 mile south of SR-8	N 11,000	S 11,000	22,000	11.02	51.99	3.07
5022	SR-190 (John Sims Parkway) - 0.18 mile west of SR 397	N 0	S 0	3,900	11.02	51.99	4.14
1504	SR-190 (John Sims Parkway) - 0.27 Mile East of SR-85	N 1,900	S 2,000	3,900	11.02	51.99	5.22
5081	SR-85 150′ west of SR-397 (Leg D)	N 9,000	S 9,300	18,300	11.02	51.99	5.50
1507	SR-85 - 0.2 mile north of SR-190 (Niceville city limits)	N 8,500	S 8,600	17,100	11.02	51.99	6.49

AADT, K, and D are taken from Florida Department of Transportation (FDOT), 2006.
′ = feet; AADT = average annual daily traffic; PHV = peak hourly volume; SR = State Road
1. K is a factor relating the AADT to the peak hourly volume.
2. D is a factor showing the percentage of the traffic flowing in the heavier direction.

Table 3-9 shows the expected LOS for arterial roadways that would be impacted by Alternative 3. Figure 3-7 depicts the LOS on roadways affected by Alternative 3.

Table 3-9. Expected LOS Baseline/No Action Arterial Roadways Impacted by Alternative 3

Site	Description	2010 Heavy Direction LOS	2010 Light Direction LOS	2017 Heavy Direction LOS	2017 Light Direction LOS	2022 Heavy Direction LOS	2022 Light Direction LOS
1706	SR-189 (Lewis Tuner Blvd) - 2.0 miles west of SR-85	F	F	F	F	F	F
0250	SR-189 - 1.6 mile north of SR-188/US-98, Okaloosa County	F	F	F	F	F	F
5090	SR-189 - 300' north of SR-188 (Racetrack Road)	F	F	F	F	F	F
306	Hurlburt Field Road - 300' west of Martin Luther King Blvd	F	F	F	F	F	F

′ = feet; Blvd = Boulevard; LOS = Level of Service; SR = State Road; US = U.S. Highway

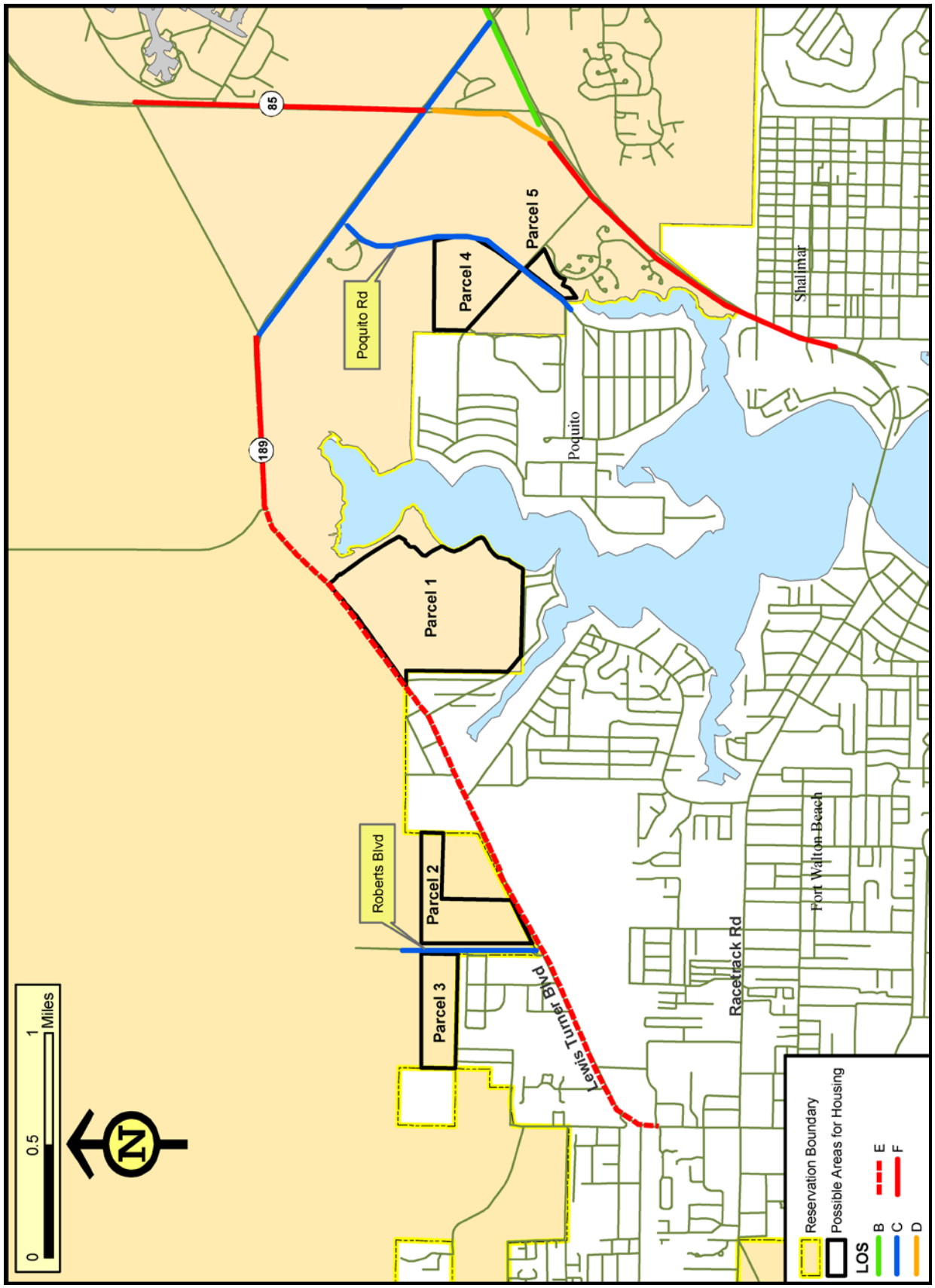

Figure 3-7. Alternative 3 – Existing Level of Service

3.1.2.6 Alternative 4: Mix Alternative

This Alternative would involve utilizing a combination of the parcels described in Alternatives 1, 2, and 3. The affected environment for this alternative would be the same as described previously.

3.2 SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE

3.2.1 Definition of the Resource

Socioeconomic resources are defined as the basic attributes associated with human activities. The Eglin Military Housing Privatization Initiative (MHPI) is primarily associated with the construction and renovation of on-base housing units for military members. Therefore, the following resources are addressed under socioeconomics as the indicators that could potentially be impacted by the MHPI process: population, economic activity (employment and earnings), schools, and housing.

Environmental Justice

Concern that certain disadvantaged communities may bear a disproportionate share of adverse health and environmental effects compared to the general population led to the enactment in 1994 of Executive Order (EO) 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*. This EO directs federal agencies to address disproportionate environmental and human-health effects in minority and low-income communities. In addition, 32 Code of Federal Regulations (CFR) 989, *Environmental Impact Analysis Process,* addresses the need for consideration of environmental justice issues in compliance with the National Environmental Policy Act. EO 12898 applies to federal agencies that conduct activities that could substantially affect human health or the environment. The evaluation of environmental justice is designed to:

- Focus attention of federal agencies on the human health and environmental conditions in minority communities and low-income communities with the goal of achieving environmental justice.
- Foster nondiscrimination in federal programs that may substantially affect human health or the environment.
- Give minority communities and low-income communities greater opportunities for public participation in, and access to, public information on matters relating to human health and the environment.

Environmental justice analysis also addresses the protection of children, as required by EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*

(*Protection of Children*), issued in 1997 to identify and address issues that affect the protection of children. According to the EO, all federal agencies must assign a high priority to addressing health and safety risks to children, to coordinating research priorities on children's health, and to ensuring that their standards take into account special risks to children. The EO states that, "…'environmental health risks and safety risks' mean risks to health or to safety that are attributable to products or substances that the child is likely to come in contact with or ingest (such as the air we breathe, the food we eat, the water we drink or use for recreation, the soil we live on, and the products we use or are exposed to)."

3.2.2 Affected Environment

3.2.2.1 Commonalities Across All Alternatives

The influence of Eglin AFB and Hurlburt Field is distinguishable within a three county region of influence (ROI) composed of Okaloosa, Santa Rosa, and Walton counties located in northwest Florida. Although the effects of activities taking place at both installations are manifest throughout the ROI, they are most evident in Okaloosa County. In addition, individual parcels of the proposed housing areas are not discussed individually as the effects of the construction and demolition activities, as well as the operation of these housing areas, would be distributed through the ROI.

Population

The population of the ROI increased by more than 56,000 persons (17.2 percent) over years 2000 to 2009, at an average annual rate of 1.8 percent. The greatest absolute contribution to this increase was derived from the population increase in Santa Rosa County (over 34,000 persons), followed by Walton County (over 14,500 persons), and lastly Okaloosa County (nearly 8,000 persons). Walton County (the smallest county in terms of population) experienced the highest percentage growth rate (3.5 average annual percent) of the three counties (U.S. Census Bureau, 2010a). Santa Rosa County experienced a comparable growth with an average population increase of 2.9 percent.

At the time of the 2000 census, the total population in the region was approximately 328,842 persons. Okaloosa County was the most populous county in the region with a total population of nearly 170,500 persons, followed by Santa Rosa County with 117,400 persons (U.S. Census Bureau, 2010b and 2010c). Walton County is a more rural county with a 2000 population of 40,600 persons (U.S. Census Bureau, 2010a). Currently, Okaloosa County is the 24th most populous county in the state of Florida (Florida Legislature Office of Economic and Demographic Research [OEDR], 2010a). In Okaloosa County, the two communities with the largest populations are Fort Walton Beach and Crestview. Walton County is currently ranked as the 41st most populous

county in the state of Florida but has been one of the fastest growing counties in Florida (Florida Legislature OEDR, 2010b).

Since 2000, the U.S. Census Bureau has estimated the population of the region by estimating the change in population components such as births, deaths, international immigration, and net migration from other states. In all of the counties in the region, births have outnumbered deaths; however, only in Santa Rosa and Walton counties has migration from other states been a larger component of population growth (Texas A&M University Real Estate Center, 2011a, 2011b). Okaloosa County has also had domestic in-migration, but in the years 2005 through 2009 net domestic migration was negative, with more people moving out of the county than in. In 2009, net domestic migration was a loss of nearly 3,000 persons, contributing to a decrease in estimated population from 2008 to 2009 (Texas A&M University Real Estate Center, 2011c). These components were used to estimate the current population in the region.

Under each alternative, a large part of the construction, renovation, and demolition of housing would occur in the main housing areas on Eglin AFB and Hurlburt Field. Additionally, under some of the alternatives, new housing areas would be constructed in or near the cities of Valparaiso or Fort Walton Beach. Table 3-10, Table 3-11, and Table 3-12 summarize the community and population data for each county in the ROI and the largest incorporated areas.

Hurlburt – Hurlburt Field is located in Okaloosa County (ZIP Code 32544). The incorporated areas of Mary Esther, Fort Walton Beach, and Navarre are adjacent to Hurlburt Field. In 2008, Hurlburt Field had a total of 8,206 active duty personnel; 10,782 dependents; and 1,316 civilians (Economic Development Council [EDC] of Okaloosa County, 2009).

Table 3-10. Population Estimates for Okaloosa County, 2000–2009

Location	2000	2009 Estimate	Average Annual Percent Change
Cinco Bayou	377	311	-2.1%
Crestview	14,766	18,987	2.8%
Destin	11,119	12,637	1.4%
Fort Walton Beach	19,973	19,220	-0.4%
Laurel Hill	549	700	2.7%
Mary Esther	4,055	3,960	-0.3%
Niceville	11,684	12,400	0.7%
Shalimar	718	927	2.9%
Valparaiso	6,408	6,126	-0.5%
Okaloosa County	170,497	178,473	0.5%

Source: U.S. Census Bureau, 2010b, 2011a

Table 3-11. Population Estimates for Walton County, 2000–2009

Location	2000	2009 Estimate	Average Annual Percent Change
DeFuniak Springs	5,089	5,029	-0.1%
Freeport	1,190	1,667	3.8%
Paxton	656	818	2.5%
Walton County	40,602	55,105	3.5%

Source: U.S. Census Bureau, 2010a, 2011b

Table 3-12. Population Estimates for Santa Rosa County, 2000–2009

Location	2000	2009 Estimate	Average Annual Percent Change
Jay	579	687	1.9%
Gulf Breeze	5,665	6,493	1.5%
Milton	7,045	8,546	2.2%
Santa Rosa County	117,743	151,759	2.9%

Source: U.S. Census Bureau, 2010c, 2011c

Employment

Eglin AFB, spanning over each county in the region, combined with Hurlburt Field and Duke Field form the Eglin Complex. Therefore, the military and other defense-related industries are the largest contributor to Okaloosa County's economy. With the location of Eglin Complex and its role in the development and testing of new technologies, the region has become a center for defense-related and technology industries. The Eglin Complex has an overall economic impact of over $6 billion (EDC of Okaloosa County, 2009). A large part of the economic activity attributed to the Eglin Complex stems from related industries such as defense contractors. In FY 2002, military installations located in Okaloosa County added over $728 million into the local economy through contracts; 350 local businesses were awarded contracts. In FY 2005, the EDC of Okaloosa County estimated that over 20,000 local jobs had been created in industries related to military spending in Okaloosa County (EDC of Okaloosa County, 2009).

Tourism is the second largest contributor to Okaloosa County's economy. The EDC estimates that tourism generates about $1 billion annually and supports 35,000 jobs (EDC of Okaloosa County, 2009a). The primary attractions are the beaches and sport fishing. Tourists are drawn to the area year-round, though peak activity occurs in the spring and summer.

In 2008, the latest data available, total employment in the region was approximately 205,290 jobs. As with population, Okaloosa County had the largest share of employment with over 127,000 jobs (U.S. Bureau of Economic Analysis, 2010a). This number is more than twice the number of jobs in Santa Rosa County, which had a total

employment of approximately 50,000 jobs during the same time period. Walton County had approximately 27,500 jobs in 2008.

Each of the counties experienced strong job growth between 2001 and 2007 prior to a decrease in the number of jobs between 2007 and 2008. Over the entire time period between 2001 and 2008 Okaloosa County had the lowest rate of job growth, with an average annual increase of 3.0 percent; employment in Santa Rosa County increased at an average annual rate of 3.7 percent; and Walton County experienced the highest job growth rate, with an increase of 6.8 percent per year.

A sharp decrease in the housing market in 2007 marked the beginning of a nationwide recession. The state of Florida was particularly hard-hit by the recession. Between 2007 and 2008, Okaloosa County lost over 1,400 jobs, while Santa Rosa County lost 482 jobs and Walton County lost 912 jobs. In comparison, the state of Florida as a whole lost over 128,000 jobs between 2007 and 2008. In the region, the construction industry was a component of job growth and comprised a large share of total employment until the recession. Between 2001 and 2006, the number of jobs in the construction industry increased to a high of over 10,000 jobs in Okaloosa County alone. In 2007, the construction industry began to retract with the number of jobs decreasing from approximately 8,700 jobs then to approximately 7,800 jobs in 2008 (U.S. Bureau of Economic Analysis, 2010a). The construction industry in Santa Rosa County and Walton County experienced a similar contraction and the number of jobs decreased between 2006 and 2008.

The median household income in Okaloosa County is $50,899 (2005 dollars adjusted for inflation) (EDC of Okaloosa County, 2009b). According to the county's EDC, Okaloosa County has a lower cost of living than the average of the metropolitan statistical areas in the United States. The average cost of living in the county dropped from 101.1 percent in 2005 to 98.5 percent in the first quarter of 2007 (EDC of Okaloosa County, 2008).

In 2008, the unemployment rate in each of the three counties within the ROI was lower than both the national level of 5.8 percent and the state level of 6.2 percent (Table 3-13). Between 2003 and 2006 the unemployment rate for each county decreased annually. However, since 2007 the percentages have started to increase. In all three counties, the unemployment rate increased by over 50 percent between 2007 and 2008.

Table 3-13. Labor Force Data by County, 2009

County	Labor Force	Employed	Unemployed	Unemployment Rate
Okaloosa County	98,167	91,113	7,054	7.2
Santa Rosa County	69,387	65,513	3,874	5.6
Walton County	31,585	30,204	1,381	4.4

Source: U.S. Bureau of Labor Statistics, 2009

Schools

Potential impacts to schools would be primarily determined by the location of the proposed parcels in relation to the school district and the school attendance zones defined for each individual school. All of the proposed parcels are located in Okaloosa County and the Okaloosa County School District. Therefore, the following discussion and potential impacts focuses on that district and its related schools.

On Eglin AFB there is one elementary school, Eglin Elementary that is attended by most of the pre-kindergarten through fourth grade students living on base. Eglin Elementary was established in the 2007–2008 school year after combining two on-base schools, Cherokee Elementary and Oak Hill Elementary, into a single elementary school. There is currently one Child Development Center (CDC) located at building 2578 and another modular CDC located at Foster Drive. There are two new CDCs under development at Eglin AFB (near the corner of Boatner Road and Memorial Trail), expected to be completed in August 2011; these will replace the modular CDC located on Foster Drive. Middle school and high school aged children living on Eglin AFB or Hurlburt Field are likely to attend Addie Lewis Middle School, Clifford Meigs Middle School, Niceville High School, Choctawhatchee High School, or Fort Walton Beach High School.

With the development of housing proposed on new parcels within the Eglin Reservation, several other schools may receive additional students. Table 3-14 displays a list of the schools (current GIS information does not show the location of the new CDCs) that have attendance zones in proximity to the parcels proposed for development under the MHPI. All of the schools have average class sizes at or below the maximum class size dictated by the Class Size Reduction Amendment passed by the Florida Legislature in 2002. All schools in Florida are required to reduce their average class sizes below the mandated class sizes by the beginning of the 2010–2011 school year. During scoping, the Superintendent of Okaloosa County School District and other commenters expressed concern that Bluewater Elementary School is nearing capacity and would be adversely affected by the MHPI with the adjusting distribution of school attendance by the children living in the new Eglin military family housing (MFH). In the 2009–2010 school year, Bluewater Elementary School enrolled 763 students and had an average class size of 17.99 for pre-kindergarten through third grade classes and 19.38 for grades four through eight. These class sizes are near the mandated average class sizes and are in compliance with the Class Size Reduction Amendment.

Students are not necessarily confined to schools within their attendance zones. Okaloosa County School District operates a plan for Controlled School Choice Open Enrollment which allows for students to attend schools outside of their attendance zone with a zoning waiver. This system allows parents and students a choice of schools within the district. Parents and students are required to complete a waiver application for the school of their choice. The schools evaluate the waiver applications and accept or deny the waiver based on capacity and space availability.

Table 3-14. Enrollment and Average Class Sizes by Potentially Affected Schools

Location	Enrollment[1]	Average Class Size[2]		
		Grades PreK–3	Grades 4–8	Grades 9–12
Maximum Class Sizes Legislated	N/A	18.00	22.00	25.00
Okaloosa County School District	28,695	17.29	19.38	23.62
Bluewater Elementary School	763	17.99	21.84	N/A
Bruner Middle School	791	N/A	19.52	N/A
Choctawhatchee High School	1,633	N/A	N/A	23.69
Edge Elementary School	524	17.83	18.85	N/A
Edwins Elementary School	478	15.80	17.42	N/A
Eglin Elementary School	368	17.96	16.00	N/A
Elliot Point Elementary School	627	17.55	21.47	N/A
Florosa Elementary School	517	17.85	19.06	N/A
Fort Walton Beach High School	1,827	N/A	N/A	24.02
Kenwood Elementary School	608	17.35	20.34	N/A
Lewis Middle School	653	N/A	16.97	N/A
Longwood Elementary School	496	14.88	14.40	N/A
Mary Esther Elementary School	566	17.42	18.58	N/A
Meigs Middle School	575	N/A	20.92	N/A
Niceville High School	1,883	N/A	N/A	24.68
Plew Elementary School	571	17.66	21.02	N/A
Pryor Middle School	579	N/A	19.96	N/A
Ruckel Middle School	848	N/A	20.71	N/A
Shalimar Elementary School	587	16.82	20.56	N/A
Wright Elementary School	581	17.74	16.52	N/A

Source: Florida Department of Education 2009, 2010a, 2010b
PreK = pre-kindergarten
1. Data is for the 2010-2011 school year.
2. Data is for the 2009-2010 school year.

Housing

At the time of the 2000 census, there were 156,795 housing units in the ROI. Between 1990 and 2000, housing in the ROI grew by 37,667 units, a growth of 2.8 percent annually. In 2000, 112,717 housing units of the total housing units in the ROI were occupied, representing over 72 percent of the total housing supply (U.S. Census Bureau, 2000a, 2000b, 2000c, 2000d).

Between 2000 and 2008, housing growth in the ROI was primarily in single family housing units. The number of multi-family housing units permitted during the same time period varied widely with most of the multi-family permits being issued in Okaloosa and Walton counties. Santa Rosa County issued very few multi-family building permits. The number of total permits in 2007 and 2008 were much lower in all of the counties than in previous years. This can be explained by the slowing in the housing market experienced during that time as compared to the booming housing market and housing development from previous years.

In 2007 and 2008, the collapse of the booming housing market initiated a nationwide recession. Florida, in particular, was hard hit by a housing market that experienced falling values, slow sales, and the stalling of new housing developments. The Emerald Coast Association of Realtors tracks information from the Multiple Listing Service (MLS) within an area covering primarily Okaloosa and Walton counties as well as collecting data for Escambia, Santa Rosa, and Bay counties. According to the Emerald Coast Association of Realtors MLS, in July 2005 at the height of the housing boom, a total of 520 housing units were sold, including condos and townhomes, with an average price of $441,429 and an average of 62 days on the market. In the same month, in 2010, only 290 housing units were sold, with an average price of $243,501 and an average of 138 days on the market (Emerald Coast Association of Realtors, 2010).

Another, more reliable measurement of the housing market is the median price. In 2005, the median price of a housing unit in Okaloosa County was $238,400 as compared to the median price in the United States of $213,000. In 2009, the median price decreased to $185,500 in Okaloosa County, surpassing the median price in the United States of $169,000 (EDC of Okaloosa County, 2009). Santa Rosa County experienced a similar increase in the median price where between 2007 and 2008 the median sales price decreased over 5 percent (Florida Legislature OEDR, 2009). Information on the median sales price for Walton County was not available.

Future housing development in Okaloosa County is likely to be concentrated in the northern portion of the county, including the city of Crestview. The southern portion of Okaloosa County is occupied by Eglin AFB, and the cities of Fort Walton Beach, Valparaiso, and Niceville are located between Eglin AFB and the coastline. Undeveloped land is limited. The northern portion of the county is relatively rural with land available for the development of new subdivisions. Sales prices in Crestview are also lower as compared to the southern portion of Okaloosa County. In 2007, the average sales price for a single family home in Crestview was $200,423 as compared to $227,800 in the greater Fort Walton Beach area or $306,480 in Niceville and Valparaiso (EDC of Okaloosa County, 2009). Average rent in Crestview during the same time period was $1,313 per month as compared to $1,154 in Niceville and Valparaiso. Average rent in the greater Fort Walton Beach area was actually lower than in Crestview at $964 per month.

Military Family Housing

According to the 2009 Housing Requirements and Market Analysis (HRMA), Eglin AFB has an inventory of 1,340 government-controlled housing units (U.S. Air Force, 2009a). The HRMA applies Department of Defense (DoD) policies to determine the availability of private sector housing for military members and assesses the number of on-base housing units that would be required in the future (FY 2014) to fulfill the demand of the military members, particularly if affordability or availability of suitable housing is an issue. In the Eglin AFB HRMA conducted in 2009, the authorized manpower was 7,098 permanent party personnel with an estimated 3,780 accompanied personnel and

2,226 unaccompanied personnel (U.S. Air Force, 2009a). As part of the BRAC decision, Eglin AFB is scheduled to receive additional personnel from the U.S. Army and the establishment of the Joint Strike Fighter Initial Joint Training Site. Based on these changes in base population, the projected number of authorized permanent party personnel for 2014 is 10,311, with 5,696 accompanied personnel and 3,048 unaccompanied personnel. Based on this analysis, it was determined that there would be a shortfall of 580 private sector housing units for military families.

In addition to the increase in personnel and housing, the BRAC decision involves the beddown and operation of the F-35 aircraft at Eglin AFB. As discussed in Sections 3.7.2 and 4.7.2, *Noise*, the noise from the airfield would change the noise affecting the Eglin AFB housing areas. The noise analysis from the preferred alternative considered in the *Eglin BRAC Supplemental EIS for the F-35 Beddown at Eglin AFB (Draft September 2010)* (the "F-35 SEIS") indicates that some existing Eglin AFB housing areas would be exposed to aircraft noise above 65 dB day-night average sound level (DNL) (see Figure 4-9 and Figure 4-10, in Chapter 4). At these noise levels, residents of the existing Eglin housing could experience increased levels of annoyance and potentially experience disruptions in speech, phone conversations, or sleeping. However, these noise levels are not considered high enough to cause physical harm to the residents. Constructing new housing with noise level reduction measures can decrease the level of annoyance and number of disruptions.

Hurlburt Field had a separate HRMA performed at the same time as Eglin AFB. In the Hurlburt Field HRMA, the authorized manpower was 7,757 permanent party personnel with an estimated 4,029 accompanied personnel and 3,210 unaccompanied personnel (U.S. Air Force, 2009b). Personnel have been transferred from Hurlburt Field to Cannon AFB, New Mexico as a result of the BRAC decision to beddown the Air Force Special Operations Command (AFSOC) assets at Cannon AFB. Based on these changes in base population, the projected number of authorized permanent party personnel for 2014 is 6,776, with 3,603 accompanied personnel and 2,779 unaccompanied personnel. In 2009, Hurlburt Field had an inventory of 680 government-controlled housing units, including 300 leased units with the lease that will expire in 2012 (U.S. Air Force, 2009b). As in the Eglin AFB HRMA, the local housing market was analyzed to determine the availability of private sector housing for Hurlburt Field personnel. The Hurlburt Field HRMA determined that a shortfall of 314 private sector housing units would exist by FY 2014.

Environmental Justice

Table 3-15 identifies total population and percentage populations of concern in each of the three ROI counties, the state of Florida, and the United States. Air Force guidance on environmental justice analysis specifies using census tract data. Currently, 2010 census data is not available for Florida to the census tract level. The most recent data at the census tract level is from the 2000 census.

Table 3-15. Total Population and Populations of Concern by County and City, 2000

Location	Population	Percent Minority	Percent Low-Income
Okaloosa County	170,498	19.0	8.8
Cinco Bayou	377	17.7	15.5
Crestview	14,766	22.7	16.7
Destin	11,119	2.3	5.5
Fort Walton Beach	19,973	17.8	9.9
Laurel Hill	549	22.6	21.6
Mary Esther	4,055	12.6	5.7
Niceville	11,684	9.8	9.6
Shalimar	718	9.6	3.1
Valparaiso	6,408	16.3	6.7
Santa Rosa County	117,743	10.9	9.8
Jay	579	1.7	16.5
Gulf Breeze	5,665	1.5	4.2
Milton	7,045	19.6	16.6
Walton County	40,601	12.7	14.4
DeFuniak Springs	5,089	N/A	N/A
Freeport	1,190	4.9	21.4
Paxton	656	4.8	12.3
Three-county ROI	**328,842**	**15.3**	**9.8**
Florida	**15,982,378**	**34.6**	**12.5**
United States	**281,421,906**	**30.9**	**12.4**

Source: U.S. Census Bureau, 2000a, 2000b, 2000c, and 2000d

1. Population density is calculated as average persons per square mile.

The total population in 2000 for the ROI was 328,842 persons, representing 2.1 percent of the Florida population (15,982,378 persons). Population density in the region ranged from 38.4 persons per square mile in Walton County to 182.2 persons per square mile in Okaloosa County. By comparison, the state of Florida has an overall population density of 296.4 persons per square mile, reflecting the relatively sparse population in the region surrounding Eglin AFB.

Minority persons represent 15.3 percent of the ROI population and 34.6 percent of the state population. African Americans are the predominant minority group in the ROI, while at the state level, Hispanic or Latino persons are the largest minority group. The minority population in the three counties of the ROI ranges from 10.9 percent in Santa Rosa County to 19.0 percent in Okaloosa County.

The percentage of persons and families in the ROI with incomes below the poverty level was somewhat lower than state levels, averaging 9.8 percent in the ROI compared to 12.5 percent in Florida as a whole. Okaloosa County and Santa Rosa County exhibited relatively low poverty rates of 8.8 and 9.8 percent, respectively, while in Walton County 14.4 percent of the population was living below the poverty level. The maps presented in Figure 3-8 and Figure 3-9 display the minority and low-income communities of concerning the Eglin AFB region.

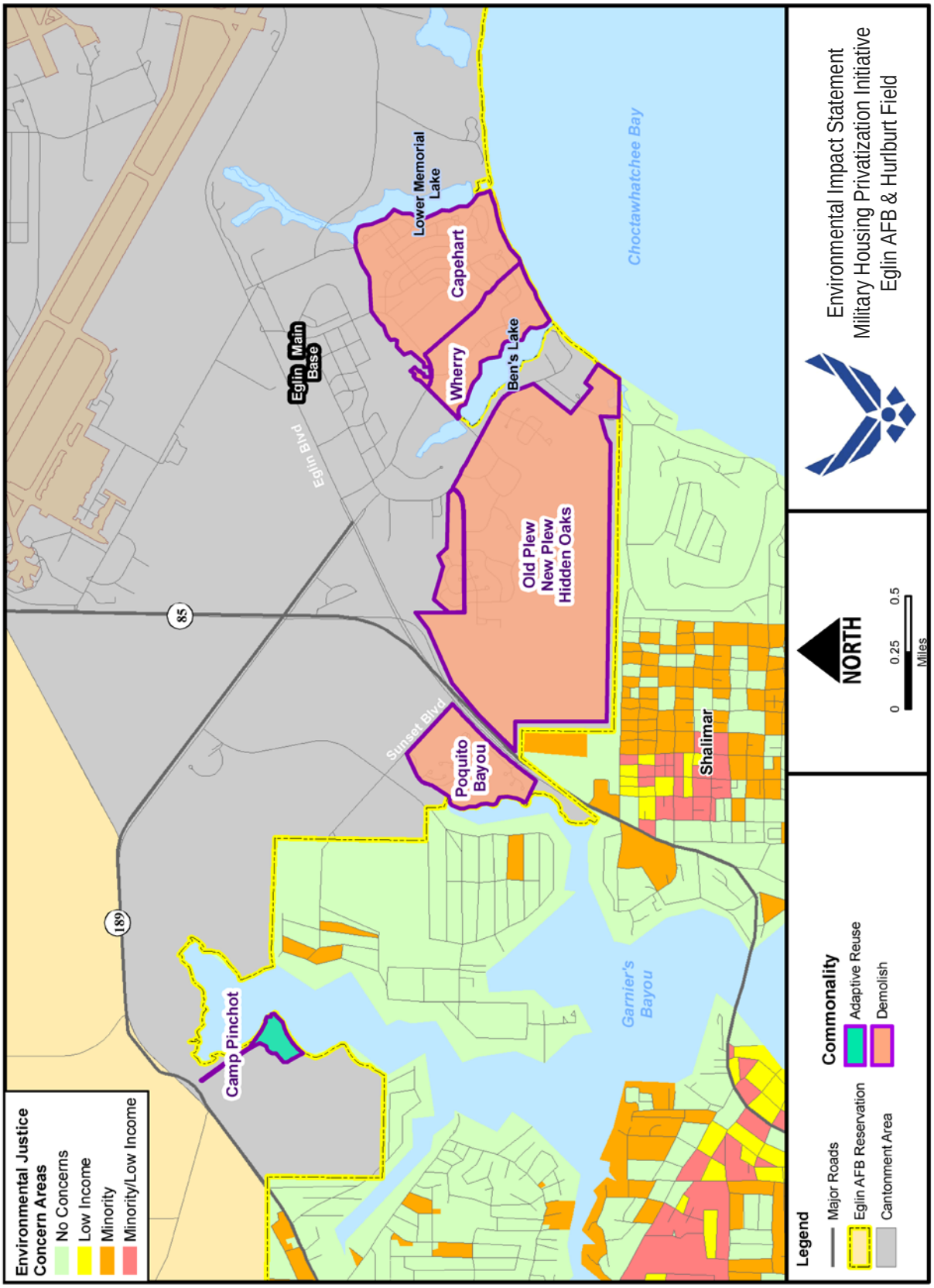

Figure 3-8. Communities With High Minority and/or Low-Income Populations as Compared to County Averages Within the Eglin Project Area

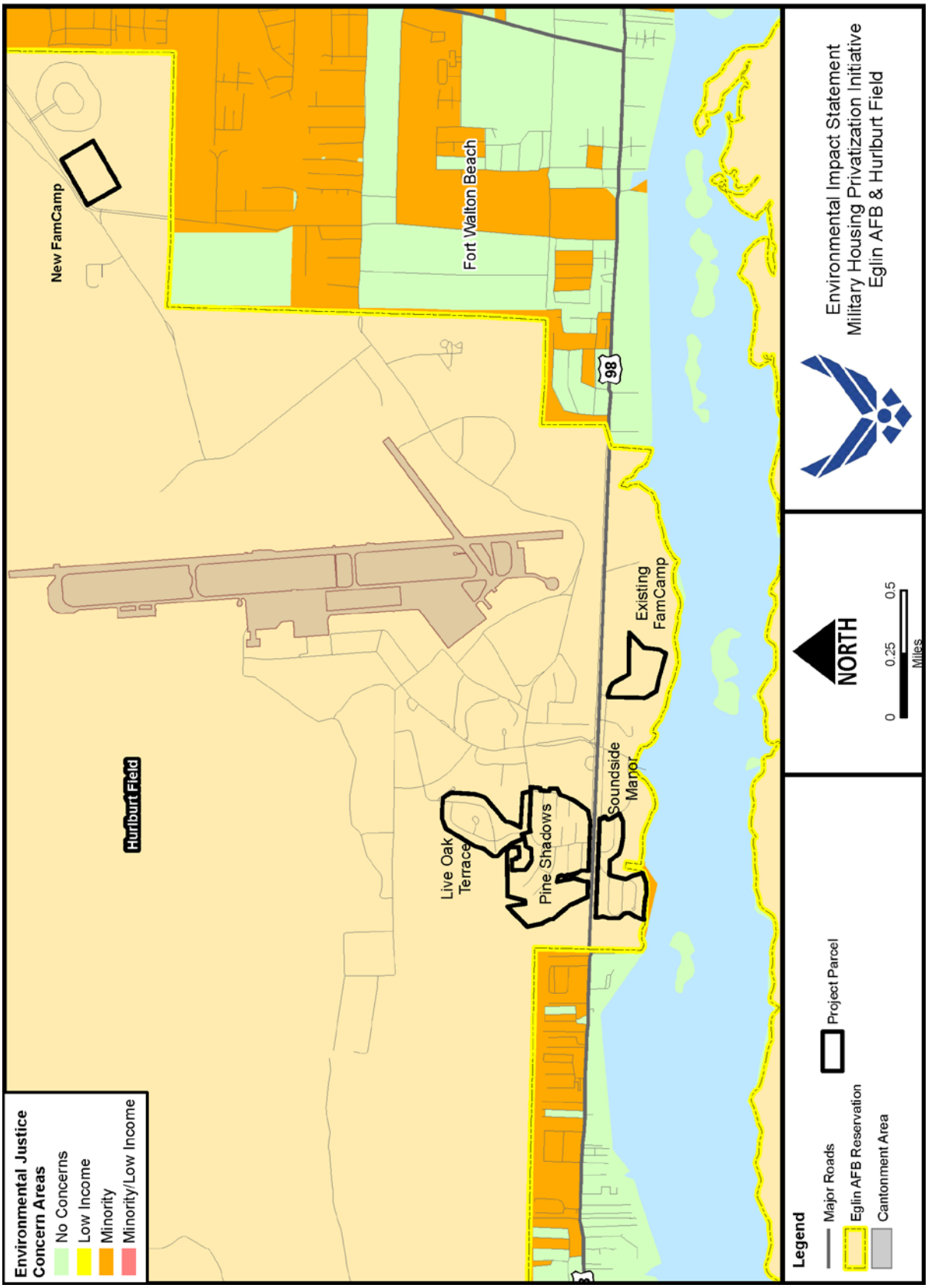

Figure 3-9. Communities With High Minority and/or Low-Income Populations as Compared to County Averages Within the Hurlburt Field Project Area

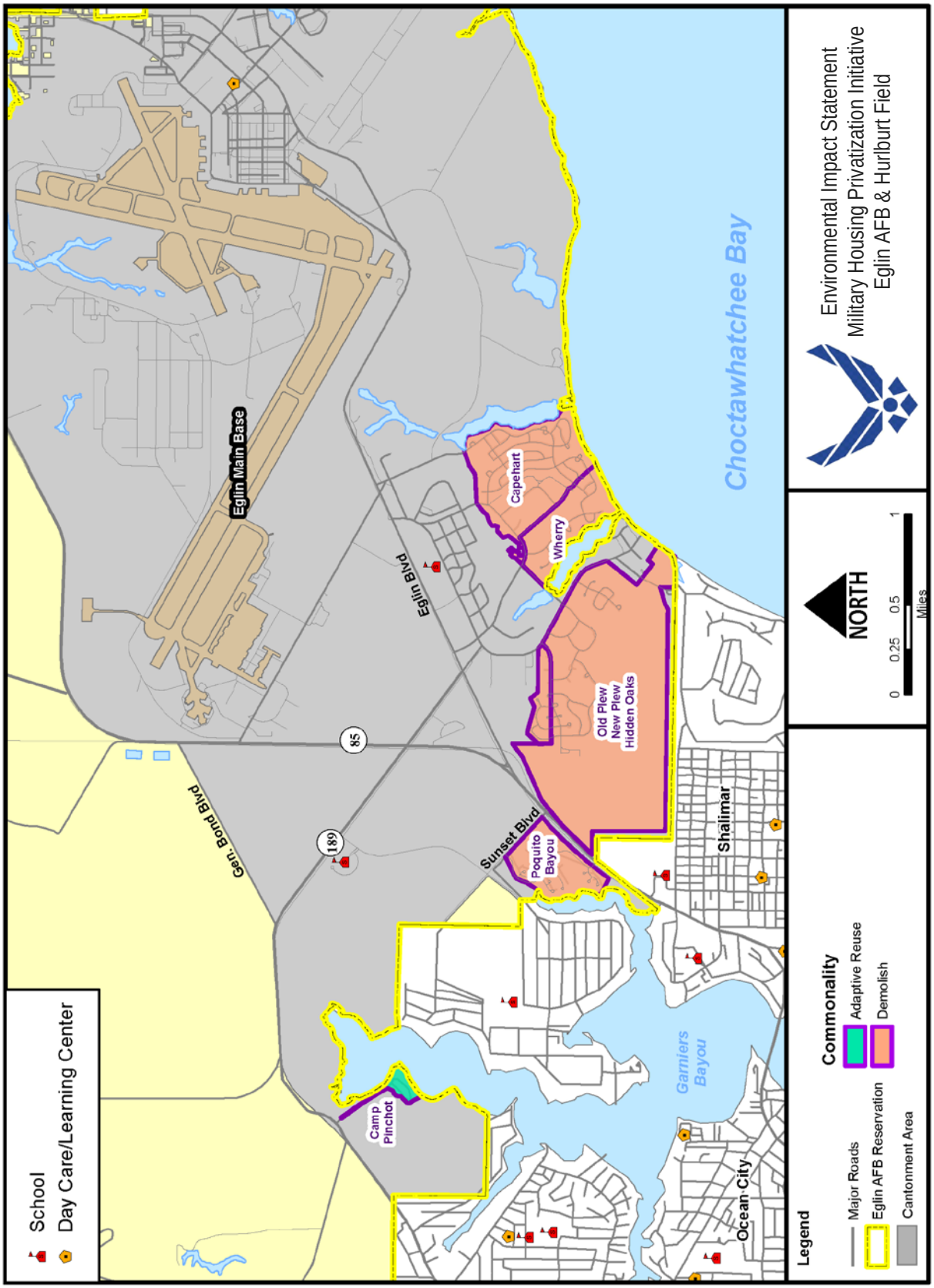

Figure 3-10. Communities With a High Percentage of Children Under 18 as Compared to County Averages Within the Eglin Project Area

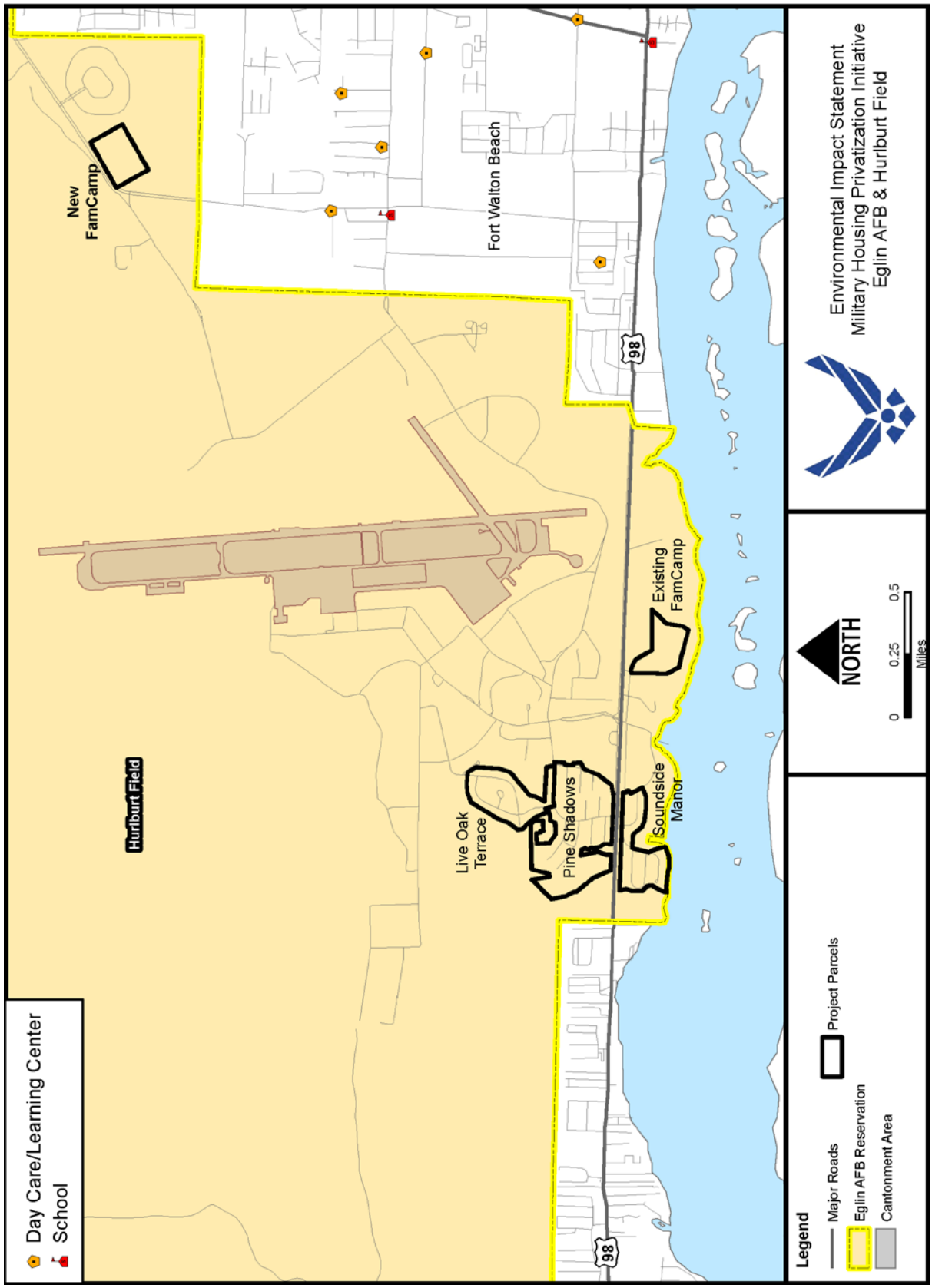

Figure 3-11. Communities With a High Percentage of Children Under 18 as Compared to County Averages Within the Hurlburt Field Project Area

According to statistics from the 2000 census (the latest available), 3,681 children under age 18 (or 38.4 percent of the total base population) live on Eglin AFB (ZIP Code 32542). A total of 1,490 children (approximately 15.5 percent of the total base population) are younger than five years old. At Hurlburt Field (ZIP Code 32544), 1,008 children under age 18 (or 32.5 percent of the total base population) live on the base, with 394 children (approximately 12.7 percent of the total base population) under the age of five years (U.S. Department of Commerce, 2008). The youth population, comprising children under the age of 18 years, constitutes 25 percent of the ROI population, ranging from 21.7 percent in Walton County to 26.6 percent in Santa Rosa County, compared to 22.8 percent for Florida overall. Schools and childcare centers are displayed on the maps presented in Figure 3-10 and Figure 3-11 (on the previous two pages).

3.3 UTILITIES

The utilities described and analyzed for potential impact resulting from the implementation of the MHPI include potable water, wastewater, electricity, and natural gas. The description of the each utility focuses on existing infrastructure (e.g., wells, water systems, wastewater treatment plants), current utility use, and any predefined capacity or limitations as set forth in permits or regulations.

3.3.1 Definition of the Resource

Water that is drinkable by humans is referred to as "potable water." Potable water is safe to consume because it either comes from an uncontaminated aquifer (an underground layer of porous rock containing water) or it has been pretreated to eliminate contaminants that would potentially cause illness in humans.

Wastewater is water that has been used and contains dissolved or suspended waste materials. The waste materials include a wide variety of pollutants such as human excreta, food waste, soaps, detergents, and other cleaning materials. Before the wastewater can be released into waterways, it is treated at wastewater treatment plants to get rid of the pollutants.

"Electrical supply" refers to the demand on the facilities' electrical substations and distribution system. "Natural gas" refers to the on-base transmission and distribution system and the demand for natural gas to heat base facilities.

3.3.2 Affected Environment

Potable Water

The Florida Department of Environmental Protection (FDEP) regulates potable water supply systems in Florida. The Florida Safe Drinking Water Act and FDEP rules have incorporated federal primary and secondary drinking water standards as identified in the Safe Drinking Water Act (42 United States Code [USC] 201, 300 et seq.) and the

National Primary Drinking Water Regulations. A public water supply system is classified by the FDEP as a system that has at least 15 service connections or regularly serves 25 individuals daily at least 60 days of the year. The Florida Water Resources Act (Florida Statutes, Title 28 Section 373) requires a comprehensive approach to water management based on regional hydrological boundaries. The act also provides for the creation of five regional water management districts; Eglin AFB is within the Northwest Florida Water Management District (NWFWMD).

At Eglin AFB, family housing units use potable water drawn from a series of 18 potable water system (PWS) wells located throughout Eglin AFB. Due to the excellent quality of the water, the only treatment process typically required is chlorine disinfection at each well. Potable water for Camp Rudder housing is serviced by two active wells at Camp Rudder. The water on Eglin Main Base is supplied by two separate systems that the Air Force owns and operates. The Main Base/Ammunition Area water system supplies the areas east of the runway, including the Georgia Avenue housing area. The housing area system services the other areas on Eglin Main Base including the main housing areas. Table 3-16 identifies the Eglin Main Base public water supply systems and includes the permitted and actual potable water use.

Table 3-16. Public Water Supply Systems Associated With Eglin Main Base

Water Supply System	Permitted Average Daily Limit (gal/day)	Permitted Max Daily Limit (gal/day)	Permitted Max Monthly Limit (gal/month)	2008 Average Daily Rate (gal/day)	2008 Average Monthly Rate (gal/month)
Main Base/ Ammunition Area	1.7 million	4.0 million	91.0 million	719,960	21.9 million
Housing Area	1.92 million	4.99 million	120 million	1.1 million	27.7 million

Source: Adams, 2009
gal = gallons

Family housing units on Hurlburt Field also use potable water drawn from the Floridan Aquifer. Water is drawn from a series of five wells located throughout the installation. Because of the excellent quality of the water, the only treatment process typically required is chlorine disinfection at each well. The overall production capacity of the wells is 2,100 gallons per minute or 3.03 million gallons per day (MGD). These wells supply four existing storage tanks. Hurlburt Field housing areas are serviced by Hurlburt Field's water supply system, which the Air Force currently owns and operates. Table 3-17 identifies the public water supply system on Hurlburt Field. The table also includes the permitted and actual potable water use. Hurlburt Field is permitted by the state of Florida to pump a maximum combined withdrawal of 1.63 MGD, not to exceed 31 MGD monthly (U.S. Air Force, 2002a).

Table 3-17. Hurlburt Field Public Water Supply System, 2007

Water Supply System	Permitted Average Daily Limit (gal/day)	Permitted Max Daily Limit (gal/day)	Permitted Max Monthly Limit (gal/month)	2007 Average Daily Rate (gal/day)	2007 Average Monthly Rate (gal/month)
Hurlburt Field	800,000	1.63 million	31.0 million	664,500[a]	20.2 million[a]

Source: Lynd, 2008
gal = gallons

Wastewater

The Clean Water Act (CWA) (33 USC 1151 et seq., 1251 et seq.) is the basic federal legislation governing wastewater discharges. The implementing federal regulations include the National Pollutant Discharge Elimination System (NPDES) permitting process (40 CFR 122), general pretreatment programs (40 CFR 403), and categorical effluent limitations, including limitations for pretreatment of direct discharges (40 CFR 405 et seq.).

The Florida Air and Water Pollution Control Act (Florida Statutes, Title 28 Section 403) governs industrial and domestic wastewater discharges in the state. The NWFWMD has been designated as the enforcement authority by the FDEP. The implementing state regulations are contained in the Florida Administrative Code (FAC) 62-600 through 62-660. These regulations establish water quality standards, regulate domestic wastewater facility management and industrial waste treatment, establish domestic wastewater treatment plant monitoring requirements, and regulate stormwater discharge. There are no permitted discharges of wastewater effluent to Choctawhatchee Bay due to the use of land made available by Eglin for spray irrigation.

The 96th Civil Engineer Group, Environmental Compliance Branch (96 CEG/CEVC) manages wastewater treatment facility permits and related compliance requirements, in accordance with applicable Air Force regulations at Eglin AFB. Wastewater at Eglin AFB is processed at treatment plants owned and operated by the installation. There are five wastewater treatment plants on Eglin AFB and one on Hurlburt Field, which is also owned and operated by the Air Force (Table 3-18). Camp Pinchot is served by its own septic system.

Discharge from all sewage plants on Eglin AFB and Hurlburt Field is regulated by the NPDES and is closely monitored by both the FDEP and the installations to ensure continued compliance with applicable environmental laws and regulations. Details of wastewater daily flow for the respective treatment facilities are given in Table 3-18.

Table 3-18. Wastewater Treatment Systems Near or Surrounding Alternative Areas

WWTP Location	Capacity in MGD	Annual Average Usage in MGD (May 2009)	Percentage of Capacity Used	Areas Served by WWTP
Main Base	1.0	0.342	34.2	Main Base east of the runway
Plew Heights	1.5	0.286	19.1	Main Base housing, 33 FW, Munitions Storage Area
Field 3	0.125	0.010	8.0	Duke Field
Field 6	0.099	0.033	33.3	Camp Rudder
Site C-6	0.020	0.008	40.0	Test Site C-6
Hurlburt Field	1.0	0.7*	70.0	Hurlburt Field Main Base

Source: Brown, 2010; MGD = million gallons/day; WWTP = wastewater treatment plant; 33 FW = 33rd Fighter Wing
*2006 data

Nearby public wastewater treatment plants include the new Arbennie Pritchett Water Reclamation Facility (WRF) and the Niceville, Valparaiso, Okaloosa County (NVOC) wastewater treatment plant. The NVOC plant is located on SR-85 north in Niceville. The City of Niceville owns and operates 70 sewage lift stations that pump wastewater to the NVOC plant. The Arbennie Pritchett WRF is a new 10 MGD wastewater treatment plant constructed on the existing Garnier's effluent spray field located on Eglin AFB. The new plant replaced the 6.5 MGD Garnier's wastewater treatment plant and will discharge effluent to 200 acres of newly constructed rapid infiltration basins. The Arbennie Pritchett WRF will serve Okaloosa County's Garnier's service area, the new 7th Special Forces Group (Airborne) facilities located on the Eglin Range, and eventually wastewater flows generated by Eglin AFB. Connections to the WRF are estimated to be completed in calendar year 2013 with the Eglin Main, Duke Field, and Camp Rudder facilities being closed the following year.

Electricity

Gulf Power serves all of Santa Rosa County and much of Okaloosa County (including the cities of Fort Walton Beach, Cinco Bayou, Destin, Mary Esther, Shalimar, Crestview, Niceville, and Valparaiso). Gulf Power is an operating company of the Southern Electric System, along with Georgia Power Company, Alabama Power Company, Mississippi Power Company, and Savannah Electric. As the largest system in the nation, Southern Electric pools power and draws as needed. Gulf Power has generating plants located in Pensacola, Pea Ridge, Sneads, and Lynn Haven, Florida, all of which provide electrical utility service throughout northwest Florida.

There is electricity available in all alternative areas for consideration (Table 3-19). The majority of electric to Eglin AFB and Hurlburt Field is provided by Gulf Power, although the Choctawhatchee Electric Cooperative, Inc. (CHELCO) services the White Point Area. The Air Force currently owns and operates the entire electric system on the main bases and within all the housing areas. Gulf Power owns and operates the Eglin West Gate substation and West Side Hurlburt Field substation. Gulf Power will also

own and operate the East Side Hurlburt Field substation that is currently under construction. Only the Georgia Avenue units and two units on Palm Circle on Eglin Main Base are currently metered. No individual units on Hurlburt Field are metered.

Table 3-19. Electric Capabilities at Alternative Areas

Area	Electric Available in Area	Area Supplier	Capacity
White Point	√	CHELCO	-
Eglin Main Base / Valparaiso	√	Gulf Power	-
North Fort Walton Beach	√	Gulf Power	Limited
Hurlburt Field	√	Gulf Power	-

Source: Fernandez, 2010
CHELCO = Choctawhatchee Electric Cooperative, Inc.

Natural Gas

Natural gas is provided to Eglin AFB and Hurlburt Field from the Okaloosa Gas District, which supplies natural gas to most of Okaloosa County. Okaloosa Gas owns and operates the entire natural gas distribution system on both bases, with the exception of the Hidden Oaks units on Eglin Main Base, which the Air Force owns and operates. No individual units on Hurlburt Field are metered.

3.3.2.1 Alternative 1: White Point Area

There are no PWS wells on any of the parcels in this area. The closest public water supply is the Bluewater Bay/Raintree system operated by Okaloosa County Water & Sewer. This system is served by three wells and two elevated tanks.

Alternative 1 – Parcel 1

The closest PWS well to Parcel 1 is ER-MGRA#1(70), which is less than one mile to the southwest.

Alternative 1 – Parcels 2–7

The closest well to Parcels 2–7 is ER-D51 #116 located on D-51.

3.3.2.2 Alternative 2: Eglin Main Base / Valparaiso Area

Alternative 2 – Parcels 1, 9, 10, 11

The potable water supply for Parcel 1, 9, 10, and 11 is supplied by the Eglin housing area system.

Alternative 2 – Parcels 2–8

There are no PWS wells on Parcels 2–8. The closest water supply system is the Main Base system.

3.3.2.3 Subalternative 2a: Eglin Main Base (Preferred Alternative)

The existing potable water supply for Subalternative 2a is addressed under the Proposed Action commonalities for Eglin Main Base Housing Areas.

3.3.2.4 Alternative 3: North Fort Walton Beach Area

There are no PWS wells on any of the parcels in this area. The closest public water supply is the Garnier's Main Water System operated by Okaloosa County Water & Sewer. This water system services the Ocean City-Wright-Shalimar-Okaloosa Island area and all the unincorporated areas around Fort Walton Beach. It is served by 12 water wells, 8 elevated tanks, and one 2-million-gallon ground storage tank.

3.3.2.5 Alternative 4: Mix Alternative

This Alternative would involve utilizing a combination of the parcels described in Alternatives 1, 2, and 3. The affected environment for this alternative would be the same as described previously.

3.4 AIR QUALITY

3.4.1 Definition of the Resource

Air quality is determined by the type and amount of pollutants emitted into the atmosphere, the size and topography of the air basin, and the prevailing meteorological conditions. The levels of pollutants are generally expressed in terms of concentration, either in units of parts per million or micrograms per cubic meter ($\mu g/m^3$).

The baseline standards for pollutant concentrations are the National Ambient Air Quality Standards (NAAQS) and state air quality standards. These standards represent the maximum allowable atmospheric concentration that may occur and still protect public health and welfare.

Based on measured ambient air pollutant concentrations, the United States Environmental Protection Agency (USEPA) designates whether areas of the United States meet the NAAQS. Those areas demonstrating compliance with the NAAQS are considered "attainment" areas, while those that are not are known as "nonattainment" areas. Those areas that cannot be classified on the basis of available information for a particular pollutant are "unclassifiable" and are treated as attainment areas until proven otherwise.

Greenhouse Gases

Greenhouse gases (GHGs) are chemical compounds in the earth's atmosphere that trap heat. Gases exhibiting greenhouse properties come from both natural and human sources. Water vapor, carbon dioxide (CO_2), methane, and nitrous oxide are examples of GHGs that have both natural and manmade sources, while other gases such as those used for aerosols are exclusively manmade. In the United States, GHG emissions come mostly from energy use. These are driven largely by economic growth, fuel used for electricity generation, and weather patterns affecting heating and cooling needs.

Transportation sources accounted for approximately 29 percent of total U.S. GHG emissions in 2006 and are the fastest-growing source of U.S. GHGs according to USEPA Transportation and Climate sources (USEPA, 2009a). The majority of CO_2 emissions come from the combustion of fossil fuels based on the fuel's carbon content. To a lesser degree, transportation sources emit methane (CH_4) and nitrous oxide (N_2O) during fossil fuel consumption. Aircraft GHG emissions from military aircraft in 2003 made up 12 percent compared to the 72 percent produced from commercial aircraft. Commercial and military aircraft rely almost exclusively on jet fuel, while approximately one-quarter of the fuel used for general aviation is aviation gas. GHG emissions from aircraft in 2003 were 99 percent CO_2, about 1 percent N_2O, and less than 1 percent CH_4 (USEPA, 2006).

The use of construction equipment is expected to cause some increase in GHG emissions. The combustion of fossil fuels is considered the primary source of carbon dioxide emissions based on the fuel's carbon content. To a lesser degree, mobile sources emit CH_4 and N_2O during fossil fuel consumption. Construction equipment emits approximately 22.37 pounds of CO_2 per gallon of diesel and 19.54 pounds of CO_2 per gallon of gasoline (USEPA, 2009). These emission rates can be decreased with less idling and improved maintenance of equipment.

The FDEP's Preliminary Inventory of Florida Greenhouse Gas Emissions 1990–2004 shows that the total GHG emissions have increased since 1990 at an average rate of 2.5 percent per year. The primary causes for the increase are electric power generation (49 percent of total emissions) and transportation (43 percent of total GHG emissions). The increase in transportation emissions is due to more vehicle miles of travel (Florida Planning Toolbox, 2010). In response to Governor Charlie Crist's Executive Order 07-128 the *Florida Energy and Climate Action Plan* was completed in October 2008 and is a comprehensive plan to meet or exceed statewide targets for greenhouse gas emissions reductions. The Plan would reduce state GHG emissions by 20 percent below 1990 levels by 2020 (The Center for Climate Strategies, 2009). The Plan contains 50 separate policy recommendations, plus comments regarding the current regulatory work to develop Florida's cap-and-trade program to reduce harmful GHG emissions. These recommendations, if implemented, would result in GHG emission reductions that

would surpass the Governor's 2017 and 2025 emission reduction targets by 11 percent and 34 percent, respectively.

3.4.2 Affected Environment

3.4.2.1 Commonalities Across All Alternatives

The Proposed Action and Alternatives 1 (White Point Area), 2 (Eglin AFB Main Base), and 3 (North Fort Walton Beach Area) would occur in Okaloosa County. Therefore, for purposes of this analysis, the ROI is Okaloosa County.

The FDEP operates 57 ozone and 13 particle pollution (particulate matter with a diameter of less than or equal to 2.5 microns [$PM_{2.5}$]) air quality monitors in 31 counties throughout the state (FDEP, 2009a). There are ozone monitors located in the southern portions of both Santa Rosa and Okaloosa Counties. Both of these counties are classified as attainment areas, as all counties within Florida are classified as attainment areas for the NAAQS (USEPA, 2009a).

The Clean Air Act also establishes a national goal of preventing degradation or impairment in attainment areas. As part of the Prevention of Significant Deterioration (PSD) Program, areas were designated as Class I, II, or III. Congress designated national parks and wilderness areas as Class I areas, where any appreciable deterioration in air quality is considered significant. Class II areas are those where moderate, well-controlled industrial growth could be permitted. Class III areas allow for greater industrial development. The area surrounding Eglin AFB and Hurlburt Field is classified as Class II. Currently there are no designated Class III areas in the United States.

Under the PSD program, before a new major source of air emissions is constructed, its emissions are estimated to determine if significant emissions rate (SER) thresholds are exceeded. If a source is to be modified, then its emissions are evaluated and compared to the SER thresholds to determine if modifications are significant. The SER thresholds are used to ascertain whether pollution controls or air quality dispersion modeling are necessary for the construction project (USEPA, 1990). The FDEP considers Eglin AFB a major emissions source with respect to the PSD program. Although Hurlburt Field is part of the Eglin Reservation, its mission is quite different than Eglin and is separated from the Reservation for permitting purposes.

There are three designated PSD Class I areas in Florida: Chassahowitzka National Wildlife Refuge Wilderness Area, Everglades National Park, and St. Marks Wilderness Area; however, all of these areas are more than 50 miles from the construction areas (FAC 62-204-240).

Baseline emissions for Okaloosa County utilized in this document are presented in Table 3-20. These emissions data were acquired from the USEPA's 2002 National

Emissions Inventory data for Okaloosa County (USEPA, 2002). The county data include emissions data from point sources, area sources, and mobile sources. "Point sources" are stationary sources that can be identified by name and location. "Area sources" are point sources of emissions too small to track individually, such as individual homes, small office buildings, or diffuse stationary sources (e.g., wildfires or agricultural tilling equipment). "Mobile sources" are vehicles or equipment with gasoline or diesel engines, e.g., an airplane or a ship. Two types of mobile sources are considered: on-road and non-road. On-road mobile sources are vehicles such as cars, light trucks, heavy trucks, buses, engines, and motorcycles. Non-road sources are aircraft, locomotives, diesel and gasoline boats and ships, personal watercraft, lawn and garden equipment, agricultural and construction equipment, and recreational vehicles (USEPA, 2005).

Table 3-20. Baseline Emissions Inventory for Okaloosa County

Source Type	Emissions (tons/year)					
	CO	NO_x	PM_{10}	$PM_{2.5}$	SO_x	VOC
Okaloosa County						
Area Sources	1,867	281	8,392	1,323	462	4,527
Non-Road Mobile	16,150	1,099	162	144	109	1,897
On-Road Mobile	45,228	5,703	153	113	256	3,829
Point Sources	28	49	15	11	12	79
Total	**63,274**	**7,132**	**8,723**	**1,590**	**839**	**10,333**

Source: USEPA, 2002
CO = carbon monoxide; SO_x = sulfur oxides; NO_x = nitrogen oxides; PM_{10} = particulate matter with a diameter of less than or equal to 10 microns; VOC = volatile organic compound

3.5 SAFETY

3.5.1 Definition of the Resource

Safety is defined as any issue with a potential to increase health risks to military or DoD civilian personnel, developer personnel, or the general public. This section defines potential safety issues associated with MFH privatization activities.

Safety considers issues associated with operations and maintenance activities that support the Proposed Action; specific issues addressed include construction site job safety. A variety of Air Force regulations address or govern safety, including Air Force Instruction (AFI) 91-301, *Air Force Occupational and Environmental Safety, Fire Protection, and Health (AFOSH) Standards.* Under Title 29 CFR 1960 series, Occupational Safety and Health Administration (OSHA) standards do not apply to military-unique workplaces, operations, equipment, and systems. However, according to DoD instruction, they will be followed insofar as is possible, practicable, and consistent with military requirements. AFOSH standards apply unless specifically exempted by variance or determined to be an acceptable deviation.

Safety does not consider the potential for encountering unexploded ordnance (UXO) during construction/renovation activities, as records and interviews indicate no ordnance has ever been expended or stored in Eglin or Hurlburt MFH areas or in currently undeveloped areas addressed under the alternatives (SAIC, 2008).

3.5.2 Affected Environment

The ROI for safety comprises MFH areas at Eglin AFB and Hurlburt Field, which are associated with alternatives.

3.5.2.1 Proposed Action Commonalities

Job Site Safety – Day-to-day construction operations and maintenance activities conducted at Eglin AFB and Hurlburt Field are performed in accordance with applicable Air Force safety regulations, published Air Force technical orders, and standards prescribed by AFOSH requirements. Developers working on the installations are required to prepare appropriate job site safety plans explaining how job safety will be assured throughout the life of the project. Developers are also required to follow applicable OSHA requirements.

Job site safety also includes the potential for worker exposure to legacy pesticides (i.e., chlordane) during ground-disturbance activities around existing housing units. Chlordane was used in the past for the control of subterranean termites in MFH areas. The pesticide was applied to the underlying soils around the foundation of housing units. Because of concern about damage to the environment and harm to human health, the USEPA banned all uses of chlordane in 1983 except to control termites. In 1988, the USEPA banned all uses of the chemical (Agency for Toxic Substances and Disease Registry [ATSDR], 2004). Chlordane has not been applied at the base since at least 1988.

Eglin AFB and Hurlburt Field manage asbestos and lead-based paint (LBP) in place where present, removing it only when there is a potential for adverse health impacts. Each installation provides information on potential health hazards associated asbestos and LBP to all incoming housing residents. Additionally, construction projects require that safety measures be implemented in residential areas surrounding work sites. These measures include maintenance of restricted access during all aspects of the project; work hours, site preparation, and nonwork hours; and the minimization of hazards for slips, trips, and falls associated with construction and demolition activities.

3.5.2.2 Alternative 1: White Point Area

Parcels 1–7 are undeveloped; therefore, there are no affected resources related to job site safety. Additionally, there is no evidence of UXO potential on any of these parcels.

3.5.2.3 Alternative 2: Eglin Main Base/Valparaiso Area

There are no affected resources associated with job site safety or UXO on currently developed housing areas of Alternative 2 that were not previously discussed under the Proposed Action Commonalities. In undeveloped areas associated with Alternative 2, there are no affected resources related to job site safety. Additionally, there is no evidence of UXO potential on undeveloped areas.

3.5.2.4 Subalternative 2a: Eglin Main Base (Preferred Alternative)

There are no affected resources associated with job site safety or UXO on currently developed housing areas of Subalternative 2a that were not previously discussed under the Proposed Action Commonalities. In undeveloped areas associated with Subalternative 2a, there are no affected resources related to job site safety. Additionally, there is no evidence of UXO potential on undeveloped areas.

3.5.2.5 Alternative 3: North Fort Walton Beach Area

Alternative 3 – Parcels 1–5

Parcels 1 through 5 are undeveloped; therefore, there are no affected resources related to job site safety. Additionally, there is no evidence of UXO potential on this parcel.

3.5.2.6 Alternative 4: Mix Alternative

This alternative would utilize a mix of parcels discussed previously under Alternatives 1–3. As a result, the affected environment would be the same as that discussed previously under Alternatives 1–3.

3.6 HAZARDOUS MATERIALS AND WASTE

3.6.1 Definition of the Resource

Hazardous materials listed under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 and the Emergency Planning and Community Right-to-Know Act are defined as any substances that, due to quantity, concentration, or physical, chemical, or infectious characteristics, may present substantial danger to public health, welfare, or the environment. State laws pertaining to hazardous materials management include the Florida Right-to-Know Act; Florida Statutes Title 17, Chapter 252; and 49 CFR 178 under Florida statute annotated Title 29, Section 403.721 implemented by the FDOT Motor Carrier Compliance Department. Examples of hazardous materials include cleaning products and paint-related products. Petroleum storage tanks located on or near MFH areas are also addressed in this section.

Hazardous wastes listed under the Resource Conservation and Recovery Act of 1976 (RCRA) are defined as any solid, liquid, or contained gaseous or semisolid waste, or any combination of wastes that poses a substantive present or potential hazard to human health or the environment. In addition, hazardous wastes must meet either a hazardous characteristic of ignitability, corrosivity, toxicity, or reactivity under 40 CFR 261 or be listed as a waste under 40 CFR 261.

The affected resources also include Air Force Environmental Restoration Program (ERP) sites. The ERP is used by the Air Force to identify, characterize, clean up, and restore sites contaminated with toxic and hazardous substances; low-level radioactive materials; petroleum, oil, or lubricants (POL); or other pollutants and contaminants. The ERP has established a process to evaluate past disposal sites, control the migration of contaminants, identify potential hazards to human health and the environment, and remediate the sites.

The affected resources include the potential presence in structures of asbestos or LBP. Friable (brittle) asbestos becomes hazardous when fibers become airborne and are inhaled. Asbestos is regulated by the USEPA with the authority promulgated under OSHA, 29 USC 669 et seq. Emissions of asbestos fibers to ambient air are regulated under Section 112 of the Clean Air Act (CAA) of 1970. Lead contamination is regulated by the Toxic Substances Control Act of 1976, Titles I and IV, and OSHA. Additionally, the LBP Poisoning Prevention Act (42 USC 4821 et seq.), as amended by the Residential LBP Hazard Reduction Act of 1992 (Public Law 102-550, also known as Title X), requires that LBP hazards in some federal structures be identified and eliminated.

Finally, the affected resources also include the potential presence of chlordane in soils underlying or surrounding MFH units. Chlordane is a manufactured chemical that was used as a pesticide in the United States from 1948 to 1988. Because of concern about damage to the environment and harm to human health, the USEPA banned all uses of chlordane in 1988.

3.6.2 Affected Environment

The ROI for hazardous materials and hazardous waste comprises MFH areas at Eglin AFB and Hurlburt Field. The ROI is not solely limited to areas associated with the Proposed Action, since the impact of those actions may affect base-wide hazardous waste generation rates and management of hazardous wastes.

3.6.2.1 Proposed Action Commonalities

Hazardous Materials – MFH areas contain no industrial facilities, and the installation does not store hazardous materials in these areas. However, residents may purchase cleaning supplies and other chemicals for personal use that contain constituents classified as hazardous materials. These products are typical of those found in a household and include gasoline, motor oils, paints and thinners, small volumes of

pesticides, cleaning solvents, and janitorial supplies. The use of these chemicals is not regulated or tracked by the installation, and the quantity of these materials stored is unknown.

Small quantities of hazardous materials are also stored at several locations within close proximity to MFH areas. There is a small hazardous materials storage shed located in the housing developer maintenance area at Hurlburt Field. This concrete hazardous materials storage shed has built-in secondary containment and is used to store small containers (five gallons and less) of paint-related products and POL. Small quantities of POL are also stored at the maintenance building located in Camp Pinchot or in other maintenance areas/storage buildings.

Hazardous materials also include petroleum-based fuels. The 96 CEG/CEVC at Eglin AFB and the 1st Special Operations Civil Engineer Squadron Asset Management (1 SOCES/CEA) at Hurlburt Field are responsible for managing petroleum storage tanks at each installation. The installation-specific Oil and Hazardous Substance Pollution Contingency Plan provides guidance for properly managing storage tanks and for preventing/mitigating potential releases from these tanks. Table 3-21 lists petroleum storage tanks located within, or in close proximity to, MFH areas. No fuel spills/releases have been reported from any of these tanks (Stippich, 2008).

Table 3-21. Petroleum Storage Tanks Located Within or Near MFH Areas

Tank Type	Location	Tank Description	Tank Purpose
AST	Camp Pinchot, Building 1567	120-gallon gasoline 120-gallon diesel	Vehicle fueling
AST	Camp Pinchot, Building 1565	300-gallon diesel	Day tank to supply fuel to backup generator
AST	Camp Rudder	280-gallon diesel 5,000-gallon diesel	Supply for backup generator and fueling
AST	Poquito Bayou, Building 10478, west side of Loblolly Drive	200-gallon diesel	Provides emergency power to sewage lift station generators
AST	Eglin Main Base housing area, 100 yards east of Ben's Lake Drive in the Ben's Lake housing area (Building 11057)	500-gallon diesel	Provides emergency power to sewage lift station generators
AST	Ben's Lake Marina	1,000-gallon gasoline	Boat fueling
UST	Cherokee Elementary School, 2580 Gaffney Road, 100 yards from the Ben's Lake housing area	3,000-gallon heating oil	Provides fuel to boiler for heating purposes
UST (removed)	Camp Pinchot, formerly located adjacent to Building 1565	300-gallon diesel	Supply fuel to a backup generator

Source: Eglin AFB, 2008; Stippich, 2008
AST = aboveground storage tank; MFH = Military Family Housing; UST = underground storage tank

Hazardous Wastes – Eglin AFB and Hurlburt Field are classified as large-quantity generators of hazardous wastes. Hazardous wastes at both installations are primarily associated with the maintenance and operation of jet aircraft. Hazardous wastes collected from base operations are temporarily stored for a period of up to 90 days until the wastes can be disposed by permitted contractors (U.S. Air Force, 2006a).

No industrial-type hazardous wastes are generated in Eglin AFB and Hurlburt Field MFH areas, although routine household hazardous wastes are generated. These wastes include batteries, fluorescent bulbs, pesticides, paint/paint cans, and pool chemicals. Used oil or other lubricants may also be generated as part of "do-it-yourself" vehicle maintenance activities. Both installations provide guidance and information on proper disposal of household hazardous wastes and encourage MFH residents to take their wastes to on base/off-base collection centers for recycling and disposal.

Household hazardous wastes, except used oil, are currently allowed to be disposed with other household trash. Used oil, filters, and greases may be disposed at the Eglin AFB and Hurlburt Field Automotive Skills Development Centers. Other residential hazardous wastes may be turned in at the South County Road Department, located on Ready Avenue in Fort Walton Beach. Okaloosa County's Mobile Household Hazardous Waste Collection Center also provides a convenient, on-site service to residents for the disposal of hazardous household wastes.

Environmental Restoration Program Sites - The ERP is used by the Air Force to identify, characterize, and remediate past environmental contamination on Air Force installations. There are numerous ERP sites located on Eglin AFB and Hurlburt Field. In addition, there are potential contamination sites on non-government properties near both installations. Most off-base sites are associated with the presence of underground storage tanks or with past leaks/spills from these tanks. Several ERP sites are located adjacent to, or within close proximity of, MFH areas (Table 3-22). The locations and status of these ERP sites are depicted in Figure 3-12, Figure 3-13, and Figure 3-14.

As Table 3-22 indicates, most of the ERP sites have been investigated and found to require No Further Action (NFA). None of these sites, or other contamination sites located on or off the base, is likely to cause or contribute to a release of any hazardous substance or any petroleum product on MFH areas.

Asbestos – Asbestos is a naturally occurring mineral whose crystals form long, thin fibers. Asbestos was widely used in manufacturing in the late 1800s because of its insulating properties, its ability to withstand heat and chemical corrosion, and its soft, pliant nature. Building materials and processes that incorporated asbestos included sprayed-on fireproofing, acoustical plaster, pipe, boiler and mechanical equipment insulation, drywall joint compound, asbestos cement siding, roofing shingles and tars,

floor tiles and mastic, and electrical wire insulation. In 1989, the USEPA prohibited the use of most commercially available asbestos-containing materials used in the United States. Since that time, knowledge of the adverse health effects associated with exposure to airborne asbestos has increased.

A comprehensive asbestos survey of base housing has not been conducted at Eglin AFB. However, limited testing conducted in our older units has identified asbestos-containing building materials (ACBM) in some of those units.

Table 3-22. ERP Sites On/Near Eglin and Hurlburt Field MFH Areas

Site Designation	Location	Site Description	Site Status
ST-71	Ben's Lake	AAFES West Gate Gasoline Station/Shoppette – Soil	NFA
ST-71A	Ben's Lake	AAFES West Gate Shoppette (ST-71, described above) – UST	NFA
ST-59	Ben's Lake/ Old Plew	The Ben's Lake Marina – former tank field	NFA
ST-77	Ben's Lake	Water Tower (Building 2589) – removal of lead-contaminated soil	NFA
ST-79	Ben's Lake/ Old Plew	Water Tower (Building 2830) – removal of lead-contaminated soil	NFA
POI-343	Camp Pinchot	Soil concentration of methylene chloride below screening criteria	NFA
ST-254	Camp Rudder	Water Tower (Number 6100) removal of lead-contaminated soil	NFA
ST-78	Capehart	Water Tower (Building 10351) – lead-contaminated soil removed	NFA
ST-113	Georgia Avenue	Rapcon Building 104 – two USTs removed in November 1997	NFA
ST-114	Georgia Avenue	The Airfield Lighting Building 116 – UST removed in October 1997	NFA
SD-208	Live Oak Terrace	Live Oak Terrace Housing Area – Contamination above cleanup levels in soil (calcium) and groundwater (iron, manganese); discoloration of soil from iron-fixing bacteria	NFA
ST-81	New Plew	Water Tower (Building 2756) – stripped and repainted to remove the potential source of contamination to site soils	NFA
ST-80	Old Plew	Water Tower (Building 2830) Well 12	NFA
ST-120	Old Plew	The Plew Sewage Treatment – UST removed in December 1997	NFA

Source: U.S. Air Force, 2003
AAFES = Army and Air Force Exchange; ERP = Environmental Restoration Program; MFH = Military Family Housing; NFA = No Further Action; PCB = Polychlorinated Biphenyl; UST = Underground Storage Tank

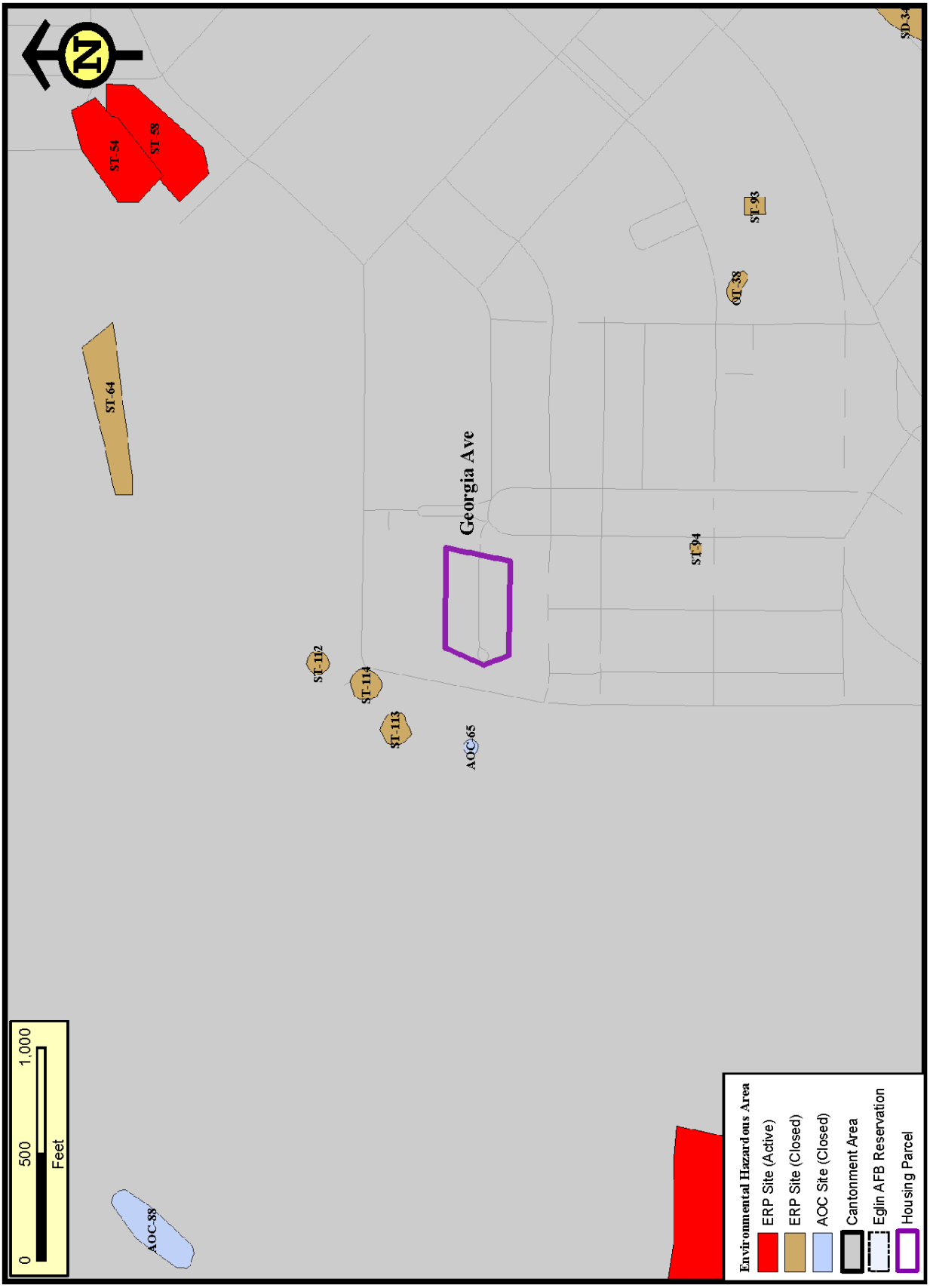

Figure 3-12. ERP Sites on/near Georgia Avenue MFH

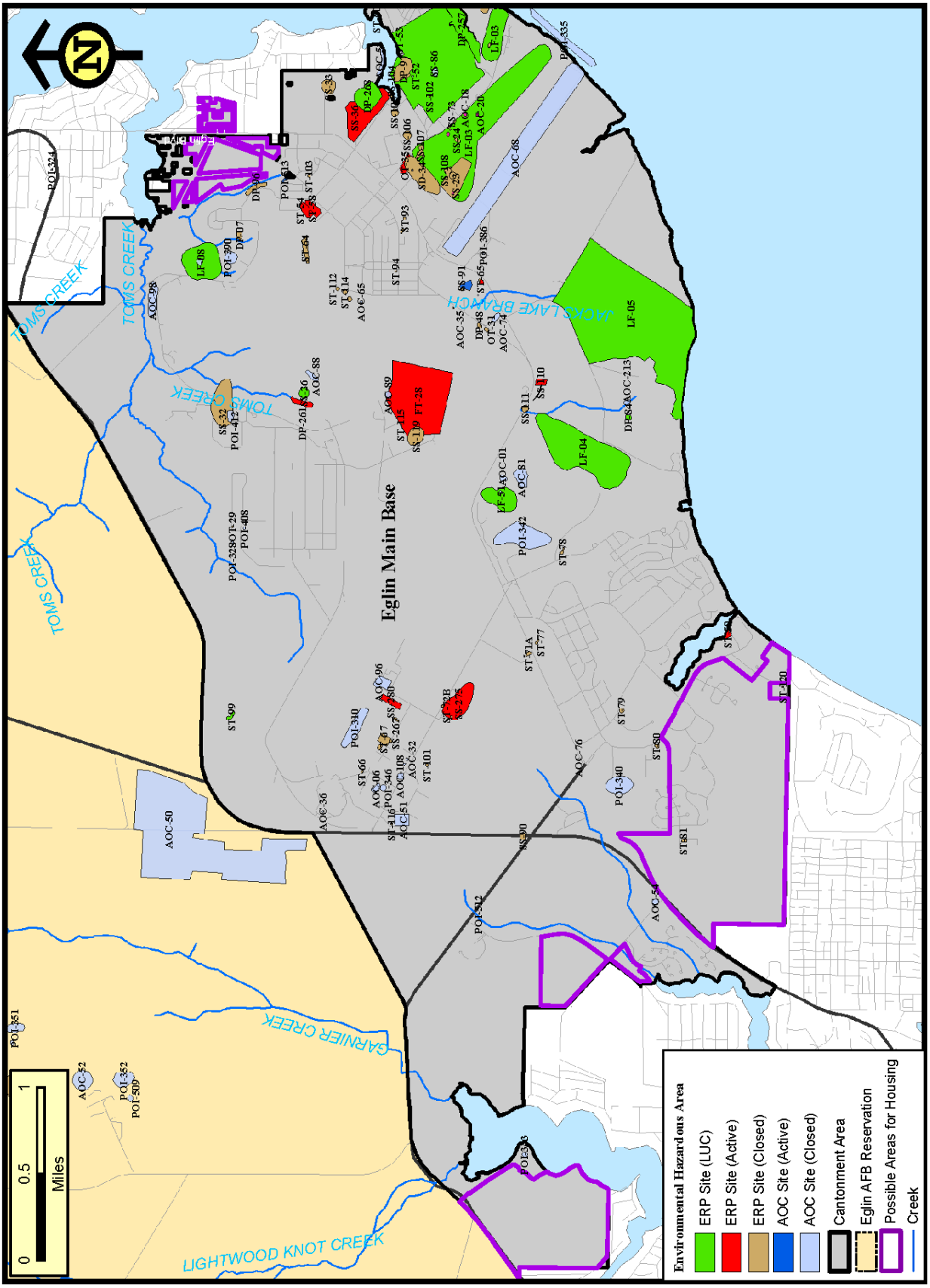

Figure 3-13. ERP Sites on/near Eglin Main MFH Areas

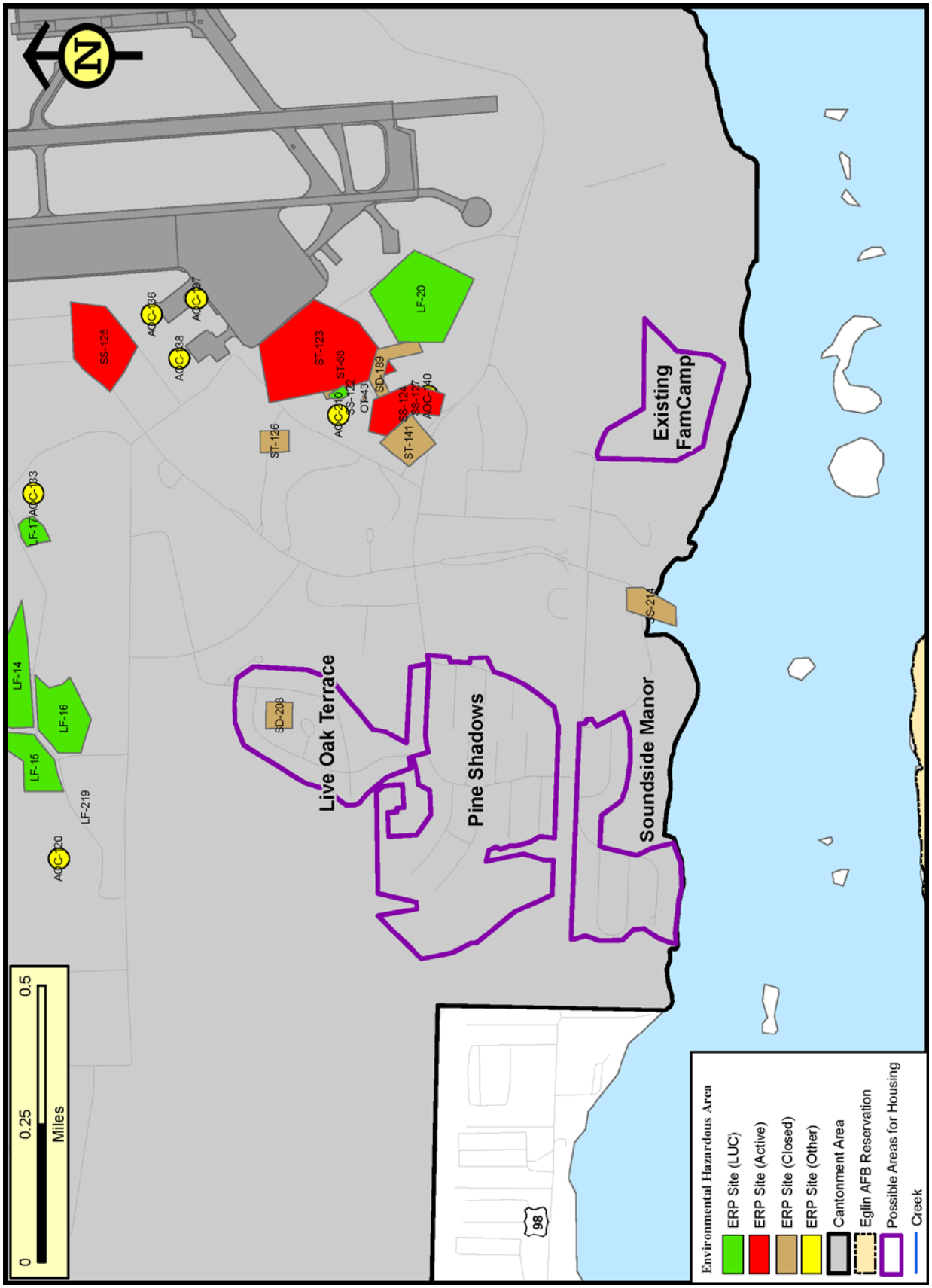

Figure 3-14. ERP Sites on/near Hurlburt Field MFH Areas

The Air Force conducted a preliminary survey for ACBM at Hurlburt Field housing at Soundside Manor, Pine Shadows, and Live Oak Terrace during 1995 and 1996. The survey confirmed the presence of ACBM in all three housing areas. ACBM identified in Soundside Manor units included vinyl composition tile, pipe insulation, flooring mastic, and roofing materials. ACBM identified in the Live Oak subdivision included textured acoustical ceiling/sheetrock material and roofing shingles. The Pine Shadows subdivision included asbestos-containing roofing shingles (Overstreet, 2007).

Both Eglin AFB and Hurlburt Field maintain computerized database systems documenting the presence of ACBM in base structures. These systems contain information on the type, amount, location, and conditions of ACBM surveyed. Base personnel continuously update these systems to ensure that current ACBM information is available when needed. It is the policy of each installation that, prior to any housing unit renovation/demolition activities, a comprehensive survey is performed, and any ACBM found is properly abated/disposed (Kauffman, 2009; Overstreet, 2007).

Lead-Based Paint – The LBP Poisoning Prevention Act requires that LBP hazards in federal housing be identified and eliminated. LBP is defined as paint on surfaces that contains lead in excess of 1.0 milligram per square centimeter as measured by an X-ray fluorescence spectrum analyzer, or 0.5 percent lead by weight. Waste containing levels of lead exceeding a maximum concentration of 5.0 milligrams per liter, as determined using the USEPA Toxic Characteristic Leaching Procedure, is defined as RCRA-regulated hazardous waste and requires specific handling, storage, and disposal requirements. In 1977, the U.S. Consumer Product Safety Commission prohibited the use of LBP in housing constructed or renovated with federal assistance.

To ensure that any threat to human health and the environment from LBP has been identified, Air Force policy requires that an LBP survey of high priority facilities be conducted. High-priority facilities include MFH, transient lodging facilities, schools, day care facilities, playgrounds, and other facilities frequented by children under the age of seven. The management of LBP at Eglin AFB and Hurlburt Field is the responsibility of the 96 CEG/CEVC and 1 SOCES/CEA, respectively.

A survey conducted at Eglin AFB MFH areas during 1995 identified materials containing LBP in all housing units, except those located at Poquito Bayou (constructed in 1976) and Camp Rudder (constructed in 1975) where LBP was not detected. The survey collected and evaluated material samples from 240 housing units. Materials identified as containing LBP included exterior wood doors, including casings and jambs; porch and carport posts and rails; soffit; fascia; and gables (U.S. Air Force, 2002b). The 96th Air Base Wing published a memorandum based on this survey in 1996. The memo, which is distributed to new housing occupants, identifies specific LBP locations and advises occupants on potential health hazards associated with LBP exposure.

The Air Force completed an LBP survey at Hurlburt Field in 1995. The survey included a visual inspection of all MFH units, sampling a representative number of units of each type of MFH, and sampling of all high-priority facilities. The survey identified LBP in Hurlburt Field housing units on interior/exterior wood doors, wood baseboards, wood beams or columns, interior/exterior wood window frames and trim, wood cabinet doors, and exterior metal trim (Overstreet, 2007). Hurlburt Field Instruction 32-6002, *Hurlburt Field Military Family Housing Brochure,* advises housing occupants on potential health hazards associated with LBP exposure and provides guidance on LBP-related questions and issues (U.S. Air Force, 2007).

Chlordane – In the past, many Air Force bases used chlordane for termite control. Sampling, conducted in December 2010, confirmed the presence of chlordane in the housing areas (Rogers, 2011). Chlordane is a manufactured chemical that was used as a pesticide in the United States from 1948 to 1988. Before 1978, chlordane was used as a pesticide on agricultural crops, lawns, and gardens and as a fumigating agent. Because of concerns over cancer risk, evidence of human exposure and build up in body fat, persistence in the environment, and danger to wildlife, the USEPA canceled the use of chlordane on food crops and phased out other aboveground uses between 1978 and 1983. From 1983 until 1988, chlordane's only approved use was to control termites in homes; the pesticide was applied underground around the foundation of homes. When chlordane is used in the soil around a house, it kills termites that come into contact with the pesticide. In 1988, when the USEPA canceled chlordane's use for controlling termites, all approved use of chlordane in the United States stopped (ATSDR, 2004).

Eglin Main Base, Poquito Bayou, Camp Pinchot, Camp Rudder, and Hurlburt Field Housing Areas

There are no affected resources related to hazardous materials usage/storage, hazardous waste generation, ERP sites, asbestos, LBP, or chlordane not already discussed under the Proposed Action Commonalities.

3.6.2.2 Alternative 1: White Point Area

Parcels 1–7 are undeveloped; there are no affected resources related to hazardous materials usage/storage, hazardous waste generation, ERP sites, asbestos, LBP, or chlordane under this alternative.

3.6.2.3 Alternative 2: Eglin Main Base/Valparaiso

There are no affected resources associated with hazardous materials usage/storage, hazardous waste generation, ERP sites, asbestos, LBP, or chlordane on currently developed housing areas of Alternative 2 that were not previously discussed under the Proposed Action Commonalities. In undeveloped areas associated with Alternative 2, there are no affected resources related to hazardous materials usage/storage, hazardous waste generation, ERP sites, asbestos, LBP, or chlordane.

3.6.2.4 Subalternative 2a: Eglin Main Base (Preferred Alternative)

There are no affected resources associated with hazardous materials usage/storage, hazardous waste generation, ERP sites, asbestos, LBP, or chlordane on currently developed housing areas of Subalternative 2a that were not previously discussed under the Proposed Action Commonalities. In undeveloped areas associated with Subalternative 2a, there are no affected resources related to hazardous materials usage/storage, hazardous waste generation, ERP sites, asbestos, LBP, or chlordane.

3.6.2.5 Alternative 3: North Fort Walton Beach Area

Parcels 1–5 are undeveloped; there are no affected resources related to hazardous materials usage/storage, hazardous waste generation, ERP sites, asbestos, LBP, or chlordane.

3.6.2.6 Alternative 4: Mix Alternative

This alternative would utilize a mix of parcels discussed previously under Alternatives 1–3. As a result, the affected environment would be the same as that discussed previously under Alternatives 1–3.

3.7 NOISE

3.7.1 Definition of the Resource

Noise is defined as any unwanted sound. Defining characteristics of noise include sound level (amplitude), frequency (pitch), and duration. Each of these characteristics plays a role in determining a noise's intrusiveness and level of impact on a noise receptor. The term "noise receptor" is used in this document to mean any person, animal, or object that hears or is affected by noise.

Sound levels are recorded on a logarithmic decibel scale, reflecting the relative way in which the ear perceives differences in sound energy levels. A sound level that is 10 decibels (dB) higher than another would normally be perceived as twice as loud while a sound level that is 20 dB higher than another would be perceived as four times as loud as the baseline sound. Under laboratory conditions, the healthy human ear can detect a change in sound level as small as 1 dB. Under most nonlaboratory conditions, the typical human ear can detect changes of about 3 dB.

Sound measurement may be further refined through the use of frequency "weighting." The normal human ear can detect sounds that range in frequency from about 20 hertz (Hz) to 20,000 Hz (Federal Interagency Committee on Noise [FICON], 1992). However, all sounds throughout this range are not heard equally well. In "A-weighted" measurements, the frequencies in the 1,000- to 4,000-Hz range are emphasized because these are the frequencies heard best by the human ear. Sound level measurements

weighted in this way are termed "A-weighted decibels"(dBA). In the case of sonic booms, blast noise, and other impulsive "booming" noises, sound is felt as well as heard. With these types of noise, overpressure may be considered more annoying than the sound itself. For this reason, impulsive sounds are measured using "C-weighting," which does not attenuate the lower frequencies to the extent that A-weighting does. Sound level measurements weighted in this way are termed "C-weighted decibels" (dBC). Unless otherwise noted, all sound levels referenced in this EIS can be assumed to be A-weighted.

Typically, sound levels at any given location change constantly. For example, the sound level changes continuously when an aircraft flies by, starting at the ambient (background) level, increasing to a maximum when the aircraft passes closest to the receptor, and then decreasing to ambient levels when the aircraft flies into the distance. The term "maximum sound level," or L_{max}," represents the sound level at the instant during an aircraft overflight when sound is at its maximum.

Because both the duration and frequency of noise events also play a role in determining overall noise impact, several metrics are used that account for these factors. Each metric discussed below is used in the assessment of noise impacts in this EIS.

- Sound exposure level (SEL) accounts for both the L_{max} and the length of time a sound lasts. SEL does not directly represent the sound level heard at any given time, rather, it provides a measure of the total sound exposure for an entire event compressed into one second. This metric is useful for comparing fast-moving and slow-moving aircraft and is a good predictor of several noise impacts including sleep disturbance and speech interference.
- DNL represents aircraft noise level averaged over a 24-hour period with a 10 dB penalty to flights occurring between 10:00 PM and 7:00 AM to account for the added intrusiveness of noise during these hours. It is important to recognize that the DNL metric does not represent the noise heard at any single point in time, but rather a weighted average of noise levels that occur over the course of a day. The DNL metric has been endorsed by several federal agencies as being the best descriptor of general noise conditions in the vicinity of airfields (USEPA, 1974; Federal Interagency Committee on Urban Noise [FICUN], 1980).
- C-weighted day-night sound level (CDNL) is day-night sound levels computed for areas subject to sonic booms and blasts from high explosives. Use of the C-weighted scale accounts for the dominance of low-frequency components of these types of sounds.
- Onset-rate adjusted monthly day-night average sound level (DNLmr) is the measure used for subsonic aircraft noise in military airspace (ranges, military training routes, military operations areas, or warning areas). This metric accounts for the fact that when military aircraft fly low and fast, the sound can rise from the ambient level to its maximum very quickly. Known as an onset-rate, this

effect can make noise seem louder due to added "startle" effects. Penalties of up to 11 dB are added to account for this onset rate.

Effects of Noise

Annoyance, speech interference, sleep interference, human health impacts, structural damage, and wildlife impacts have all been associated with noise. In this document, the "Noise" section addresses general noise impacts on humans and structures, while subsequent sections discuss the impacts of noise on land use, environmental justice, biological resources, and cultural resources.

Annoyance is the most common effect of aircraft noise on humans. Aircraft noise often interferes with activities such as conversation, watching television, using a telephone, listening to the radio, and sleeping. This interference often contributes to individuals becoming annoyed. Whether or not an individual becomes annoyed by a particular noise is highly dependent on emotional and situational variables of the listener as well as the physical properties of the noise (Federal Aviation Administration [FAA], 1985). However, when assessed over long periods of time and with large groups of people, a strong correlation exists between the percentage of people highly annoyed by noise and the time-averaged noise exposure level in an area (Schultz, 1978; Finegold et al., 1994). This finding is based on surveys of groups of people exposed to various intensities of transportation noise. A generalized categorization of noise-induced annoyance can be found in Table 3-23. As discussed earlier in this section, DNL (A-weighted) is used to assess noise for which audible sound is the major concern (e.g., subsonic aircraft noise, small-arms fire). CDNL (C-weighted) is used to assess noise in which vibration and low-frequency components are a major concern (e.g., sonic booms, high-explosive munitions noise).

Table 3-23. Relationship Between Noise Level and Percent of Population Highly Annoyed

Criteria	Noise Level		
A-Weighted Average Noise Levels (Continuous Noise)	< 65 dB	65-75 dB	> 75 dB
C-Weighted Average Noise Levels (Impulsive Noise)	< 62 dBC	62-70 dBC	> 70 dBC
Unweighted Peak Noise Levels (Small Arms Noise)	< 87 dBP	87-104 dBP	> 104 dBP
Percent of Population Highly Annoyed	< 15%	15%-39%	> 39%

Source: United States Army Center for Health Promotion and Preventive Medicine (USACHPPM), 2005; U.S. Army, 1997

< = less than; > = greater than; dB = decibels; dBC = C-weighted decibels; dBP = P-weighted decibels

Note: The primary noise metric used by the U.S. Army to describe small-arms noise is $PK_{15(met)}$.

The USEPA has recommended that the noise level in sleeping areas be less than 45 dB DNL (USEPA, 1974). The Air Force has requirements for housing built in areas with noise levels above 65 dB DNL: sound-proofing measures must be incorporated in the design and construction of the housing to achieve an outdoor-indoor noise level reduction of at least 25 dB in the 65 to 70 dB DNL range and 30 dB in the 70 to 75 dB DNL range. Standard construction provides a noise level reduction of 20 dB; therefore,

construction requirements of 5 to 10 dB over standard construction with mechanical ventilation and closed windows year-round would reduce noise effects to residents in noise exposure areas (U.S. Air Force, 2004). Studies indicate a tendency for humans to habituate to regularly occurring nighttime noise over time, eventually reducing susceptibility to noise-induced sleep disturbance (Fidell et al., 1995; Pearsons et al., 1995; Kryter, 1984).

The USEPA recommends that, to protect public health with an adequate margin of safety, exterior noise levels should not exceed 55 dB DNL and interior noise levels should not exceed 45 dB DNL in noise-sensitive locations (USEPA, 1974). The Federal Interagency Committee on Urban Noise (FICUN) took these recommendations into consideration when developing its recommendations on compatibility of land uses with noise impacts (FICUN, 1980). These recommendations have been adopted, with minor modifications, by the DOD (*U.S. Air Force Family Housing Guide for Planning, Programming, Design, and Construction* August 2004 and Air Force Handbook (AFH) 32-7084, *AICUZ Program Managers Guide*).

In June 2009, the Undersecretary of Defense issued a memorandum stating that individuals exposed to high noise levels (in excess of 80 dB DNL) from flight operations in and around an installation are at the most risk of potential hearing loss (DoD, 2009). To identify impacts the letter recommends that a calculation of potential hearing loss methodology be used as defined in the USEPA Report No. 550/9-82-105, *Guidelines for Noise Impact Analysis*.

Noise is often viewed as being one of a number of general biological stressors. Some studies have indicated that excessive exposure to intense noise might contribute to the development and aggravation of stress-related conditions such as high blood pressure, coronary disease, ulcers, colitis, and migraine headaches. Other studies have found no correlation between noise and various health conditions. Non-auditory health effects of noise are not well established at this time, and are likely only experienced at extremely high noise levels (USEPA, 1981).

A considerable amount of data on noise-related hearing loss has been collected and analyzed. It is well established that continuous exposure to high noise levels (such as eight hours of continuous exposure of 85 dB) will damage human hearing (USEPA, 1974).

3.7.2 Affected Environment

Eglin AFB and Hurlburt Field are active with noise from both military and residential activities. Common sounds at Eglin AFB and Hurlburt Field are aircraft operations, construction activities, traffic sounds, munitions use (bombs and small arms) at nearby ranges, as well as residential activities such as lawn mowing. With the implementation

of the proposed F-35 beddown, new noise contours from the F-35 aircraft may affect new and existing housing areas at Eglin AFB.

Noise zones above 75 dB DNL are not recommended for residential use, and noise zones below 65 dB DNL do not require any restrictions. Whenever possible, residential land use should be located below 65 dB DNL (AFH 32.7084). Units that would be located in areas over 65 dBA would require noise abatement in the housing units. The Air Force would identify those areas exposed once an F-35 beddown decision is made, and the lease agreement would require any units in areas not below 65 dB DNL to be constructed with proper noise abatement.

3.7.2.1 Proposed Action Commonalities

Eglin Main Base Housing Areas

The Eglin Main Base housing areas are located in areas where residential areas currently exist. Currently baseline noises consist of some aircraft over-flight and munitions noises but are primarily normal residential noises such as light vehicle traffic and various lawn equipment uses. No existing housing areas are within 65 dB DNL or higher noise contours. These sites are most likely to be affected by the F-35 beddown due to the proximity of the parcels to the airfield. New and existing housing may be affected by noise greater than 65 dB DNL and would require noise abatement. The noise analysis from the preferred alternative considered in the F-35 SEIS indicates that some existing Eglin AFB housing areas would be exposed to aircraft noise above 65 dB DNL (see Figure 4-9 and Figure 4-10, in Chapter 4).

Poquito Bayou Housing Area

Poquito Bayou housing area baseline sound levels are primarily natural sounds (e.g., wind, birds), some traffic noise from SR-85, and low level noise from military operations on the ranges.

Camp Pinchot Housing Area

The Camp Pinchot housing area sound environment is primarily natural sounds. This area is not near enough to Eglin Main Base airfield to be adversely affected by aircraft noise.

Camp Rudder Housing Area

This housing area baseline noise consists primarily of natural sounds (55 dB or less). The site is located on an active base and therefore is subject to some operational noises such as aircraft overflight and munitions use on the various ranges. These noises would occur sufficiently far enough away to cause slight increases in the noise environment and would not cause harm to potential receptors.

Hurlburt Field Housing Areas

Proposed housing areas at Hurlburt Field would be on sites currently used for residential purposes. The current sound environment consists of vehicular noise from US-98 and residential roads as well as normal noises from residents (e.g., radios, lawn equipment, children playing). The baseline noise levels are expected to be approximately 55–60 dB.

3.7.2.2 Alternative 1: White Point Area

The White Point area is currently a wooded area with residential areas near Parcels 1, 2, 5, 6, and 7. Baseline noise levels are primarily natural sounds with varying degrees of vehicle traffic noise from nearby roads. Further discussion of each of the parcels' baseline noise and potential receptors is included under the following subheadings. Sensitive receptors include residents in housing areas, hospitals, churches, and schools.

Alternative 1 – Parcel 1

This parcel is currently a wooded area with residential area to the north. The baseline noise is primarily natural sounds with some traffic noise from roads that pass through the area and noise from the nearby residents. A preschool is located within 550 feet of the northern border of the parcel. Houses are located adjacent to the northern edge of the proposed parcel which may be affected by construction noise.

Alternative 1 – Parcel 2

Parcel 2 is currently a wooded area bordered on the north and east sides with residential areas and is approximately 600 feet east of SR-20 (or John Sims Parkway) at the closest point.

Alternative 1 – Parcel 3

This parcel is located in a wooded area with the northeast border parallel to Highway 20. The closest receptors would be the residents to the northeast and southwest at approximately 1,500 feet at the closest points. This parcel's baseline noise consists primarily of natural sounds and some traffic noise from the nearby SR-20.

Alternative 1 – Parcel 4

Parcel 4 is also an undeveloped wooded area with current sounds consisting primarily of natural sounds. The nearest noise receptors are located in the residential areas located northeast, southwest, and south, approximately 2,000 feet from the parcel at its closest points.

Alternative 1 – Parcel 5

The northern most portion of this parcel is adjacent to SR-20 and the western edge abuts up to a residential area. The current noise levels of this parcel are 45–50 dB as it is undeveloped wooded land with some roadway noise at the northern end. Potential noise receptors during construction are the residents to the west and east of this parcel, as well as a couple of churches and one school. There are two churches located west of this parcel: one adjacent to the boundary of the parcel and the other approximately 1,000 feet west of the parcel boundary. The school is located about 500 feet south of the southern edge of Parcel 5.

Alternative 1 – Parcel 6

Parcel 6 is a wooded, undeveloped area with the eastern edge adjacent to a residential area that would be affected during construction activities.

Alternative 1 – Parcel 7

Parcel 7 is a wooded area that is adjacent to residential areas on the east and south borders. Two schools are located approximately 1,000 feet east of the parcel and one church is 300 feet south. Current noise at this parcel is made up of natural sounds and typical suburban noises (vehicle traffic, lawn mowers, etc).

3.7.2.3 Alternative 2: Eglin Main Base/Valparaiso Area

The noise baseline for Parcel 1 (Eglin Main Base) was discussed in detail under the Proposed Action Commonalities section. Parcels 2–8 are located east of the Eglin Main runways with one parcel (Parcel 8) east of John Sims Parkway. Baseline noise would consist of vehicle traffic and typical residential sounds; however, the sound environment would be dominated by aircraft noise from nearby runways. There are residential areas located along the parcel borders of Parcels 3, 5, 6, 7, and 8 that would be affected by construction noise in the event that new housing is constructed in these parcels. A middle school is located approximately 1,000 feet south of Parcel 8, 1,000 feet east of Parcel 2. Parcels 9 and 10 are the current Capehart and Wherry housing areas, respectively. Parcel 11 is located northeast of the Eglin Main Base Parcel (Parcel 1) and is adjacent to current residential areas that may be affected by noise due to new construction.

3.7.2.4 Subalternative 2a: Eglin Main Base (Preferred Alternative)

The noise baseline for Parcel 1 (Eglin Main Base) was discussed in detail under the Proposed Action Commonalities section.

3.7.2.5 Alternative 3: North Fort Walton Beach Area

All of the following parcels pertaining to Alternative 3 are currently undeveloped sites with baseline noise levels consisting of natural sounds and some suburban or rural type noises (45–55 dB). Each parcel will be discussed individually to determine potential sensitive receptors near each site for noise analysis.

Alternative 3 – Parcel 1

This parcel has residential areas located along the eastern and southern borders. There will be a development setback for this parcel thus a noise buffer between construction activities and the residents.

Alternative 3 – Parcel 2

Parcel 2 is north and east of a recreational park (sports fields) and the western edge is adjacent to a residential area. The southern edge of the parcel lies alongside SR-189. A school is located approximately 600 feet west of the north eastern border.

Alternative 3 – Parcel 3

Parcel 3's western border abuts commercial buildings/land and the southern boundary is located along residential areas. A church is located within 500 feet of the southern border of Parcel 3.

Alternative 3 – Parcel 4

This parcel is in an area that is relatively undeveloped. A few homes are located near the western border of the parcel that may be affected by construction noise.

Alternative 3 – Parcel 5

The southeastern border of Parcel 5 is adjacent to a small residential community that may be temporarily affected by construction noise.

3.7.2.6 Alternative 4: Mix Alternative

This Alternative would involve utilizing a combination of the parcels described in Alternatives 1, 2, and 3. The affected environment for this alternative would be the same as described previously.

3.8 SOLID WASTE

3.8.1 Definition of the Resource

"Solid waste" is defined in the Florida Solid Waste Disposal Facility regulations as any sludge (unregulated by the federal CWA or CAA), garbage, rubbish, refuse, special waste, or other discarded material resulting from domestic, industrial, commercial, mining, agricultural, or government activities. Solid waste includes wastes commonly referred to as municipal solid wastes (such as garbage and refuse) and construction and demolition (C&D) debris, which consists of discarded materials generally not soluble in water (steel, glass, brick, concrete, asphalt, etc.). The impacted resource associated with the generation of solid waste and subsequent disposal is the available landfill capacity located within the ROI.

The Solid Waste Disposal Act (42 USC 3251 et seq.) established guidelines for solid waste collection, transport, separation, recovery, and disposal systems. RCRA (42 USC 6901 et seq.) amended this Act by shifting the emphasis from disposal to recycling and reuse of recoverable materials. Florida also has solid waste management regulations pertaining to solid waste facilities, state resource recovery and management programs, certification of resource recovery equipment, used oil and domestic sludge classification, utilization, and disposal criteria. The FDEP develops and adopts rules that govern proper management of solid waste in the state. Most of the responsibility for solid waste management under the law rests with local governments. Generally, counties operate the solid waste disposal facilities to serve the cities and towns within their jurisdictions.

Florida solid waste management regulations include the following:

- Florida Solid and Hazardous Waste Management Act (Florida Statutes 29 Chapter 403)
- Florida Resource Recovery and Management Regulations (FAC 62-7)
- Florida Solid Waste Disposal Facility Regulations (FAC 62-701)

Florida landfills are designated as Class I, II, or III. Class I landfills receive an average of 20 tons or more of solid waste per day (if weighed by scale), or 50 cubic yards or more of solid waste (as measured in place after covering). The permitting requirements for Class II landfills are the same as Class I landfills; Class II landfills are smaller in size. Class III landfills receive C&D debris, asbestos, carpet, cardboard, paper, glass, plastic, furniture other than appliances, and other materials that are not expected to produce leachate. Leachate is produced when water percolates through the landfill. In some cases, leachate may contain undesirable or toxic chemicals picked up from dissolving materials in the landfill.

Air Force regulatory requirements and management of solid waste are established by Air Force Policy Directive (AFPD) 32-70, *Environmental Quality*. AFPD 32-70 requires compliance with applicable federal, state, and local environmental laws and standards. For solid waste, AFPD 32-70 is implemented by AFI 32-7042.

AFI 32-7042 requires that each installation have a solid waste management program that includes a solid waste management plan that addresses handling, storage, collection, disposal, and reporting of solid waste. AFI 32-7080 contains the solid waste requirement for preventing pollution through source reduction, resource recovery, and recycling.

The 96 CEG/CEVC at Eglin AFB and the 1 SOCES/CEA at Hurlburt Field manage the solid waste management programs.

3.8.2 Affected Environment

3.8.2.1 Commonalities Across All Alternatives

The ROI for solid waste resources includes Eglin AFB and the surrounding counties where landfill resources are located, and is not "alternative specific." Available resources in the immediate vicinity of Eglin AFB include landfills operated in Okaloosa, Walton, and Santa Rosa Counties. The analysis assumed that military families under the Proposed Action and alternatives would be living throughout the ROI, with the majority expected to reside within Okaloosa County, thereby increasing the county's municipal solid waste generation rate.

Solid waste would be generated within the ROI in the form of construction debris from construction, renovation, and demolition activities. Solid wastes (including C&D debris) requiring disposal would require landfill capacity within the ROI. The management and disposal of solid waste is regulated at both the state and federal level.

Collection and disposal of municipal solid waste at Eglin AFB is handled by contract and administered by the 96 CEG. Local solid waste is recycled or disposed of in landfills in Okaloosa, Walton, and Santa Rosa Counties. All landfills in this area are located, operated, and maintained either by the respective county or privately. All landfills are permitted by the FDEP.

Okaloosa County formerly operated a Class I landfill near Baker, Florida (Baker West Facility) that is currently used for waste transfer and processing operations. The County currently does not operate a landfill but instead utilizes transfer facilities to dispose of solid wastes generated within the county to private landfills. The County also operates a yard trash mulching facility at the Wright Landfill located on out-leased land on Eglin AFB. Three privately owned C&D debris landfills are located within Okaloosa County: Waste Recyclers, Point Center, and Arena landfills.

Walton County operates and maintains a Class I and III landfill for county residents. The landfill accepts any household or construction materials except hazardous materials. The landfill, located near DeFuniak Springs, was permitted for "high rising" (a process of expanding the landfill upwards) that will extend the life span of the landfill until 2020 (Floyd, 2005). Municipal solid waste is transported to a state-permitted solid waste transfer facility located on SR-83 approximately three miles north of DeFuniak Springs. Four privately owned C&D debris landfills are located within Walton County: Coyote East, Coyote West, J&K, and Waste Recyclers.

Santa Rosa County owns and operates two landfills. The Central Landfill is a Class I facility, primarily serving the central portion of the county. A Class III facility is also located at the Central Landfill, making the total size approximately 550 acres. The life expectancy of the Central Landfill was estimated at year 2075 prior to the 2004 and 2005 hurricanes. Four privately owned C&D debris landfills are located within Santa Rosa County: Coyote Navarre, Joiner Fill Dirt Inc., Persimmon Hollow, and Tower Ridge C&D Landfills.

The information presented in Table 3-24 lists the average annual amounts of municipal solid wastes, including C&D debris, generated within Okaloosa, Santa Rosa, and Walton Counties from 2002 to 2007 (FDEP, 2010a). This includes all solid wastes that were generated within the counties that required management through recycling or disposal. The latest published information available from the FDEP is for calendar year 2007 (FDEP, 2010a).

C&D debris is a subset of the total quantity of wastes generated and disposed within the three county ROI. Table 3-25 lists the average annual amounts of C&D debris taken to construction and demolition landfills in Okaloosa, Santa Rosa, and Walton Counties from 2002 to 2007. The latest published information available from the FDEP is for calendar year 2007 (FDEP, 2010a).

Table 3-24. Solid Waste Collected in Okaloosa, Santa Rosa, and Walton Counties (tons)

Year	Okaloosa County	Santa Rosa County	Walton County
2002	386,740	357,623	103,837
2003	231,352	224,336	142,168
2004*	280,881	418,430	90,032
2005*	564,264	754,919	272,787
2006	336,020	295,947	139,641
2007	338,481	212,081	136,882
Average	**300,286**	**377,223**	**147,556**

Sources: FDEP, 2010a

* Hurricane Ivan devastated the northwest Florida Gulf coast in September 2004, causing a dramatic increase in the amount of debris taken to area landfills in 2004 and 2005.

Table 3-25. Construction and Demolition Debris Generated in Okaloosa, Santa Rosa, and Walton Counties (tons)

Year	Okaloosa County	Santa Rosa County	Walton County
2002	199,375	127,183	68,477
2003	48,815	102,880	96,278
2004*	85,837	226,883	40,000
2005*	358,406	540,311	222,345
2006	135,599	139,118	103,308
2007	88,013	21,081	99,025
Average	**152,674**	**192,901**	**104,906**

Sources: FDEP 2010a
* Hurricane Ivan devastated the northwest Florida Gulf coast in September 2004, causing a dramatic increase in the amount of debris taken to area landfills in 2004 and 2005.

As shown in the quantities of debris generated, several hurricanes struck the Gulf Coast of Florida in 2004 and 2005. These storms wrought massive destruction on personal and public property, resulting in an increase in the amount of C&D debris generated in Santa Rosa, Okaloosa, and to a lesser extent, Walton counties.

3.9 LAND USE

3.9.1 Definition of the Resource

"Land use" generally refers to the management and use of land by people. The attributes of land use include general land use patterns, land ownership, land management plans, and special use areas. General land use patterns characterize the types of uses within a particular area. Specific uses of land typically include residential, commercial, industrial, agricultural, military, and recreational. Land use also includes areas set aside for preservation or protection of natural resources, wildlife habitat, vegetation, or unique features. Management plans, policies, ordinances, and regulations determine the types of uses that are allowable, or the types of uses that protect specially designated or environmentally sensitive uses.

Public Law 668, from the 76th Congress on June 27, 1940, transferred all Choctawhatchee National Forest land to the War Department (Department of Defense) for use for military purposes. Should the property cease to be needed for military purposes, the land may be returned to National Forest status at the discretion of the Secretary of Defense. Providing housing for military families while in the service of the DoD is considered use for military purposes.

Certain land use designations are particular to military installations. The clear zone (CZ), the area closest to the runway's end, is the most hazardous and must be clear of any development (DoDI 4165.57, *Air Installation Compatible Use Zones*). Some economic use of the land in accident potential zone I (APZ I) is allowed, such as light industrial, manufacturing, transportation, communication and utilities, wholesale trade, open

space, recreation, and agriculture. However, land uses that result in large concentrations of people in small areas are not acceptable in APZ I. Acceptable uses in the APZ II include those of APZ I, as well as low-density, single-family residential, personal and business services, and commercial/retail trade uses of low intensity or scale of operation. High-density functions such as multistory buildings, places of assembly (e.g., theaters, churches, schools, restaurants) and high-density office uses are not considered appropriate (U.S. Air Force, 2006b). Currently, there are 364 single-family and multiplex residences within APZs I and II associated with Runway 19 on Eglin Main Base (Okaloosa County, 2009). The Air Force is currently evaluating options for mitigating impacts to these residences, including land acquisition of these clear zone areas (Okaloosa County, 2009).

Noise from aircraft operations is one of the major factors in determining appropriate land uses, since elevated noise levels are especially incompatible with residential areas. The Air Installation Compatible Use Zone (AICUZ) Program is used to promote compatible land development in areas subject to aircraft noise and accident potential. The AICUZ-compatible use zones include the CZ, APZ I, APZ II, and four noise zones. The four AICUZ noise zones are defined as 65–69 dB DNL, 70–74 dB DNL, 75–79 dB DNL, and greater than 80 dB DNL. For a land use to be considered compatible, it must meet criteria for its category for both noise and accident potential. Housing is not compatible with noise exposures of 75 dB DNL or higher, and new or replacement housing in this noise level area should be prohibited. Housing development is discouraged in the 65 to 75 dB DNL noise zone. When no other viable alternative exists and residential uses are planned in areas above 65 dB DNL, sound-proofing measures should be incorporated into the design and construction of the housing (U.S. Air Force, 2006b). Additional detailed information on noise and noise effects is presented in Section 3.7, *Noise*.

In addition to aircraft noise considerations, ordnance usage can have land use affects because of noise or explosive safety quantity distance (ESQD) considerations. ESQD clearance zones provide safe setback areas around explosive-handling facilities and must be considered when evaluating land use impacts. Air Force Manual 91-201, *Explosives Safety Standards*, governs the majority of explosive activities and facilities on Air Force bases. This regulation defines safe clearances for similar activities, inhabited buildings, roadways, and personal contact with explosive activities.

Several plans and programs guide land use planning on Eglin AFB. The Eglin AFB Land Use Plan component of the Eglin AFB *General Plan* presents a comprehensive planning strategy to support military missions assigned to the installation. The plan provides general information regarding the installation and describes existing land uses, a planning analysis of constraints and opportunities, future land use, and implementation guidelines (U.S. Air Force, 2001).

3.9.2 Affected Environment

3.9.2.1 Proposed Action Commonalities

Eglin Main Base Housing Areas

Affected Eglin AFB housing includes the built-up area at Eglin Main Base (the Cantonment Area) and Camp Rudder. Eglin Main Base houses the major administrative, operations, housing, and community functions within approximately 10,500 acres (U.S. Air Force, 2001). The major land uses on Eglin Main Base include airfield and aircraft operations and maintenance (approximately 2,362 acres), industrial land use in nine separate areas (2,057 acres), open space (4,141 acres), and residential areas (over 1,000 acres) (Figure 3-15).

The largest of the family housing areas contains Capehart, Wherry, Old Plew, New Plew, Hidden Oaks, and Ben's Lake MFH and is located just inside the West Gate. Upper and Lower Memorial Lake border this housing area on the east, Choctawhatchee Bay borders it on the south, open space borders it on the west, and Eglin Boulevard borders the area to the north. Land uses associated with community services (e.g., Cherokee Elementary School, youth center, child care center, playground) are located north of the Ben's Lake housing area and immediately south of Eglin Boulevard.

The Eglin Hospital complex is located west of the Wherry housing area, across from Boatner Road, and immediately north of the Old Plew housing area. The Eglin Officers' Club and Ben's Lake Marina are located to the southeast of the Old Plew housing area. Industrial land uses associated with the Plew Sewage Treatment Plant are located to the south of the Old Plew housing area and southwest of the Officers' Club. One of the two main Eglin AFB runways is approximately 3,200 feet from the closest point to this housing area.

None of the housing areas are located within airfield APZs or within ESQDs. The noise analysis from the preferred alternative considered in the F-35 SEIS indicates that some existing Eglin AFB housing areas would be exposed to aircraft noise above 65 dB DNL (see Figure 4-9 and Figure 4-10, in Chapter 4). Currently, exposure areas for the F-35 SEIS's No Action Alternative noise contours include the Georgia Avenue housing area (noise levels around 75 dB DNL) and portions of the Capehart and Ben's Lake housing (noise levels between 65 to 70 dB DNL). All other housing areas experience noise levels below 65 dB DNL.

The Georgia Avenue housing area lies along the northern edge of the Eglin Field Historic District. The Eglin Field Historic District is significant for its association with the establishment, development, and operation of Eglin AFB, and because of its association with the advanced engineering design related to specific weapons testing and development (U.S. Air Force, 2004a).

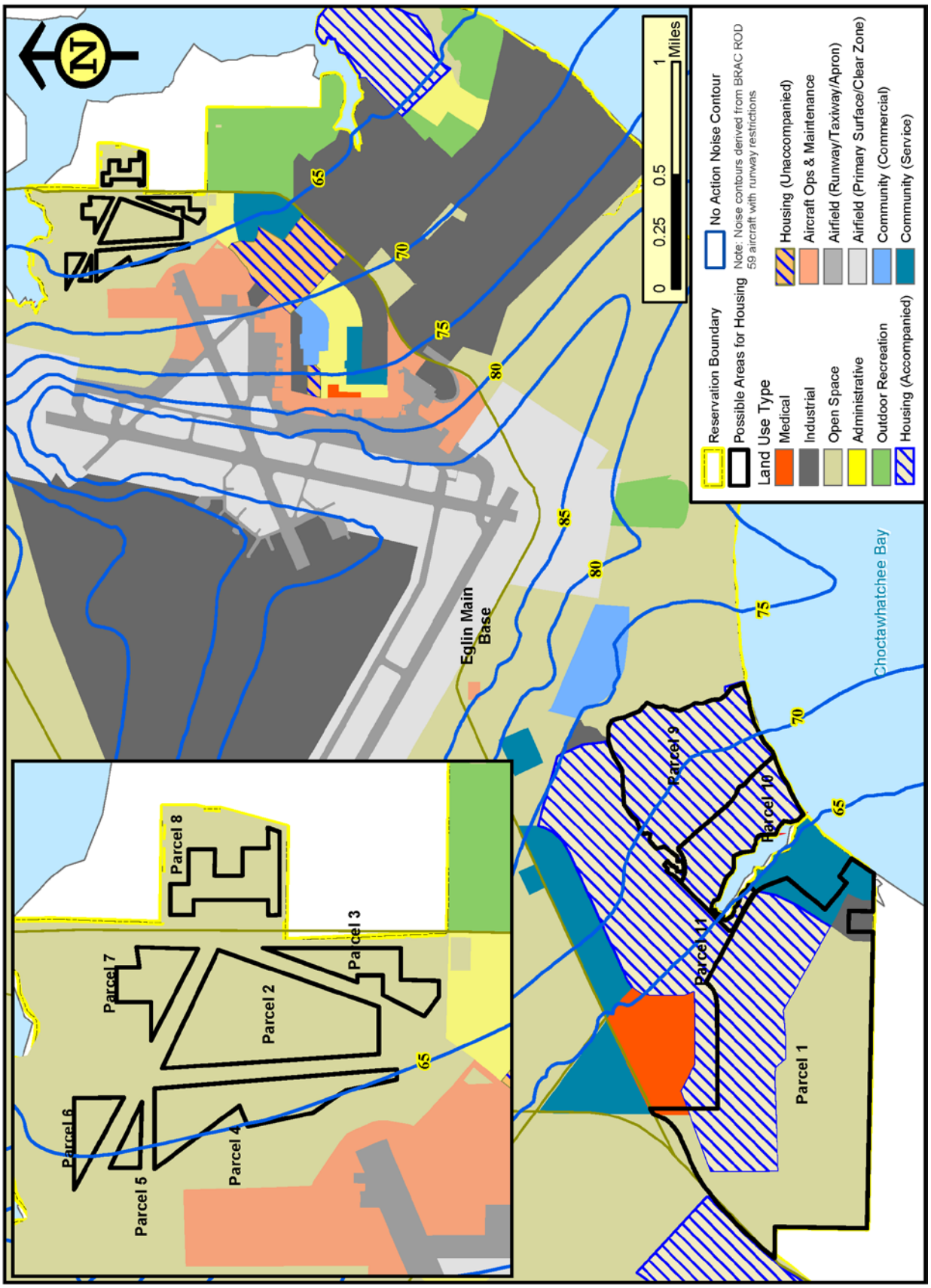

Figure 3-15. Existing Land Use at Eglin Main Base and F-35 SEIS No Action Noise Contours

Section 3.10.2 provides additional information on this district. The Georgia Avenue housing units were built in 1943. Immediately surrounding this one-block area, land uses include light industrial, commercial, administrative, and aircraft operations and maintenance and are associated with base operations and/or support.

Activities associated with Eglin Main Base primarily affect nonmilitary land to the northeast of the airfield, including the cities of Valparaiso and Niceville, and unincorporated areas of Okaloosa County. Valparaiso comprises a diverse mix of moderate density land uses. Single family residential uses exist throughout Valparaiso and in the northwest corner of Niceville. Strip commercial uses are prevalent along John Sims Parkway (SR-20 and SR-327), Valparaiso Parkway (SR-190), and Government Avenue (SR-85). Mixed uses consisting of medium-and high-density residential, public/quasi-public, and commercial uses exist on both sides of South John Sims Parkway and SR-85 north of West John Sims Parkway to West College Boulevard. Land uses in the triangle formed by Government Avenue, Valparaiso Parkway, and North John Sims Parkway are also mixed, with large areas of public/quasi public uses including schools and churches (U.S. Air Force, 2006b).

Zoning in the Valparaiso and Niceville areas generally reflects existing land use patterns. The majority of land is zoned for various densities of residential uses. Commercially zoned land exists along the major corridors of Government Avenue and John Sims Parkway in Valparaiso and SR-85 in Niceville. Land along Boggy Bayou, shoreline east of John Sims Parkway, is zoned as a conservation district. Zoning has also been incorporated to protect the CZ and APZ, with industrial and commercial designations being the primary zoning classification (U.S. Air Force, 2006b). However, 4 parcels covering 20 acres of non-military land inside the CZ currently include commercial uses, and 14 parcels covering about 6 acres include single family residential uses. These land uses are incompatible with the CZ. A large area of incompatible medium density residential use exists in APZ I east of Wolverine Avenue and south of Government Avenue. Two churches along Valparaiso Parkway are also incompatible with the APZ I. For APZ II, the residential areas with densities greater than one dwelling unit per acre are incompatible.

Camp Pinchot Housing Area

Camp Pinchot is bordered on the east and north by Garnier's Bayou and on the west by approximately 243 acres of undeveloped land (known as the Camp Pinchot Expansion) (Figure 2-1, Existing Housing Areas at Eglin AFB). The Camp Pinchot housing area includes the Camp Pinchot Historic District. Section 3.10.2 has more details on the district. The Camp Pinchot Expansion is bordered on the west by urban mixed use and medium-level residential land uses along Lewis Turner Boulevard (SR-189). Low-density residential land use occupies the area immediately to the south. Institutional land use east of Camp Pinchot is associated with the University of Florida Research and Engineering Education Facility.

Camp Rudder Housing Area

Camp Rudder, located in the northwestern portion of the Eglin Reservation, is the home of the Army's 6th Ranger Training Battalion (Figure 1-1, Location of Eglin AFB, Hurlburt Field, and Camp Rudder Housing Areas). The Camp Rudder housing area is located on the Eglin Reservation, approximately 16 miles northwest of Eglin Main Base and adjacent to Auxiliary Field 6. The housing area is bordered on the south, east, and north by open areas associated with the Eglin Reservation. Airfield, aircraft operations, administrative, and other land uses associated with Auxiliary Field 6 activities are located to the west.

Hurlburt Field Housing Areas

The major land uses at Hurlburt Field include airfield and aircraft operations and maintenance (approximately 251 acres), housing (206 acres), outdoor recreation (286 acres), and open space (5,554 acres) (Figure 3-16).

Figure 2-3 (Existing and Proposed Housing Areas at Hurlburt Field) shows the locations of the existing Hurlburt Field MFH areas. The Pine Shadows and Live Oak MFH areas are located within the boundaries of Hurlburt Field's "Main Base" (Hurlburt Field north of US-98) in southern Okaloosa County. The Pine Shadows housing area is located on the southwest portion of Hurlburt Field. The housing area is bordered on the south by the installation perimeter fence and US-98, and on the west by a section of open area associated with Hurlburt Field. West of that open area are single-family residential and small-scale commercial uses (along US-98). Land uses immediately to the east are associated with base operations and include industrial, commercial, administrative, and aircraft operations and maintenance.

The Live Oak housing area is located immediately to the north of Pine Shadows. Open areas of the Eglin Reservation border it to the north, with land uses to the east associated with airfield operations. The Soundside Manor housing area is located immediately south of Hurlburt Field Main Base, across US-98. Santa Rosa Sound, a part of the Gulf of Mexico, forms the southern border of Soundside Manor. The municipality of Mary Esther borders Hurlburt Field to the east. Fort Walton Beach lies approximately 7 miles farther east. The town of Florosa lies to the southwest.

None of the housing areas are located within airfield APZs or within noise levels greater than 65 dB DNL. Hurlburt Field's *General Plan* land use configuration for the South Shore area (south of US-98) is the same as the plan established in the *Marina Area Development Plan*, *Marine Terminal Area Development Plan*, and the *South Shore Master Plan* (U.S. Air Force, 2002a). These plans essentially establish two different types of land use areas: the western portion, which includes existing and proposed housing areas and the Officers' Club, and the eastern portion, which allows minimal impact to preserve the natural assets of the site (U.S. Air Force, 2002a).

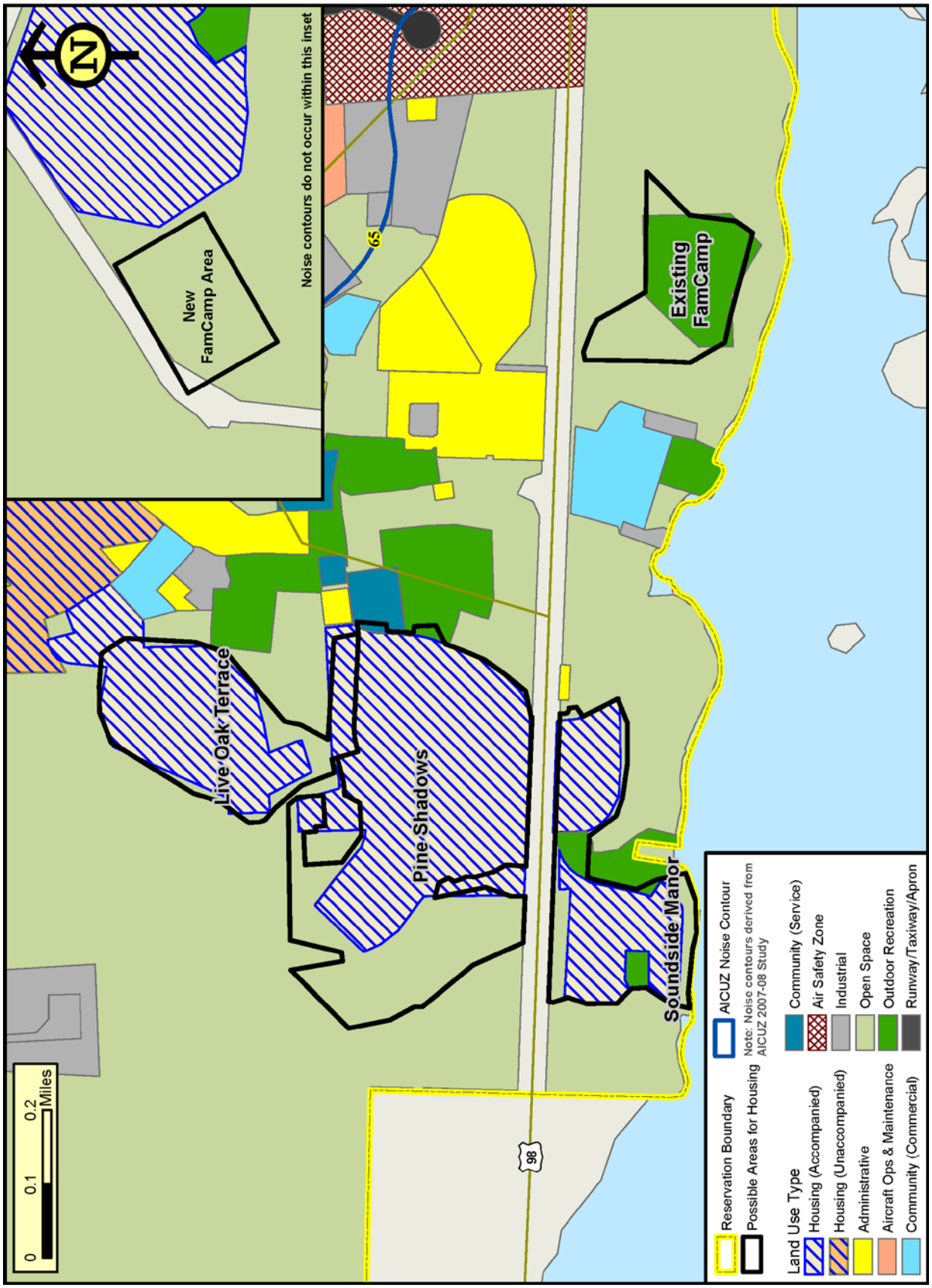

Figure 3-16. Existing Land Use at Hurlburt Field

Communities immediately surrounding Hurlburt Field to the east include Fort Walton Beach and Mary Esther. Unincorporated Okaloosa County property along Santa Rosa Sound is located to the west. Land use is primarily commercial and urban residential.

The existing FAMCAMP location is designated for recreation, and the proposed new FAMCAMP location is currently undeveloped, open space and is adjacent to the Commando Village housing area.

3.9.2.2 Alternative 1: White Point Area

The area is located at White Point along the coastline of Choctawhatchee Bay south of Niceville, Florida, adjacent to SR-20. All of the parcels are located in a relatively undeveloped area of the Eglin Range that is mostly open for outdoor recreation use only. About 4 acres of Parcel 2 are also within an area of the Eglin Range that is closed to all forms of public access.

The nearest off-base communities are the unincorporated residential and golf resort community of Bluewater Bay and Seminole. Land use is primarily low-density residential and recreational. Commercial, institutional, and industrial uses are located along John Sims Parkway.

3.9.2.3 Alternative 2: Eglin Main Base/Valparaiso Area

Parcel 1 is located in the southwest corner of Eglin Main Base adjacent to the New Plew housing area. Parcels 2–8 are located along the northeast border of Eglin Main Base, near the East Gate and adjacent to Valparaiso. Parcel 9 contains the existing Capehart housing area. Parcel 10 contains the existing Wherry housing area. Parcel 11 is a small area located along Boatner Road and Memorial Trail adjacent to the Old Plew housing area.

Existing land uses for Parcels 9, 10, and 11 are addressed under the Proposed Action Commonalities for Eglin Main Base. Parcels 2–8 are located within an area of Eglin Main Base that is closed to all public access. Existing land use is primarily open space. Off base, low-density residential areas are located adjacent to Parcels 3, 5, 6, 7, and 8. A middle school is also located to the east of Parcel 3 (Okaloosa County, 2009).

3.9.2.4 Subalternative 2a: Eglin Main Base (Preferred Alternative)

Parcel 1 was discussed previously under both the Commonalities section and Alternative 2.

3.9.2.5 Alternative 3: North Fort Walton Beach Area

Parcel 1 is located adjacent to the Camp Pinchot Historic District and is bordered on the west by SR-189. For Parcel 1, approximately 199 acres of the total 248 acres would be utilized for construction, while the remaining 49 acres would be maintained as a buffer

between the shoreline and the housing development; this buffer lies within storm surge category 1–4. Parcels 2 and 3 are located along the southern Eglin Reservation boundary in north Fort Walton Beach just north of SR-189 and approximately 1 mile west of Parcel 1. Parcels 1–3 are all located within undeveloped areas of Eglin AFB that are closed to all forms of public access.

Off-base communities immediately adjacent to the North Fort Walton Beach area include Wright and Ocean City. Land use is predominantly residential and other mixed uses. Parcels 4 and 5 are located adjacent to the Poquito Bayou housing area, which is classified as medium-density residential. To the southeast of Parcel 2 are a recreation area and the Okaloosa County Fairgrounds. West of Parcel 3 are mixed use and industrial land uses, while to the south is medium-density residential. To the north of both Parcels 2 and 3 are the newly constructed Arbennie Pritchett WRF and existing Garnier's effluent spray field, which could potentially present compatibility issues with any new housing (Okaloosa County, 2009).

3.9.2.6 Alternative 4: Mix Alternative

This Alternative would involve utilizing a combination of the parcels described in Alternatives 1, 2, and 3. The affected environment for this alternative would be the same as described previously.

3.10 CULTURAL RESOURCES

3.10.1 Definition of the Resource

Cultural resources consist of prehistoric and historic sites, structures, artifacts, and any other physical or traditional evidence of human activity considered relevant to a particular culture or community for scientific, traditional, religious, or other reasons.

As defined under 36 CFR 800.16(1), "historic property" means any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places (NRHP) maintained by the Secretary of the Interior. Historic property includes artifacts, records, and remains that are related and located within such properties. The term also includes properties of traditional religious and cultural importance to a Native American tribe or Native Hawaiian organization that meet NRHP criteria.

3.10.2 Affected Environment

Section 106 Process, Native American and Agency Consultation and Coordination

The alternative-specific cultural resources sections within this chapter describe known cultural resources within the affected areas that are potentially eligible for nomination

to the NRHP. This includes any archaeological resources that are considered eligible or potentially eligible for nomination to the NRHP, or that are currently listed on the NRHP. This may also include historic structures, historic districts, historic cemeteries, or traditional cultural properties. The APE for cultural resources across all action alternatives for this EIS essentially has complete inventories as per 36 CFR 800.4. Section 106 concurrence from the State Historic Preservation Officer (SHPO) and others regarding the completeness of inventory is addressed in Appendix E, *Cultural Resources*.

The Air Force initiated consultation with the five interested federally recognized tribes that include the Miccosukee Tribe of Indians of Florida, the Seminole Tribe of Florida, the Poarch Band of Creek Indians of Alabama, the Muskogee (Creek) Nation of Oklahoma, and the Thlopthlocco Tribal Town of the Creek (Muskogee) Tribe. Other consulting parties include the Advisory Council on Historic Preservation, the Florida Trust for Historic Preservation, the National Trust for Historic Preservation, National Forests in Florida, and the Florida SHPO in compliance with Section 106 of the NHPA.

A letter describing the Proposed Action and current cultural resource management efforts was sent to all consulting parties (Appendix E, *Cultural Resources*). This letter described efforts to develop a project-specific Programmatic Agreement (PA). Following this notification, a Draft PA was sent to all consulting parties in June 2010 and executed in February of 2011. The PA presents all actions with the potential to adversely affect historic properties resulting from the Proposed Action or alternatives. These adverse effects will be resolved pursuant to the MHPI PA in compliance with Section 106 of the NHPA. Compliance with the project-specific PA is mandatory and non-discretionary in nature for the signatories of the agreement document. Mitigations as presented in the project-specific PA are discussed in detail within this document. A detailed description of consultation efforts, MHPI project-specific PA stipulations, archaeological sites, archeological survey areas, historic structures, and other cultural resources is presented in Appendix E, *Cultural Resources*.

3.10.2.1 Proposed Action Commonalities

Public Law 668, from the 76th Congress on June 27, 1940, transferred all Choctawhatchee National Forest land to the War Department (Department of Defense) for use for military purposes. Should the property cease to be needed for military purposes, the land may be returned to National Forest status, at the discretion of the Secretary of Defense. Providing housing for military families while in the service of the DoD is considered use for military purposes.

These following areas are included as commonalities in the affected environment:

Camp Pinchot Historic District and the Georgia Avenue Historic Buildings

The Camp Pinchot Historic District (8OK1703; Figure 3-17) includes one NRHP-listed historic district and at least one eligible archaeological site (8OK871); another site in the area (8OK1201) was previously determined as ineligible for listing on the NRHP (Meyer, 1997).

The Camp Pinchot Historic District encompasses 15 acres on the west bank of Garnier's Bayou. It was originally the Choctawhatchee National Forest headquarters compound, and was built between 1910 and 1920. The Camp Pinchot Historic District buildings and grounds are considered significant at the national, state, and local levels for their association with the establishment and management of the Choctawhatchee National Forest, the first national forest in the southeastern United States (NRIS, 2010; CRIMS, 2010). The property was named for Gifford Pinchot, America's first professionally trained forester. Pinchot rose to national prominence as a conservationist and political progressive under Theodore Roosevelt and was twice elected governor of Pennsylvania (Bixler, 1976). The U.S. Forest Service (USFS) transferred Camp Pinchot to the War Department in 1940. Throughout the 1940s, the residences (buildings 1556, 1557, 1558, and 1559) served as enlisted quarters (U.S. Air Force, no date). In 1950, the Air Force converted the residences to officers' housing. Camp Pinchot was finally listed on the NRHP in 1998 as a historic district.

Camp Pinchot is significant for its ties to the Choctawhatchee National Forest—the only national forest to be devoted to the operation and study of the naval stores industry, which was reliant on the wealth of pine forests in the region. The naval stores, or turpentine, industry was integral to the economic development of many parts of Florida in the early twentieth century, as forest rangers attempted testing of more effective and less damaging methods of extracting sap from the pines (Swanson and Sheffield, 2005).

Other than the Camp Pinchot Historic District, there is one remaining historic structural feature in the area representing the early Choctawhatchee National Forest: one of two outlying ranger stations originally located near Holley and Niceville. The USFS demolished the original station at Niceville during World War II and eventually relocated the Ranger Station in Holley to Niceville where it currently exists as part of the Boathouse Landing restaurant (Swanson and Sheffield, 2005). Based on Eglin AFB inventories completed to date of structures 50 years old or older, there are no identified structures associated with the Choctawhatchee National Forest other than Camp Pinchot on Eglin AFB property.

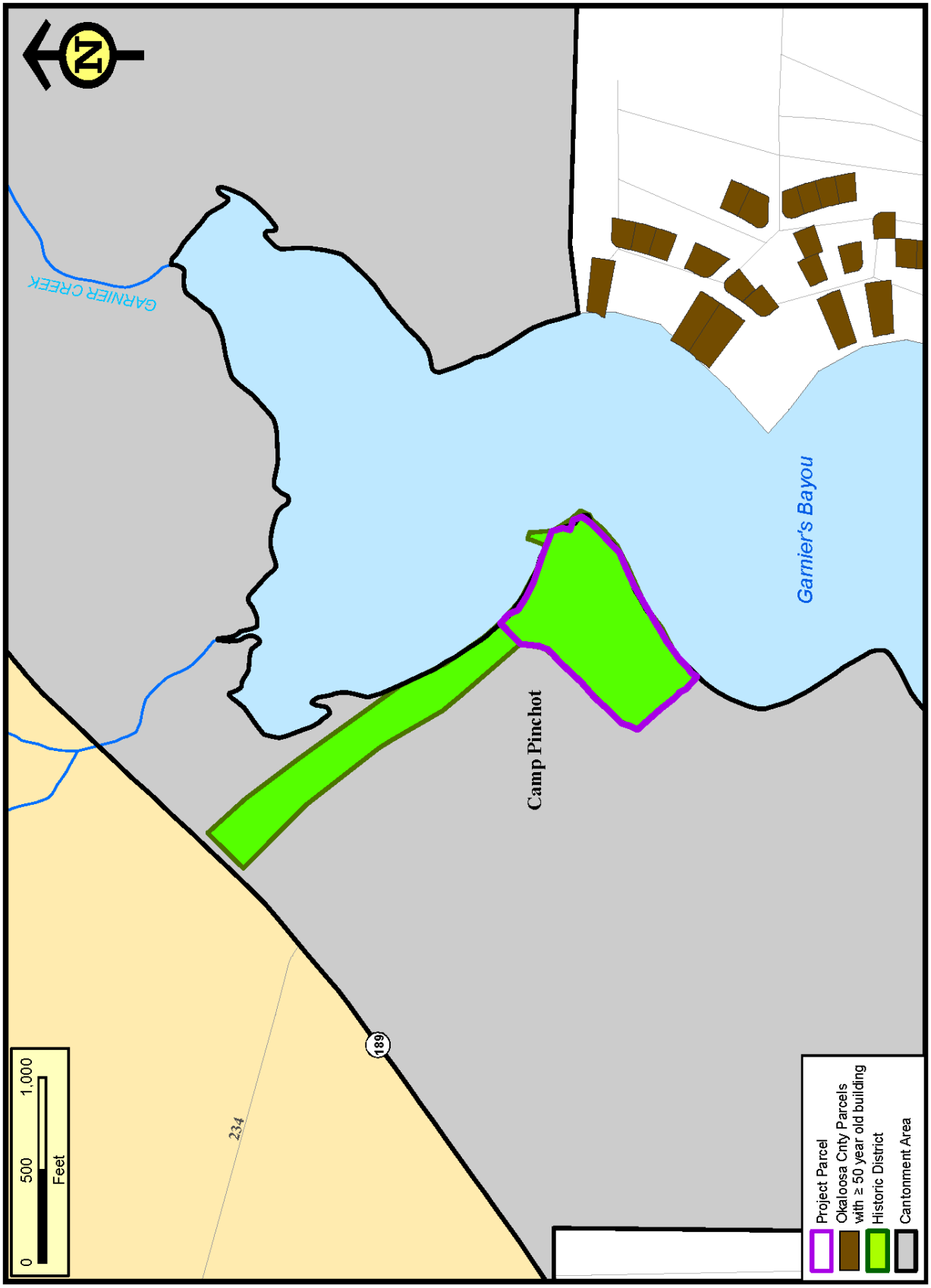

Figure 3-17. Camp Pinchot Historic District on Eglin AFB

The Camp Pinchot Historic District is located within more than 200 acres of forested property. The historic residences are surrounded to the south and east by water and to the west and north by forest. This location effectively isolates the property visually from other, more recent developments. Camp Pinchot Road trends north to SR-189 and serves as a link to outside development. At the same time, the long access road currently contributes to the pristine setting of the District by allowing a narrow entrance that leads back to the District allowing preservation of a visual sense of place from Camp Pinchot. The District is considered to possess excellent integrity of both buildings and setting. With one exception, no changes in building placement have occurred since its development in the early twentieth century. In the 1960s, one office building originally located between Building 1559 and the boat dock, was razed. During historic use by the War Department, porches were enclosed at the rear of the buildings and the interiors were upgraded. Early photographs suggest the buildings were built on wooden piers; concrete foundations were added around 1957. Today, the appearance of the buildings is not dramatically different from that displayed at the time of their construction (U.S. Air Force, no date). Table 3-26 lists the buildings in the Camp Pinchot Historic District.

Table 3-26. Camp Pinchot Historic District Structures

Bldg. No.	Construction Date	Building Name	NRHP Status*
1550	1977	Tennis Courts	Non-contributing
1551	1910–1920	Detached Garage	Contributing
1552	1910	Detached Garage	Contributing
1553	1910–1920	Storage Building	Contributing
1554	1965	Greenhouse (2)	Non-contributing
1555	1910	Detached Garage	Contributing
1556	1910	Family Housing	Contributing
1557	1910	Family Housing	Contributing
1558	1910	Family Housing	Contributing
1559	1910	Family Housing	Contributing
1560	1999	Water Retaining Wall	Non-contributing
1561	1914	Boathouse and Dock	Contributing
1562	1943	Storage Building	Contributing
1564	1950	Visiting Officer's Quarters	Non-contributing
1565	1952	Water Supply Building (Pump house)	Non-contributing
1566	1975	350 Gallon Diesel Storage Tank	Non-contributing
1567	1975	350 Gallon Mogas Storage Tank	Non-contributing
1569	1968	3,000 Gallon Water Storage Tank	Non-contributing
1570	1968	Detached Garage	Non-contributing

Source: U.S. Air Force, no date
NRHP = National Register of Historic Places
*Refers to whether the structure contributes to the historical status of the district.

Archaeological survey and subsurface testing at Camp Pinchot in 1993 and 1999 identified both prehistoric and historic cultural materials at the site (8OK871). The prehistoric component is a Deptford-period encampment (1,000 to 2,600 years ago); the

historic component consists of remains of structures and cultural features associated with the Forest Service period. The integrity of the archaeological site is considered excellent, with minimal shoreline erosion (Meyer et al., 2000).

Although outside of the current APE, the Air Force also surveyed a formerly proposed expansion area outside of Camp Pinchot for cultural resources (Thomas and Campbell 1992; Thomas, 1993; Meyer, 1997). In 2000, 842 artifacts were recovered from excavations north of Building 1562 where utility work had uncovered several artifacts. Most of these were architectural remains from previously demolished buildings (Thomas et al., 2004a).

In 2004, a systematic archaeological sampling program and metal detector survey was conducted to further delineate the boundaries of Camp Pinchot. As a result of this survey, a total of 47 discrete concentrations of metal were defined and the boundaries of the habitation area were better delineated. In addition, extensive archival research was conducted on the historic buildings, and Historic American Building Survey Level I documentation (including photography) was completed.

The Georgia Avenue Housing units are along the northern edge of the Eglin Field Historic District (Figure 3-18). The Eglin Field Historic District (8OK1532) is significant for its association with the establishment, development, and operation of Eglin AFB and for the advanced engineering design related to specific weapons testing and development (U.S. Air Force, 2004a). The buildings have statewide historical significance because of the use of structural clay tile and stucco due to environmental conditions and availability of local materials (NPS, 2010). This historic district was listed in the NRHP in 1998 for its significance from the years 1925 to 1949. It includes 20 contributing and 1 non-contributing buildings on Eglin Main Base, including 6 housing units proposed for uses other than housing under the Proposed Action (buildings 23, 25, 26, 27, 28, and 29; Table 3-27). The Georgia Avenue housing units were built in 1943 in the Minimal Traditional style, popular immediately before World War II. In the 1950s, the Air Force added additional living space and a garage extension to each unit. The buildings retain their orientation, basic appearance, shape, function, and fabric, and are contributing elements of the Historic District.

Table 3-27. Eglin Field Historic District Georgia Avenue Structures

Bldg. No.	Construction Date	Building Name	NRHP Status
23	1948	Garage FAM HSG DET	Non-contributing
25	1944	FAM HSG APPR PFY50	Contributing
26	1944	FAM HSG APPR PFY50	Contributing
27	1944	FAM HSG APPR PFY50	Contributing
28	1944	FAM HSG APPR PFY50	Contributing
29	1944	FAM HSG APPR PFY50	Contributing

Source: Cultural Resource Information Management Systems (CRIMS), 2010; NRHP = National Register of Historic Places

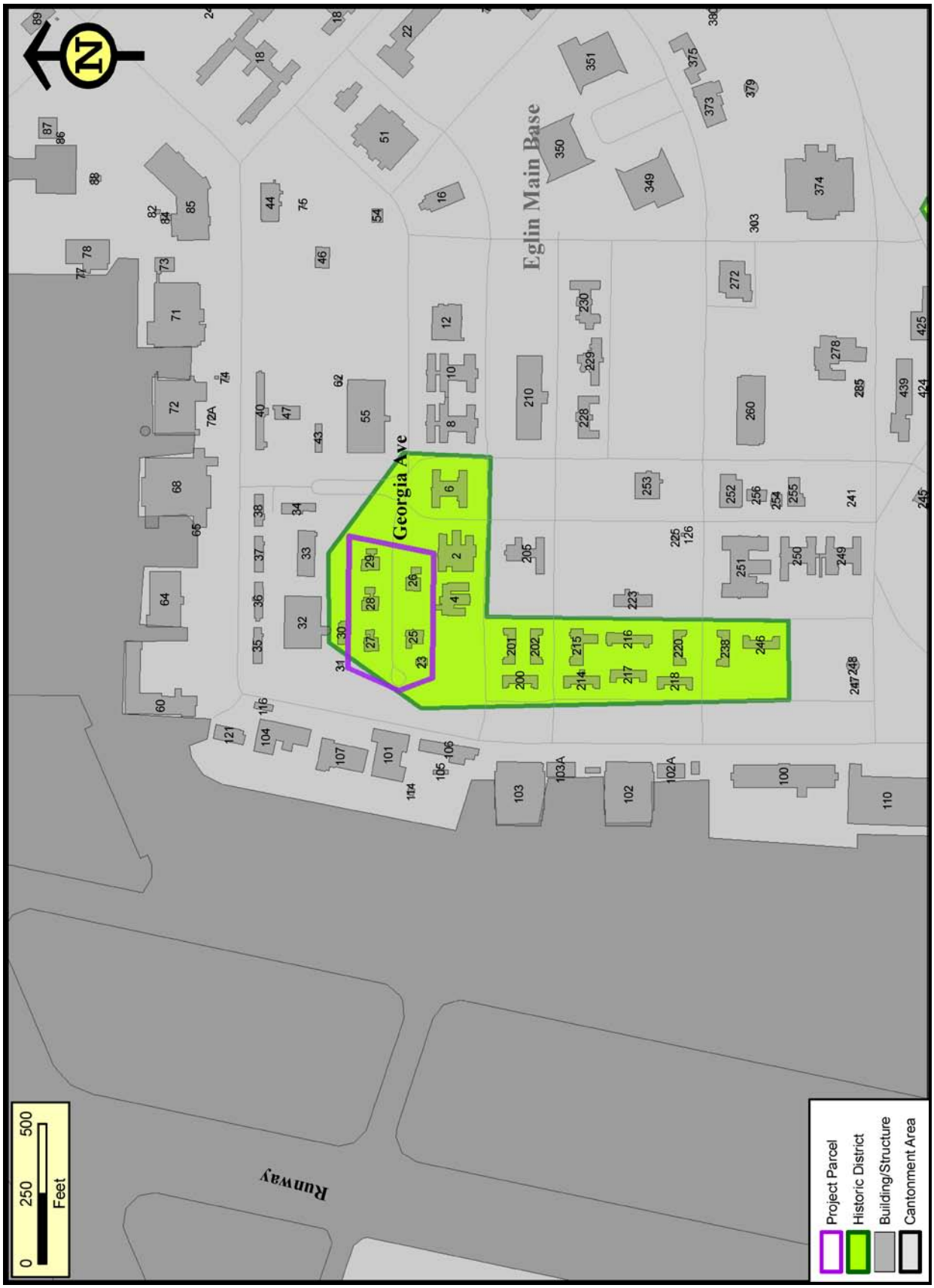

Figure 3-18. Georgia Avenue Historic Buildings on Eglin AFB

Eglin Main Base Housing Areas

On Eglin Main, the Hidden Oaks parcel does not contain any cultural resources. All high probability locales within the parcel have been surveyed for archaeological resources (Hemphill, 1995; Mathews, 1994; Morehead, 1994; Mallory, 2002; Thomas and Campbell, 1992; Thomas et al., 2004b).

Poquito Bayou Housing Area

The existing housing area near Poquito Bayou, built in 1976, is not historic in age and is not considered significant for the Cold War era. All high probability locales within the parcel have been surveyed for archaeological resources (Morehead, 1994; Mallory, 2002; Thomas et al., 2004b). The Air Force has identified four archaeological sites in the expansion area. Of these sites, three are considered eligible and one site is considered ineligible for nomination to the NRHP. Table 3-28 provides additional descriptions of the archaeological sites.

Table 3-28. Poquito Bayou Archaeological Resources

Site Number	Site Description	NRHP Status	Reference
8OK00107	Multi-component prehistoric, including Gulf Formational, Deptford, Weeden Island, Fort Walton, Pensacola	Eligible	Thomas et al., 2004b
8OK00952	Multi–components including Late Paleo-Indian, Early Archaic, Gulf Formational, Elliott's Point, Deptford, Weeden Island. Historic component not addressed in the interpretations	Eligible	Thomas et al., 2004b
8OK00953	Multi-component prehistoric, now combined with 8OK00952	Eligible	Thomas et al., 2004b
8OK02335	Single-component prehistoric, probable Weeden Island	Ineligible	Thomas et al., 2004b

Source: Cultural Resource Information Management Systems (CRIMS), 2010
NRHP = National Register of Historic Places

Camp Rudder Housing Area

The Camp Rudder parcel contains 25 housing units that were built in 1975. These units are not considered eligible for nomination to the NRHP as Cold War resources and are not historic in age. The Air Force has surveyed all high probability portions of the project area for cultural resources, and no NRHP-eligible properties were identified within or near the project area (Mallory, 2003).

Hurlburt Field Housing Areas

Existing housing is located in Pine Shadows. The 196 housing units in the Pine Shadows parcel were built in 1957. The Air Force recently evaluated these units for historical significance and, in concurrence with the SHPO, found them to be ineligible

for listing on the NRHP. The Air Force has surveyed the housing area for archaeological resources and none have been identified (Pruitt, 2008).

Existing housing is located in Soundside Manor. Fourteen housing units were built in 1997 and are not historic resources. Sixty housing units were constructed in 1957. The Air Force recently evaluated these units for historical significance and, in concurrence with the SHPO, found them to be ineligible for listing on the NRHP (Appendix E, *Cultural Resources*). The Air Force has surveyed all of Soundside Manor for archaeological resources. One prehistoric archaeological site (8OK168), with Weeden Island and Fort Walton cultural associations, has been recorded in this vicinity. As of 2004, site testing and evaluation, in compliance with Section 106 of the NHPA, were completed for this site, and testing determined that the site was ineligible for listing on the NRHP (Thomas et al., 2004b). A nearby prehistoric archaeological site (8OK061/8OK167) is considered eligible for nomination to the NRHP; however, this site is located just outside of the boundaries of the project area.

There are 110 housing units in Live Oak Terrace. Ten units were constructed in 1957 and recently evaluated by the Air Force for historical significance and, in concurrence with the SHPO, found to be ineligible for listing on the NRHP (Appendix E, *Cultural Resources*). The remaining 100 units were built in 1976 and are not historic in age and not considered eligible for listing on the NRHP as Cold War resources. No archaeological resources have been identified in this housing area. An unnamed historic cemetery (#26), represented by a detached wooden sign for a burial plot, was identified during an archaeological survey in 1982 near the proposed activity area, as depicted in historical documents. The reported location was thoroughly investigated by subsurface shovel testing (Thomas et al., 2004b). Following this survey effort, in 2004 additional investigation of the area using Ground Penetrating Radar, failed to locate the presence of any historic burials in Live Oak Terrace (Thomas et al., 2004b). Although previous studies have not detected burial features, some of the cemetery may still lay under the edge of the current housing area. The developer will ensure that demolition within 50 meters (164 feet) of the boundary of Live Oak Terrace is monitored by a qualified, third-party archaeologist.

In both the existing family camping (FAMCAMP) area south of US-98 and the proposed new FAMCAMP area, no historic structures are present. Within the current FAMCAMP area, one eligible archaeological site, 80K133 is present along the project area boundary (Rogers, 2010). The developer will ensure that demolition and construction within 50 meters (164 feet) of the southern boundary of the FAMCAMP parcel is monitored by a qualified, third-party archaeologist to avoid archaeological site 80K133.

3.10.2.2 Alternative 1: White Point Area

In addition to the commonalities presented previously, the following affected environments are included under this alternative.

Alternative 1 – Parcel 1

There are no cultural resource concerns in this parcel. All high probability locales within the parcel have been surveyed for archaeological resources (CRIMS, 2010).

Alternative 1 – Parcel 2

One archaeological site (8OK192) was previously identified in this parcel. Additional testing on this site has suggested that this resource is ineligible for listing on the NRHP (Calisto et al., 2010).

Archaeological survey of 74 acres of historic homestead survey was completed in support of the MHPI cultural resource identification effort (Calisto et al., 2010; Campbell et al., 2010). Three archaeological sites were identified as a result of the survey. The first site (8OK2751), an historic artifact scatter, is considered ineligible for listing on the NRHP. The other two sites, 8OK2753 and 8OK2754 are considered potentially NRHP-eligible pending final determination and concurrence by Eglin AFB and the SHPO.

Alternative 1 – Parcels 3–4

There are no cultural resource concerns in these parcels. All high probability locales within the parcel have been surveyed for archaeological resources (CRIMS, 2010).

Alternative 1 – Parcel 5

All high probability locales within the parcel have been surveyed for archaeological resources (CRIMS, 2010). One archaeological site (8OK1006) was previously identified directly northwest of this parcel. This site is a multicomponent prehistoric site that is believed to represent a resource collection station, potentially related to nearby village and mound sites. As such, 8OK1006 is considered eligible to the NRHP.

Alternative 1 – Parcel 6

All high probability locales within the parcel have been surveyed for archaeological resources (CRIMS, 2010). One archaeological site (8OK2627) is part of an historic homestead previously identified in this parcel. 8OK2627 is considered eligible for listing on the NRHP.

Alternative 1 – Parcel 7

All high probability locales within the parcel have been surveyed for archaeological resources (CRIMS, 2010). There are no cultural resource concerns in this parcel.

3.10.2.3 Alternative 2: Eglin Main Base/Valparaiso Area

In addition to the commonalities presented previously, the following affected environments are included under this alternative.

Alternative 2 – Parcel 1

Parcel 1 does not contain any historic structures. Archaeological survey has been completed in this project area (Morehead, 1994; Mathews, 1994; Hemphill, 1995; Thomas et al., 2004b). One archaeological site has been identified in this parcel, but it is not considered eligible for nomination to the NRHP (Meyer, 1995; CRIMS, 2010).

Alternative 2 – Parcels 2–3

All high probability locales within the parcel have been surveyed for archaeological resources (CRIMS, 2010). There are no cultural resource concerns in these parcels.

Alternative 2 – Parcel 4

All high probability locales within the parcel have been surveyed for archaeological resources (CRIMS, 2010). One archaeological site (8OK993) was previously identified in this parcel. Additional testing on this site has suggested that this resource is ineligible for listing on the NRHP (Calisto et al., 2010).

Alternative 2 – Parcel 5

All high probability locales within the parcel have been surveyed for archaeological resources (CRIMS, 2010). One archaeological site (8OK993) was previously identified in this parcel. Additional testing on this site has suggested that this resource is ineligible for listing on the NRHP (Calisto et al., 2010).

Alternative 2 – Parcels 6–8

All high probability locales within the parcel have been surveyed for archaeological resources (CRIMS, 2010). There are no cultural resource concerns in these parcels.

Alternative 2 – Parcel 9

This parcel consists of 28 Capehart housing units constructed between 1948 and 1951 that are considered ineligible for nomination to the NRHP (DoD, 2005). Archaeological

survey has been completed in this project area (Morehead, 1994; Meyer, 1995; Hemphill, 1995; Campbell, 1998; Thomas et al., 2004b). Although two archaeological sites were identified, neither site was considered eligible for nomination to the NRHP (Meyer, 1995; CRIMS, 2010).

Alternative 2 – Parcels 10

This parcel consists of seven Wherry housing units constructed in 1951. All of the housing units in this parcel are considered ineligible for nomination to the NRHP (DoD, 2005). Archaeological survey has been completed in this project area (Morehead, 1994; Meyer, 1995; Hemphill, 1995). No archaeological sites have been identified in this parcel (Meyer, 1995; CRIMS, 2010).

Alternative 2 – Parcels 11

This parcel does not contain any identified cultural resources. Archaeological survey has been completed in this project area (Hemphill, 1995).

3.10.2.4 Subalternative 2a: Eglin Main Base (Preferred Alternative)

This parcel is the same as described under Alternative 2 – Parcel 1; no cultural resource issues have been identified for this location.

3.10.2.5 Alternative 3: North Fort Walton Beach Area

In addition to the commonalities presented under alternative 1, the following affected environments are included under this alternative.

Alternative 3 – Parcel 1

One archaeological site (8OK871) was previously discussed in Section 3.10.2.1 is located directly outside of this parcel. This site contains both prehistoric and historic components and is considered eligible for listing on the NRHP (CRIMS, 2010).

Alternative 3 – Parcels 2–4

Archaeological survey has been completed in this project area (Mallory, 2002; CRIMS, 2010). There are no cultural resource concerns in these parcels.

Alternative 3 – Parcel 5

Archaeological survey has been completed in this project area (Morehead, 1994; Mallory, 2002; CRIMS, 2010). One archaeological site (8OK107) was previously identified in this parcel. This site contains Gulf Formational, Deptford, Weeden Island,

Fort Walton, and Pensacola prehistoric components and is considered eligible for listing on the NRHP.

3.10.2.6 Alternative 4: Mix Alternative

As this alternative would involve the utilization of a combination of parcels within any of the areas identified in Alternatives 1–3, the affected environment should be referred to from the individual parcel descriptions presented above.

3.11 WATER RESOURCES

3.11.1 Definition of the Resource

This section discusses water resources, including surface water, groundwater, stormwater, wetlands, floodplains, and the coastal zone located within or near the proposed project areas. Further descriptions of surface and groundwater resources, water quality, and pertinent regulations are provided in Appendix G, *Water Resources*.

Groundwater

Groundwater is defined by the U.S. Geological Survey (USGS) as "water that flows or seeps downward and saturates soil or rock, supplying springs and wells" (USGS, 2010). A deposit of subsurface water that is large enough to tap via a well is referred to as an aquifer.

Surface Water

Surface water is defined as any water on Earth's surface and includes lakes, rivers, and streams (USGS, 2010). Surface waters are important for a variety of reasons including economic, ecological, recreational, and human health. Surface waters have the potential to be impacted by land clearing and construction and demolition activities.

Section 303 of the CWA requires states to establish water quality standards for waterways to identify those that fail to meet the standards and to take action to clean up those waterways. Water quality criteria for Florida waters are presented in Appendix G, *Water Resources*. Florida adopted the Impaired Waters Rule (IWR) (FAC 62-303, with amendments), as the new methodology for assessing the state's waters for 303(d) listing. Waters that are determined to be impaired using the methodology in the IWR and adopted by Secretarial Order are submitted to the USEPA for approval as Florida's 303(d) list. The FDEP submits updates to Florida's 303(d) List of Impaired Surface Waters to the USEPA every two years. The *2008 Integrated Water Quality Assessment for Florida: 2008 305(b) Report and 303(d) List Update* (FDEP, 2008a) satisfies the listing and reporting requirements of Sections 303(d) and 305(b) of the CWA.

Stormwater

Stormwater refers to water originating from precipitation events that flows over land or impervious surface and is not absorbed into the soil or ground. Stormwater can accumulate debris, chemicals, and other pollutants and transport these pollutants into surface waters. Stormwater can adversely affect water quality, aquatic habitats, the hydrologic characteristics of streams and wetlands, and can increase flooding. Land-disturbing activities (such as clearing and grading) and the addition of impermeable surfaces (concrete, asphalt, etc.) would result in increases in stormwater runoff. However, the effects vary based on the amount of new impervious surface areas, topography, rainfall, soil characteristics, and other site conditions. The rate and volume of stormwater runoff has the potential to impact the quality and utility of water resources.

Wetlands

Wetlands, as defined by the USEPA for federal regulatory purposes are, "areas that are inundated or saturated at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs and similar areas." Wetlands are defined in the U.S. Army Corps of Engineers (USACE) *Wetland Delineation Manual* as "those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (USACE, 1987). Local hydrology and soil saturation affects soil formation and development, as well as the plant and animal communities found in wetland areas (USEPA, 1995). These resources are protected under Section 404 of the CWA (33 USC Section 1344) and at the state level with the Environmental Resource Permit program under Part IV, Florida Statutes Section 373.

Before an action adversely impacting wetlands may proceed, EO 11990, *Protection of Wetlands*, 1977 (42 Federal Register 26961), requires the head of the responsible federal agency to find that there is no practicable alternative to conducting the action in wetlands. If, however, no practicable alternative exists to the Proposed Action, mitigation must be taken to minimize impacts in or adjacent to wetlands and would be implemented early in the site planning process to reduce or eliminate direct and indirect impacts. The USACE and the FDEP both have a formal process for determining a jurisdictional wetland. This delineation process would be accomplished prior to any construction activity in coordination with natural resources managers at Eglin AFB and the action agency or the developer.

Floodplains

Floodplains are lowland areas adjacent to surface water bodies (e.g., lakes, wetlands, and rivers) that are periodically covered by water during flooding events. Floodplains are biologically unique and are also highly diverse ecosystems that provide a rich diversity of aquatic and terrestrial species, acting as a functional part of natural systems (Mitsch and Gosselink, 2000). Floodplain vegetation and soils act as water filters, intercepting surface water runoff before it reaches lakes, streams, or rivers, and serve to store floodwaters during flood events. This process aids in the removal of excess nutrients, pollutants, and sediments from the water and helps reduce the need for costly cleanups and sediment removal. Floodplains also reduce downstream flooding by increasing upstream storage in wetlands, sloughs, back channels, side channels, and former channels.

Floodplains are identified using Federal Emergency Management Agency (FEMA) flood hazard mapping data developed through the National Flood Insurance Program identification and mapping program. Areas identified as located within the floodplains are areas that have a one-percent chance of being inundated by a flood in any given year (FEMA, 2010). Development, such as residential and commercial, is allowed within this area as long as the development is compliant with local floodplain management ordinances (which must meet minimum federal requirements). Federal agencies have additional considerations under EO 11988, 1977, *Floodplain Management* (42 Federal Register 26951), with regard to development within the floodplain. While there would be no new development within floodplain boundaries, there would be demolition of existing units within some floodplain areas. Under EO 11988, federal agencies are prohibited from the occupancy and modification of floodplains and floodplain development unless there is no practicable alternative. The EO stipulates that agencies proposing actions in floodplains consider alternative actions to avoid adverse effects, avoid incompatible development in the floodplains, and provide opportunity for early public review of any plans or proposals. If adverse effects are unavoidable, the action agency must include mitigation measures in the action to minimize impacts.

Coastal Zone

The Coastal Zone Management Act (CZMA) provides for the effective, beneficial use, protection, and development of the U.S. coastal zone. Under the CZMA the term "coastal zone" is defined as coastal waters and adjacent shore lands strongly influenced by each other and in proximity to the several coastal states, including islands, transitional and intertidal areas, salt marshes, wetlands, and beaches. "Coastal waters" are defined as any waters adjacent to the shoreline that contain a measurable amount of sea water, including but not limited to sounds, bays, lagoons, bayous, ponds, and estuaries. The outer boundary of the coastal zone is the limit of state waters, which for the Gulf Coast of Florida is nine nautical miles from shore. The seaward boundaries of the state of Florida coastal zone are defined in accordance with Section 304(1) of the

CZMA, the Submerged Lands Act (43 USC 1301 et. seq.), and United States vs. Louisiana, 364 U.S. 502 (1960), as three nautical miles into the Atlantic Ocean and approximately nine nautical miles into the Gulf of Mexico. The landward boundaries of the state of Florida are defined by the state, in accordance with Section 306(d)(2)(A) of the CZMA, as the entire state of Florida. Since all of Florida is within the coastal zone as defined by the CZMA and Florida's Coastal Management Program, all of the potentially affected resources discussed in Chapter 3 and analyzed in Chapter 4 are coastal resources. These resources are discussed in more detail in the CZMA consistency determination provided in Appendix I, *CZMA Determination*.

3.11.2 Affected Environment

Groundwater

The two aquifers located under Eglin AFB are the Sand and Gravel Aquifer and the Floridan Aquifer. The Floridan Aquifer is located below the Sand and Gravel Aquifer and extends beneath peninsular Florida. The descriptions of the Sand and Gravel Aquifer and Floridan Aquifer given below apply to all of Eglin AFB, and therefore all proposed and alternative actions in this EIS.

The Sand and Gravel Aquifer consists of Citronelle formation and marine terrace deposits, which begin at the land surface. The thickness of the Sand and Gravel Aquifer at Eglin ranges from 25 to 300 feet. Water flows generally south to southeast. Although the aquifer is composed of clean, fine-to-coarse sand and gravel, locally it contains some silt, silty clay, and peat beds. The Sand and Gravel Aquifer is segregated from the underlying limestone of the Floridan Aquifer by the Pensacola Clay confining bed. Water in the Sand and Gravel Aquifer exists in generally unconfined (a free water surface or water table conditions) and confined (under pressure) conditions (USGS, 1990). Water from this aquifer is not a primary source of domestic or public supply water on Eglin AFB because of the large quantities of higher quality water available from the underlying Upper Limestone of the Floridan Aquifer (NWFWMD, 2008).

The Floridan Aquifer consists of a thick sequence of interbedded limestone and dolomite. The top of the aquifer is about 50 feet below mean sea level (MSL) in the northeast corner of the base and increases to about 700 feet below MSL in the southwestern area of the base. The top of the aquifer is about 400 to 450 feet below MSL in the main base area. The thickness of the potable-water zone in the aquifer varies from less than 250 feet along the Gulf of Mexico to over 750 feet in central Okaloosa and Walton Counties. Water flow direction is northeast to southwest. Throughout the Eglin Reservation, the Floridan Aquifer exists under confined conditions, bounded above and below by the Pensacola Clay Formation confining bed (NWFWMD, 2008). This clay layer restricts the downward migration of pollutants and restricts saline water from Choctawhatchee Bay and the Gulf of Mexico from entering the upper limestone layer of

the aquifer. The clay layer of the Bucatunna Formation separates the upper and lower limestone units. Since this layer has a high saline content, the lower limestone unit is not used as a water source (Overing et al., 1995). Groundwater storage and movement in the upper limestone layer occurs in interconnected, intergranular pore spaces, small solution fissures, and larger solution channels and cavities.

Increasing concerns about the existing and anticipated water supply from the Floridan Aquifer has resulted in the designation of the coastal areas of Region II, south of Eglin AFB in Santa Rosa, Okaloosa, and Walton Counties, as a Water Resource Caution Area (WRCA). The designation WRCA by the NWFWMD requires withdrawal permittees to implement water conservation measures and maximize their water use efficiency. In addition, permittees in the WRCA are subject to increased water use reporting requirements. The designation of WRCA also prohibits the use of the Floridan Aquifer for nonpotable purposes (NWFWMD, 2008). At Hurlburt Field, local shallow aquifer wells are used for irrigation only (The Groundwater Foundation, 2010). At Eglin AFB, the Floridan Aquifer is used extensively for drinking water while only small amounts are withdrawn from the Sand and Gravel Aquifer. The Sand and Gravel Aquifer provides an alternative source for nonpotable uses at Eglin AFB.

Surface Water

The FDEP divides river basins across Florida into groups, which the FDEP addresses according to an established rotation schedule. The eastern portion of Eglin AFB drains to the Choctawhatchee-St. Andrews Bay Basin (Group 3) and the west side drains into the Pensacola Bay Basin (Group 4) (FDEP, 2010b). Surface waters on Eglin AFB are Class III waters, meaning that they are designated for "recreation, propagation, and maintenance of a healthy, well-balanced population of fish and wildlife" (FDEP, 2010b). The bayous, sound, and bay are brackish, while the creeks are freshwater. The lakes are freshwater near their source and brackish near the bay.

The Choctawhatchee Bay has a surface area of 129 square miles (NWFWMD, 2009), and is more than 27 miles long, and varies from 1 to 6 miles wide, and 10 to 43 feet deep (Ruth and Handley, 2006). The majority of the Choctawhatchee Bay is designated a Class II, with the associated designated usage as shellfish propagation or harvesting (FDEP, 2009b). The greatest source of fresh water into the bay is the Choctawhatchee River, with additional freshwater inputs from streams and bayous along the northern and western portions of the bay including Turkey Creek, Rocky Creek, Swift Creek, and Alaqua Creek. The Choctawhatchee River is a Class III river and is also designated as Outstanding Florida Waters (OFW) as listed in Section 62-302.700, FAC. Waters are given the designation based on their exceptional recreational or ecological significance and therefore are given special protection (FDEP, 2005).

The bay opens up to Santa Rosa Sound to the west and the Intracoastal Waterway to the east. East Pass, a man-made channel located immediately west of Destin, provides the

only direct opening to the Gulf of Mexico (Ruth and Handley, 2006). Development activities near shorelines in certain areas of the Bay system have had adverse effects on water quality in such areas as Cinco, Garnier's, Joes, and Boggy Bayous (NWFWMD, 2009).

The west side of Eglin AFB drains into the Pensacola Bay Basin (Group 4) (FDEP, 2009b). The basin comprises the Pensacola Bay estuary (Pensacola Bay, East Bay, Escambia Bay, Blackwater Bay, and Santa Rosa Sound) and portions of the Escambia River, Blackwater River, and Yellow River watersheds (FDEP, 2004). The majority of East Bay and Pensacola Bay are water use Class II, shellfish harvesting and propagation (FDEP, 2004). Surface waters occupy approximately 382 square miles (16.3 percent) of the total basin area (FDEP, 2004). Stream flow in the basin is generally from rainfall which averages approximately 65.8 inches per year. The rainfall moves quickly from the land and ends up as runoff to streams. The major sources of water inflow to the Pensacola Bay estuary are the Blackwater, Yellow, and Escambia Rivers, all of which originate in Alabama (FDEP, 2004).

Several portions of the Pensacola Bay Basin are designated as OFWs, as listed in Section 62-302.700, FAC. Several water bodies in the Pensacola Bay Basin are designated as OWF including parts of the Blackwater River and Shoal River, and all parts of the Yellow River Marsh Aquatic Preserve, Fort Pickens Aquatic Preserve, and the Gulf Islands National Seashore (FDEP, 2004).

Stormwater

While Okaloosa County does not have a requirement for developments such as those considered in the Proposed Action to store and treat the stormwater runoff on-site, the state of Florida does. Florida Administrative Code (FAC) 62-346 regulates stormwater discharge facilities and permitting, and design requirements are outlined in the *Department of Environmental Protection and Northwest Florida Water Management District Environmental Resource Applicant's Handbook Volumes I and II*. Part II of Volume II establishes the general design and performance criteria for stormwater management systems. All activities that require an individual permit under FAC 62-346 are required to provide reasonable assurance that the construction, alteration, operation, maintenance, removal, or abandonment of a stormwater management system will not cause adverse effects as specified in FAC 62-346-301. Developing systems in accordance with the applicable guidance in Volume II provides this reasonable assurance. Projects meeting the following criteria must also meet stormwater quantity/flood control design requirements in Part III of Volume II.

- Systems that serve projects of 40 or more acres of total land area.
- Systems that provide for the placement of 12 or more acres of impervious surface, which also constitutes more than 40 percent of the total land area.

- Systems that are capable of impounding a volume of water exceeding 40 acre-feet (the volume of 40 acres of surface area to a depth of 1 foot).

An example of reasonable assurance is designing a retention system (a typical stormwater control method) to provide on-line retention of the runoff from 1 inch of rainfall or, at a minimum, 0.5 inch of runoff (Volume II.V.2). The NWFWMD considers the "first flush" to be the primary source of pollutants associated with stormwater runoff. The retention or detention with filtration of the first 1 inch of rainfall or 0.5 inch of runoff greatly assists in capturing the pollutants associated with stormwater runoff. Peak flows, maximum runoff amounts, and where applicable, 1-inch rain storage volume were calculated for housing areas and proposed parcels that have the potential to experience stormwater impacts from implementing the Proposed Action.

Wetlands and Floodplains

Wetland and floodplain resources are distributed across Eglin AFB and Hurlburt Field. Depending upon the alternative, one or more water resources may be present. Adjacent wetland and floodplains are associated with most of the water bodies located near the parcels in each alternative. Wetlands and floodplains differ among the alternatives, and therefore, are addressed in more detail within the alternative-specific sections below.

3.11.2.1 Proposed Action Commonalities

The following subsections address water resources associated with existing housing areas on Eglin Main Base, Poquito Bayou, Camp Pinchot, Camp Rudder, and Hurlburt Field that are common among all action alternatives.

Eglin Main Base Housing Areas

No surface waters have been identified within any of the housing areas on Eglin Main Base, which include Wherry, Capehart, and the combined Old/New Plew and Hidden Oaks parcels. However, other major water bodies are situated either on or adjacent to Eglin Main Base, including the Choctawhatchee Bay, which is located along the base's southeastern border, Ben's Lake, and Lower Memorial Lake; therefore, portions of some housing areas are also bordered by these water bodies. Since all Eglin Main Base housing commonality parcels border the Choctawhatchee Bay, they are all adjacent to the 100-year floodplain located along the shoreline. A more detailed discussion of water resources associated with each housing area is discussed below which includes their locations in relation to those main water bodies, existing stormwater conditions, wetland areas, and floodplain areas. See Figure 3-19 for all water resources associated with each housing area located on Eglin Main Base.

Figure 3-19. Water Resources at Proposed Action: Eglin Main Base Commonalities

Wherry

As previously mentioned, no surface waters have been identified on the Wherry parcel. The parcel is bound by the Choctawhatchee Bay to the south and by Ben's lake to the west.

Peak flow and maximum runoff amount for the Wherry housing area is 687 cubic feet per second (cfs) and 4.97 inches, respectively. The 1-inch rain storage volume for this area is 769,563 cubic feet (ft^3).

There are currently 1.36 acres of wetlands located within the Wherry parcel boundary. In addition, approximately 12.48 acres of the parcel are located in the 100-year floodplain (Figure 3-19).

Capehart

As previously mentioned, no surface waters have been identified in the Capehart parcel. The parcel is bound by the Choctawhatchee Bay to the south and by the Lower Memorial Lake to the east.

Peak flow and maximum runoff amount at Capehart are 340 cfs and 4.97 inches, respectively. The 1-inch rain storage volume is 341,221 ft^3.

There is currently 0.79 acre of wetlands located within the Capehart parcel boundary. In addition, approximately 2.99 acres of the parcel are located within the 100-year floodplain (Figure 3-19).

Old/New Plew and Hidden Oaks

As previously mentioned, no surface waters have been identified in the Old/New Plew and Hidden Oaks parcel. A portion of the southeast border of the Old/New Plew and Hidden Oaks parcel is located along the Choctawhatchee Bay. Peak flow and maximum runoff amount for the Old/New Plew and Hidden Oaks housing area are 873 cfs and 2.77 inches, respectively. The 1-inch rain storage volume for this area is 769,563 ft^3.

There is currently 0.75 acre of wetlands located within the Old/New Plew and Hidden Oaks parcel boundary. In addition, approximately 2.39 acres of the parcel are located within the 100-year floodplain (Figure 3-19).

Poquito Bayou Housing Area

Surface waters within the Poquito Bayou housing area consist of an unnamed creek that runs through the area. This creek drains into Poquito Bayou which then connects to Garnier's Bayou and the Choctawhatchee Bay.

Peak flow and maximum runoff amount at the Poquito Bayou housing area is 286 cfs and 4.14 inches, respectively. The 1-inch rain storage volume is 264,265 ft^3.

There are currently 8.56 acres of wetlands located within the Poquito Bayou housing parcel. In addition, approximately 4.19 acres of the housing area are located within the 100-year floodplain (Figure 3-19).

Camp Pinchot Housing Area

No surface waters have been identified within the Camp Pinchot Housing Area. The housing area is adjacent to Garnier's Bayou.

Peak flow, maximum runoff, and the 1-inch rain storage volume for Camp Pinchot were not calculated since the Camp Pinchot area is not intended for housing development.

No wetlands have been identified within the Camp Pinchot housing area. There are 1.94 acres of floodplains within the Camp Pinchot housing area and a wetland and floodplain area within a half-mile north of the parcel associated with Garnier's Bayou and Garnier's Creek (Figure 3-19).

Camp Rudder Housing Area

No surface waters have been identified within the Camp Rudder housing area. The closest surface water bodies are Mett's Creek and Prisoner's Pond located 620 feet and 1,120 feet, respectively from the housing area. Mett's Creek drains into the Yellow River, which is located approximately 1.5 miles northwest of the Camp Rudder housing area.

Peak flow and maximum runoff amount for the Camp Rudder housing area is 51 cfs and 4.97 inches, respectively. The 1-inch rain storage volume for this area is 36,300 ft^3.

No wetlands or floodplains have been identified within the Camp Rudder housing area; however, there are wetlands and floodplains within a half-mile east of the Camp Rudder housing area associated with Mett's Creek and Prisoner's Pond (Figure 3-20).

Hurlburt Field Housing Areas

Surface waters, existing stormwater conditions, wetlands, and floodplains associated with each housing area on Hurlburt Field are discussed below.

Live Oak Terrace Parcel

No surface waters have been identified within the Live Oak Parcel. The closest body of water to Live Oak Terrace is the Santa Rosa Sound located 2,200 feet away. The Santa Rosa Sound is a 36-mile long, east-to-west oriented lagoon that connects the Pensacola

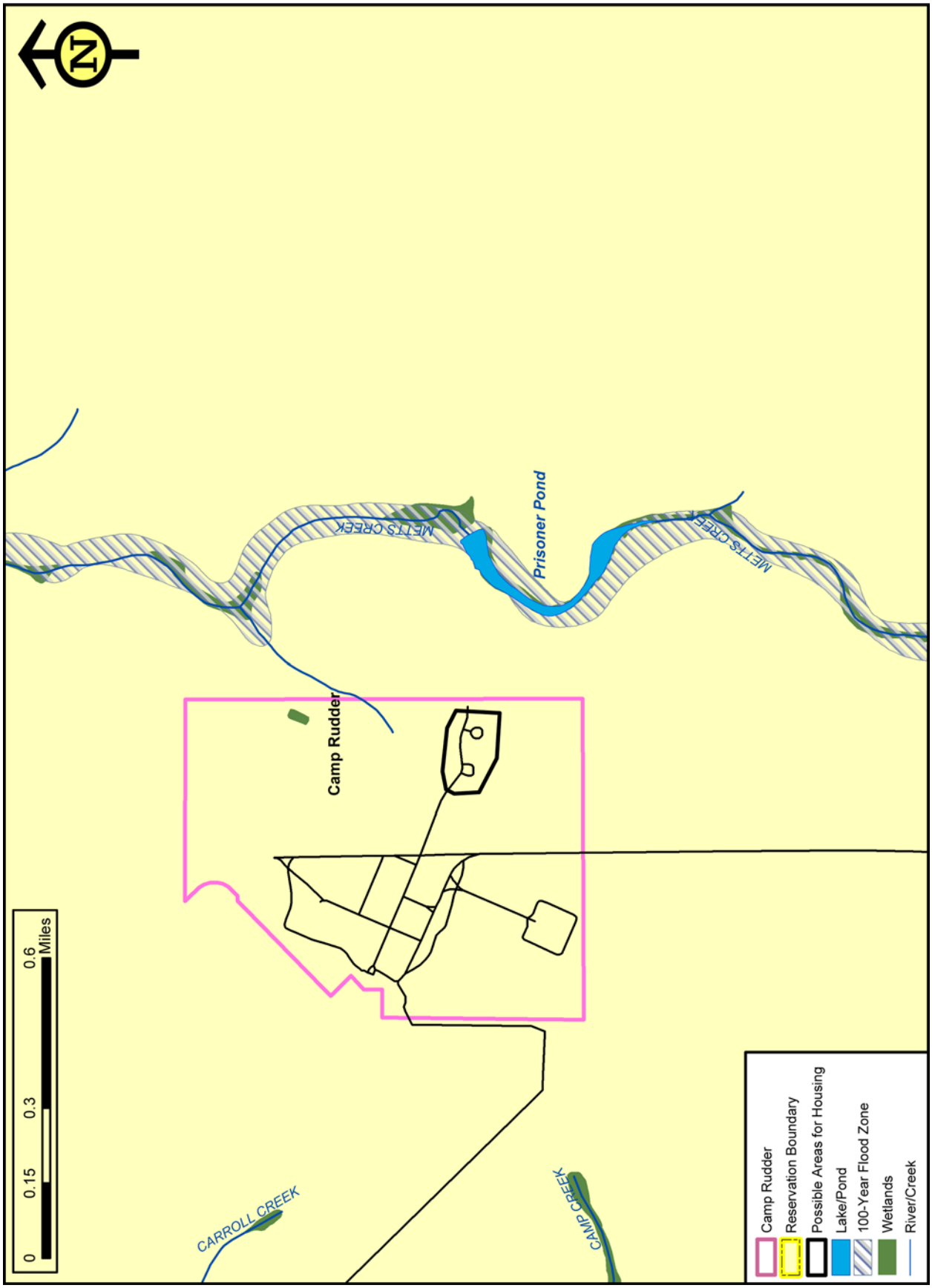

Figure 3-20. Water Resources at Proposed Action: Camp Rudder

Bay Estuary with Choctawhatchee Bay in the east. The sounds's water depth and salinity are fairly uniform.

Peak flow and maximum runoff amount at Live Oak Terrace are 104 cfs and 4.96 inches, respectively. The 1-inch rain storage volume is 87,120 ft^3.

No wetlands have been identified within the Live Oak Terrace housing area; however, the parcel is adjacent to a large wetland area to the west/northwest and several smaller wetlands to the east. Approximately 4.59 acres of the parcel and nine houses are located in the 100-year floodplain (Figure 3-21).

Pine Shadows Parcel

No surface waters have been identified within the Pine Shadows parcel. The closest body of water is the Santa Rosa Sound located 1,140 feet south of the parcel.

Peak flow and maximum runoff amount for the Pine Shadows housing area is 318 cfs and 4.97 inches, respectively. The 1-inch rain storage volume for this area is 268,621 ft^3.

Approximately 0.7 acre of wetlands exists within this parcel; these wetlands are actually man-made drainage ditches that have developed wetland characteristics over time and have been identified by the FDEP as jurisdictional in nature. In addition, several wetland areas surrounding the parcel. In addition, approximately 0.82 acre of the parcel is located in the 100-year floodplain (Figure 3-21).

Soundside Manor Parcel

No surface waters have been identified within the Soundside Manor Parcel. The southernmost border of the Soundside Manor Parcel is adjacent to the Choctawhatchee Bay.

Peak flow and maximum runoff amount at Soundside Manor are 110 cfs and 4.42 inches, respectively. The 1-inch rain storage volume is 94,380 ft^3.

No wetlands have been identified on the Soundside Manor parcel. However, a wetland area associated with the Santa Rosa Sound is located within 0.1 mile west of the parcel. Several areas of the parcel, totaling 5.81 acres, and two houses are located within the 100-year floodplain, which is also associated with the Santa Rosa Sound (Figure 3-21).

Existing/New FAMCAMP

No surface waters have been identified within the existing FAMCAMP parcel. The closest body of water is the Santa Rosa Sound located 225 feet south of the area.

Peak flow and maximum runoff amount for the existing FAMCAMP area is 105 cfs and 3.6 inches, respectively.

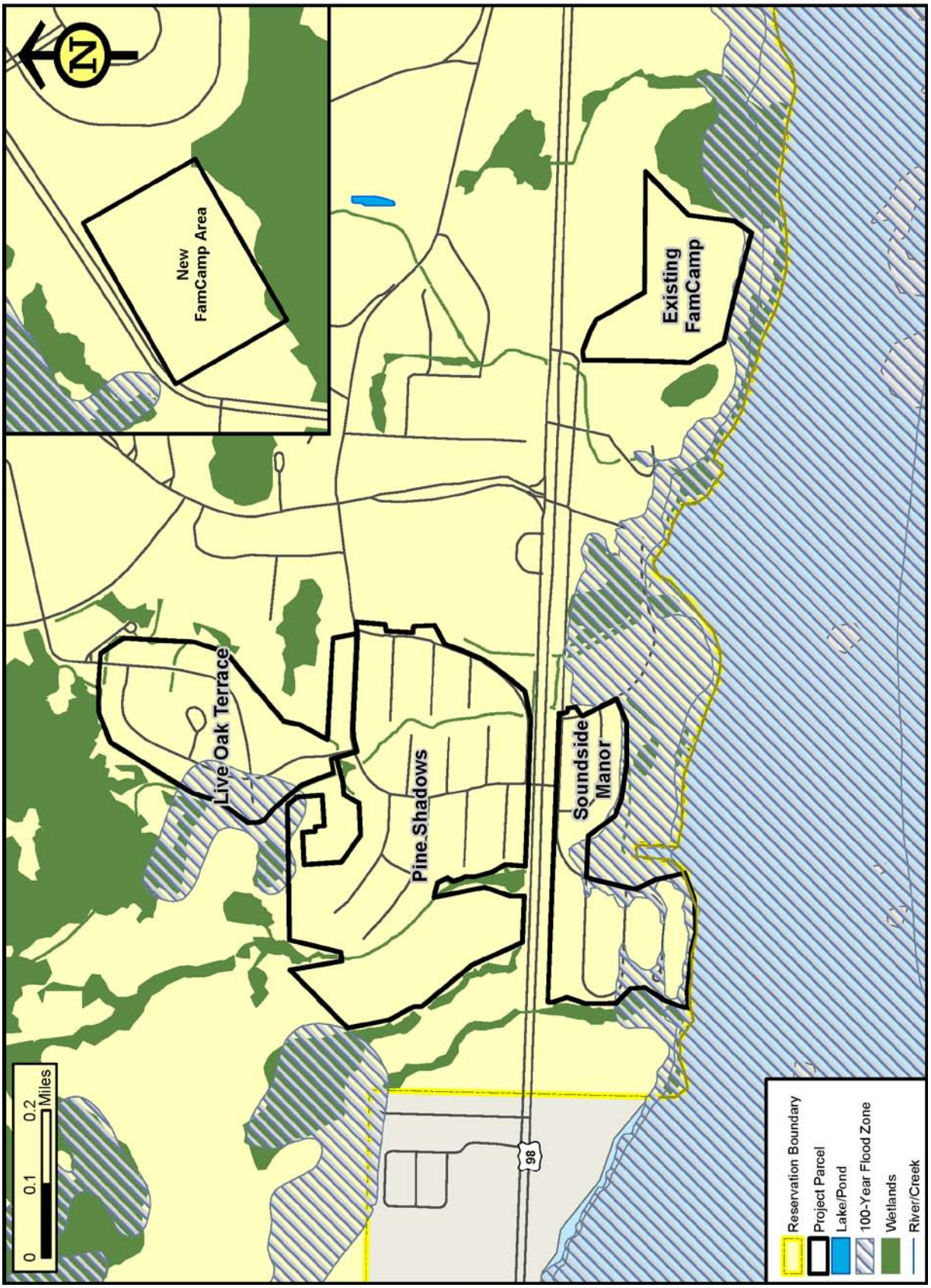

Figure 3-21. Water Resources at Hurlburt Field

No wetlands have been identified within the existing FAMCAMP area but there are wetlands associated with the Santa Rosa Sound that are within a tenth of a mile to the east and to the west of the parcel. There is 0.33 acre of floodplains within the parcel and the southern border of the parcel is less than a tenth of a mile from the shoreline of the Santa Rosa Sound, which is in the 100-year floodplain (Figure 3-21).

The proposed new FAMCAMP location is currently undeveloped, with natural runoff and no impervious surface. There is a small wetland area near the southeastern boundary.

3.11.2.2 Alternative 1: White Point Area

Alternative 1 – Parcel 1

No surface waters have been identified within the White Point Area Parcel 1. The closest body of water to Parcel 1 is the Choctawhatchee Bay located 270 feet south of the parcel.

Peak flow and maximum runoff amount at Parcel 1 is 30 cfs and 1.45 inches, respectively.

No wetlands or floodplain areas have been identified within Parcel 1; however, there is a wetland associated with Lake Pippin located within a half-mile north of the parcel. (Figure 3-22).

Alternative 1 – Parcel 2

No surface waters have been identified within Parcel 2. The closest body of water is an unnamed creek located 2,100 feet south of the parcel. The creek drains into Lake Pippin and ultimately into the Choctawhatchee Bay.

Peak flow and maximum runoff amount at Parcel 2 is 55 cfs and 1.32 inches, respectively.

No wetlands or floodplains have been identified within Parcel 2; however, there are wetlands and floodplain areas associated with Lake Pippin located within a half-mile south of the parcel (Figure 3-22).

Alternative 1 – Parcel 3

No surface waters have been identified within Parcel 3. The closest body of water is the Little Trout Creek located 230 feet east of Parcel 3. Little Trout Creek flows into Lake Pippin and ultimately into the Choctawhatchee Bay.

Peak flow and maximum runoff amount at Parcel 3 is 38 cfs and 1.32 inches, respectively.

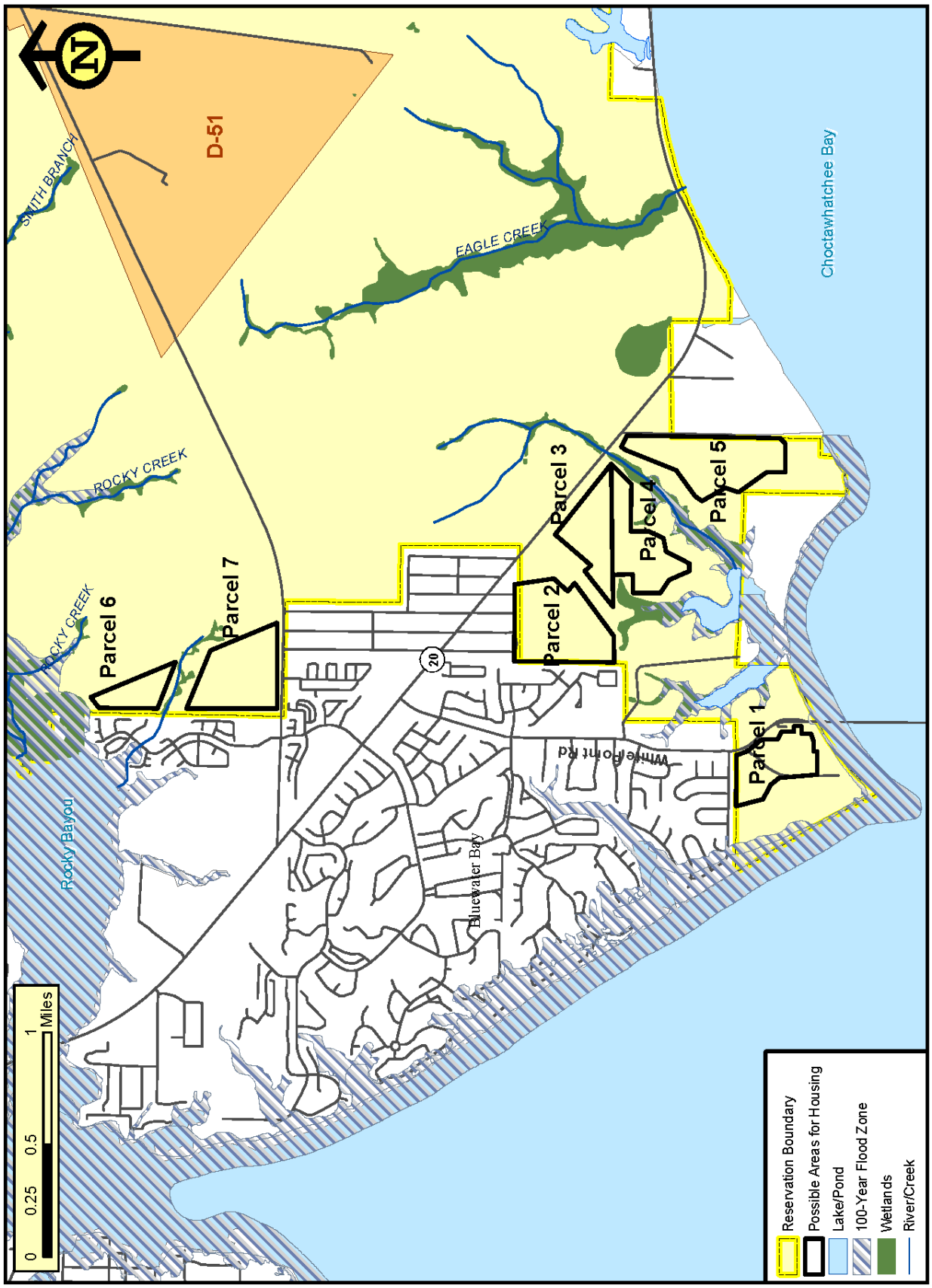

Figure 3-22. Water Resources at Alternative 1: White Point Area

No wetlands or floodplains have been identified within Parcel 3; however, there are wetlands and floodplain areas, associated with Little Trout Creek and Lake Pippin, located within a half-mile to the south west and south east corners of the parcel (Figure 3-22).

Alternative 1 – Parcel 4

No surface waters have been identified within Parcel 4. The closest body of water is the Little Trout Creek located 225 feet east of Parcel 4.

Peak flow and maximum runoff amount at Parcel 4 is 99 cfs and 3.04 inches, respectively.

No wetlands or floodplains have been identified within Parcel 4; however, there are wetlands and floodplains, associated with Little Trout Creek and Lake Pippin, located within a half-mile to the west and east of the parcel (Figure 3-22).

Alternative 1 – Parcel 5

No surface waters have been identified within Parcel 5. The closest body of water is the Little Trout Creek located 270 feet from Parcel 5. The Choctawhatchee Bay is also located within a mile south of the parcel.

Peak flow and maximum runoff amount at Parcel 5 is 30 cfs and 1.32 inches, respectively.

No wetlands or floodplains have been identified within Parcel 5; however, there are wetlands within a half-mile to the west of the parcel that are associated with Little Trout Creek and Lake Pippin. There are also floodplain areas within a half-mile south of the parcel that are associated with the Choctawhatchee Bay (Figure 3-22).

Alternative 1 – Parcel 6

No surface waters have been identified on Parcel 6. The closest body of water is an unnamed creek located 125 feet south of the parcel. Rocky Creek is also near Parcel 6 and is located within a mile of the northern portion of the parcel. Both the unnamed creek and Rocky Creek flow into Rocky Bayou and ultimately into the Choctawhatchee Bay.

Peak flow and maximum runoff amount at Parcel 6 is 19 cfs and 1.32 inches, respectively.

No wetlands or floodplains have been identified on Parcel 6; however, there are wetlands associated with Rocky Creek and Rocky Bayou located within a mile north of the parcel and wetlands associated with the unnamed creek south of the parcel (Figure 3-22).

Alternative 1 – Parcel 7

No surface waters have been identified on Parcel 7. The closest body of water is an unnamed creek located 360 feet north of Parcel 7. The creek drains into Rocky Bayou and ultimately into the Choctawhatchee Bay.

Peak flow and maximum runoff amount at Parcel 7 is 37 cfs and 1.32 inches, respectively.

No wetlands or floodplains have been located on Parcel 7 in the White Point area but a wetland area runs adjacent to the nearby creek that is located within 0.2 mile north of the parcel (Figure 3-22).

3.11.2.3 Alternative 2: Eglin Main Base/Valparaiso Area

Alternative 2 – Parcel 1

Surface waters, wetlands, and floodplains associated with Parcel 1 are the same as those discussed in the Eglin Main Base Housing Areas section under the Proposed Action Commonalities: Old/New Plew and Hidden Oaks (Figure 3-23).

Calculations for existing stormwater conditions took into account the undeveloped portions of Parcel 1 as well as the existing housing areas located within the parcel. Peak flow and maximum runoff amount at the Eglin Main Base Parcel is 480 cfs and 2.63 inches, respectively.

Alternative 2 – Parcel 2

No surface waters have been identified on Parcel 2. The closest body of water is an unnamed creek located 390 feet west of Parcel 2. The unnamed creek drains into Tom's Bayou.

Peak flow and maximum runoff amount at the Valparaiso Parcel is 19 cfs and 1.32 inches, respectively.

No wetlands or floodplains have been located on or adjacent to Parcel 2; however, there is a floodplain within a mile of the parcel that is associated with Tom's Bayou and Boggy Bayou and a wetland area within a mile to the west of the parcel associated with the unnamed creek (Figure 3-23).

Alternative 2 – Parcel 3

No surface waters have been identified on Parcel 3. The closest body of water is an unnamed creek located 560 feet west of Parcel 3. The unnamed creek drains into Tom's Bayou.

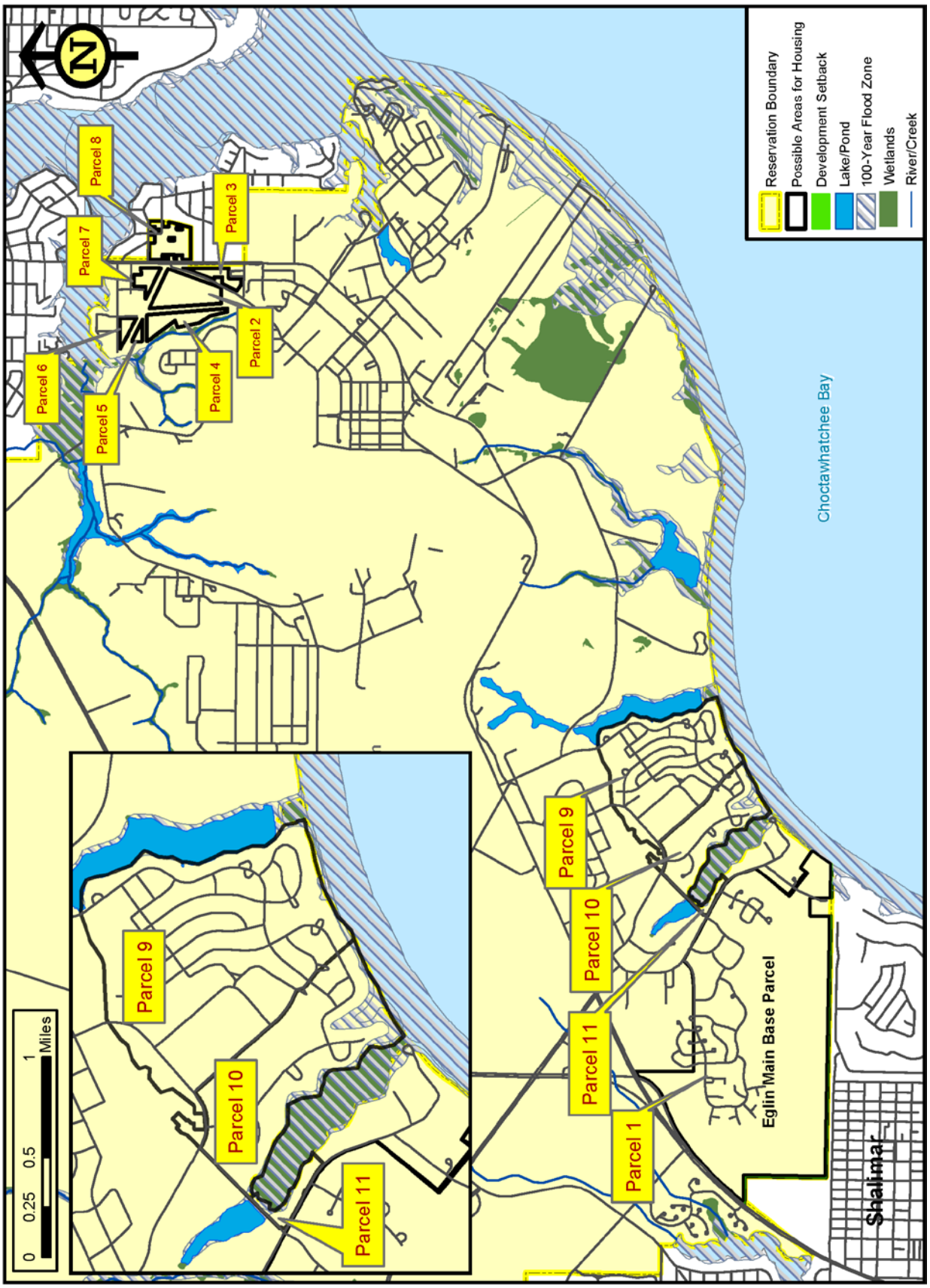

Figure 3-23. Water Resources at Alternative 2: Eglin Main Base/Valparaiso Area

Peak flow and maximum runoff amount at the Valparaiso Parcel is 5 cfs and 1.32 inches, respectively.

No wetlands or floodplains have been located on or adjacent to Parcel 3; however, there is a floodplain area located within a mile to the east of the parcel that is associated with Boggy Bayou (Figure 3-23).

Alternative 2 – Parcel 4

No surface waters have been identified on Parcel 4. The closest body of water is an unnamed creek located 100 feet west of Parcel 4. The unnamed creek drains into Tom's Bayou which is a tributary of the Choctawhatchee Bay.

Peak flow and maximum runoff amount at the Valparaiso Parcel 4 is 12 cfs and 1.32 inches, respectively.

No wetlands or floodplains have been located on or adjacent to Parcel 4; however, there is a floodplain area located within a mile to the northwest of the parcel that is associated with the unnamed creek (Figure 3-23).

Alternative 2 – Parcel 5

No surface waters have been identified on Parcel 5. The closest body of water is an unnamed creek located 220 feet west of Parcel 5. The unnamed creek drains into Tom's Bayou which is a tributary of the Choctawhatchee Bay.

Peak flow and maximum runoff amount at the Valparaiso Parcel 5 is 2 cfs and 1.32 inches, respectively.

No wetlands or floodplains have been located on or adjacent to Parcel 5; however, there is a floodplain area located within a mile to the west of the parcel that is associated with the unnamed creek and Tom's Bayou (Figure 3-23).

Alternative 2 – Parcel 6

No surface waters have been identified on Parcel 6. The closest body of water is an unnamed creek located 360 feet west of Parcel 6. The unnamed creek drains into Tom's Bayou which is a tributary of the Choctawhatchee Bay.

Peak flow and maximum runoff amount at the Valparaiso Parcel 6 is 3 cfs and 1.32 inches, respectively.

No wetlands or floodplains have been located on or adjacent to Parcel 6; however, there is a wetland area and floodplain area located within a mile of the parcel that is associated with the unnamed creek and Tom's Bayou (Figure 3-23).

Alternative 2 – Parcel 7

No surface waters have been identified on Parcel 7. The closest body of water is Boggy Bayou located 770 feet north of Parcel 7. Boggy Bayou is part of the Choctawhatchee Bay.

Peak flow and maximum runoff amount at the Valparaiso Parcel 7 is 7 cfs and 1.32 inches, respectively.

No wetlands or floodplains have been located on or adjacent to Parcel 7; however, there is a floodplain area located within a quarter-mile of the parcel that is associated with Boggy Bayou and a wetland area located within a mile west of the parcel that is associated with Tom's Bayou (Figure 3-23).

Alternative 2 – Parcel 8

No surface waters have been identified on Parcel 8. The closest body of water is Boggy Bayou located 765 feet north of Parcel 8. Boggy Bayou is part of the Choctawhatchee Bay.

Peak flow and maximum runoff amount at the Valparaiso Parcel 8 is 13 cfs and 1.32 inches, respectively.

No wetlands or floodplains have been located on or adjacent to Parcel 8; however, there is a floodplain area located within a mile of the parcel that is associated with Boggy Bayou (Figure 3-23).

Alternative 2 – Parcel 9

No surface waters have been identified on Parcel 9. The parcel is bound by the Choctawhatchee Bay to the south and by the Lower Memorial Lake to the east.

Peak flow and maximum runoff amount at Capehart are 340 cfs and 4.97 inches, respectively. The 1-inch rain storage volume is 341,221 ft^3.

There is currently 0.79 acre of wetlands located within the parcel boundary. In addition, approximately 2.99 acres of Parcel 9 are located within the 100-year floodplain (Figure 3-23). There are no houses located within the floodplain in Parcel 9.

Alternative 2 – Parcel 10

No surface waters have been identified on Parcel 10. The parcel is bound by the Choctawhatchee Bay to the south and by Ben's Lake to the west.

Peak flow and maximum runoff amount at Parcel 10 are 340 cfs and 4.97 inches, respectively. The 1-inch rain storage volume is 341,221 ft^3.

There is currently 0.67 acre of wetlands located within the parcel. In addition, approximately 7.58 acres of Parcel 10 are located within the 100-year floodplain.

Alternative 2 – Parcel 11

No surface waters have been identified on Parcel 11. The parcel is bound by Ben's Lake to the east.

Peak flow and maximum runoff amount at Parcel 11 are 12 cfs and 2.23 inches, respectively. The 1-inch rain storage volume is 0 ft^3.

There is currently 0.69 acre of wetlands located within the parcel. In addition, approximately 3.37 acres of Parcel 10 are located within the 100-year floodplain (Figure 3-23).

3.11.2.4 Subalternative 2a: Eglin Main Base (Preferred Alternative)

Surface waters, wetlands, and floodplains associated with Parcel 1 are the same as those discussed for Alternative 2, Parcel 1.

3.11.2.5 Alternative 3: North Fort Walton Beach Area

Alternative 3 – Parcel 1

No surface waters have been identified on Parcel 1 of the North Fort Walton Beach area; however, the southeastern border of Parcel 1 adjoins Garnier's Bayou. Garnier's Bayou ultimately flows into the Choctawhatchee Bay. Furthermore, Chula Vista Bayou and Garnier's Creek are located within a quarter-mile of the parcel.

Peak flow and maximum runoff amount at Parcel 1 is 180 cfs and 1.32 inches, respectively.

No wetlands have been identified on the parcel; however, there is an extensive wetland area located less than a quarter-mile north of the parcel that is associated with Garnier's Creek and Garnier's Bayou. Approximately, 4.9 acres of the southeastern border are located within the 100-year floodplain which is associated with Garnier's Bayou (Figure 3-24).

Alternative 3 – Parcel 2

No surface waters have been identified on Parcel 2. The closest body of water is Chula Vista Bayou located 2,400 feet east from Parcel 2.

Peak flow and maximum runoff amount at Parcel 2 is 178 cfs and 3.18 inches, respectively.

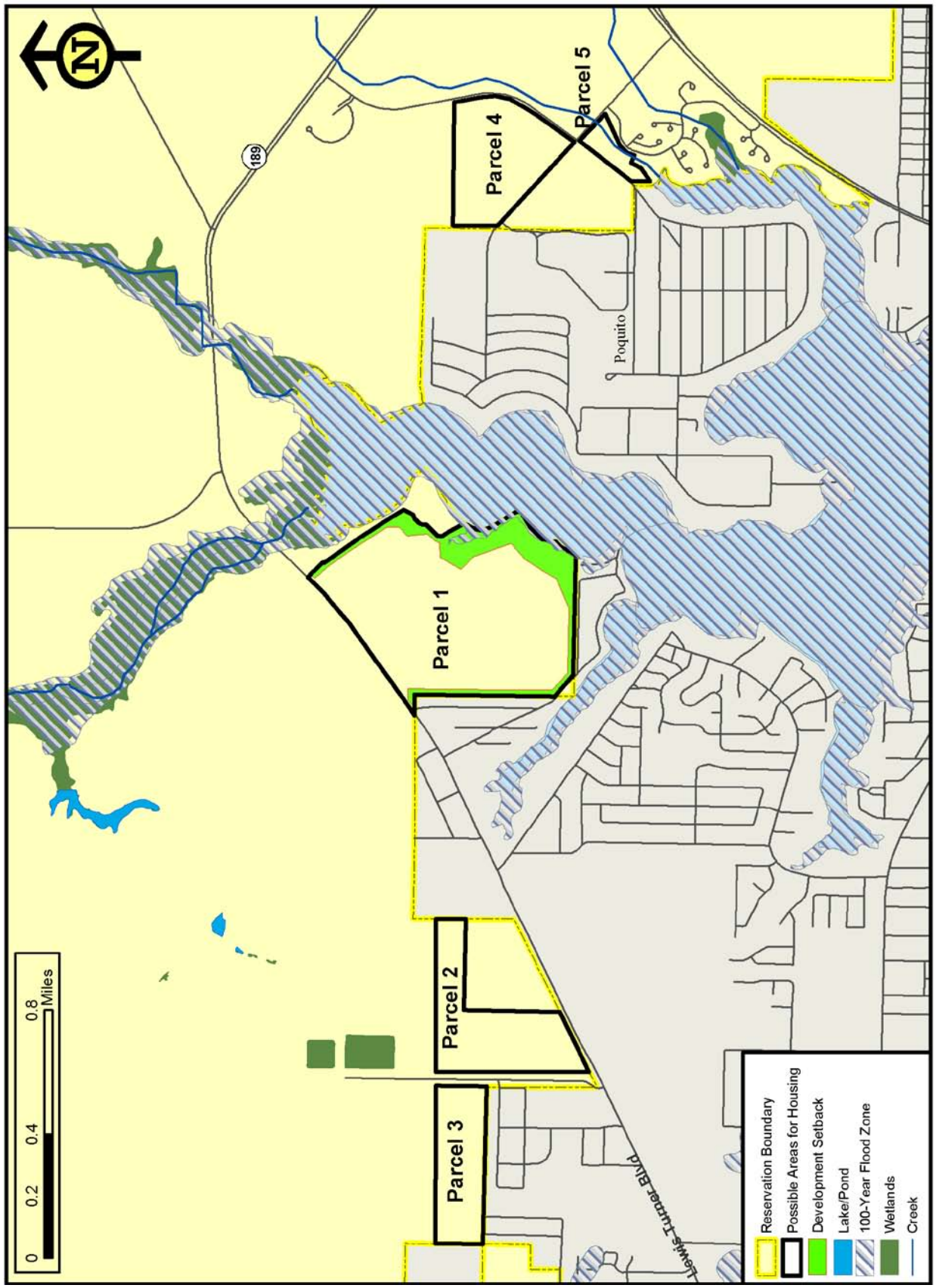

Figure 3-24. Water Resources at Alternative 3: North Fort Walton Beach Area

No wetlands or floodplains have been identified on Parcel 2 of the North Fort Walton Beach area; however, a wetland area exists within a quarter-mile north of the parcel (Figure 3-24).

Alternative 3 – Parcel 3

No surface waters have been identified on Parcel 3. The closest body of water is Chula Vista Bayou located 5,000 feet east of the parcel.

Peak flow and maximum runoff amount at Parcel 3 is 47 cfs and 1.57 inches, respectively.

No wetlands or floodplains have been identified on Parcel 3 of the North Fort Walton Beach area; however, a wetland area exists within a quarter-mile of the northeast corner of the parcel (Figure 3-24).

Alternative 3 – Parcel 4

No surface waters have been identified on Parcel 4. The closest body of water is an unnamed creek located 195 feet east of the parcel. The creek drains into Poquito Bayou and which is part of the Choctawhatchee Bay.

Peak flow and maximum runoff amount at Parcel 4 is 38 cfs and 1.32 inches, respectively.

No wetlands or floodplains have been identified on Parcel 4 of the North Fort Walton Beach area; the closest wetland and floodplain areas are within a mile south of the parcel and are associated with Poquito Bayou (Figure 3-24).

Alternative 3 – Parcel 5

There is one unnamed creek that intersects Parcel 5. The creek drains into Poquito Bayou, which is part of the Choctawhatchee Bay.

Peak flow and maximum runoff amount at Parcel 5 is 59 cfs and 5.24 inches, respectively.

No wetlands or floodplains have been identified on Parcel 5 of the North Fort Walton Beach area. The closest wetland and floodplain areas are within a mile south of the parcel. Both are associated with Poquito Bayou (Figure 3-24).

3.11.2.6 Alternative 4: Mix Alternative

Alternative 4 is comprised of any of the above listed parcels. For a description of water resources for each respective parcel, refer to the appropriate section above.

3.12 SOIL RESOURCES

3.12.1 Definition of the Resource

Geologic resources of an area typically consist of surface and subsurface materials and their inherent properties. The term "soils" refers to unconsolidated materials formed from the underlying bedrock or other parent material. Soils play a critical role in both the natural and human environment. Soil drainage, texture, strength, shrink-swell potential, and erodability all determine the suitability of the ground to support man-made structures, facilities, and military activities. The ROI for soils includes the areas that may be affected by proposed facility construction and demolition within the housing area parcels, as well as the FAMCAMP at Hurlburt Field. Each of the soil map units described has minor soils that are encompassed within the map unit. These minor soils may have different properties and limitations, but can only be delineated on-site.

The properties and limitations of the soil type that comprises the majority of each soil map unit are presented in this section to provide an indication of the conditions and limitations found in the ROI.

3.12.2 Affected Environment

Geology and topography are not expected to be affected by the actions considered in this EIS, so the existing conditions and environmental consequences discussions are limited to soils. The Georgia Avenue and Camp Pinchot areas are not included in the commonalities section as these areas are proposed for reuse and therefore no soil disturbance would occur.

3.12.2.1 Proposed Action Commonalities

Table 3-29 presents the limitations and hazards for selected relevant soil parameters to be used to identify areas where problems can be expected and where management actions would be needed to minimize maintenance within the common areas of the Proposed Action. Figure 3-25 and Figure 3-26 detail the site specific distribution of soils within each area.

Table 3-29. Brief Descriptions of Dominant Soils Within Proposed Common Housing Areas

Soil Map Unit Name	Eglin Main including Wherry and Capehart	Poquito Bayou	Camp Rudder	Hurlburt Field including Live Oak Terrace, Pine Shadows, Soundside Manor, Existing & New FAMCAMP	Drainage	Runoff Potential	Building Site Development Rating for buildings less than three stories high*	Corrosion of Concrete	Corrosion of Steel
	Acres								
Arents	3.7			0	Excessively drained	Very low	Not limited to somewhat limited based on slope	High	Low
Chipley and Hurricane soils	7.5	8.2		36.8	Somewhat poorly drained	Negligible	Not limited	High	Low
Dorovan muck	3.1	9.7		36.1	Very poorly drained	Very high	Very limited due to propensity for ponding/ flooding	High	High
Foxworth sand	20.5	0.2		1.2	Moderately well drained	Negligible	Not limited	High	Low
Lakeland sand	925.4	70.6	9.9	14.3	Excessively drained	Negligible – Medium depending on slope	Not limited to very limited depending on slope	Moderate	Low
Mandarin sand	0			7	Somewhat poorly drained	Very low	Not limited	High	Moderate
Resota sand	0	2.1		32.5	Moderately well drained	Negligible	Not limited	High	Low
Rutledge fine sand	0			30.2	Very poorly drained	Negligible	Very limited due to propensity for ponding/ flooding	High	High
Urban land	0			31.1	----	----	Not rated	----	----

Source: USDA, 2010

*The ratings indicate the extent to which the soils are limited by all of the soil features that affect the specified use. "Not limited" indicates that the soil has features that are favorable for the specified use. "Somewhat limited" indicates that soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. "Very limited" indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or installation procedures.

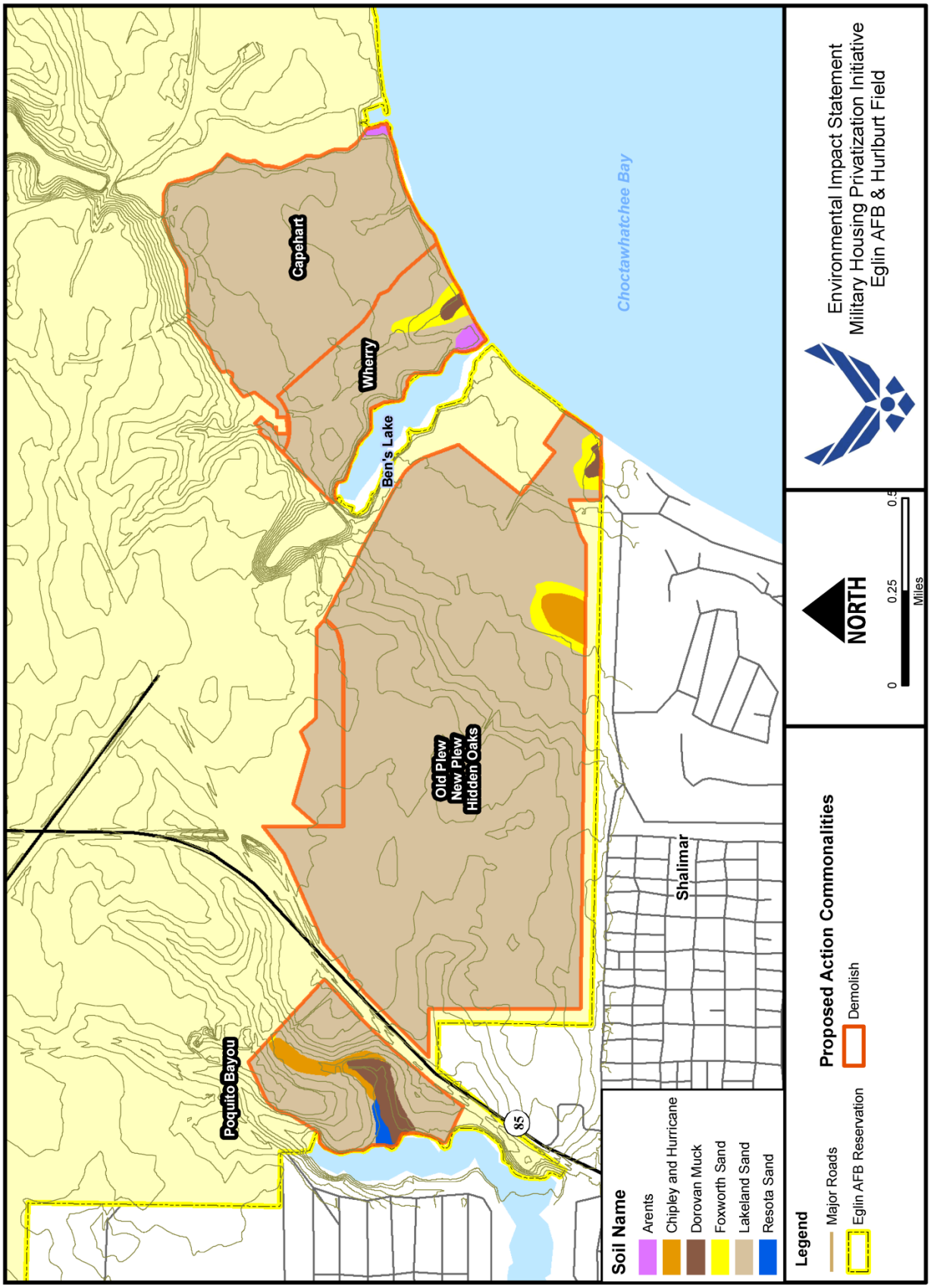

Figure 3-25. Eglin AFB Common Area Soils

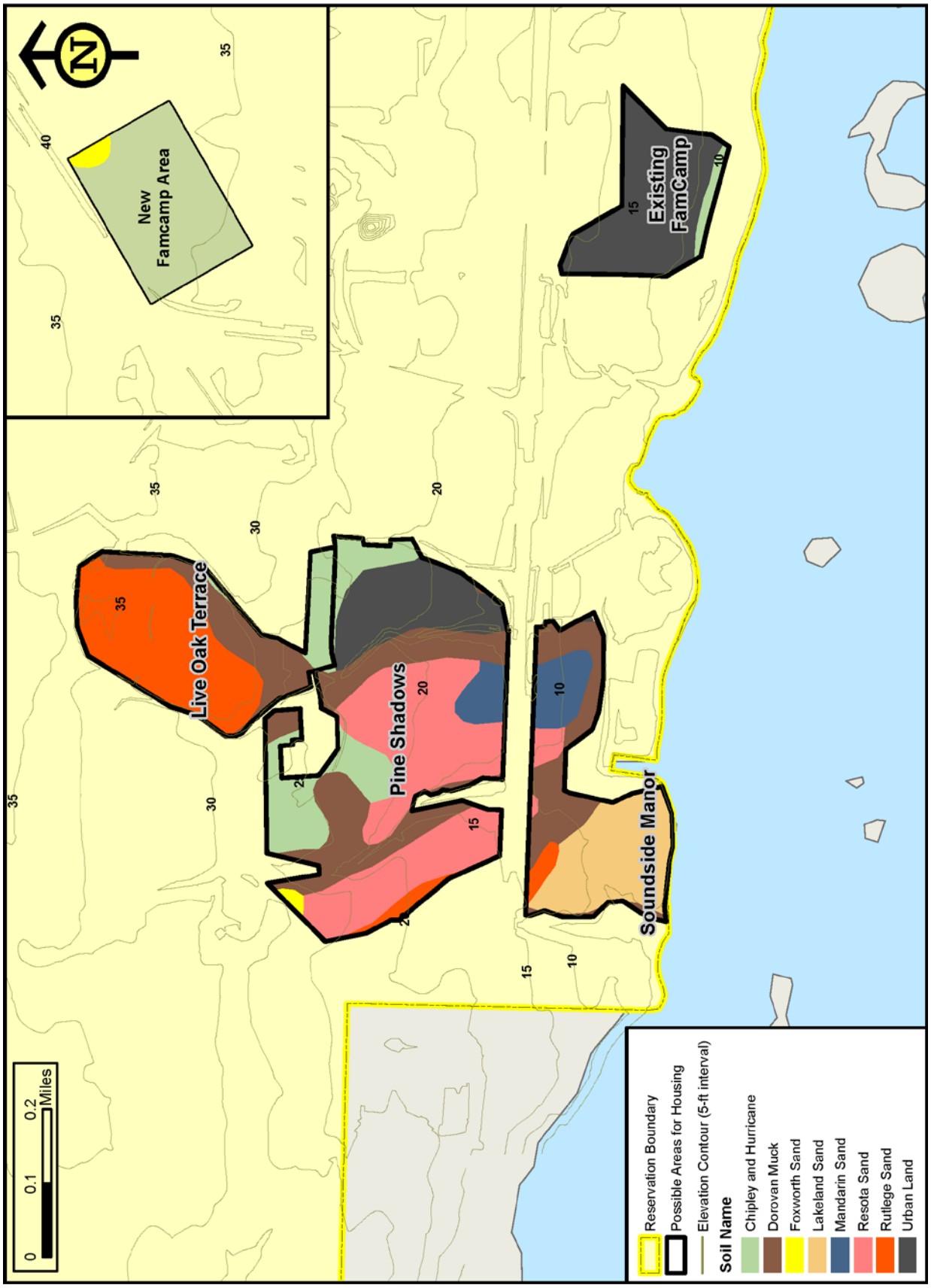

Figure 3-26. Hurlburt Common Area Soils

The definitions of the soil characteristics in Table 3-29, quantified by the acreage within the ROI, are listed below.

- Drainage refers to the frequency and duration of wet periods under conditions similar to those under which the soils formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration.
- Surface runoff refers to the loss of water from an area by flow over the land surface. The classification assumes that the surface of the soil is bare and that the retention of surface water resulting from irregularities in the ground surface is minimal.
- Building site ratings depend on the soil properties that affect the capacity of the soil to support a load without movement and on the properties that affect excavation and construction costs. The ratings indicate the extent to which the soils are limited by all of the soil features that affect the specified use. Soils that have slight to moderate limitations for small buildings indicate relatively low maintenance needs after construction.
- Corrosion of steel and concrete – susceptibility of concrete and uncoated steel to corrosion when in contact with the soil. Corrosion is caused by soil-induced electrochemical or chemical action that breaks down and weakens concrete and steel in the soil.

In addition, with the exception of Dorovan soils, the USDA, NRCS, Web Soil Survey indicates all other soils in the ROI as having a high susceptibility to wind erosion. The high susceptibility to wind erosion is the greatest concern, especially with vegetation removal and soils disturbance during proposed earthmoving and construction.

Eglin Main Base Housing Areas

The Eglin Main Base housing area encompasses approximately 960 acres of which nearly 950 acres are considered excessively or moderately well drained (99 percent) and slightly greater than 10 acres are considered somewhat or very poorly drained (1 percent). In addition, approximately 28 acres (3 percent) within the area maintain a building site development rating that is not limited for structures less than three-stories, approximately 3 acres (0.3 percent) are within the building site development rating that is very limited due to the potential for flooding/ponding, and the remaining acreage varies in rating depending on the slope of the site. Approximately 925 acres (96 percent) of the area maintains soils that are moderately susceptible to concrete corrosion with low susceptibility to uncoated steel corrosion.

Poquito Bayou Housing Area

The Poquito Bayou housing area encompasses approximately 91 acres. Nearly, 73 acres are considered excessively or moderately well drained (80 percent) and 18 acres are considered somewhat or very poorly drained (20 percent). In addition, approximately 10 acres (11 percent) within the area maintain a building site development rating that is not limited for structures less than three-stories, nearly 10 acres (10 percent) are within the building site development rating that is very limited due to potential for flooding/ponding, and the remaining acreage varies in rating depending on the slope of the site. Approximately 71 acres (78 percent) of the area maintains soils that are moderately susceptible to concrete corrosion with low susceptibility to uncoated steel corrosion.

Camp Rudder Housing Area

The Camp Rudder Housing Area encompasses nearly 10 acres. All of the acreage is considered excessively drained. In addition, all of the acreage maintains a building site development rating that varies in rating depending on the slope of the site. The entire area maintains soils that are moderately susceptible to concrete corrosion with low susceptibility to uncoated steel corrosion.

Hurlburt Field Housing Areas

The Hurlburt Field project area encompasses approximately 189 acres, which includes Live Oak Terrace, Pine Shadows, Soundside Manor and existing and new FAMCAMP areas. Approximately, 48 acres are considered excessively or moderately well drained (25 percent) and 110 acres are considered somewhat or very poorly drained (58 percent). The remaining soils are considered (urban/landscaped); areas of this unit require onsite investigation and evaluation for most land use decisions to identify any potential limitations. In addition, approximately 77 acres (41 percent) within the area maintain a building site development rating that is not limited for structures less than three-stories, approximately 66 acres (35 percent) are within the building site development rating that is very limited due to potential for flooding/ponding, and the remaining acreage varies in rating depending on the slope of the site. Only approximately 14 acres (7 percent) of the area maintains soils that are moderately susceptible to concrete corrosion with low susceptibility to uncoated steel corrosion. The remaining acreage maintains soils that are highly susceptible to concrete corrosion with low and high susceptibility to uncoated steel corrosion.

3.12.2.2 Alternative 1: White Point Area

Table 3-30 presents the limitations and hazards for selected relevant soil parameters to be used to identify areas where problems can be expected and where management actions would be needed to minimize maintenance within the common areas of the Proposed Action. Figure 3-27 details the site specific distribution of soils within each area.

The definitions of the soil characteristics in Table 3-30 are the same as those detailed in the Proposed Action Commonalities section. In addition, as indicated previously, with the exception of Dorovan soils, the USDA, NRCS, Web Soil Survey indicates all other soils in the ROI as having a high susceptibility to wind erosion. The high susceptibility to wind erosion is the greatest concern, especially with vegetation removal and soils disturbance during proposed earthmoving and construction.

Alternative 1 – Parcel 1

Parcel 1 of the White Point housing area encompasses nearly 49 acres of which nearly 47 acres are considered excessively or moderately well drained (96 percent) and 2 acres are considered somewhat drained (4 percent). In addition, approximately 5 acres (10 percent) within the area maintain a building site development rating that is not limited for structures less than three-stories, and the remaining acreage varies in rating depending on the slope of the site. Approximately 44 acres (90 percent) of the area maintains soils that are moderately susceptible to concrete corrosion with low susceptibility to uncoated steel corrosion; the remaining area is highly susceptible to concrete corrosion with low susceptibility to uncoated steel corrosion.

Alternative 1 – Parcel 2

Parcel 2 of the White Point housing area encompasses nearly 86 acres. All of the acreage is considered excessively drained. In addition, all of the acreage maintains a building site development rating that varies in rating depending on the slope of the site. The entire area maintains soils that are moderately susceptible to concrete corrosion with low susceptibility to uncoated steel corrosion.

Alternative 1 – Parcel 3

Parcel 3 of the White Point housing area encompasses nearly 49 acres. All of the acreage is considered excessively drained. In addition, all of the acreage maintains a building site development rating that varies in rating depending on the slope of the site. The entire area maintains soils that are moderately susceptible to concrete corrosion with low susceptibility to uncoated steel corrosion.

Table 3-30. Brief Descriptions of Dominant Soils Within Proposed White Point Housing Areas

Soil Map Unit Name	Acres Parcel 1	Acres Parcel 2, 3, 6, and 7	Acres Parcel 4	Acres Parcel 5	Drainage	Runoff Potential	Building Site Development Rating for buildings less than three stories high*	Corrosion of Concrete	Corrosion of Steel
Chipley and Hurricane soils	2		23.5	2.1	Somewhat poorly drained	Negligible	Not limited	High	Low
Dorovan muck			1.5		Very poorly drained	Very high	Very limited due to propensity for ponding/ flooding	High	High
Foxworth sand	3.2		20.4	26.6	Moderately well drained	Negligible	Not limited	High	Low
Lakeland sand	43.5	86, 49, 25, 70	9.4	52.7	Excessively drained	Negligible – Medium depending on slope	Not limited to very limited depending on slope	Moderate	Low
Unknown	0		0.8		----	----	----	----	----

Source: USDA, 2010

*The ratings indicate the extent to which the soils are limited by all of the soil features that affect the specified use. "Not limited" indicates that the soil has features that are favorable for the specified use. "Somewhat limited" indicates that soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. "Very limited" indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or installation procedures.

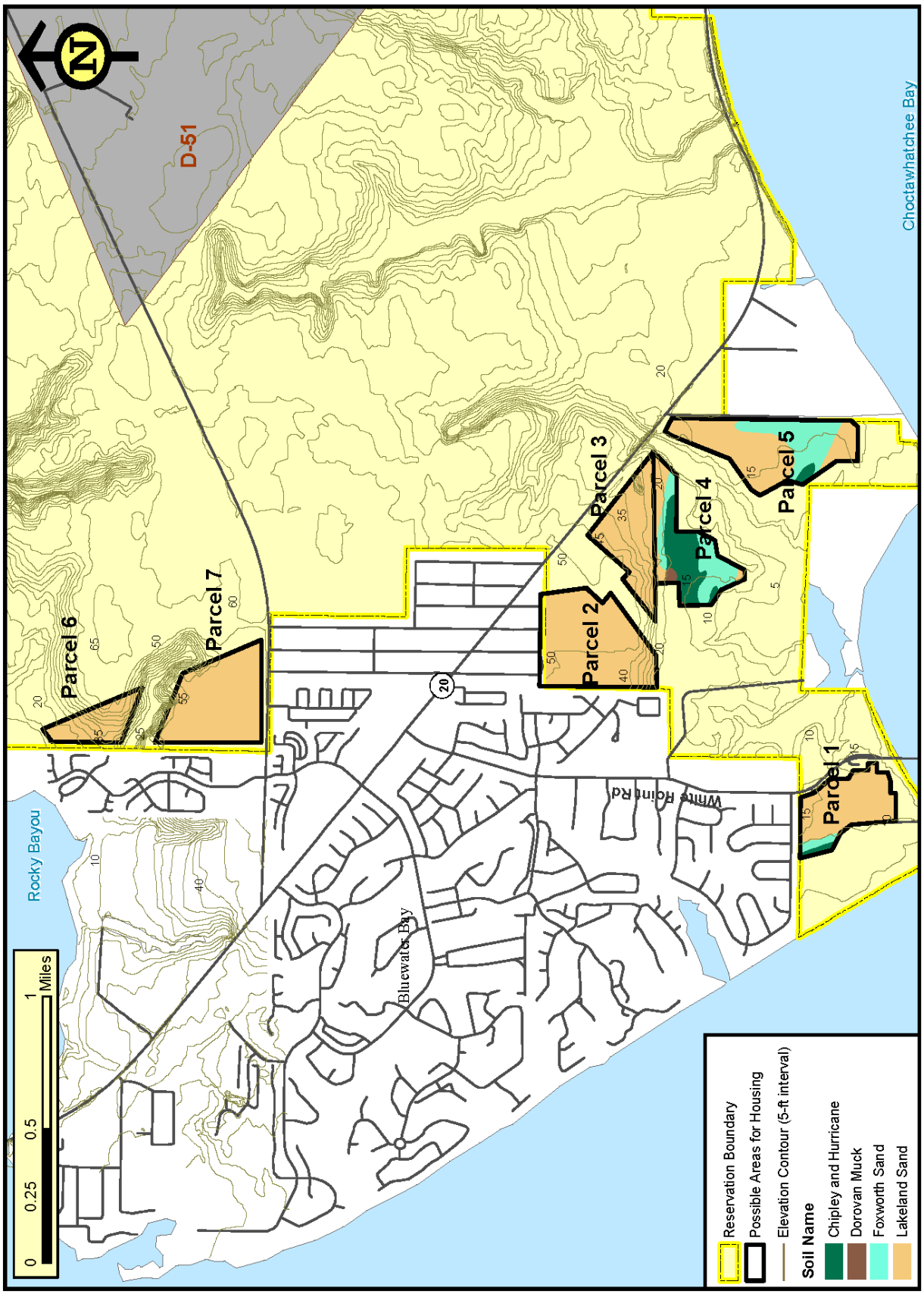

Figure 3-27. Alternative 1: White Point Area Soils

Alternative 1 – Parcel 4

Parcel 4 of the White Point housing area encompasses nearly 56 acres of which nearly 30 acres are considered excessively or moderately well drained (54 percent) and 25 acres are considered somewhat or very poorly drained (45 percent). The remaining soils are considered unknown; areas of this unit require onsite investigation and evaluation for most land use decisions to identify any potential limitations. In addition, approximately 44 acres (78 percent) within the area maintain a building site development rating that is not limited for structures less than three-stories, approximately 1.5 acres (3 percent) are within the building site development rating that is very limited due to potential for flooding/ponding, and the remaining acreage varies in rating depending on the slope of the site. Approximately 9 acres (17 percent) of the area maintains soils that are moderately susceptible to concrete corrosion with low susceptibility to uncoated steel corrosion; the remaining area is highly susceptible to concrete corrosion with low and high susceptibility to uncoated steel corrosion.

Alternative 1 – Parcel 5

Parcel 5 of the White Point housing area encompasses nearly 82 acres of which nearly 79 acres are considered excessively or moderately well drained (98 percent) and 2 acres are considered somewhat drained (2 percent). In addition, approximately 29 acres (35 percent) within the area maintain a building site development rating that is not limited for structures less than three-stories, and the remaining acreage varies in rating depending on the slope of the site. Nearly 53 acres (65 percent) of the area maintains soils that are moderately susceptible to concrete corrosion with low susceptibility to uncoated steel corrosion; the remaining area is highly susceptible to concrete corrosion with low susceptibility to uncoated steel corrosion.

Alternative 1 – Parcel 6

Parcel 6 of the White Point housing area encompasses nearly 25 acres. All of the acreage is considered excessively drained. In addition, all of the acreage maintains a building site development rating that varies in rating depending on the slope of the site. The entire area maintains soils that are moderately susceptible to concrete corrosion with low susceptibility to uncoated steel corrosion.

Alternative 1 – Parcel 7

Parcel 7 of the White Point housing area encompasses nearly 70 acres. All of the acreage is considered excessively drained. In addition, all of the acreage maintains a building site development rating that varies in rating depending on the slope of the site. The entire area maintains soils that are moderately susceptible to concrete corrosion with low susceptibility to uncoated steel corrosion.

3.12.2.3 Alternative 2: Eglin Main Base/Valparaiso Area

Table 3-31 presents the limitations and hazards for selected relevant soil parameters to be used to identify areas where problems can be expected and where management actions would be needed to minimize maintenance within the common areas of the Proposed Action. Figure 3-28 details the site specific distribution of soils within each area.

The definitions of the soil characteristics in Table 3-31 are the same as those detailed in Proposed Action Commonalities section. In addition, as indicated previously, with the exception of Dorovan soils, the USDA, NRCS, Web Soil Survey indicates all other soils in the ROI as having a high susceptibility to wind erosion. The high susceptibility to wind erosion is the greatest concern, especially with vegetation removal and soils disturbance during proposed earthmoving and construction.

Alternative 2 – Parcel 1

The Parcel 1 housing area encompasses approximately 673 acres; however, only approximately 661 acres would be utilized/disturbed with construction, of which nearly 594 acres are considered excessively or moderately well drained (99 percent) and 9 acres are considered somewhat or very poorly drained (1 percent). In addition, nearly 18 acres (3 percent) within the area maintain a building site development rating that is not limited for structures less than three-stories, approximately 584 acres (97 percent) are within the building site development rating that varies in rating depending on the slope, and the remaining acreage of the site is very limited due to potential for flooding/ponding. Approximately 584 acres (97 percent) of the area maintains soils that are moderately susceptible to concrete corrosion with low susceptibility to uncoated steel corrosion; the remaining area is highly susceptible to concrete corrosion with low and high susceptibility to uncoated steel corrosion.

Alternative 2 – Parcel 2

The Parcel 2 housing area encompasses approximately 29 acres. All of the acreage is considered excessively drained. In addition, all of the acreage maintains a building site development rating that varies in rating depending on the slope of the site. The entire area maintains soils that are moderately susceptible to concrete corrosion with low susceptibility to uncoated steel corrosion.

Alternative 2 – Parcel 3

The Parcel 3 housing area encompasses nearly 8 acres. All of the acreage is considered excessively drained. In addition, all of the acreage maintains a building site development rating that varies in rating depending on the slope of the site. The entire area maintains soils that are moderately susceptible to concrete corrosion with low susceptibility to uncoated steel corrosion.

Table 3-31. Brief Descriptions of Dominant Soils Within Proposed Eglin Main Housing Areas

Soil Map Unit Name	Parcel 1	Parcel 2	Parcel 3	Parcel 4	Parcel 5	Parcel 6	Parcel 7	Parcel 8	Parcel 9	Parcel 10	Parcel 11	Drainage	Runoff Potential	Building Site Development Rating for buildings less than three stories high*	Corrosion of Concrete	Corrosion of Steel
Arents									1	2.7		Excessively drained	Very low	Not limited to somewhat limited based on slope	High	Low
Chipley and Hurricane soils	7.5											Somewhat poorly drained	Negligible	Not limited	High	Low
Dorovan muck	1.4									1.7		Very poorly drained	Very high	Very limited due to propensity for ponding/ flooding	High	High
Foxworth sand	10.1									5.8		Moderately well drained	Negligible	Not limited	High	Low
Lakeland sand	584	29	7.7	16	1.8	4	6.5	20.6	210.3	84.2	5.7	Excessively drained	Negligible – Medium depending on slope	Not limited to very limited depending on slope	Moderate	Low

Source: USDA, 2010

*The ratings indicate the extent to which the soils are limited by all of the soil features that affect the specified use. "Not limited" indicates that the soil has features that are favorable for the specified use. "Somewhat limited" indicates that soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. "Very limited" indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or installation procedures.

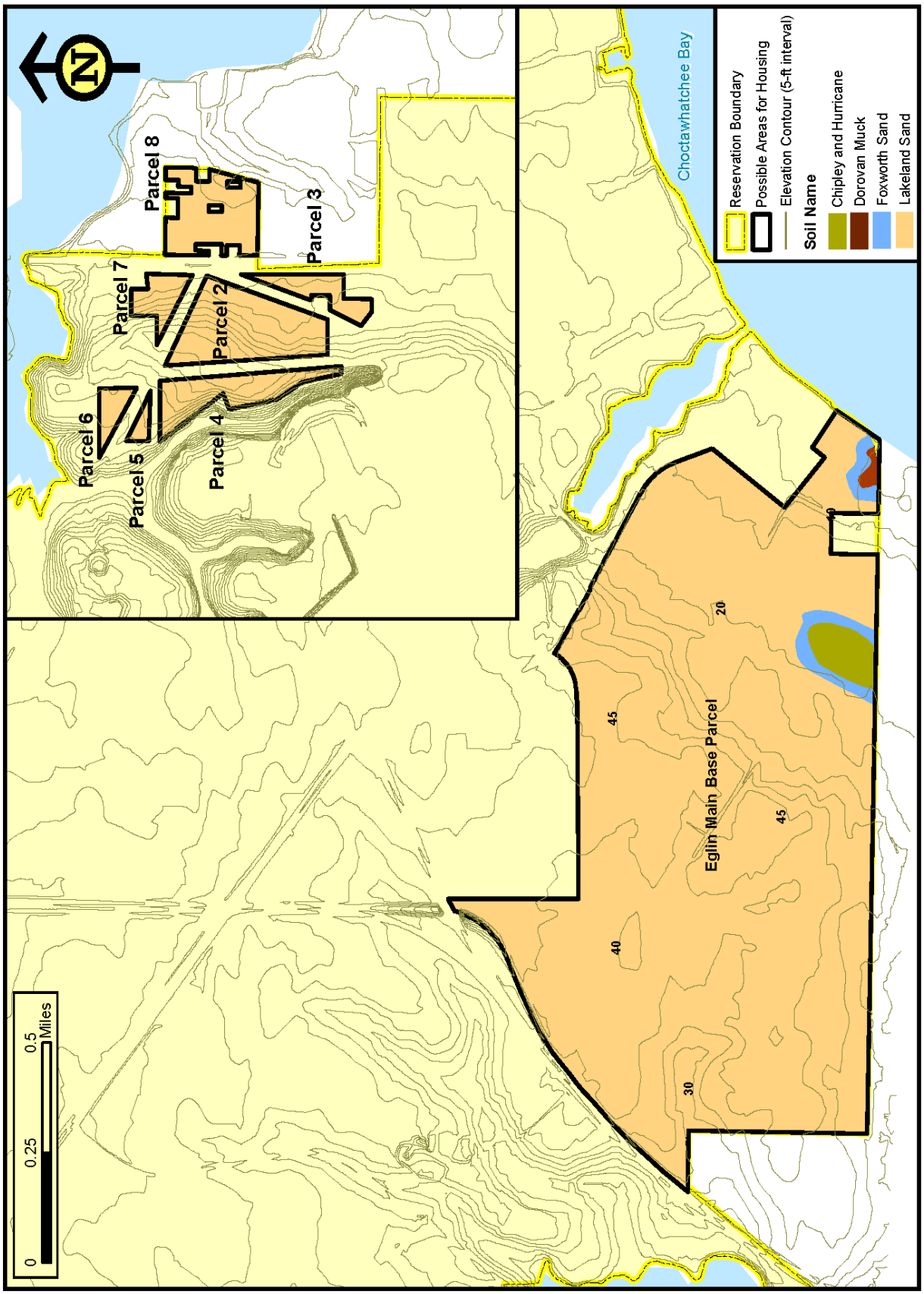

Figure 3-28. Alternative 2 and 2a: Eglin Main Area Soils

Alternative 2 – Parcel 4

The Parcel 4 housing area encompasses approximately 16 acres. All of the acreage is considered excessively drained. In addition, all of the acreage maintains a building site development rating that varies in rating depending on the slope of the site. The entire area maintains soils that are moderately susceptible to concrete corrosion with low susceptibility to uncoated steel corrosion.

Alternative 2 – Parcel 5

The Parcel 5 housing area encompasses nearly 2 acres. All of the acreage is considered excessively drained. In addition, all of the acreage maintains a building site development rating that varies in rating depending on the slope of the site. The entire area maintains soils that are moderately susceptible to concrete corrosion with low susceptibility to uncoated steel corrosion.

Alternative 2 – Parcel 6

The Parcel 6 housing area encompasses approximately 4 acres. All of the acreage is considered excessively drained. In addition, all of the acreage maintains a building site development rating that varies in rating depending on the slope of the site. The entire area maintains soils that are moderately susceptible to concrete corrosion with low susceptibility to uncoated steel corrosion.

Alternative 2 – Parcel 7

The Parcel 7 housing area encompasses approximately 7 acres. All of the acreage is considered excessively drained. In addition, all of the acreage maintains a building site development rating that varies in rating depending on the slope of the site. The entire area maintains soils that are moderately susceptible to concrete corrosion with low susceptibility to uncoated steel corrosion.

Alternative 2 – Parcel 8

The Parcel 8 housing area encompasses nearly 21 acres. All of the acreage is considered excessively drained. In addition, all of the acreage maintains a building site development rating that varies in rating depending on the slope of the site. The entire area maintains soils that are moderately susceptible to concrete corrosion with low susceptibility to uncoated steel corrosion.

Alternative 2 – Parcel 9

The Parcel 9 housing area encompasses approximately 211 acres. All of the acreage is considered excessively drained. In addition, all of the acreage maintains a building site development rating that varies in rating depending on the slope of the site. Approximately 210 acres (99 percent) of the area maintains soils that are moderately

susceptible to concrete corrosion with low susceptibility to uncoated steel corrosion; the remaining area is highly susceptible to concrete corrosion with low susceptibility to uncoated steel corrosion.

Alternative 2 – Parcel 10

The Parcel 10 housing area encompasses approximately 94 acres. Nearly 93 acres are considered excessively or moderately well drained (98 percent) and 1.7 acres are considered very poorly drained (2 percent). In addition, nearly 6 acres (6 percent) within the area maintain a building site development rating that is not limited for structures less than three stories, approximately 87 acres (93 percent) are within the building site development rating that varies in rating depending on the slope, and the remaining acreage of the site is very limited due to potential for flooding/ponding. Approximately 84 acres (89 percent) of the area maintains soils that are moderately susceptible to concrete corrosion with low susceptibility to uncoated steel corrosion; the remaining area is highly susceptible to concrete corrosion with low and high susceptibility to uncoated steel corrosion.

Alternative 2 – Parcel 11

The Parcel 11 housing area encompasses nearly 5.7 acres. All of the acreage is considered excessively drained. In addition, all of the acreage maintains a building site development rating that varies in rating depending on the slope of the site. The entire area maintains soils that are moderately susceptible to concrete corrosion with low susceptibility to uncoated steel corrosion.

3.12.2.4 Subalternative 2a: Eglin Main Base (Preferred Alternative)

The definitions of the soil characteristics in for Subalternative 2a are the same as those detailed in the Alternative 2, Parcel 1 section above.

3.12.2.5 Alternative 3: North Fort Walton Beach Area

Table 3-32 presents the limitations and hazards for selected relevant soil parameters to be used to identify areas where problems can be expected and where management actions would be needed to minimize maintenance within the common areas of the Proposed Action. Figure 3-29 details the site specific soil within each area.

The definitions of the soil characteristics in Table 3-32 are the same as those detailed in Proposed Action Commonalities section. In addition, as indicated previously, the USDA, NRCS, Web Soil Survey indicates Lakeland sand in the ROI as having a high susceptibility to wind erosion. The high susceptibility to wind erosion is the greatest concern, especially with vegetation removal and soils disturbance during proposed earthmoving and construction.

Table 3-32. Brief Descriptions of Dominant Soils Within Proposed North Fort Walton Beach Housing Areas

Soil Map Unit Name	Acres Parcel 1	Acres Parcel 2	Acres Parcel 3	Acres Parcel 4	Acres Parcel 5	Drainage	Runoff Potential	Building Site Development Rating for buildings less than three stories high*	Corrosion of Concrete	Corrosion of Steel
Lakeland sand	248.5 (199 – construction area)	73.8	51.4	72	11.2	Excessively drained	Negligible – Medium depending on slope	Not limited to very limited depending on slope	Moderate	Low

Source: USDA, 2010

*"Not limited" indicates that the soil has features that are favorable for the specified use. "Somewhat limited" indicates that soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. "Very limited" indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or installation procedures.

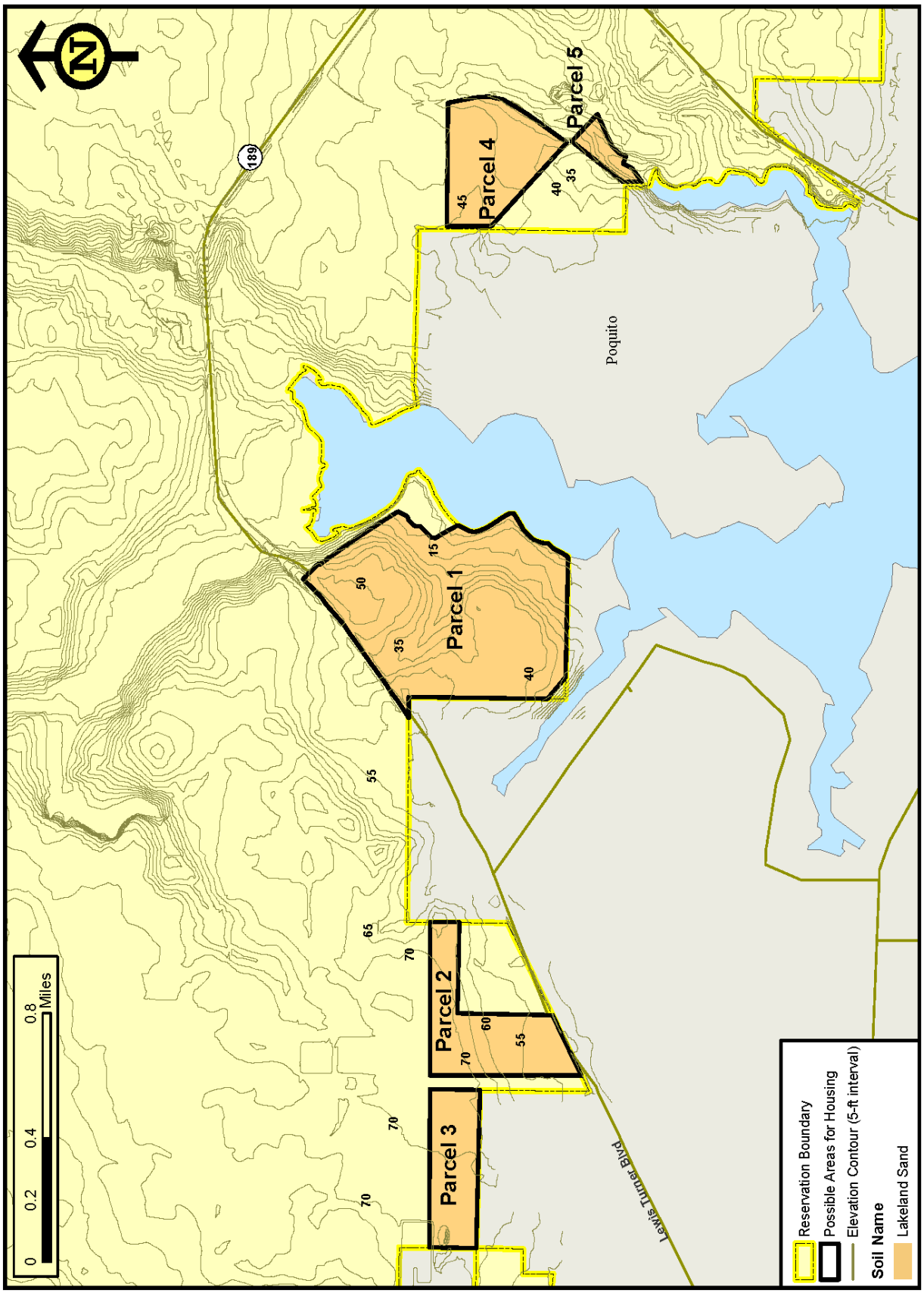

Figure 3-29. Alternative 3: North Fort Walton Beach Area Soils

Alternative 3 – Parcel 1

Parcel 1 of the North Fort Walton Beach housing area encompasses approximately 248 acres; however, only approximately 199 acres would be utilized for construction, while 49 acres would be maintained as a buffer area. All of the acreage is considered excessively drained. In addition, all of the acreage maintains a building site development rating that varies in rating depending on the slope of the site. The entire area maintains soils that are moderately susceptible to concrete corrosion with low susceptibility to uncoated steel corrosion.

Alternative 3 – Parcel 2

Parcel 2 of the North Fort Walton Beach housing area encompasses nearly 74 acres. All of the acreage is considered excessively drained. In addition, all of the acreage maintains a building site development rating that varies in rating depending on the slope of the site. The entire area maintains soils that are moderately susceptible to concrete corrosion with low susceptibility to uncoated steel corrosion.

Alternative 3 – Parcel 3

Parcel 3 of the North Fort Walton Beach housing area encompasses approximately 51 acres. All of the acreage is considered excessively drained. In addition, all of the acreage maintains a building site development rating that varies in rating depending on the slope of the site. The entire area maintains soils that are moderately susceptible to concrete corrosion with low susceptibility to uncoated steel corrosion.

Alternative 3 – Parcel 4

Parcel 4 of the North Fort Walton Beach housing area encompasses approximately 72 acres. All of the acreage is considered excessively drained. In addition, all of the acreage maintains a building site development rating that varies in rating depending on the slope of the site. The entire area maintains soils that are moderately susceptible to concrete corrosion with low susceptibility to uncoated steel corrosion.

Alternative 3 – Parcel 5

Parcel 5 of the North Fort Walton Beach housing area encompasses approximately 11 acres. All of the acreage is considered excessively drained. In addition, all of the acreage maintains a building site development rating that varies in rating depending on the slope of the site. The entire area maintains soils that are moderately susceptible to concrete corrosion with low susceptibility to uncoated steel corrosion.

3.12.2.6 Alternative 4: Mix Alternative

This alternative consists of a mixture of parcels identified under the previous alternatives. Soil conditions for parcels under this alternative are described previously

3.13 BIOLOGICAL RESOURCES

3.13.1 Definition of the Resource

Habitats and Sensitive Species

Biological resources include the native and introduced terrestrial and aquatic plants and animals found on and around the ROI, which includes the proposed locations for demolition and construction associated with the MHPI on Eglin AFB and Hurlburt Field. Habitat types are based on floral, faunal, and geophysical characteristics. The main habitat types, or ecological associations, within the ROI include: sandhills, flatwoods, wetlands/riparian areas, and maritime hammock. Artificially maintained urban/landscaped areas also exist within the ROI, primarily on Eglin Main Base, Camp Rudder, and Hurlburt Field, and in adjacent developed areas (i.e., Niceville, Valparaiso, Shalimar, Fort Walton Beach). Appendix F, *Biological Resources*, provides descriptions of the habitat types within the ROI and includes typical flora (plants) and fauna (animals) found within each of these habitats.

Sensitive habitats include areas that the federal government, state government, or the DoD have designated as worthy of special protection due to certain characteristics such as high species diversity, special habitat conditions for rare species, or other unique features. Sensitive habitats within the ROI include Outstanding Natural Areas, a Significant Botanical Site, Gulf sturgeon critical habitat, and essential fish habitat (EFH). Wetlands and floodplains are described in Section 3.11, *Water Resources*. Appendix F, *Biological Resources*, provides details on the sensitive habitats found at the Proposed Action areas.

Sensitive species are those species protected under federal or state law (see Laws and Regulations section below), to include threatened and endangered species and migratory birds. An "endangered" species is one that is in danger of extinction throughout all or a significant portion of its range. A "threatened" species is any species that is likely to become endangered within the foreseeable future throughout all or a significant portion of its range. Migratory birds spend only a portion of the year at any one location, with most migratory birds breeding in the temperate or higher latitudes and flying south to wintering grounds in tropical or subtropical climates. Appendix F, *Biological Resources*, provides additional detail on the natural history of sensitive species related to the Proposed Action.

Laws and Regulations

The Endangered Species Act (ESA) of 1973 (16 USC 1531 to 1544; 1997–Supp) was enacted to provide for the conservation of endangered and threatened species and the ecosystems on which they depend. Air Force Policy Directive 32-70 directs the implementation of the ESA. Certain federal activities may require an ESA Section 7 consultation with the USFWS and/or the National Marine Fisheries Service (NMFS), if impacts to federally listed species are possible. Avoidance of impacts by changing the time of action, place of action, or types of activities in locations of federally listed species can be cost- and time-effective if a consultation is avoided.

The Florida Endangered and Threatened Species Act establishes the wise management of threatened and endangered species in the state. The Act prohibits the intentional killing or wounding or wrongfully possessing any of the species on the official Florida list of endangered species, threatened species, and species of special concern. The Preservation of Native Flora of Florida Act prohibits the intentional destruction or harvesting of endangered or threatened plants.

The Magnuson-Stevens Fishery Act requires federal agencies to consult with the NMFS regarding any action undertaken, funded, or authorized by it that may adversely affect EFH. The EFH includes those waters and substrate necessary to fish managed by the NMFS for spawning, breeding, feeding, or growth to maturity, including marine, estuarine, and riverine environments.

AFI 32-7064 provides details on how to manage natural resources in such a way as to comply with federal, state, and local laws and regulations. The AFI calls for the protection and conservation of state-listed species when not in direct conflict with the military mission. Eglin AFB applies for appropriate permits for actions that may affect state-listed species (such as monitoring and handling), and also cooperates with the Florida Fish and Wildlife Conservation Commission to further the goals of the Florida State Wildlife Conservation Strategy.

The Migratory Bird Treaty Act (16 USC 703-712; 1997-Supp) and EO 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*, protect migratory birds and their habitats and establish a permitting process for legal taking. A migratory bird is defined by the USFWS as any species or family of birds that lives, reproduces, or migrates within or across international borders at some point during their annual life cycle. For normal and routine operations such as installation support functions, actions of the DoD may not result in pursuit, hunting, taking, capturing, killing, possession, or transportation of any migratory bird, bird part, nest, or egg thereof, except as permitted. The DoD must address these routine operations through the Memorandum of Understanding developed in accordance with EO 13186 (DoD and USFWS, 2006).

Under the 2003 National Defense Authorization Act, the Armed Forces are exempted from the incidental taking of migratory birds during military readiness activities, except in cases where an activity would likely cause a significant adverse effect to the population of a migratory bird species. As detailed in the final rule in the Federal Register (50 CFR 21), in this situation the Armed Forces, in cooperation with the USFWS, must develop and implement conservation measures to mitigate or minimize the significant adverse impacts.

Invasive nonnative species are species introduced from other countries or regions of the United States that threaten native plants and animals by altering the composition, structure, and function of native ecosystems. Invasive nonnative species impose large economic costs on natural resource managers, requiring intensive and extensive management to prevent undesirable ecosystem changes. Recognizing the ecological and economic impacts of invasive species, EO 13112 states that each federal agency whose actions may affect the status of invasive species shall:

- Prevent the introduction of invasive species.
- Detect and respond rapidly to and control populations of such species in a cost-effective and environmentally sound manner.
- Monitor invasive species populations accurately and reliably.
- Provide for restoration of native species and habitat conditions in ecosystems that have been invaded.
- Conduct research on invasive species and develop technologies to prevent introduction and provide for environmentally sound control.
- Promote public education on invasive species.

EO 13112 states that no federal agency shall authorize, fund, or carry out actions that it believes are likely to cause or promote the introduction or spread of invasive nonnative species in the United States or elsewhere.

3.13.2 Affected Environment

Some species may occur at any of the proposed MFH demolition or construction sites, due either to their transient nature or their ability to survive in disturbed conditions. The Florida black bear, gopher tortoise, Florida pine snake, pine barrens tree frog, southeast American kestrel, and the indigo snake have the potential to be found at any of the MFH sites, thus are considered as potentially occurring at any of the alternative locations, including the new FAMCAMP area.

Migratory birds pass through the ROI, but neither Eglin nor Hurlburt is considered an important stopover area or concentration site for neotropical migratory birds in the spring or fall (Tucker et al., 1996). Breeding neotropical migrants at Eglin and Hurlburt are primarily found in riparian, hammock, and barrier island habitats. Appendix F, *Biological Resources*, contains additional natural history information on state and federally listed species, as well as migratory birds.

3.13.2.1 Proposed Action Commonalities

Eglin Main Base Housing Areas

All of the proposed Main Base demolition sites are degraded urban/landscaped areas (Figure 3-30); however, sensitive habitats are present in waters adjacent to some of the sites and a few small wetland areas fall within the project area boundaries. Critical habitat for the Gulf sturgeon exists in Choctawhatchee Bay adjacent to Capehart, Wherry, and Old Plew/New Plew/Hidden Oaks (Figure 3-31). Seagrass is found offshore of Capehart (Parcel 9), Wherry (Parcel 10), and Old Plew/New Plew/Hidden Oaks.

The majority of Wherry is residential housing, but small areas of hammock habitat exist along the western portion of the parcel which borders Ben's Lake. A small area of estuarine tidal marsh is present along Ben's Lake and Choctawhatchee Bay shorelines at the Wherry parcel (Herring et al., 2006). Capehart's eastern boundary is formed by Lower Memorial Lake (Figure 3-31). Other than transient species, no sensitive species exist in these areas.

Poquito Bayou Housing Area

Poquito Bayou serves as the western boundary of the current Poquito Bayou housing area. The western portion of the parcel is urban/landscaped and the eastern half of the parcel is poor quality, fire suppressed sandhills (Figure 3-32). A small area of wetland/riparian baygall surrounded by overgrown flatwoods exists along a small drainage into Poquito Bayou (Herring et al., 2006). Seagrass is found offshore of the Poquito Bayou parcel (Figure 3-33). Other than transient species, no sensitive species exist in this area.

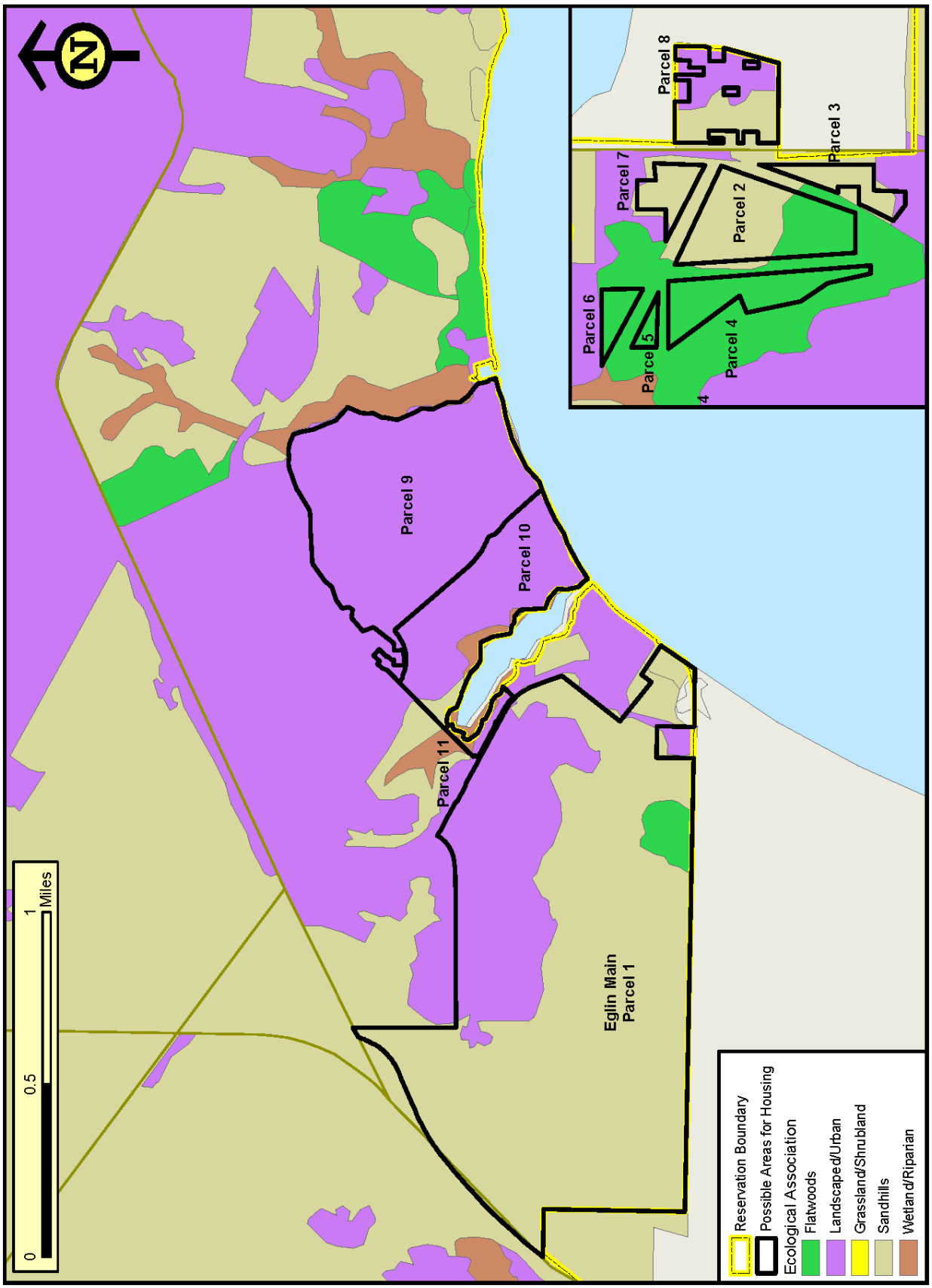

Figure 3-30. Ecological Associations at Eglin Main Base/Valparaiso Area

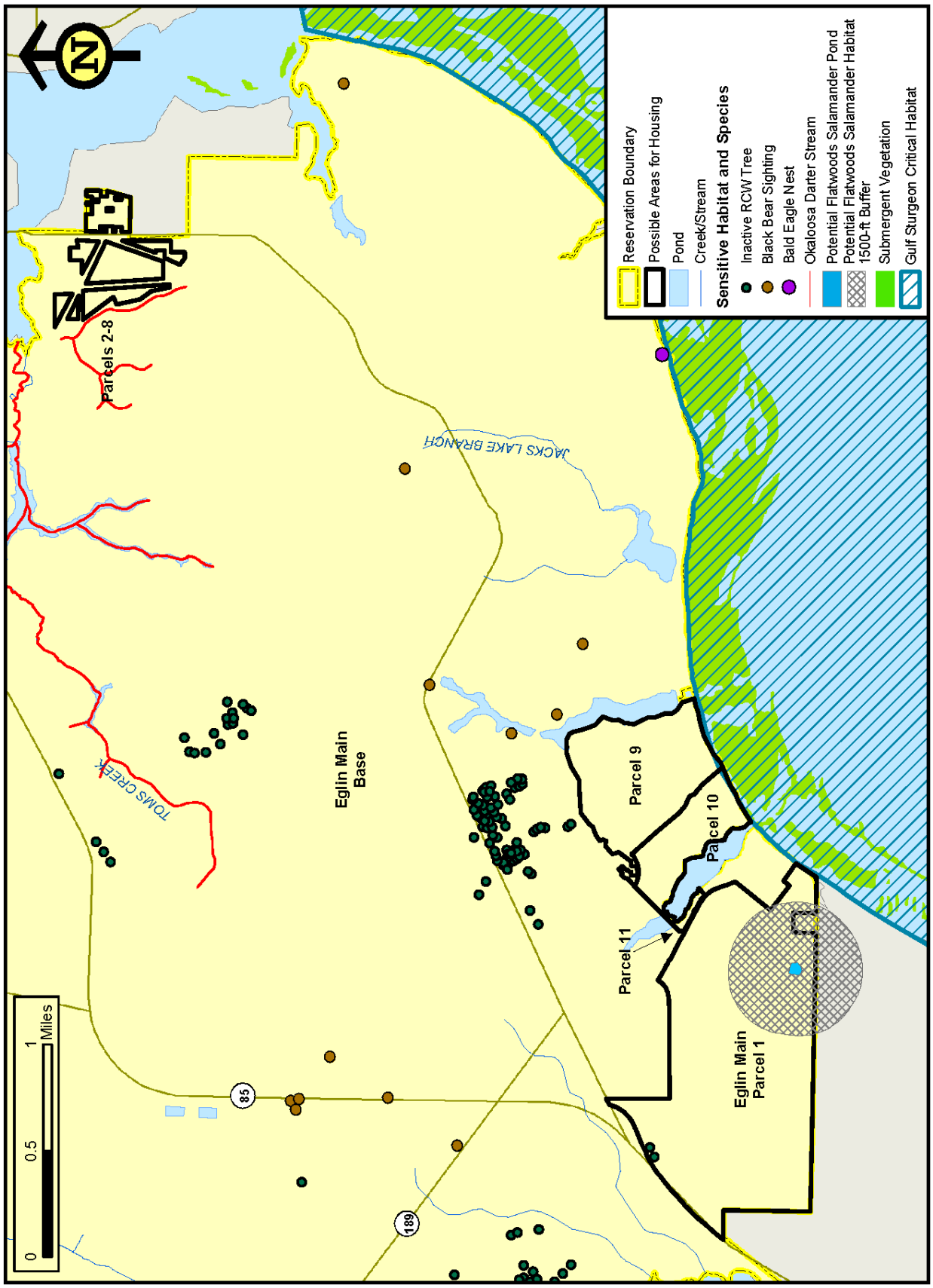

Figure 3-31. Sensitive Habitats and Species at Eglin Main Base/Valparaiso Area

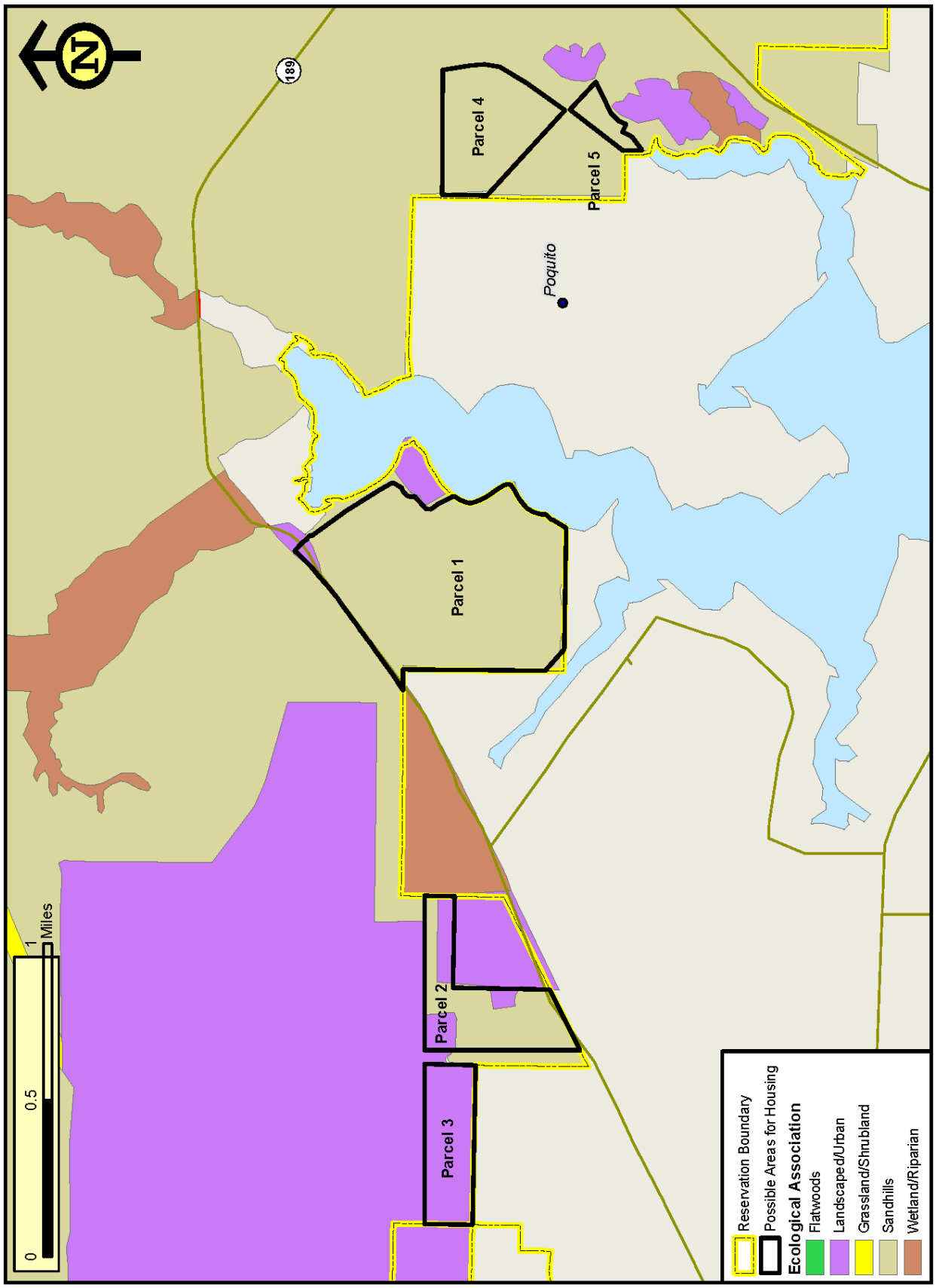

Figure 3-32. Ecological Associations at Fort Walton Beach Area

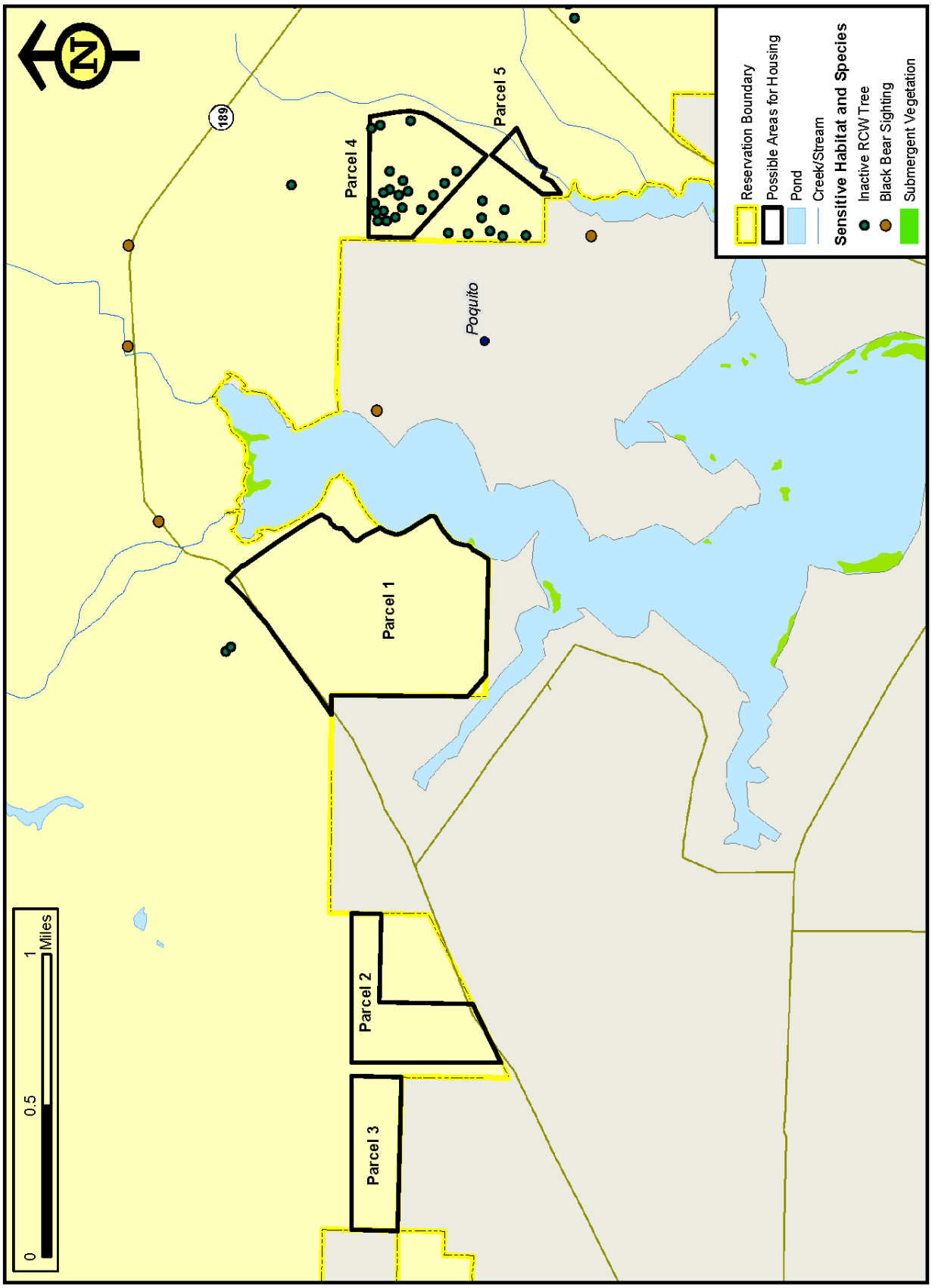

Figure 3-33. Sensitive Habitats and Species at Fort Walton Beach Area

Camp Pinchot Housing Area

The Camp Pinchot housing area includes only the 15-acre area in close proximity to the existing buildings, and a small right-of-way along the entrance road. This area is a combination of urban areas and low quality sandhills.

The eastern boundary of this parcel runs along Garnier's Bayou. Gulf sturgeon may travel through Garnier's Bayou, but it is not considered critical habitat. Other than transient species, no sensitive species are documented in this area.

Camp Rudder Housing Area

The Camp Rudder housing area is completely urban/landscaped (10 acres), but is bordered by a large area of high quality sandhills habitat to the east and south; this sandhills area is red-cockaded woodpecker (RCW) foraging habitat (Figure 3-34; Figure 3-35). The eastern indigo snake also has been sighted near the Camp Rudder parcel. Because the forested area adjacent to the site is so large and of high quality, transient species such as black bears, kestrels, pine barrens tree frogs, gopher tortoises, and pine snakes may traverse the housing area. The headwaters of a tributary to Mett's Creek are located less than 0.25 mile to the north.

Hurlburt Field Housing Areas

All of the parcels proposed for demolition at Hurlburt Field are urban/landscaped residential areas (Figure 3-36). Most of the areas proposed for construction overlap with the demolition areas, but some expansion areas contain flatwoods and hammock habitats (Figure 3-36). Soundside Manor and Live Oak Terrace are completely urban/landscaped. The eastern portion of Pine Shadows is residential housing, but the western portion is flatwoods; flatwoods salamander buffer habitat is about 0.25 mile to the west of Pine Shadows. The FAMCAMP area is urban/landscaped in the middle, with scrubby flatwoods in the northern and western portions of the site, and maritime hammock in the southern and eastern portions (Figure 3-36). The new FAMCAMP area is flatwoods. Critical habitat for the Gulf sturgeon exists in Santa Rosa Sound adjacent to Soundside Manor (Figure 3-37). Transient species such as black bears may traverse these areas.

3.13.2.2 Alternative 1: White Point Area

Table 3-33 and Table 3-34 present the habitat types (ecological associations) and sensitive species associated with Alternative 1: White Point Area.

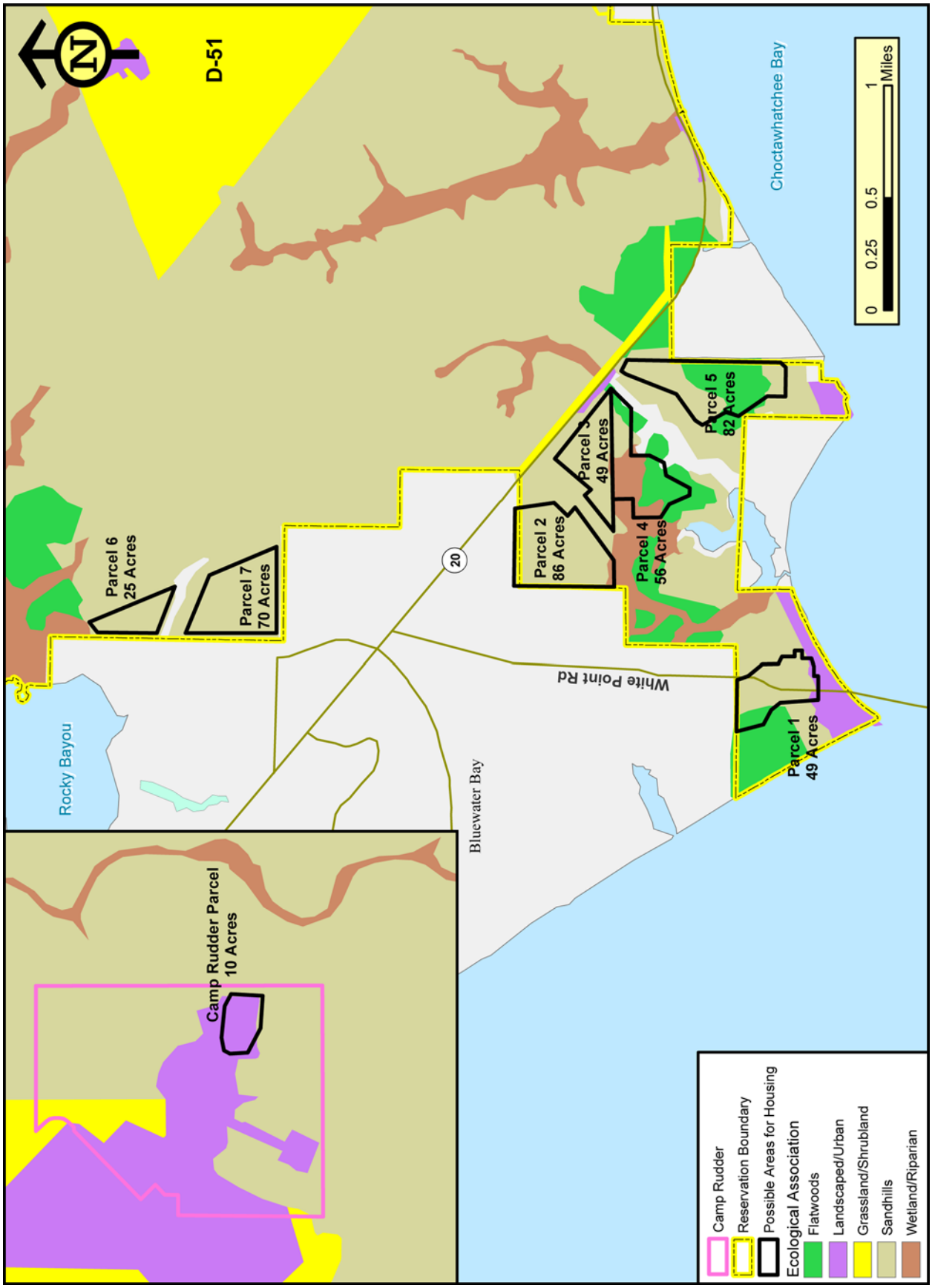

Figure 3-34. Ecological Associations at White Point Area and Camp Rudder Area

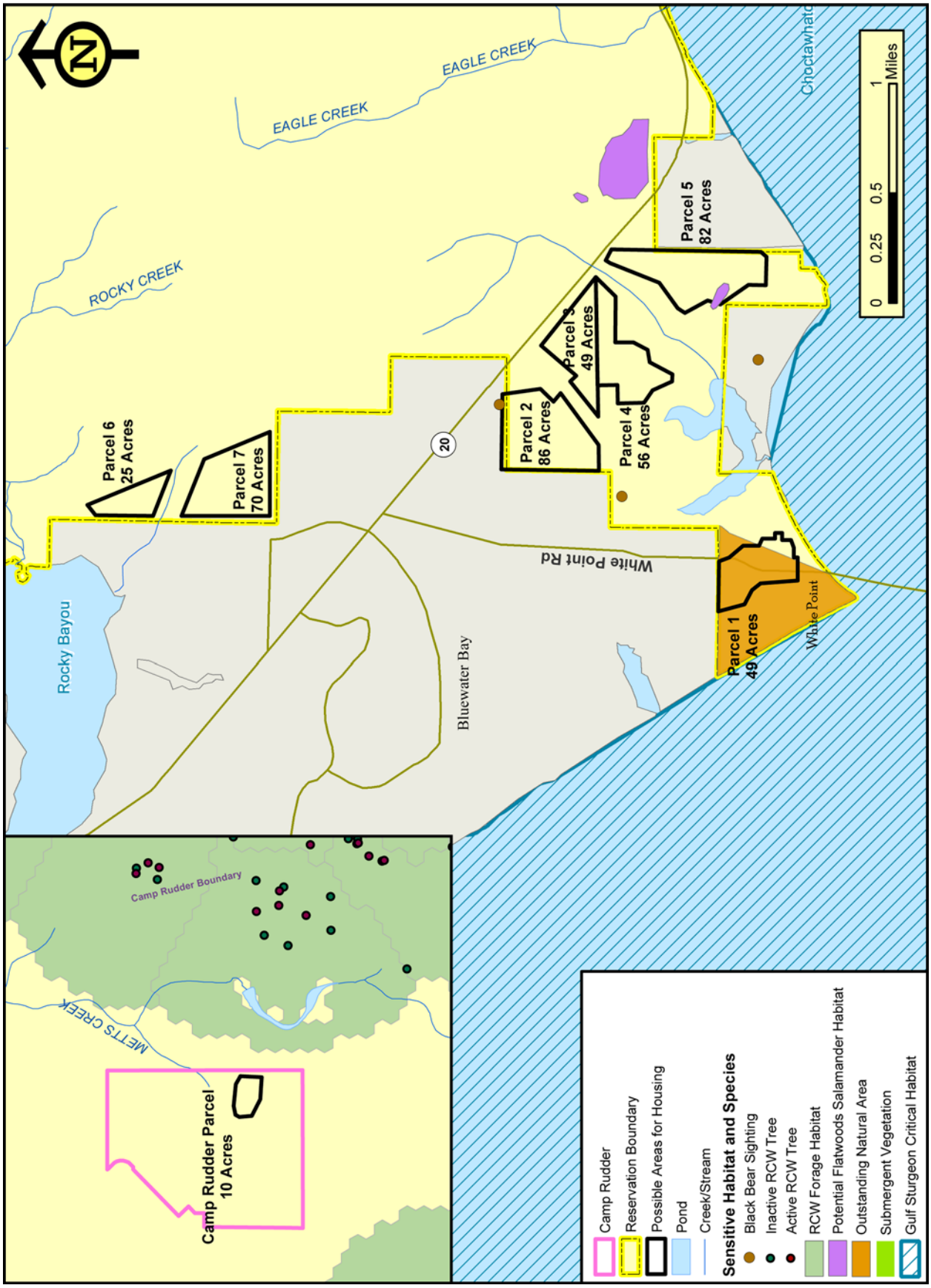

Figure 3-35. Sensitive Habitats and Sensitive Species at the White Point Area and Camp Rudder Area

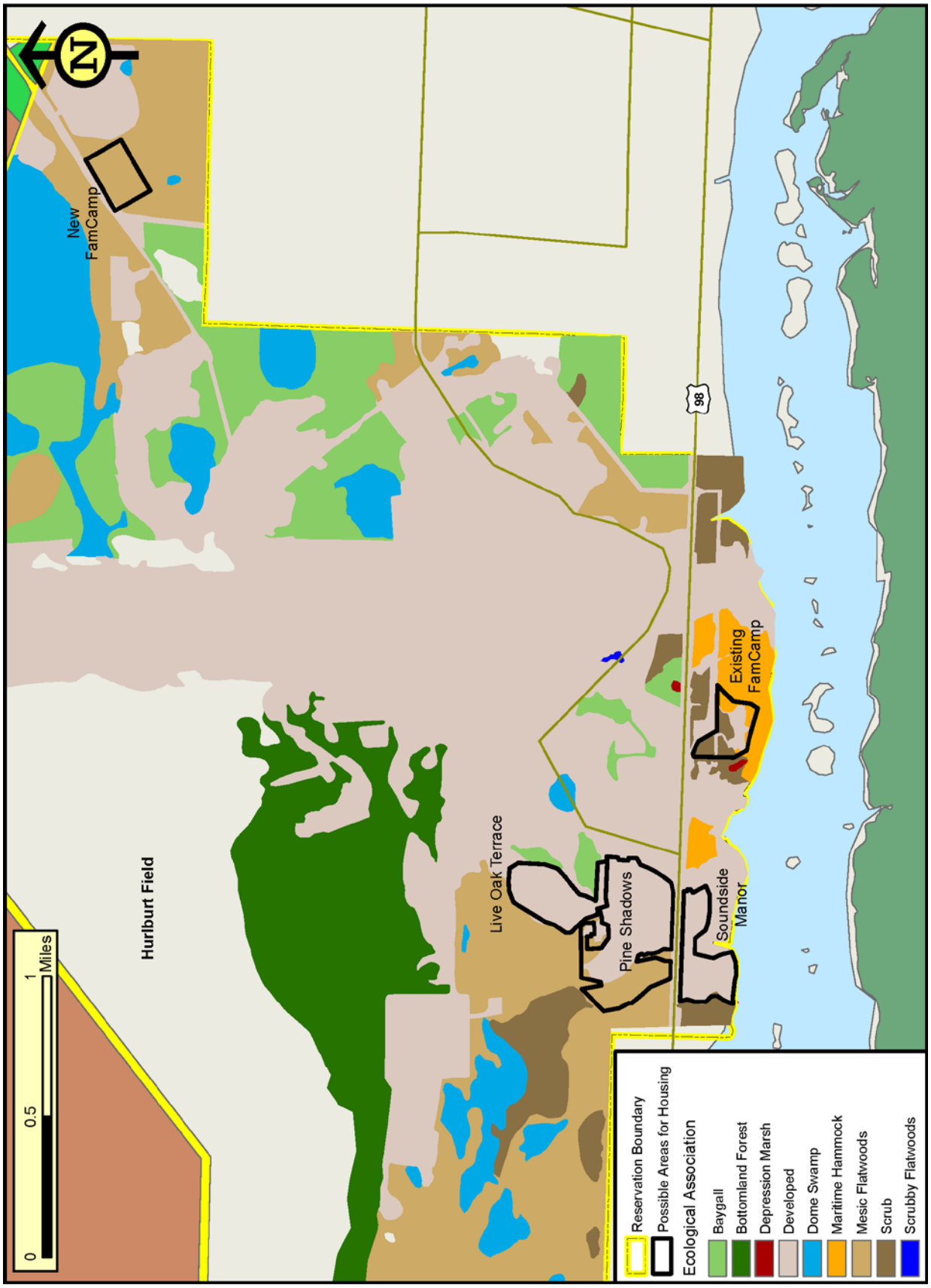

Figure 3-36. Habitat Types at Hurlburt Field

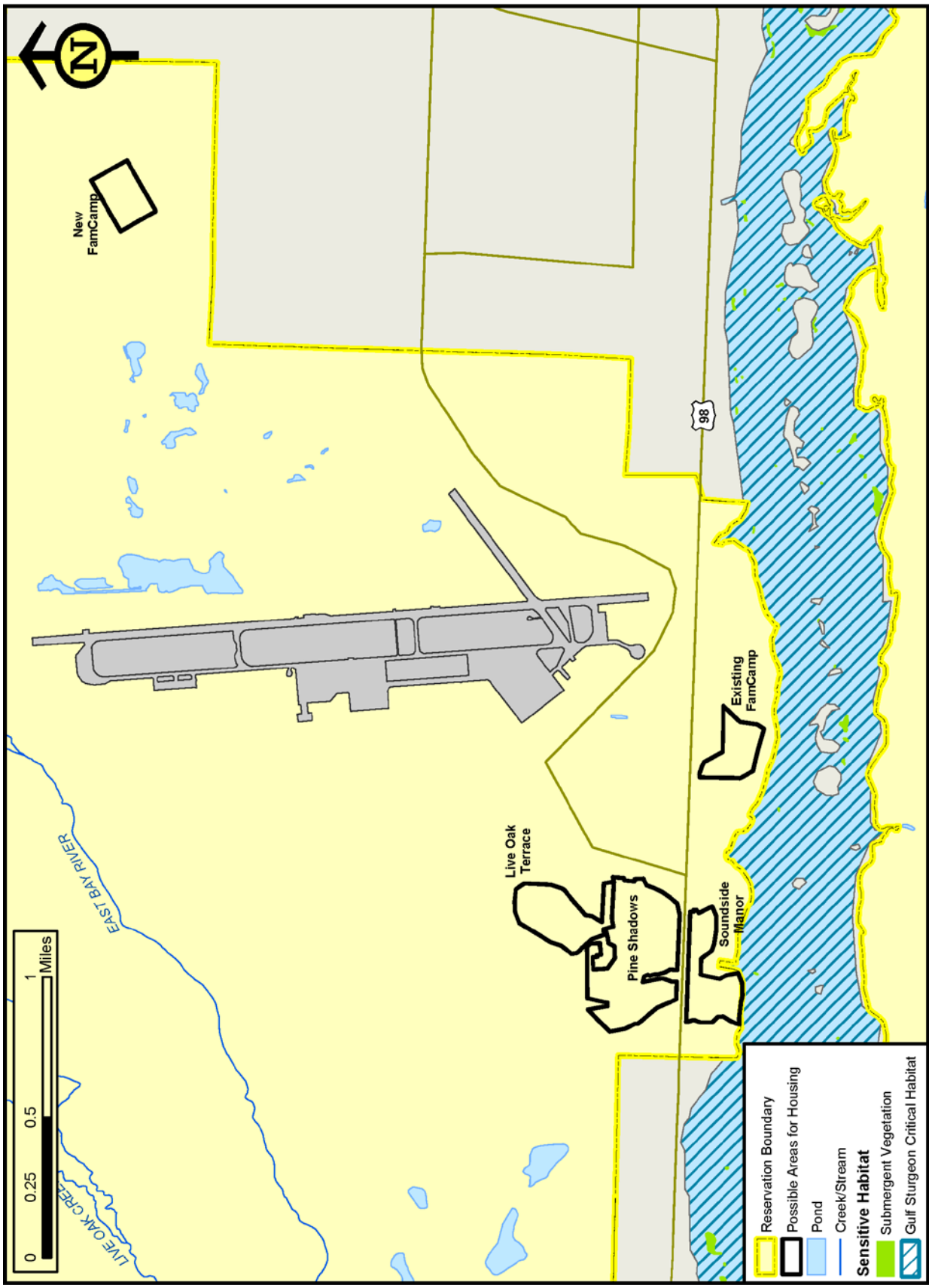

Figure 3-37. Sensitive Habitats and Species at Hurlburt Field

Table 3-33. Acres of Ecological Associations at White Point Area

Alternative	Acres					
	Parcel	Sandhills	Flatwoods	Wetland/ Riparian	Landscaped / Urban	Grassland/ Shrubland
White Point Area	1	37	9	0	3	0
	2	74	0	2	0	0
	3	48	1	1	0	0
	4	9	23	24	0	0
	5	42	40	0	0	0
	6	25	0	0	0	0
	7	70	0	0	0	0

Table 3-34. Sensitive Species Potentially Occurring On or Near Proposed White Point Area

Common Name	Scientific Name	State Status	Federal Status	Parcel
Sensitive Animals*				
Amphibians				
Reticulated Flatwoods Salamander*	*Ambystoma bishopi*	FE	FE	3, 4, 5
Pine Barrens Tree Frog	*Hyla andersonii*	SSC	-	ALL
Gopher Frog	*Rana capito*	SSC	--	5
Reptiles				
Eastern Indigo Snake	*Drymarchon corais couperi*	FT	FT	ALL
Florida Pine Snake	*Pituophis melanoleucus mugitus*	SSC	--	ALL
Gopher Tortoise	*Gopherus polyphemus*	ST	--	ALL
Fish				
Gulf Sturgeon	*Acipenser oxyrinchus desotoi*	FT	FT	1, 5
Mammals				
Florida Black Bear	*Ursus americanus floridanus*	ST	--	ALL
Birds				
Southeastern American Kestrel	*Falco sparverius paulus*	ST	--	ALL
Sensitive Plants				
Hairy wild indigo	*Baptisia calycosa var. villosa*	ST	--	2, 3, 5
Serviceberry holly	*Ilex amelanchier*	ST	--	5
Large-leaved jointweed	*Polygonella macrophylla*	ST	--	2, 5
Arkansas oak	*Quercus arkansana*	ST	--	6, 7
Pineland hoary-pea	*Tephrosia mohrii*	ST	--	1, 2 , 3, 5, 6, 7

Sources: Entrix, 2010; Eglin GIS, 2008
FE = federally endangered; FT = federally threatened; SE = state-endangered; SSC = state species of special concern; ST = state-threatened
*Potential flatwoods salamander pond and buffer

Alternative 1 – Parcel 1

Much of Parcel 1 is medium quality sandhills, with high quality flatwoods habitat in the western portion, a landscaped/urban area along the southern boundary, and a small area of high quality maritime hammock in the southeast corner (Table 3-33; Figure 3-34). The majority of Parcel 1 overlaps with the White Point Outstanding Natural Area (42 acres) (Figure 3-35). Designation as an Outstanding Natural Area

indicates a site has a unique character, excellent ecological condition, high species diversity, and/or the presence of rare species. The White Point Outstanding Natural Area is a unique example of high-quality old-growth mesic flatwoods. Submerged aquatic vegetation and Gulf sturgeon critical habitat are present off of the White Point shoreline to the south of Parcel 1. The parcel boundary is approximately 275 feet from Choctawhatchee Bay. Surveys documented one state-listed plant species on this parcel (Table 3-34).

Alternative 1 – Parcel 2

Parcel 2 is primarily medium quality sandhills, with a few acres of high quality wetland/riparian habitat along the southern border (Table 3-33; Figure 3-34). Surveys documented three state-listed plant species at this site (Table 3-34).

Alternative 1 – Parcel 3

Parcel 3 is almost entirely medium quality sandhills, with 1 acre each of flatwoods and wetland/riparian habitat (Table 3-33; Figure 3-34). Little Trout Creek is approximately 230 feet from the eastern tip of the parcel. Surveys documented two state-listed plant species at this site (Table 3-34).

Alternative 1 – Parcel 4

Medium quality flatwoods and high quality wetland/riparian areas are the dominant habitat types at Parcel 4, with a small area of pine production in the eastern portion (Table 3-33; Figure 3-34). Little Trout Creek, which runs to the south of the parcel, is within 225 feet of the parcel. No sensitive species have been documented at Parcel 4.

Alternative 1 – Parcel 5

At Parcel 5, medium quality flatwoods wrap around a small high quality depression wetland along the western boundary. The remainder of the parcel is high quality sandhills scrub habitat (Table 3-33; Figure 3-34). Little Trout Creek, which runs north of the parcel, is within 270 feet of the parcel. The wetland/flatwoods area on the parcel is potential flatwoods salamander habitat out to a 1,500-foot buffer from the pond; approximately 73 acres of potential flatwoods salamander habitat are present on Parcel 5 (Figure 3-35). This wetland is also a confirmed gopher frog breeding pond. Surveys documented four state-listed plant species at this site (Table 3-34).

Alternative 1 – Parcel 6

Parcel 6 is a combination of medium and high quality sandhill scrub habitat (Table 3-33; Figure 3-34). An unnamed steep ravine stream runs parallel to the southern boundary at a distance of approximately 125 feet. Surveys documented two state-listed plant species at this site (Table 3-34).

Alternative 1 – Parcel 7

The majority of Parcel 7 is medium quality sandhill scrub, with a small area of high quality scrub (Table 3-33; Figure 3-34). An unnamed steep ravine stream runs parallel to the northern boundary of the parcel, within 360 feet. Surveys documented two state-listed plant species at this site (Table 3-34).

3.13.2.3 Alternative 2: Eglin Main Base/Valparaiso Area

Alternative 2 – Parcel 1

A residential area covers approximately 160 acres in the northern portion of Parcel 1 (see the Proposed Action Commonalities section for Eglin Main Base), but the majority of this parcel is poor quality, fire-suppressed longleaf pine sandhills, with some old-growth trees (Table 3-35; Figure 3-30). A small hammock exists on the eastern side of Parcel 1 near the Choctawhatchee Bay shoreline and south of Boatner Road. On the southeast portion of the site, there is a small area of overgrown flatwoods surrounding a shallow depression. Although the understory of these flatwoods is overgrown, there are some older mature and old-growth longleaf pine present (Herring et al., 2006). This wetland/flatwoods area is considered potential flatwoods salamander habitat out to 1,500 feet from the pond (Table 3-36; Figure 3-31); 121 acres of potential salamander buffer habitat are on the Main Base parcel.

Table 3-35. Acres of Ecological Associations at Eglin Main Base/Valparaiso Area

Parcel	Acres				
	Sandhills	Flatwoods	Wetland/ Riparian	Landscaped / Urban	Grassland/ Shrubland
1	490	15	5	159	0
2	19	10	0	0	0
3	8	0	0	1	0
4	0	16	0	0	0
5	0	2	0	0	0
6	0	4	0	0	0
7	7	0	0	1	0
8	7	0	0	2	0
9	3	0	1	207	0
10	5	0	6	83	0
11	0	0	3	4	0

Gulf sturgeon critical habitat and submerged aquatic vegetation are present off the shoreline portion of this parcel, and two inactive RCW trees are found along the northwestern boundary (Figure 3-31). Surveys documented one inactive gopher tortoise burrow and two state listed plant species at this site (Entrix, 2010). There are also two historical Florida Natural Areas Inventory Element Occurrences of the state-listed *Polygonella macrophylla* (largeleaf jointweed) at Parcel 1.

Table 3-36. Sensitive Species Potentially Occurring On or Near Eglin Main Base/Valparaiso Area

Common Name	Scientific Name	State Status	Federal Status	Parcel
Sensitive Animals				
Amphibians				
Reticulated Flatwoods Salamander*	*Ambystoma bishopi*	FE	FE	1
Pine Barrens Tree Frog	*Hyla andersonii*	SSC	-	ALL
Reptiles				
Eastern Indigo Snake	*Drymarchon corais couperi*	FT	FT	ALL
Florida Pine Snake	*Pituophis melanoleucus mugitus*	SSC	--	ALL
Gopher Tortoise	*Gopherus polyphemus*	ST	--	ALL
Fish				
Gulf Sturgeon	*Acipenser oxyrinchus desotoi*	FT	FT	1, 9, 10
Okaloosa Darter	*Etheostoma okaloosae*	FE	FE	4, 5, 6
Mammals				
Florida Black Bear	*Ursus americanus floridanus*	ST	--	ALL
Birds				
Red-cockaded Woodpecker**	*Picoides borealis*	FE	FE	1
Southeastern American Kestrel	*Falco sparverius paulus*	ST	--	1
Sensitive Plants				
Arkansas oak	*Quercus arkansana*	ST	--	5
Hairy wild indigo	*Baptisia calycosa var. villosa*	ST	--	1
Largeleaf jointweed	*Polygonella macrophylla*	ST	--	1
Pineland hoary-pea	*Tephrosia mohrii*	ST	--	1, 2, 4, 6, 7, 8

Sources: Entrix, 2010; Eglin GIS, 2008
FE = federally endangered; FT = federally threatened; MBP= Main Base Parcel; SSC = state species of special concern; ST = state-threatened
*Potential flatwoods salamander pond and buffer; **Inactive RCW cavity trees

Alternative 2 – Parcel 2

The northern portion of Parcel 2 is low quality sandhills and the southern portion is low quality flatwoods (Table 3-35; Figure 3-30). Surveys documented one state-listed plant species at this site (Table 3-36).

Alternative 2 – Parcel 3

Parcel 3 is almost entirely poor quality sandhills, with 1 acre of urban area in the southern portion (Table 3-35; Figure 3-30). No sensitive species were found at this site during recent surveys (Entrix, 2010).

Alternative 2 – Parcel 4

All of Parcel 4 is medium quality flatwoods habitat (Table 3-35; Figure 3-30). An unnamed tributary to Tom's Creek, an Okaloosa darter stream, runs parallel to the

Parcel 4 western boundary at a distance of approximately 100 feet (Figure 3-31). Surveys documented one state-listed plant species at this site (Table 3-36).

Alternative 2 – Parcel 5

Current Parcel 5 habitat is completely medium quality flatwoods (Table 3-35; Figure 3-30). An unnamed tributary to Tom's Creek, an Okaloosa darter stream, runs parallel to the Parcel 5 western boundary at a distance of approximately 220 feet (Figure 3-31). Surveys documented one state-listed plant species at this site (Table 3-36).

Alternative 2 – Parcel 6

The only habitat type at Parcel 6 is low quality flatwoods (Table 3-35; Figure 3-30). The western portion of Parcel 6 is within 360 feet of an unnamed tributary to Tom's Creek, an Okaloosa darter stream (Figure 3-31). Surveys documented one state-listed plant species at this site (Table 3-36).

Alternative 2 – Parcel 7

Parcel 7 is dominated by low quality sandhills, with 1 acre of urban area (Table 3-35; Figure 3-30). Surveys documented one state-listed plant species at this site (Table 3-36).

Alternative 2 – Parcel 8

The majority of Parcel 8 is low quality sandhills habitat, with urban areas on the eastern portion of the site (Table 3-35; Figure 3-30). Surveys documented one state-listed plant species at this site (Table 3-36).

Alternative 2 – Parcel 9

A description of Parcel 9 (Capehart) is provided in Section 3.12.2.1 *Proposed Action Commonalities,* for Eglin Main Base Housing Areas (Figure 3-30; Table 3-35 and Table 3-36).

Alternative 2 – Parcel 10

A description of Parcel 10 (Wherry) is provided in Section 3.12.2.1 for Eglin Main Base Housing Areas (Figure 3-30; Table 3-35 and Table 3-36).

Alternative 2 – Parcel 11

Parcel 11 is half landscaped/urban and half wetland/riparian area (Figure 3-30; Table 3-35 and Table 3-36). No sensitive species have been documented at this site.

3.13.2.4 Subalternative 2a: Eglin Main Base (Preferred Alternative)

Subalternative 2a consists of Parcel 1 as described under Alternative 2. The affected environment would be the same as described previously for this parcel.

3.13.2.5 Alternative 3: North Fort Walton Beach Area

Alternative 3 – Parcel 1

Parcel 1 is primarily low quality sandhills, with a small urban area in the northern tip (Table 3-37; Figure 3-32). There is a small area of submerged vegetation off the southeastern boundary of the parcel (Figure 3-33). The eastern boundary of this parcel runs along Garnier's Bayou for approximately 2,345 linear feet.

Table 3-37. Acres of Ecological Associations at the North Fort Walton Beach Area

Alternative	Acres					
	Parcel	Sandhills	Flatwoods	Wetland/ Riparian	Landscaped / Urban	Grassland/ Shrubland
North Fort Walton Beach Area	1	246	0	0	3	0
	2	54	0	0	20	0
	3	0	0	0	51	0
	4	72	0	0	0	0
	5	11	0	0	0	0

Due to area resident concerns regarding potential impacts to sensitive species, a survey of the area was conducted by the 96th Civil Engineer Group/Wildlife Section (96 CEG/CEVSNW) biologists in March 2004. Biologists rode all-terrain vehicles (ATVs) along the established roads and trails and explored off road via ATVs and on foot when they observed areas that appeared to have any potential to support sensitive species. Walking transects or the use of ATVs is a professionally accepted method to cover large areas for wildlife surveys. Although animals may be scared off by the noise from ATVs, gopher tortoise burrows, RCW cavity trees, and bird nests are immobile. At the time of the survey, biologists found no evidence of bald eagle nests, suitable RCW habitat, osprey nests, the Florida panther, or other species. In addition, no gopher tortoise burrows (abandoned or active) were located (Hagedorn, 2004).

However, in May 2005 during public hearings for the EIS, several residents provided photographic evidence of what appeared to be active gopher tortoise burrows and an osprey in the area. The 96 CEG/CEVSNW biologists then confirmed that the osprey nest identified by local residents is at the head of Garnier's Bayou, but outside the project areas (Hagedorn, 2005). The burrows were inspected by the 96 CEG/CEVSNW supervisory biologist, along with the resident who took the pictures. These burrows were found to be made by either box turtles (a common species in the area) or other species such as armadillos, and no gopher tortoise burrows were found. Although the gopher tortoise may occur in the Camp Pinchot area, this location is not considered quality sandhill habitat for the gopher tortoise (Hagedorn, 2005a).

Recent surveys conducted in the fall of 2009 used both qualitative survey methods, such as random pedestrian surveys within a given habitat, and quantitative methods, such as line transects, to provide adequate site coverage (Entrix, 2010). One abandoned gopher tortoise burrow and one state listed plant species were documented (Entrix, 2010). Other transient species that may be present are listed in Table 3-38. Local resident eyewitness reports describe sightings of bald eagles, RCWs, and the Florida panther. Species documented to occur outside but adjacent to the project area include the osprey (protected by the Migratory Bird Treaty Act), and the federally listed Gulf sturgeon and West Indian manatee (within Garnier's Bayou). While the Gulf sturgeon may travel through Garnier's Bayou, it is not designated as critical habitat.

Table 3-38. Sensitive Species Potentially Occurring On or Near Proposed North Fort Walton Beach Area

Common Name	Scientific Name	State Status	Federal Status	Location
Sensitive Animals				
Amphibians				
Pine Barrens Tree Frog	*Hyla andersonii*	SSC	-	ALL
Reptiles				
Eastern Indigo Snake	*Drymarchon corais couperi*	FT	FT	ALL
Florida Pine Snake	*Pituophis melanoleucus mugitus*	SSC	--	ALL
Gopher Tortoise	*Gopherus polyphemus*	ST	--	ALL
Fish				
Gulf Sturgeon**	*Acipenser oxyrinchus desotoi*	FT	FT	1, 5
Mammals				
Florida Black Bear	*Ursus americanus floridanus*	ST	--	ALL
West Indian Manatee**	*Trichechus manatus*	FE	FE	1
Birds				
Red-cockaded Woodpecker*	*Picoides borealis*	FE	FE	4
Southeastern American Kestrel	*Falco sparverius paulus*	ST	--	ALL
Osprey	*Pandion haliaetus*		MBTA	1
Sensitive Plants				
Pineland hoary-pea	*Tephrosia mohrii*	ST	--	ALL

Sources: Entrix, 2010; Eglin GIS, 2008. FE = federally endangered; FT = federally threatened; SE = state-endangered; SSC = state species of special concern; ST = state-threatened; MBTA= Migratory Bird Treaty Act
*Inactive RCW trees; **Eye witness reports

Alternative 3 – Parcel 2

Parcel 2 is a combination of low quality sandhills and urban/landscaped areas (Table 3-37; Figure 3-32). Surveys documented one state-listed plant species at this site (Table 3-38) (Entrix, 2010).

Alternative 3 – Parcel 3

Parcel 3 is entirely landscaped/urban (Table 3-37; Figure 3-32). Surveys documented one state-listed plant species at this site (Table 3-38) (Entrix, 2010).

Alternative 3 – Parcel 4

All of Parcel 4 is medium quality sandhills habitat (Table 3-37; Figure 3-32). An unnamed stream runs parallel to the eastern parcel boundary at a distance of approximately 195 feet. Twenty-one inactive RCW trees are present on Parcel 4 (Figure 3-33). Surveys documented one state-listed plant species at this site (Table 3-38) (Entrix, 2010).

Alternative 3 – Parcel 5

Parcel 5 is completely low quality sandhills habitat (Table 3-37; Figure 3-32). The southern tip of the parcel is near the northern portion of Poquito Bayou, within approximately 100 feet. An unnamed creek runs through the southeastern portion of the site. Surveys documented one state-listed plant species at this site (Table 3-38) (Entrix, 2010).

3.13.2.6 Alternative 4: Mix Alternative

Alternative 4 is comprised of any of the above listed parcels. For a description of biological resources for each respective parcel refer to the appropriate section above.

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4. ENVIRONMENTAL CONSEQUENCES

Impact analysis throughout the document considers the implementation of regulatory requirements and non-discretionary mitigations as part of the Proposed Action or alternatives, because these mitigations would be required to be implemented by permit or other regulatory requirements. Discretionary mitigations are identified after the analysis to identify mitigations that can be implemented to minimize or offset any potential impacts identified by the analysis despite implementation of regulatory requirements or other non-discretionary mitigations. The actual discretionary mitigations that would be implemented by the Air Force and the privatization developer are alternative-dependent and will not be known until the Air Force selects an alternative. The Air Force will identify in the Record of Decision (ROD) any discretionary or non-discretionary mitigation to be implemented. The MHPI RFQ requires that the developer incorporate all mitigations from the MHPI EIS (whether discretionary or non-discretionary), associated ROD, and Mitigation Plan into an Environmental Management Plan (EMP) detailing how the developer will implement and monitor compliance with mitigation requirements. The Air Force will review and approve the EMP prior to any development activities to ensure consistency between the EMP and NEPA requirements. During the EMP review, the Air Force will determine whether additional NEPA analysis is required. The developer is responsible for acquiring all permits and implementing the associated mitigations, as well as any Air Force-imposed discretionary mitigations, and the Air Force is responsible for ensuring that all required permits are acquired and any mitigations are implemented effectively.

4.1 TRANSPORTATION

The impacts of the alternatives were evaluated with respect to the roadway network under both existing and future conditions. Potential shifts in population created by the alternatives and corresponding trip generation were estimated. The expected trips were then assigned to road segments. Based on these assumptions, net changes in vehicle volumes were developed and analyzed for each alternative.

The traffic generated by the proposed housing would affect the roadway segments used to access those housing areas. That traffic was added to the expected traffic volume on the respective roadways and the level of service (LOS) was determined for that segment. The LOS determined for the No Action Alternative and action alternatives were then compared to determine the impact on the roadways in question.

4.1.1 Analysis Methodology

The analysis focuses on assessing the ability of the existing public roadway system to accommodate increased utilization of particular road segments. The number of trips that would be generated by the Proposed Action has been estimated using methods of

the Institute of Transportation Engineers (ITE) *Trip Generation, 7th Edition* (ITE, 2003). The level of traffic on each roadway analyzed was found from publicly available information from the Florida Department of Transportation (FDOT) (FDOT, 2008), from the Eglin Air Force Base (AFB) Transportation Master Plan (Master Plan) (HDR, 2008) and the Hurlburt Field Transportation Plan (Black & Veatch, 2008). The level of traffic was escalated by an assumed rate of growth on public roadways.

The year 2017 was selected for analysis because all construction for the Proposed Action is expected to be completed and the housing fully occupied by 2017. The "horizon" year 2022 was selected because it is five years after the estimated project completion. Transportation engineers recommend that analysis also be conducted for five years after the horizon year. This is done because changes to highways typically take many years to program, fund, and design, and if a proposed action is expected to reduce LOS to an unacceptable level within five years of the project's completion, it may be warranted to take action in response to that expectation. In the analysis, the characteristics of the roadway were adjusted for future-year scenarios to reflect currently planned improvements. The LOS for selected roadways was then determined using the methods and tables contained in the 2009 FDOT *Quality Level of Service Handbook* (FDOT, 2009).

The traffic generated by the proposed housing would affect the roadway segments providing access to those housing areas. For this analysis, the traffic generated by the proposed housing areas was added to the expected traffic volume on that roadway and the expected LOS after the change was determined for that segment.

The number of trips per day per household is a function of the number of persons in the household and the number of vehicles per household. Traffic volumes are typically based on the number of expected vehicles in a one-hour period, also called the peak hourly volume (PHV), which is defined by traffic engineers as the thirtieth (30th) highest traffic volume expected in any 60-minute period of a 365-day calendar year. To understand the function of the roadway under its peak traffic loading, LOS is determined based on the PHV. The number of peak hour trips expected to be gained or lost in each defined housing area was calculated using the methods contained in ITE's *Trip Generation*, 2003. Peak hour trip generation is forecasted using the regression equations published in Section 210 "Single Family Detached Housing" and Section 501 "Military Base" of the ITE document. Trip generation was checked for peak hours on weekdays, Saturday, and Sunday, and the largest number of trips generated was used in the analysis. In most cases, the weekday afternoon rush hour was the most critical time period for the study area.

For each alternative, the expected traffic was added to the traffic volumes forecast for the affected arterial roadway for the years 2017 and 2022. The expected change in traffic for each alternative was then modeled using the Highway Capacity Manual (TRB, 2000).

According to the Okaloosa-Walton Transportation Planning Organization (OWTPO)'s *2030 Long Range Transportation Plan*, the area surrounding the base is expected to experience an annual average growth in total vehicles of about 2.5 percent and a growth in trips of approximately 2.3 percent (OWTPO, 2007). Ten continuously monitored sites around the base were checked for growth between 2003 and 2006. The average growth in traffic for these sites over this period was 2 percent. Between 2006 and 2008, the traffic volumes reported by the FDOT on the roadways adjoining the base dropped significantly.

The analysis assumed a transportation growth rate of 2 percent per year for the road segments analyzed. As traffic volumes on existing roadways are expected to increase over time, the LOS of those roadways would be expected to decrease even further unless roadway improvements are made. As the LOS deteriorates, it becomes more likely that roadway improvements will be undertaken.

Significant impacts to traffic LOS are generally considered to occur when the LOS on the studied roadway segment fall below the acceptable LOS for that roadway. Each roadway segment has an acceptable LOS determined by local authorities having responsibility for that segment.

Generally in urban areas, such as this study area, an acceptable LOS is an LOS of D or sometimes an LOS of E. An impact is significant if the LOS falls below the expected LOS at an earlier time than expected (e.g., if a roadway segment is projected to reach LOS E in 2020, but a proposed action causes the LOS to fall to LOS E in 2015).

LOS changes that are not considered significant are typically any changes caused by changes in peak hour trips of less than 100 vehicles per hour. The LOS designations are a continuum based on motorists' perceptions, and it is unlikely that changes of less than 100 vehicles per hour would greatly inconvenience motorists even if that change results in a change in the LOS letter assignment. Any increase in traffic to an intersection or roadway segment operating at an LOS of F is not desirable. However, if an intersection or roadway segment is operating at an LOS of F and an increase in peak hour traffic of less than 100 vehicles per hour is anticipated, this increase would not be considered significant. Increases in peak hour traffic of more than 100 vehicles per hour to an intersection or roadway segment operating at an LOS of F would be considered significant. It is also not considered a significant change if the LOS changes from one acceptable LOS to another acceptable LOS. For example, a change from LOS A to LOS B would not be considered a significant change. Any changes that are not significant would be considered acceptable changes.

4.1.2 No Action Alternative

Under the No Action Alternative, existing housing will be maintained and used in place. In addition to the anticipated Base Realignment and Closure (BRAC) impacts,

the region is expected to experience transportation growth. Therefore, the traffic volumes on existing roadways would be expected to increase over time, and the LOS of those roadways would be expected to decrease, unless roadway improvements are made to increase the capacity of the roadway.

The No Action Alternative's baseline (2010) and projected average annual daily traffic (AADT) and LOS for 2017 and 2022 on various roadways is provided in tables in each alternative-specific subsection in this analysis (Sections 4.1.4 through 4.1.7) to give the reader a comparison of impacts from the baseline/no action condition and the respective alternative action. In those tables (e.g., Table 4-3 and Table 4-4 on pages 4-14 and 4-15), the "No Action 2010" column contains the AADT for 2010 based on the traffic volumes taken from the 2008 Florida Highway Data (the most recent data available) and projected to 2010, assuming a 2-percent increase per year. Similarly, the "No Action Alternative – 2017" and "No Action Alternative – 2022" columns give estimated AADT and LOS on each roadway segment for the No Action Alternative in 2017 and 2022.

Public transportation projects committed and programmed to being built include:

- Intersection improvements at General Bond Boulevard and State Road (SR-)189.
- Improve SR-20 from two lanes to four lanes between Rocky Bayou Road and SR-293.
- SR-85 upgrades to Okaloosa Regional Airport entrance.
- Improve SR-85 from four lanes to six lanes between South of General Bond Boulevard and North of the Okaloosa Regional Airport entrance.
- Improve SR-85 with additional lanes between SR-397 and SR-85.
- Improve SR-85 with additional lanes between General Bond Blvd and the Okaloosa Regional Airport.
- Bicycle and pedestrian projects per the OWTPO *Bicycle and Pedestrian Plan*.
- Intelligent Transportation System (ITS) Master Plan projects.

4.1.3 Proposed Action Commonalities

For housing-related impacts, an increase in housing units would be expected to increase traffic volumes on nearby roadways, and a loss of housing units would be expected to reduce traffic volumes on nearby roadways.

Traffic volumes are measured by "trips." A trip is defined as a single or one-direction vehicle movement with either the origin of the destination at the study site. For example, in a household with two adults, if each of the adults leaves for work and returns and also one of the adults goes somewhere and returns in an evening, that

would be a total of six trips associated with that house for that day. Each person visiting the household would be another two trips.

The ITE publishes the results of studies that provide a means to estimate the number of trips generated by a number of independent variables. A common independent variable for housing is the number of housing units. For developments that have a large number of data points, the ITE recommends the use of the regression equations developed from an analysis of all of the data points. A particular alternative's net impact is characterized by using the regression equations from the ITE *Trip Generation, 7th Edition* and the number of units constructed minus the number of units demolished and the spatial difference between the distribution of trips now and the distribution of trips in the future.

Eglin Main Base Housing Areas

These areas would experience demolition of 849 existing housing units. The demolition of 849 housing units would be expected to eliminate 7,400 trips per day using the methods contained in ITE's *Trip Generation*. The 2008 Eglin AFB Transportation Master Plan (HDR, 2008) found the trips per day for on-base housing were 19 percent higher than the trips generated by ITE's *Trip Generation*. However, the Transportation Master Plan (HDR, 2008) also found that peak hour trips were approximately the same as those yielded by the ITE *Trip Generation* methods. The peak hour trips are generally used in determining LOS. In this report, the number of daily trips generated for off-base housing were not increased by 19 percent, and the ITE method was also used to generate peak hour trips.

- Expected reduction in trips per day – 7,400
- Expected reduction in AM peak hour trips – 600
- Expected reduction in PM peak hour trips – 750

The adjoining streets, Boatner Road, Ben's Lake Road, Nakina Drive, Hatchee Road, and Memorial Trial, are currently (in 2010) operating at an LOS of C. A segment of Chinquapin Road and a segment of Boatner Road are currently operating at an LOS of D. These roadways primarily serve as collector streets to route traffic to Eglin Boulevard (LOS B in 2010). With the reduction in traffic, the LOS on these streets would improve. Eglin Boulevard is connected to both the East and West Eglin Access Control Points (ACPs). The impact on the ACPs would vary depending on the location of replacement housing.

Poquito Bayou Housing Area

This area would experience demolition of 150 existing housing units. The demolition of 150 housing units would result in the following:

- Expected reduction in trips per day – 1,800
- Expected reduction in AM peak hour trips – 100
- Expected reduction in PM peak hour trips – 150

The adjoining streets, Sunset Lane and Poquito Road, serve as collector streets to route traffic to SR-85 (LOS F in 2010) and SR-189 (LOS B in 2010). With the reduction in traffic, the LOS on these streets would improve. There would be some minor LOS improvement on SR-189 and SR-85.

Camp Pinchot Housing Area

This location would not be used for new housing. It is possible that any new uses might generate more traffic than residential housing. Any increase in traffic from the changed uses of four buildings of this size should not be significant and would not be expected to significantly change the LOS of adjoining collector or arterial roadways.

Camp Rudder Housing Area

For all alternatives except Subalternative 2a, this area would experience the demolition of 25 housing units and the construction of 35 new housing units. The net increase of 10 housing units would result in the following:

- Expected increase in trips per day – 130
- Expected increase in AM peak hour trips – 10
- Expected increase in PM peak hour trips – 10

The Camp Rudder housing area is served by Military Road 257 (LOS A in 2010). The LOS of Military Road 257 would not be expected to change.

Hurlburt Field Housing Areas

The Hurlburt Field housing area would experience the following transportation-related effects:

Soundside Manor - The net increase of housing units in this area would result in the following:

- Expected increase in trips per day – 360
- Expected increase in AM peak hour trips – 30
- Expected increase in PM peak hour trips – 30

Soundside Manor is connected to Hurlburt Main Base by the intersection of U.S. Highway (US-) 98 and Hume Drive, to Champaign Street/Cody Avenue. According to the Hurlburt Field Transportation Plan (Black & Veatch, 2008) this intersection has an LOS of F. This increase in peak hour traffic is small and would not greatly impact the LOS on US-98 or the intersection of US-98 and Champaign Street/Cody Avenue; however, any increase in traffic on a LOS F intersection is not desirable. The streets within the Base, at Soundside Manor, and on Cody Avenue would continue to operate at an LOS of E or better. Increases in peak hour traffic of less than 100 vehicles per hour are not considered perceptible by the driving population and are not considered significant by transportation engineers.

Existing Family Camping (FAMCAMP) location development – The development of this location for housing would result in the following:

- Demolition of recreational vehicle park (ITE *Trip Generation* Land Use 416)
  - Expected decrease in AM peak hour trips – 10
  - Expected decrease in PM peak hour trips – 20
- Construction of 96 housing units (ITE *Trip Generation* Land Use 210)
  - Expected increase in trips per day – 1,200
  - Expected increase in AM peak hour trips – 80
  - Expected increase in PM peak hour trips – 100
- Net peak hour trips would be:
  - Expected increase in AM peak hour trips – 70
  - Expected increase in PM peak hour trips – 80

The existing FAMCAMP site is connected to Hurlburt Main Base by the intersection of US-98 and Hume Drive, to Champaign Street/Cody Avenue. According to the Hurlburt Field Transportation Plan (Black & Veatch, 2008), this intersection has an LOS of F. This increase in peak hour traffic is less than 100 vehicles per hour and would not result in a significant impact on the LOS of the intersection of US-98 and Champaign Street/Cody Avenue. The streets within the Base at Soundside Manor and on Cody Avenue would operate at an acceptable LOS.

New FAMCAMP Development - As a component of the Proposed Action, the Hurlburt Field FAMCAMP facility would be relocated. Development of the new FAMCAMP would require a new road entrance. A median cut in Martin Luther King Boulevard is also proposed for access to the FAMCAMP. The proposed FAMCAMP would be constructed south of Martin Luther King Boulevard, west of Commando Village. The

construction of a 50-campsite recreational vehicle park would result (ITE *Trip Generation* Land Use 416) in the following:

- Expected increase in AM peak hour trips – 10
- Expected increase in PM peak hour trips – 20

Many of these trips would be by recreational vehicles and might be by drivers unfamiliar with the roadways. The public roadway they would be accessing, Martin Luther King Boulevard, is a four-lane divided roadway that currently has an acceptable LOS. The addition of an entrance and this small number of peak hour trips will not significantly affect LOS. It appears unlikely there would be any sight distance concerns with this new entrance; however, given the volume of relatively fast moving traffic on Martin Luther King Boulevard, any traffic movement crossing traffic lanes, such as left turns from the FAMCAMP to eastbound Martin Luther King Boulevard, would be potentially hazardous. This can be especially so with recreational vehicles, which may have lower acceleration speeds than many other vehicles. Management actions to minimize this possibility would be to allow only right-in and right-out traffic movements to the FAMCAMP. If a median crossing movement is allowed, then the median should be designed to be large enough to allow traffic to come to a stop in the median while waiting for an opening in traffic to merge or cross. The use of acceleration and deceleration lanes in conjunction with westbound Martin Luther King Boulevard is also a management action. The volume of traffic from the FAMCAMP would be expected to be too small to warrant signals or stop signs on Martin Luther King Boulevard; however, the entrance onto Martin Luther King Boulevard should be stop-sign controlled, and signage warning of the intersection might be considered.

Figure 4-1 and Figure 4-2 illustrate the anticipated LOS on roadways impacted near Hurlburt Field by the Proposed Action for 2017 and 2022.

School Bus Routes

There are several schools in the immediate vicinity of Eglin and Hurlburt Field that are currently light on attendance. Busing the students from the new housing areas to those schools would bring additional students and potentially help to keep those schools open. For Alternative 2, including Subalternative 2a, the school bus routes would not change, and for the other alternatives, existing school bus routes that serve the adjacent communities can be adjusted for the new developments. For major developments in new areas, coordination with the school district to provide school bus services would be desirable. The impact of additional school buses on the arterial road system would be minimal, and the LOS experienced by those buses would mirror that experienced by other traffic. School bus stops should be limited to collector and local service roadways. School bus stops on arterial roadways should be avoided, if possible, both for traffic and safety reasons.

Bicycle and Pedestrian Facilities

According to the 2008 Eglin AFB Transportation Master Plan, SR-189 between Roberts Boulevard and the Eglin Main Base West Gate has paved shoulders or bike lanes; this roadway would be accessible by Alternative 3 parcels. Also according to the Transportation Master Plan, the section of SR-20 from White Point Road to Rocky Bayou will include paved shoulders or bike paths in the planned widening project. This section of roadway would be somewhat accessible from Alternative 1's Parcels 5 and 6.

All proposed housing developments should include pedestrian- and bicycle-friendly designs, including sidewalks, curb ramps, and bicycle-friendly grate inlets. Any future bicycle pathways should be developed following the engineering design criteria expressed in the American Association of State Highway and Transportation Officials (AASHTO) *Guide for the Development of Bicycle Facilities* or similar approved engineering design criteria (AASHTO, 1991).

New roadways can be designed and existing roadways can be improved to more safely accommodate bicycle traffic. Possible bicycle pathways should provide safe drainage grates and railroad crossings, and smooth pavements, and signals responsive to bicycles should be provided. As stated in the AASHTO *Guide for the Development of Bicycle Facilities*: "Wide curb lanes and bicycle lanes are usually preferred in restrictive urban conditions and the widened shoulder will generally be more accommodating in rural circumstances. Where it is intended that bicyclists ride on shoulders, smooth paved shoulder surfaces should be provided and maintained." It is also possible to provide wide curb lanes or designated bicycle lanes.

Regulatory Requirements/Mitigations

Mitigations are actions that, if implemented, serve to avoid, minimize, rectify, reduce, or compensate for potential impacts. Discretionary mitigations are those mitigations that are at the discretion of the Air Force to implement as part of the Proposed Action or alternatives, while non-discretionary mitigations are those that the Air Force would be required to implement as a result of permit or other regulatory requirements. The Air Force would identify any discretionary mitigations that would be implemented at the time of alternative selection in the ROD; those discretionary mitigations, as well as any non-discretionary mitigations, would be identified in the ROD and would be required to be implemented by the developer or Air Force as applicable. No non-discretionary mitigations have been identified that are common to all locations. The following are discretionary mitigations common to all locations:

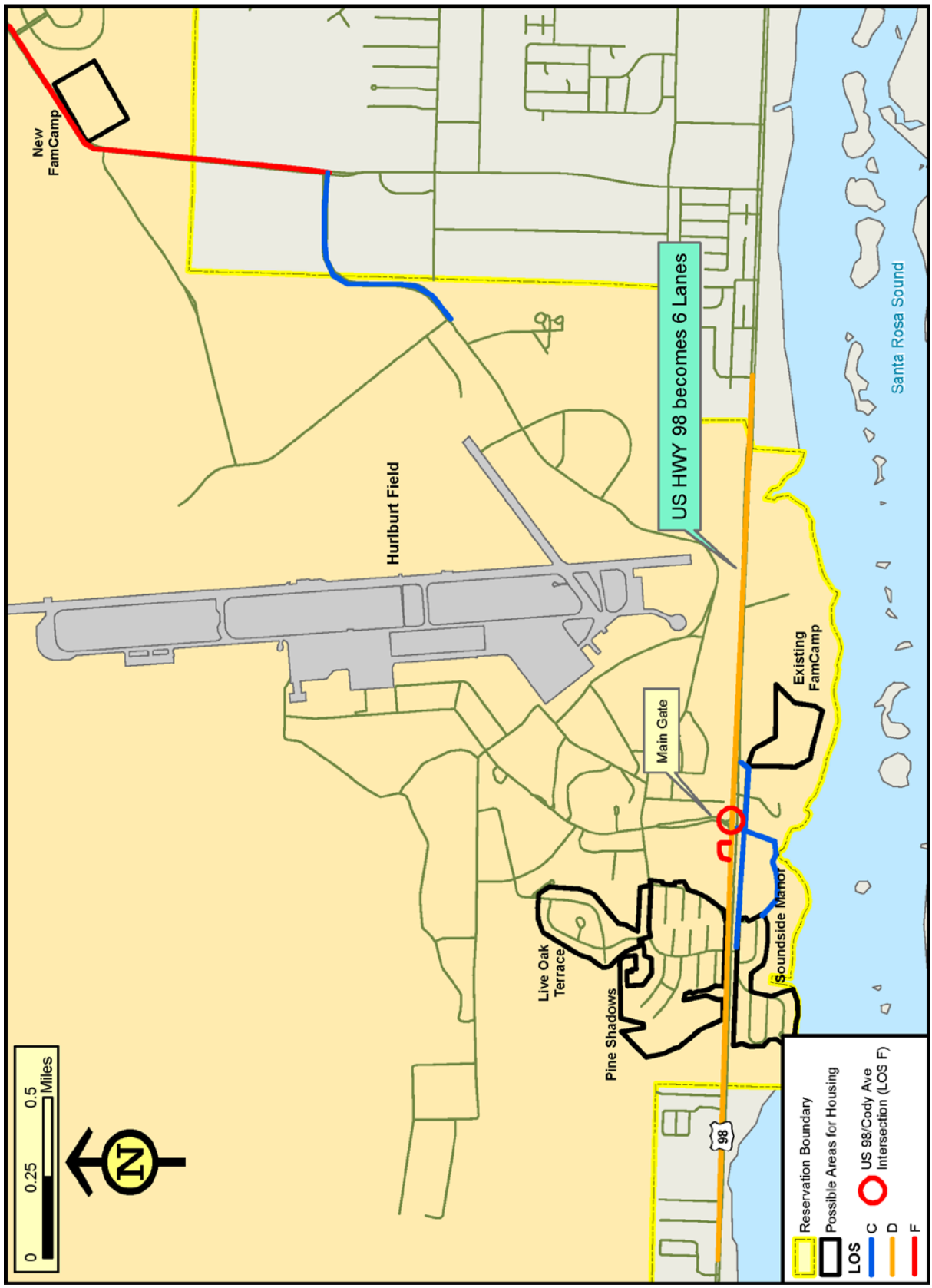

Figure 4-1. Anticipated LOS on Roadways Impacted by Proposed Action (near Hurlburt) – 2017

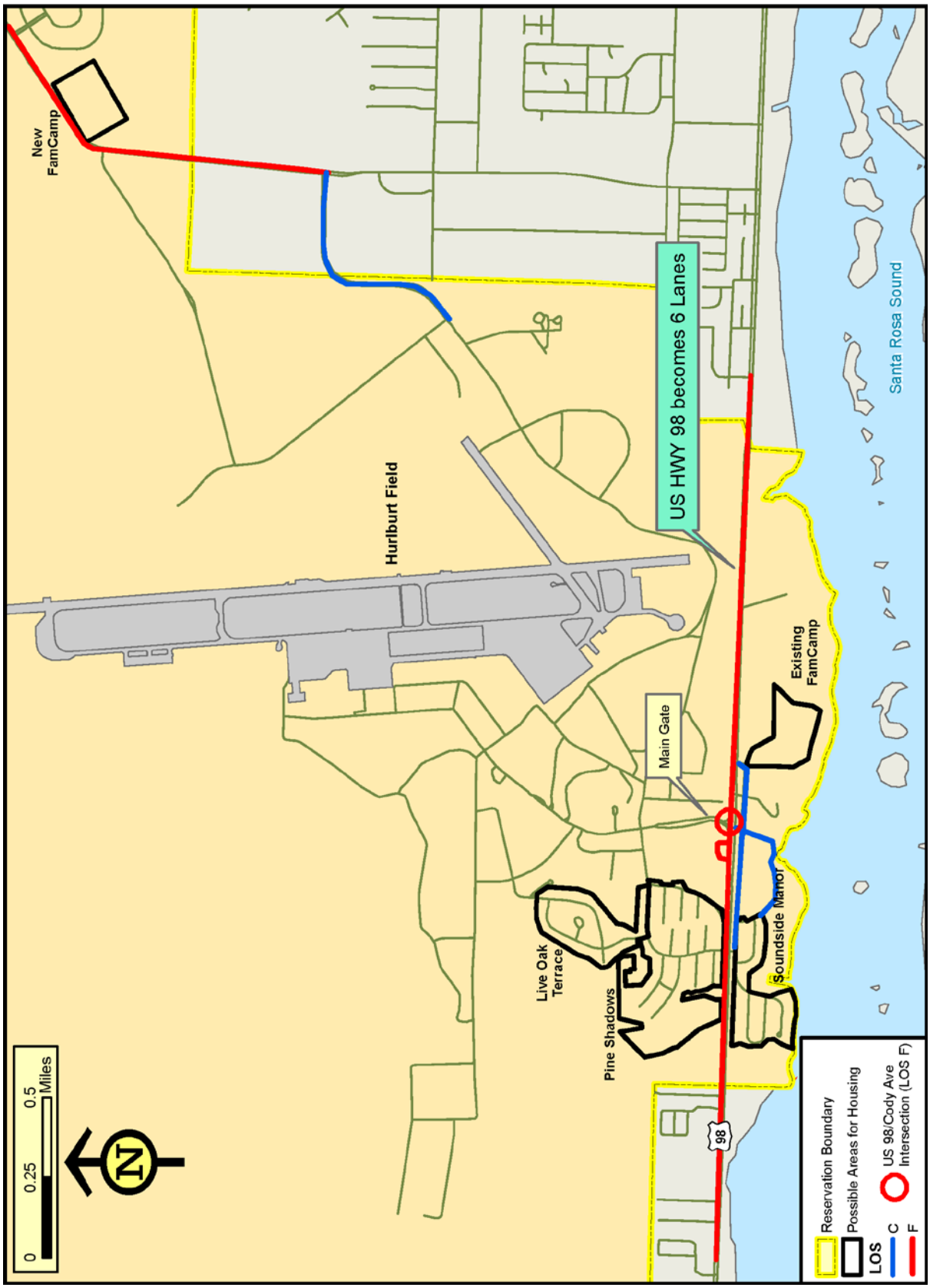

Figure 4-2. Anticipated LOS on Roadways Impacted by Proposed Action (near Hurlburt) – 2022

- All new transportation infrastructure associated with the new housing would be designed and developed in accordance with the U.S. Department of Transportation (USDOT), the FDOT, and current engineering practice requirements to ensure traffic safety.
- Design internal local and collector roadways to current engineering standards.
- Investigate all new and existing road entrances impacted by new development to determine if the use of signals or other intersection improvements are warranted.
- Investigate any existing collector roadway impacted by new development to determine if roadway improvements are warranted. Based on the results of those investigations, implement improvements for new and existing roadways to mitigate the impacts of the new development.
- Management actions to minimize traffic build-up at the Eglin AFB and Hurlburt Field gates include establishing additional lanes or gates, the use of tandem processing in the peak AM hour, and staggered start times for shifts at the base.
- Traffic congestion within housing area roadway systems could be reduced and safety would be enhanced through the provision of adequate parking off roadways, pedestrian walkways, and designing local access roads to terminate at a collector road in less than 0.5 mile, if possible, and to have those collector roads convey the traffic from the local road system to the arterial road system.
- Provide pedestrian access on one or both sides of the new roadways to schools, parks, shopping areas, and transit shops, and provide sidewalk curb ramps at all crosswalks to accommodate persons with disabilities and pedestrians.
- If possible, it is preferred that all proposed developments should be able to gain access to the existing arterial road system without passing through existing housing areas.

4.1.4 Alternative 1: White Point Area

In this alternative, seven parcels, generally along SR-20 and north and east of Bluewater Bay, would be developed.

Alternative 1 consists of seven parcels that would be expected to access the public road system by using the following roadways:

- Parcel 1: White Point Road to SR-20
- Parcels 2–5: SR-20
- Parcels 6 and 7: Range Road to SR-20

Table 4-1 provides the expected trips by parcel from the expected maximum development of six housing units per acre. The number of trips has been rounded using AASHTO and FDOT standards.

The maximum total number of units to be developed on these parcels is 958. This means the total expected increase in the number of trips on the SR-20 arterial roadway is limited to 8,300 trips per day, or 800 peak hour trips.

Table 4-1. Trip Generation Alternative 1

Parcel	Daily Trips	Peak Hour Trips
Parcel 1	2,300	250
Parcel 2	3,800	400
Parcel 3	2,300	250
Parcel 4	2,600	250
Parcel 5	3,700	350
Parcel 6	1,200	150
Parcel 7	3,200	300

Alternative 1 – Parcel 1

This 49-acre parcel could have the construction of 235 new housing units. This increase in housing units would result in the following:

- Expected increase in trips per day – 2,300
- Expected increase in AM peak hour trips – 150
- Expected increase in PM peak hour trips – 250

Parcel 1 is served by White Point Road to SR-20. SR-20 is connected to Eglin Main Base East Gate by SR-85 and SR-397.

After the intersection of SR-293 with SR-20, the increase in traffic on SR-20 would potentially include additional traffic from Parcels 2, 3, 4, and 5. It would not include significant traffic from Parcels 6 and 7 until the intersection of SR-20 and Range Road, approximately 1 mile west of the intersection of SR-293 and SR-20.

The maximum total number of housing units to be constructed on all seven parcels is 958. Parcel 1 could contain up to 235 new housing units. Parcels 2, 3, 4, and 5 would be limited to a maximum of 723 new housing units. Parcels 6 and 7 could contain up to 456 housing units. Therefore, if Parcels 1, 6, and 7 are fully developed, then Parcels 2, 3, 4, and 5 would have to contain 267 housing units. SR-20 between White Point Road and Range Road could be expected to carry, at a minimum, the traffic generated from 267 housing units on Parcels 2, 3, 4, and 5 plus the traffic from the 235 housing units on Parcel 1. SR-20 between White Point Road and Range Road could be expected to carry, at a maximum, the traffic generated from 723 housing units on Parcels 2, 3, 4, and 5 plus the traffic from the 235 housing units on Parcel 1. That segment of SR-20 is anticipated to be reconstructed from four lanes to six lanes prior to 2017.

The toll booth at the Mid-Bay Bridge is known to negatively impact traffic on SR-293. Parcel 1 is adjacent to this toll collection facility and traffic associated with Parcel 1 would potentially impact and would be impacted by queues associated with the Mid-Bay Bridge toll facility.

The development of Parcel 1 would add additional traffic to SR-293, which has an LOS of F, as well as adding additional traffic to SR-20 on the segment between Rocky Bayou Road, which has an LOS of F. The traffic on SR-20, west of the intersection with Range Road, would be common to all Alternative 1 parcels. Table 4-2 and Table 4-3 compare the anticipated LOS associated with certain sections of roadways affected by Alternative 1, Parcel 1 against the No Action Alternative LOS for 2010, 2017, and 2022.

Table 4-2. LOS Alternative 1, Parcel 1: SR-293 from Parcel 1 to SR-20

No Action 2010 3 lane	No Action 2017 3 lane	No Action 2022 3 lane	Alt 1: P1 2017 3 lane	Alt 1: P1 2022 3 lane
AADT 20,000	AADT 22,500	AADT 24,500	AADT 24,500	AADT 27,000
LOS D	LOS E	LOS F	LOS F	LOS F

AADT = Average Annual Daily Traffic; LOS = Level of Service; P1 = Parcel 1; SR = State Road

Table 4-3. LOS Alternative 1, Parcel 1: SR-20 from SR-293 to Range Road

AADT Level	No Action 2010 4 lane	No Action 2017 6 lane	No Action 2022 6 lane	Alt 1: P1 2017 6 lane	Alt 1: P1 2022 6 lane
Minimum	AADT 32,000	AADT 37,000	AADT 41,000	AADT 41,500	AADT 45,500
	LOS D	LOS C	LOS D	LOS D	LOS D
Maximum	32,000	37,000	41,000	45,500	49,000
	LOS D	LOS C	LOS D	LOS D	LOS D

AADT = Average Annual Daily Traffic; LOS = Level of Service; P1 = Parcel 1; SR = State Road

Alternative 1: Parcel 2

This 86 acre parcel could have the construction of 413 new housing units. This increase in housing units would result in the following:

- Expected increase in trips per day – 3,800
- Expected increase in AM peak hour trips – 300
- Expected increase in PM peak hour trips – 400

This traffic would be served by SR-20, which at this location is a two lane roadway. SR-20 becomes a four-lane roadway approximately three-fourths of a mile to the west. This roadway is currently at LOS B and would be anticipated to be LOS C in 2017 and 2022 with no action.

The total number of housing units to be constructed on all seven Alternative 1 parcels is 958. Parcel 2 would contain up to 413 new housing units and Parcels 3, 4, and 5 would be limited to a maximum of 545 new housing units. Alternative 1 Parcels 6 and 7 could contain up to 456 housing units. Therefore, if Parcels 2, 6, and 7 are fully developed, then Parcels 3, 4, and 5 could not contain more than 89 units. SR-20 between White Point Road and Range Road could be expected to carry, at a minimum, the traffic generated from 502 housing units. SR-20 between White Point Road and Range Road could be expected to carry at a maximum the traffic generated from 545 housing units on Parcels 3, 4, and 5 plus the traffic from the 413 housing units on Parcel 2.

Parcel 2 is not adjacent to SR-20. To provide access to SR-20, either a section of new right of way would be required or a connection would need to be made to one of the adjoining subdivision streets. If an adjoining street is utilized, Live Oak Street would be the shortest route and would have the least impact. However, the residents of Live Oak Street would be impacted by this use. Table 4-4, Table 4-5, and Table 4-6 compare the anticipated LOS associated with certain sections of roadways affected by Alternative 1, Parcel 2 against the No Action Alternative LOS for 2010, 2017, and 2022.

Table 4-4. LOS Alternative 1, Parcel 2: SR-20 from Parcel 2 to Beginning of Four-Lane SR-20

AADT Level	No Action 2010 2 lane	No Action 2017 2 lane	No Action 2022 2 lane	Alt 1: P2 2017 2 lane	Alt 1: P2 2022 2 lane
Minimum	AADT 9,000	AADT 10,000	AADT 11,000	AADT 13,500	AADT 14,500
	LOS C	LOS C	LOS D	LOS D	LOS D
Maximum	9,000	10,000	11,000	18,000	19,000
	LOS C	LOS C	LOS D	LOS F	LOS F

AADT = Average Annual Daily Traffic; LOS = Level of Service; P2 = Parcel 2; SR = State Road

If Parcel 2 is utilized, LOS on the two lane segment of SR-20 will decline. This decline would be acceptable under the minimum condition, but would not be acceptable under the maximum condition. The LOS on any four-lane sections of SR-20 between the two lane and the expected six-lane sections will decline to LOS F. The LOS of the six-lane section will operate at an acceptable LOS.

Table 4-5. LOS Alternative 1, Parcel 2: SR-20 from Beginning of Four-Lane SR-20 to SR-293

AADT Level	No Action 2010 4 lane	No Action 2017 4 lane	No Action 2022 4 lane	Alt 1: P2 2017 4 lane	Alt 1: P2 2022 4 lane
Minimum	AADT 32,000	AADT 35,500	AADT 39,500	AADT 39,500	AADT 43,000
	LOS D	LOS D	LOS F	LOS F	LOS F
Maximum	32,000	37,000	41,000	44,000	47,500
	LOS D	LOS D	LOS F	LOS F	LOS F

AADT = Average Annual Daily Traffic; LOS = Level of Service; P2 = Parcel 2; SR = State Road

Table 4-6. LOS Alternative 1, Parcel 2: SR-20 from SR-293 to Range Road

AADT Level	No Action 2010 4 lane	No Action 2017 6 lane	No Action 2022 6 lane	Alt 1: P2 2017 6 lane	Alt 1: P2 2022 6 lane
Minimum	AADT 32,000	AADT 35,500	AADT 39,500	AADT 39,500	AADT 43,000
	LOS D	LOS C	LOS D	LOS D	LOS D
Maximum	32,000	37,000	41,000	44,000	47,500
	LOS D	LOS C	LOS D	LOS D	LOS D

AADT = Average Annual Daily Traffic; LOS = Level of Service; P2 = Parcel 2; SR = State Road

Alternative 1 – Parcels 3, 4, and 5

Impacts to transportation under Parcels 3, 4, and 5 are similar as those described under Parcel 2, and the potential impacts on transportation would not vary significantly from those presented for Parcel 2. The LOS of affected roadway segments for these parcels will be the same as that shown for Parcel 2 above.

Alternative 1 – Parcel 6

This 25 acre parcel could have the construction of 120 new housing units. This increase in housing units would result in the following:

- Expected increase in trips per day – 1,200
- Expected increase in AM peak hour trips – 90
- Expected increase in PM peak hour trips – 150

Parcel 6 is served by Range Road to SR-20; however, Parcel 6 is not adjacent to Range Road but could reach Range Road through Parcel 7. Range Road connects to SR-20 in a skew tee intersection. SR-20 is connected to Eglin Main Base East Gate by SR-85 and SR-397. Range Road could also include traffic from Parcel 7, but would not include traffic from Parcels 1, 2, 3, 4, and 5. The total number of housing units to be constructed on all 7 Alternative 1 parcels is 958. Parcel 6 would contain up to 120 new housing units. Parcel 7 could also be on Range Road and would contain up to 336 units. Therefore, Range Road could convey the traffic from a minimum of 120 new housing units to a maximum of 456 housing units. No traffic count data is available for Range Road; however, the developed area off of this road is relatively small and the LOS can be estimated to be LOS C. An AADT of 5,000 vehicles per day (VPD) was assumed for a baseline condition. The remaining 502 housing units would need to be developed on Parcels 1, 2, 3, 4, or 5. Table 4-7 compares the anticipated LOS associated with certain sections of roadways affected by Alternative 1, Parcel 6 against the No Action Alternative LOS for 2010, 2017, and 2022. Table 4-8 compares the anticipated LOS for a portion of roadway affected by Alternative 1, Parcels 6 and 7.

It might be possible for Parcel 6 to establish some connection to the existing adjoining subdivision; however it is not clear how such a connection would be made and there would be impacts on the residents of the existing streets.

Table 4-7. LOS Alternative 1, Parcel 6: Range Road from Parcel 6 Entrance on Range Road to SR-20

No Action 2010 2 lane	No Action 2017 2 lane	No Action 2022 2 lane	Alt 1: P6 2017 2 lane	Alt 1: P6 2022 2 lane
AADT 5,000	AADT 5,700	AADT 6,300	AADT 6,900	AADT 7,500
LOS C	LOS C	LOS C	LOS C	LOS C

AADT = Average Annual Daily Traffic; LOS = Level of Service; P6 = Parcel 6; SR = State Road

Table 4-8. LOS Alternative 1, Parcels 6 and 7: Range Road from Parcels 6 and 7 Entrance on Range Road to SR-20

No Action 2010 2 lane	No Action 2017 2 lane	No Action 2022 2 lane	Alt 1: P6 & P7 2017 2 lane	Alt 1: P6 & P7 2022 2 lane
AADT 5,000	AADT 5,700	AADT 6,300	AADT 9,900	AADT 10,500
LOS C	LOS C	LOS C	LOS C	LOS C

AADT = Average Annual Daily Traffic; LOS = Level of Service; P6 = Parcel 6; P7 = Parcel 7; SR = State Road

The intersection of Range Road and SR-20 is likely to be substandard and improvements would likely be needed if Parcel 6 is developed. Range Road would operate at an acceptable LOS.

Alternative 1 – Parcel 7

This 70 acre parcel could have the construction of 336 new housing units. This increase in housing units would result in the following:

- Expected increase in trips per day – 3,200
- Expected increase in AM peak hour trips – 250
- Expected increase in PM peak hour trips – 300

White Point Area Parcel 7 is served by Range Road to SR-20. Range Road connects to SR-20 in a skew tee intersection. SR-20 is connected to Eglin Main Base East Gate by SR-85 and SR-397. Range Road could also include traffic from Parcel 6, but would not include traffic from Parcels 1, 2, 3, 4, and 5. The total number of housing units to be constructed on all seven Alternative 1 Parcels is 958. Parcel 7 would contain up to 336 new housing units. Parcel 6 could also be on Range Road and would contain up to 120 units. Therefore, Range Road could convey the traffic from a minimum of 336 new housing units to a maximum of 456 housing units. No traffic count data is available for Range Road; however, the developed area off of this road is relatively small and the LOS can be estimated to be LOS C. An AADT of 5,000 VPD was assumed for a baseline condition. Table 4-9 compares the anticipated LOS associated with certain sections of roadways affected by Alternative 1, Parcel 7 against the No Action Alternative LOS for 2010, 2017, and 2022. Table 4-10 compares the anticipated LOS for a portion of roadway affected by Alternative 1, Parcels 6 and 7.

Table 4-9. LOS Alternative 1, Parcel 7: Range Road from Parcel 7 Entrance on Range Road to SR-20

No Action 2010 2 lane	No Action 2017 2 lane	No Action 2022 2 lane	Alt 1: P7 2017 2 lane	Alt 1: P7 2022 2 lane
AADT 5,000	AADT 5,700	AADT 6,300	AADT 8,900	AADT 9,500
LOS C	LOS C	LOS C	LOS C	LOS C

AADT = Average Annual Daily Traffic; LOS = Level of Service; P7 = Parcel 7; SR = State Road

Table 4-10. LOS Alternative 1, Parcels 6 and 7: Range Road from Parcel 7 entrance on Range Road to SR-20

No Action 2010 2 lane	No Action 2017 2 lane	No Action 2022 2 lane	Alt 1: P6 & P7 2017 2 lane	Alt 1: P6 & P7 2022 2 lane
AADT 5,000	AADT 5,700	AADT 6,300	AADT 9,900	AADT 10,500
LOS C	LOS C	LOS C	LOS C	LOS C

AADT = Average Annual Daily Traffic; LOS = Level of Service; P6 = Parcel 6; P7 = Parcel 7; SR = State Road

SR-20 will receive the traffic from 958 housing units from this point onward. From Range Road to the intersection of Rocky Bayou Road, SR-20 is expected to be a six-lane divided roadway by 2017. SR-20 between the intersection of Rocky Bayou Road and SR-285 is expected to be a four-lane roadway. After the intersection of SR-285, SR-20 is a six-lane divided roadway to the intersection of SR-85. Between SR-85 and Bayshore Drive, SR-20 is currently a four-lane roadway, but is planned to be a six-lane roadway. The expected LOS impacts to those road segments are listed along with the anticipated LOS for the No Action Alternative in Table 4-11 through Table 4-16.

Table 4-11. LOS Alternative 1, 958 Units on any of Parcels 1, 2, 3, 4, 5, 6, and 7: SR-20 from Range Road to Rocky Bayou Road

No Action 2010 4 lane	No Action 2017 6 lane	No Action 2022 6 lane	Alt 1: P1–P7 2017 6 lane	Alt 1: P1–P7 2022 6 lane
AADT 41,000	AADT 45,500	AADT 50,000	AADT 53,500	AADT 58,500
LOS F	LOS C	LOS C	LOS D	LOS F

AADT = Average Annual Daily Traffic; LOS = Level of Service; P1 = Parcel 1; P7 = Parcel 7; SR = State Road

Table 4-12. LOS Alternative 1, 958 Units on any of Parcels 1, 2, 3, 4, 5, 6, and 7: SR-20 from Rocky Bayou Road to SR-285

No Action 2010 4 lane	No Action 2017 4 lane	No Action 2022 4 lane	Alt 1: P1–P7 2017 4 lane	Alt 1: P1–P7 2022 4 lane
AADT 40,000	AADT 44,000	AADT 49,000	AADT 48,000	AADT 53,000
LOS F	LOS F	LOS F	LOS F	LOS F

AADT = Average Annual Daily Traffic; LOS = Level of Service; P1 = Parcel 1; P7 = Parcel 7; SR = State Road

Table 4-13. LOS Alternative 1, 958 Units on any of Parcels 1, 2, 3, 4, 5, 6, and 7: SR-20 from SR-285 to SR-85

No Action 2010 6 lane	No Action 2017 6 lane	No Action 2022 6 lane	Alt 1: P1–P7 2017 6 lane	Alt 1: P1–P7 2022 6 lane
AADT 49,500	AADT 54,500	AADT 60,000	AADT 58,500	AADT 64,000
LOS D	LOS D	LOS F	LOS F	LOS F

AADT = Average Annual Daily Traffic; LOS = Level of Service; P1 = Parcel 1; P7 = Parcel 7; SR = State Road

Table 4-14. LOS Alternative 1, 958 Units on any of Parcels 1, 2, 3, 4, 5, 6, and 7: SR-20 (SR-85) from SR-85 to Government Ave

No Action 2010 4 lane	No Action 2017 6 lane	No Action 2022 6 lane	Alt 1: P1–P7 2017 6 lane	Alt 1: P1–P7 2022 6 lane
AADT 54,000	AADT 60,000	AADT 66,000	AADT 64,000	AADT 70,000
LOS F	LOS F	LOS F	LOS F	LOS F

AADT = Average Annual Daily Traffic; LOS = Level of Service; P1 = Parcel 1; P7 = Parcel 7; SR = State Road

Table 4-15. LOS Alternative 1, 958 Units on any of Parcels 1, 2, 3, 4, 5, 6, and 7: John Sims Parkway from Government Ave to CR-190

No Action 2010 4 lane	No Action 2017 4 lane	No Action 2022 4 lane	Alt 1: P1–P7 2017 4 lane	Alt 1: P1–P7 2022 4 lane
AADT 23,000	AADT 25,000	AADT 28,000	AADT 29,000	AADT 32,000
LOS B	LOS B	LOS B	LOS B	LOS C

AADT = Average Annual Daily Traffic; LOS = Level of Service; P1 = Parcel 1; P7 = Parcel 7; SR = State Road

Table 4-16. LOS Alternative 1, 958 Units on any of Parcels 1, 2, 3, 4, 5, 6, and 7: John Sims Parkway from CR-190 to Eglin East Gate

No Action 2010 4 lane	No Action 2017 4 lane	No Action 2022 4 lane	Alt 1: P1–P7 2017 4 lane	Alt 1: P1–P7 2022 4 lane
AADT 19,500	AADT 21,500	AADT 24,000	AADT 25,500	AADT 28,000
LOS B	LOS B	LOS B	LOS B	LOS B

AADT = Average Annual Daily Traffic; LOS = Level of Service; P1 = Parcel 1; P7 = Parcel 7; SR = State Road

Figure 4-3 and Figure 4-4 illustrate the anticipated LOS on roadways impacted by Alternative 1 for 2017 and 2022. The LOS shown is the worst case result of development of any Alternative 1 White Point Area parcel.

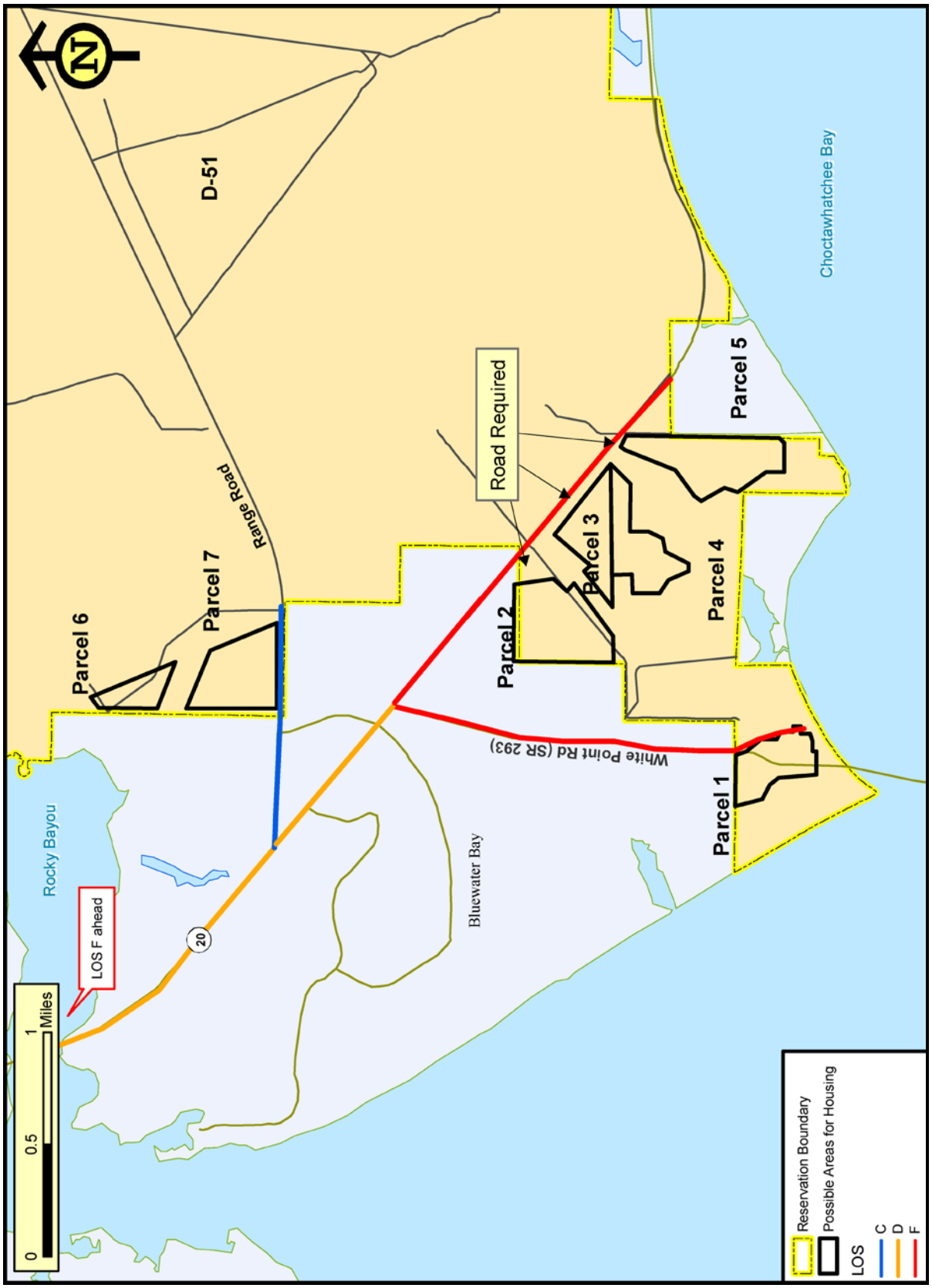

Figure 4-3. Anticipated LOS on Roadways Impacted by Alternative 1: White Point Area – 2017

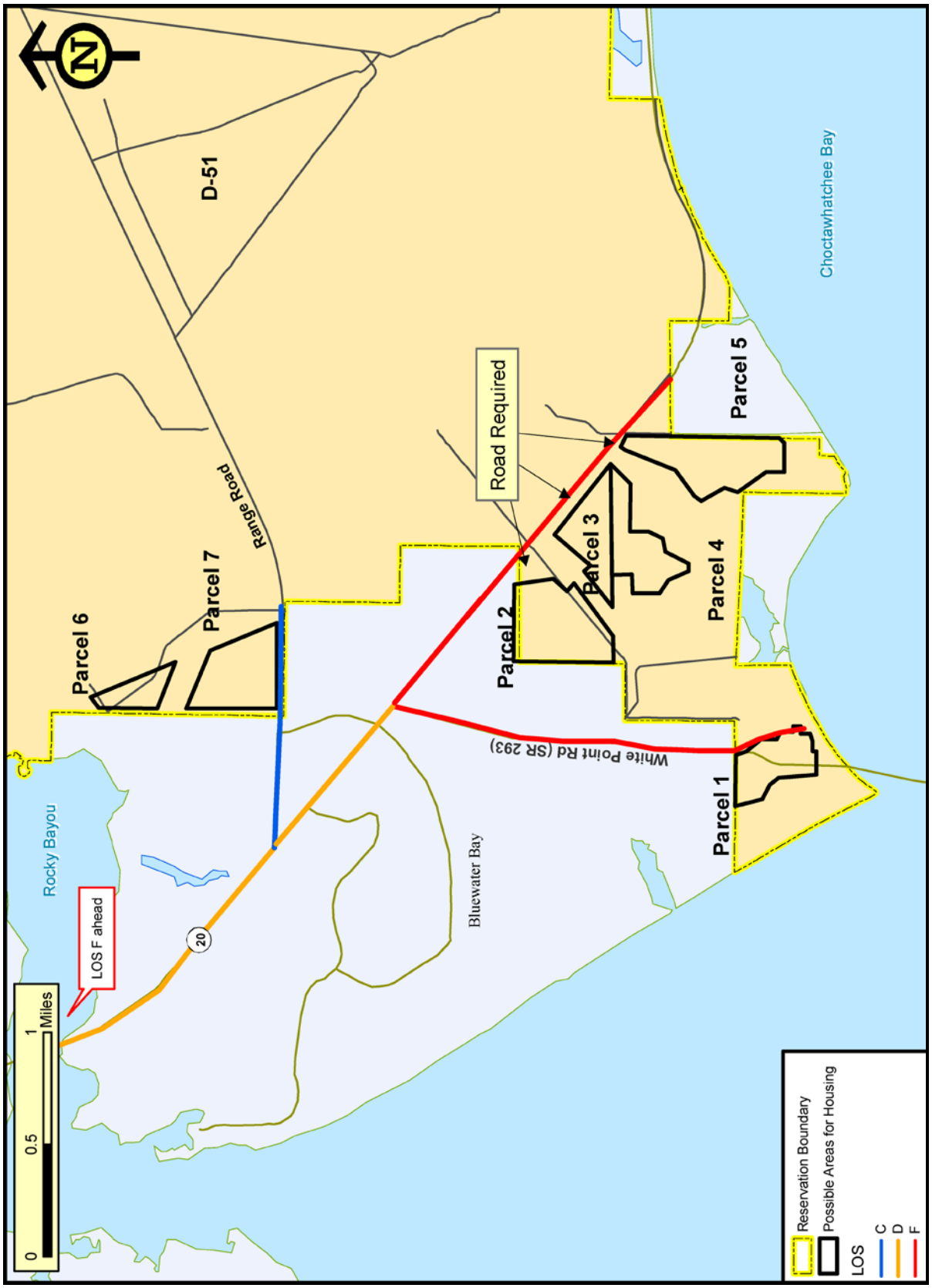

Figure 4-4. Anticipated LOS on Roadways Impacted by Alternative 1: White Point Area – 2022

Regulatory Requirements/Mitigations for Alternative 1

Alternative 1 would have the least impact on transportation if Parcels 6 and 7 are fully developed first. Parcel 1 would have the most negative impacts on transportation. There would be some slight advantage to developing the most westward of Parcels 2, 3, 4, and 5 first. Any traffic from this alternative will impact some sections of SR-20 and SR-85 that are anticipated to have LOS F. No non-discretionary mitigations have been identified for Alternative 1. The following are discretionary mitigations for Alternative 1.

Parcel 1

- Design any new entrance to SR-293 as far from the Mid-Bay Bridge toll collection facility as possible.

Parcel 2

- Provide a new entrance on SR-20.
- Do not add traffic to the adjoining local streets.

Parcels 3 and 4

- Provide a new entrance on SR-20; combine this entrance between both parcels if appropriate.

Parcel 5

- Provide a new entrance on SR-20; do not add traffic to the adjoining local streets.

Parcels 6 and 7

- Provide a new entrance on Range Road; combine this entrance between both parcels if appropriate.
- Do not add traffic to the adjoining local streets.
- Study Range Road and evaluate if road upgrades are warranted.
- Study the intersection of Range Road and SR-20 and evaluate if intersection upgrades are warranted.
- Utilization of Parcel 6 will require the construction of a bridge.

4.1.5 Alternative 2: Eglin Main Base/Valparaiso

Alternative 2 consists of 11 parcels within the Eglin Main Base boundary. Parcel 1 is a single, very large parcel located in the southwest corner of the base near the Eglin West main ACP. Parcels 2 through 8 are located in the northwest corner of the base near the Eglin East main ACP. Parcel 9 is the eastern approximately two-thirds of the area

between Lower Memorial Lake and Ben's Lake (212 acres). Parcel 10 is the western approximately one-third of the area between Lower Memorial Lake and Ben's Lake (94 acres). Parcel 11 consists of 6 acres north and west of Ben's Lake. Parcels 1, 9, 10, and 11 are the areas that will have existing housing demolition. Parcels 1, 9, 10, and 11 are referred to as the Eglin Main parcels. Parcels 2, 3, 4, 5, 6, 7, and 8 are referred to as the Valparaiso parcels.Alternative 2 consists of 11 parcels, 9 of which would be expected to access the public road system by using on-base roadways to the Eglin East and West main ACPs. In light of the Construct Perimeter Fence project, Parcels 1 and 11 would use the West main ACP to access the Main Base, so increasing the traffic there.

- Parcel 1: Eglin Boulevard to West main ACP. After the Construct Perimeter Fence project, this parcel would be outside of the base-controlled perimeter fencing..
- Parcels 2–7: Access would be to internal Eglin AFB roadways to Eglin Boulevard.
- Parcel 8: Access would be to John Sims Parkway outside of the Eglin East Gate. This parcel would be outside of the base controlled perimeter fencing.
- Parcel 9: Chinquapin Drive and Cherokee Road to Hatchee Road to Eglin Boulevard.
- Parcel 10: Ben's Lake Road and Choctaw Road to Hatchee Road to Eglin Boulevard.
- Parcel 11: Eglin Boulevard to West main ACP. After the Construct Perimeter Fence project, this parcel would be outside of the base controlled perimeter fencing.

Table 4-17 provides the expected trips by parcel, based on an expected maximum development of six housing units per acre. The number of trips has been rounded using AASHTO and FDOT standards.

Table 4-17. Trip Generation Alternative 2

Parcel	Daily Trips	Peak Hour Trips
Parcel 1	8,300	800
Parcel 2	1,400	150
Parcel 3	450	50
Parcel 4	800	90
Parcel 5	150	10
Parcel 6	250	20
Parcel 7	400	40
Parcel 8	1,000	100
Parcel 9	8,300	800
Parcel 10	4,200	400
Parcel 11	350	40

The maximum total number of units to be developed on these parcels is 958. Alternative 2 would not be expected to have significant impacts to existing base roads,

base access gates, or the public roadways. There would be some impacts from the development of Parcel 8, because this parcel would be anticipated to add additional traffic onto existing off-base collector roads and some additional traffic to the Eglin Main Base East ACP. All other parcels would not be expected to have significant impacts to existing base roadways. Parcels 1, 9, 10 and 11 would be able to reuse existing roadways and roadway entrances onto Eglin Boulevard.

Figure 4-5 and Figure 4-6 illustrate the anticipated LOS on roadways impacted by Alternative 2 for 2017 and 2022. The LOS shown is the worst case result of development of any Alternative 2 parcel.

Alternative 2 – Parcel 1

Up to 958 new housing units could be built on this parcel, which would be a net increase of 104 housing units for the Eglin Main area, resulting in the following net increase in trips for the Eglin Main area:

- Expected increase in trips per day – 1,100
- Expected increase in AM peak hour trips – 70
- Expected increase in PM peak hour trips – 100

It is possible that up to 418 housing units could be constructed on Parcels 2 through 8. Up to 958 housing units could be developed on Parcels 8, 9, and 10. Therefore, if the Valparaiso parcels are developed and only Parcel 1 is utilized for the remaining parcels, up to 540 housing units can be constructed on Parcel 1. If this number of housing units is constructed on this parcel, there would be a net reduction of 307 housing units for the Eglin Main area.

Parcel 1 is currently served by several existing collector roads that provide access to Eglin Boulevard. In light of the Construct Perimeter Fence project, Parcel 1 would use the West main ACP to access the Main Base, so increasing the traffic there. The adjoining streets, Boatner Road, Hatchee Road, and Memorial Trail, are currently (in 2010) operating at an LOS of C and primarily serve as collector streets to route traffic to Eglin Boulevard (LOS B in 2010). The traffic on the adjoining streets may experience a decrease that would improve LOS or an increase that would not change the LOS to LOS E or F. Eglin Boulevard is connected to both the East and West Eglin ACPs. The impact on the ACPs would vary depending on the location of replacement housing.

Figure 4-5. Anticipated LOS on Roadways Impacted by Alternative 2: Eglin Main Base/Valparaiso Area - 2017

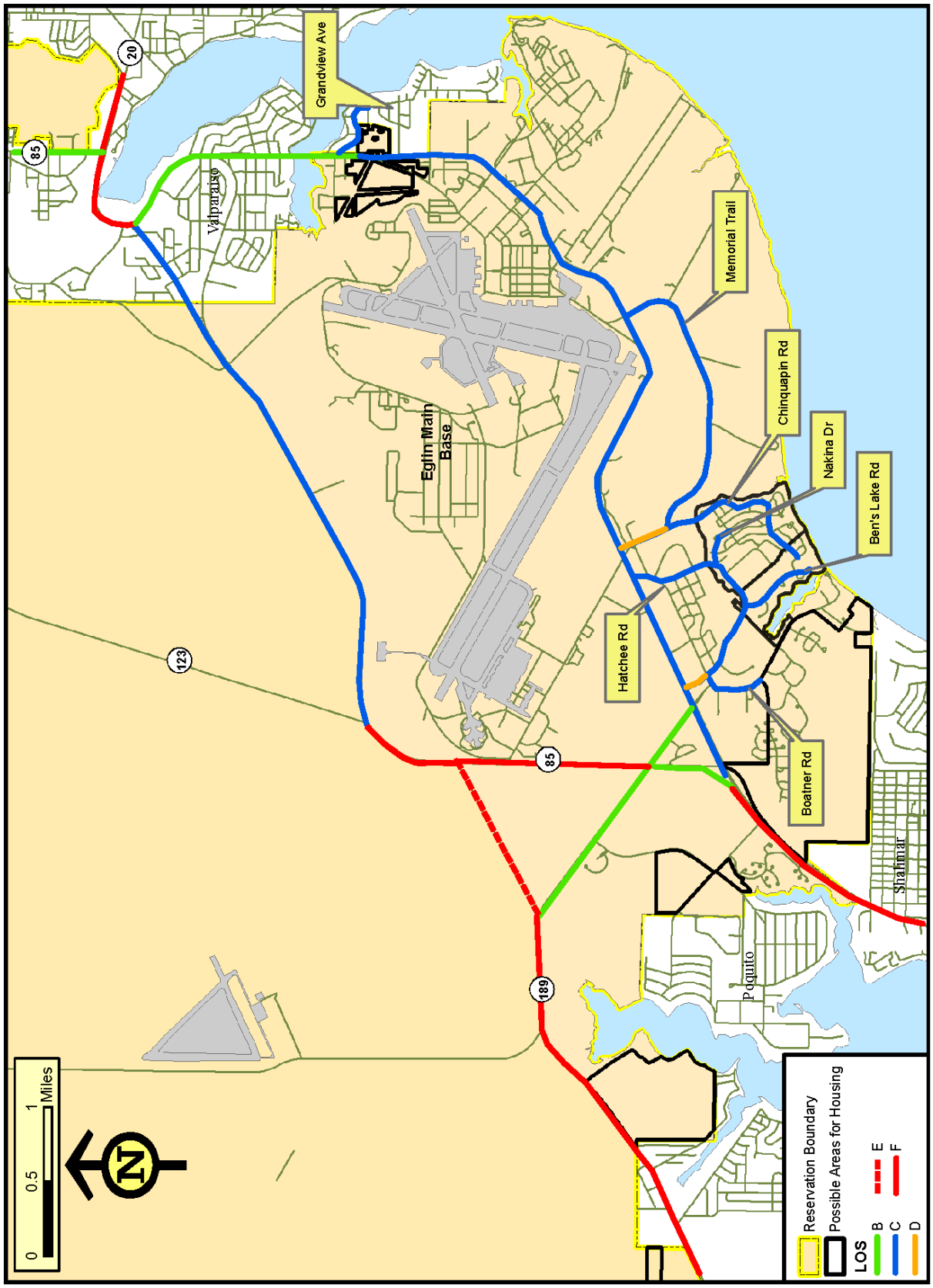

Figure 4-6. Anticipated LOS on Roadways Impacted by Alternative 2: Eglin Main Base/Valparaiso Area - 2022

The proposed changes for Parcel 1 range from a reduction of 304 housing units to an increase of 104 housing units, which would not significantly change LOS on the adjoining roadways. Traffic volumes were taken from the Eglin AFB Transportation Master Plan and a growth rate for on-base traffic of 0.5 percent was assumed.

Table 4-18 compares the anticipated LOS associated with Eglin Boulevard where it adjoins the Alternative 2, Parcel 1 against the respective No Action Alternative LOS for 2010, 2017, and 2022.

Table 4-19 assumes a worse case traffic load on each of the possible existing base roadways impacted by this alternative. The LOS of each roadway has been calculated assuming that the anticipated traffic from 104 additional housing units have been added to the expected traffic on each roadway. Alternative 2, Parcel 1 would be expected to have no significant impacts to existing base roads, existing base access gates, or the public roadways.

Table 4-18. LOS Alternative 2, Parcel 1: Eglin Boulevard Adjoining Parcel 1

AADT Level	No Action 2010 4 lane	No Action 2017 4 lane	No Action 2022 4 lane	Alt 2: P1 2017 4 lane	Alt 2: P1 2022 4 lane
Minimum	AADT 13,300	AADT 13,700	AADT 14,100	AADT 10,800	AADT 11,200
	LOS B	LOS B	LOS B	LOS B	LOS B
Maximum	13,300	13,700	14,100	14,800	15,200
	LOS B	LOS B	LOS B	LOS B	LOS B

AADT = Average Annual Daily Traffic; LOS = Level of Service; P1 = Parcel 1

Table 4-19. LOS Alternative 2, Parcel 1: Collectors to Eglin Boulevard – 104 Housing Unit Increase on Each Road

Roadway	No Action 2010 2 lane	No Action 2017 2 lane	No Action 2022 2 lane	Alt 2: P1 2017 2 lane	Alt 2: P1 2022 2 lane
Boatner Road	AADT 5,700	AADT 5,900	AADT 6,100	AADT 7,000	AADT 7,200
	LOS C	LOS C	LOS C	LOS C	LOS C
Hatchee Road West of Choctaw	2,200	2,300	2,300	3,400	3,400
	LOS C	LOS C	LOS C	LOS C	LOS C
Hatchee Road East of Choctaw	1,200	1,300	1,300	2,300	2,400
	LOS C	LOS C	LOS C	LOS C	LOS C
Chinquapin Drive	3,000	3,100	3,200	4,200	4,300
	LOS C	LOS C	LOS C	LOS C	LOS C

AADT = Average Annual Daily Traffic; LOS = Level of Service; P1 = Parcel 1

Alternative 2 – Parcels 2, 3, 4, 5, 6, and 7

The transportation impacts of all of these parcels would be similar. All of these parcels are currently undeveloped. The traffic generated by housing units on these parcels would either access existing Eglin Base roadways or would develop a common collector road system to convey traffic to Eglin Boulevard west of the Eglin Main East Gate. The

number of housing units to be developed would range from a minimum of 0 to a maximum of 317. Table 4-20 presents the anticipated LOS of Alternative 2, Parcels 2–7 for Eglin Boulevard from Eglin's East Gate to Seventh Street.

Table 4-20. LOS Alternative 2, Parcels 2, 3, 4, 5, 6, and 7: Eglin Boulevard from Eglin East Gate to 7th Street

AADT Level	No Action 2010 4 lane	No Action 2017 4 lane	No Action 2022 4 lane	Alt 2: P2–7 2017 4 lane	Alt 2: P2–7 2022 4 lane
Minimum	AADT 9,600	AADT 9,900	AADT 10,200	AADT 9,900	AADT 10,200
	LOS B	LOS B	LOS B	LOS B	LOS B
Maximum	9,600	9,900	10,200	12,900	13,200
	LOS B	LOS B	LOS B	LOS B	LOS B

AADT = Average Annual Daily Traffic; LOS = Level of Service; P= Parcel

Parcels 2, 3, 4, 5, 6, and 7 would have no significant impacts to existing base roads, base access gates, or the public roadways. Development of these parcels would require the development of new collector road systems and likely the construction of a new entrance on Eglin Boulevard.

Alternative 2 – Parcel 8

This parcel is currently undeveloped and is outside of the Eglin AFB controlled perimeter. The traffic generated by housing units on this parcel would either access via existing Florida Avenue and then to SR-397 near the Eglin Main East Gate. The number of housing units to be developed would range from a minimum of 0 to a maximum of 101. Table 4-21 presents the anticipated LOS of Alternative 2, Parcels 2–7 for John Sims Parkway from Eglin's East Gate to South Bayshore Drive.

Table 4-21. LOS Alternative 2, Parcel 8: John Sims Parkway from Eglin Main Base East Gate to South Bayshore Drive

AADT Level	No Action 2010 4 lane	No Action 2017 4 lane	No Action 2022 4 lane	Alt 2: P2-7 2017 4 lane	Alt 2: P2-7 2022 4 lane
Minimum	AADT 18,500	AADT 20,500	AADT 22,500	AADT 20,500	AADT 22,500
	LOS B	LOS B	LOS B	LOS B	LOS B
Maximum	18,500	20,500	22,500	23,500	25,500
	LOS B	LOS B	LOS B	LOS B	LOS B

AADT = Average Annual Daily Traffic; LOS = Level of Service; P = Parcel

Development of this parcel would require the development of a new collector road system and possibly the construction of a new entrance on Eglin Boulevard. If Florida Avenue is used as part of the collector road system there would be a reduction in the LOS of this roadway and its intersection with Eglin. The AM traffic leaving Florida Avenue from Alternative 2 Parcel 8 would be making two left turning movements. This entrance would be within a half mile of the Eglin Main East Gate and could have some

impact on the operation of the Eglin Main East Gate. This impact would not be significant.

Alternative 2 – Parcel 9

Up to 958 new housing units could be built on this parcel, which would be a net increase of 107 housing units, resulting in the following net increase in trips for the Eglin Main area:

- Expected increase in trips per day – 1,100
- Expected increase in AM peak hour trips – 70
- Expected increase in PM peak hour trips – 100

It is possible that up to 418 housing units could be constructed on Parcels 2 through 8. Up to 958 housing units could be developed on Parcels 8, 9, and 10. Therefore, if the Valparaiso parcels are developed and only Parcel 9 is utilized for the remaining parcels, a minimum of 540 housing units can be constructed on Parcel 9.

Parcel 9 is served by several existing collector roads that provide access to Eglin Boulevard. The adjoining streets, Cherokee Trail and Chinquapin Road, are currently (in 2010) operating at an LOS of C or D and primarily serve as collector streets to route traffic to Eglin Boulevard (LOS B in 2010). The traffic on the adjoining streets may experience a decrease that would improve LOS or an increase that would not change the LOS to LOS E or F. Eglin Boulevard is connected to both the East and West Eglin ACPs. The impact on the ACPs would vary depending on the location of replacement housing; however, impacts to traffic at the Base gates would not be expected.

Alternative 2 – Parcel 10

Up to 453 new housing units could be built on this parcel, which would be a net decrease of 394 housing units for the Eglin Main area. For the entire Eglin Main area, there would be the following net increase in trips:

- Expected increase in trips per day – 1,100
- Expected increase in AM peak hour trips – 70
- Expected increase in PM peak hour trips – 100

It is possible that up to 418 housing units could be constructed on Parcels 2 through 8. Therefore, up to 453 housing units can be constructed on Parcel 10.

Parcel 10 is served by several existing collector roads that provide access to Eglin Boulevard. The adjoining streets, Ben's Lake Road and Hatchee Road, are currently (in

2010) operating at an LOS of C and primarily serve as collector streets to route traffic to Eglin Boulevard (LOS B in 2010). The traffic on the adjoining streets may experience a decrease that would improve LOS or an increase that would not change the LOS to LOS E or F. Eglin Boulevard is connected to both the East and West Eglin ACPs. The impact on the ACPs would vary depending on the location of replacement housing; however, impacts to traffic at the Base gates would not be expected.

Alternative 2 – Parcel 11

Up to 30 new housing units could be built on this parcel, which would be a net decrease of 807 housing units for the Eglin Main area. For the entire Eglin Main area, there would be the following net increase in trips:

- Expected increase in trips per day – 1,100
- Expected increase in AM peak hour trips – 70
- Expected increase in PM peak hour trips – 100

It is possible that up to 418 housing units could be constructed on Parcels 2 through 8. Therefore, up to 30 housing units can be constructed on Parcel 9. Parcel 11 is served by several existing collector roads that currently provide access to Eglin Boulevard. The adjoining streets, Boatner Road and Hatchee Road, are currently (in 2010) operating at an LOS of C and currently primarily serve as collector streets to route traffic to Eglin Boulevard (LOS B in 2010). The traffic on the adjoining streets may experience a decrease that would improve LOS or an increase that would not change the LOS to LOS E or F. Eglin Boulevard is connected to both the East and West Eglin ACPs. The impact on the ACPs would vary depending on the location of replacement housing; however, impacts to traffic at the Base gates would be minimal. In light of the Construct Perimeter Fence project, Parcel 11 would use the West main ACP to access the Main Base.

Regulatory Requirements/Mitigations for Alternative 2

Alternative 2 would have the least impact on transportation if Parcel 1, 9, 10, or 11 are developed; existing streets and entrances on Eglin Boulevard could be utilized. Parcel 8 would have the most negative impacts on transportation. There would be some slight advantage to developing the most southwardly of Parcels 2, 3, 4, 5, 6, and 7 before Parcel 8. No non-discretionary mitigations have been identified for Alternative 2. The following are discretionary mitigations for Alternative 2:

Parcel 1

- Reuse the existing street system and the existing entrances onto Eglin Boulevard to the extent possible.

Parcels 2 through 7

- Consider reusing Old Highway 10 as a collector street.
- Provide a combined collector road system common to all utilized portions of Parcels 2, 3, 4, 5, 6, and 7 to a new or upgraded entrance on Eglin Boulevard.

Parcel 8

- Provide a new entrance on Grandview or Florida Avenue.
- Do not add traffic to the adjoining local streets.
- Study Grandview or Florida Avenue and evaluate if road upgrades are warranted.
- Study the intersection of Grandview Avenue and SR-190 and evaluate if intersection upgrades are warranted.

Parcels 9 through 11

- Reuse the existing street system and the existing entrances onto Eglin Boulevard to the extent possible.

4.1.6 Subalternative 2a: Eglin Main Base (Preferred Alternative)

Transportation impacts of Subalternative 2a are nearly identical to those identified for Parcel 1 under Alternative 2. The construction of an additional 35 units on Eglin Main Base as opposed to Camp Rudder would not result in any appreciable increase in impacts over those described for Alternative 1, Parcel 1, and potential increases in trips to and from Camp Rudder for working personnel would have minimal impact on local roadways; the net amount of trips would actually be less than those identified under the commonalities section for Camp Rudder. Therefore, Subalternative 2a would have no significant impacts to existing base roads, base access gates, or the public roadways around the Eglin Main Base or Camp Rudder area.

4.1.7 Alternative 3: North Fort Walton Beach Area

In this alternative, five parcels generally along SR-189 and west of the Eglin Main Base West Gate would be developed.

Alternative 3 consists of five parcels that would be expected to access the public road system by using the following roadways:

- Parcel 1: new entrance to SR-189
- Parcels 2 and 3: Roberts Boulevard to SR-189
- Parcels 4 and 5: Sunset Lane to Poquito Road to SR-189

Table 4-22 provides the expected trips by parcel from the expected maximum development of six housing units per acre. The number of trips has been rounded using AASHTO and FDOT standards.

Table 4-22. Trip Generation Alternative 3

Parcel	Daily Trips	Peak Hour Trips
Parcel 1	8,300	800
Parcel 2	3,300	350
Parcel 3	2,400	250
Parcel 4	3,300	350
Parcel 5	600	60

The maximum total number of units to be developed on these parcels is 958. This means the total expected increase on trips on the SR-189 arterial roadway is limited to 8,300 trips per day or 800 peak hour trips.

Alternative 3 – Parcel 1

This parcel could have the construction of a maximum of 958 new housing units resulting in:

- Expected increase in trips per day – 8,300
- Expected increase in AM peak hour trips – 700
- Expected increase in PM peak hour trips – 800

Parcel 1 would require the construction of internal collection roads and a new entrance onto SR-189. SR-189 connects to Eglin Main Base West Gate. If Parcels 4 and 5 were fully developed, they would contain a maximum of 399 housing units, therefore, the minimum number of housing units Parcels 1, 2, and 3 could contain would be 559 units. The transportation impacts of these 559 housing units would be similar on SR-189 adjoining Parcel 1 if the 559 units were constructed on either Parcel 1, 2, or 3, or any combination thereof. Table 4-23 through Table 4-26 compare the anticipated LOS associated with certain sections of roadways affected by Alternative 3, Parcel 1 against the respective No Action Alternative LOS for 2010, 2017, and 2022.

Table 4-23. LOS Alternative 3, Parcel 1: SR-189 from Mooney Road to Entrance for Parcel 1

AADT Level	No Action 2010 4 lane	No Action 2017 4 lane	No Action 2022 4 lane	Alt 3: P1 2017 4 lane	Alt 3: P1 2022 4 lane
Minimum	AADT 30,500	AADT 35,000	AADT 38,500	AADT 40,000	AADT 44,000
	LOS D	LOS E	LOS F	LOS F	LOS F
Maximum	30,500	35,000	38,500	43,500	47,000
	LOS D	LOS E	LOS F	LOS F	LOS F

AADT = Average Annual Daily Traffic; LOS = Level of Service; P1 = Parcel 1; SR = State Road

Table 4-24. LOS Alternative 3, Parcel 1: SR-189 from Entrance for Parcel 1 to General Bond Boulevard

AADT Level	No Action 2010 4 lane	No Action 2017 4 lane	No Action 2022 4 lane	Alt 3: P1 2017 4 lane	Alt 3: P1 2022 4 lane
Minimum	AADT 33,500	AADT 38,000	AADT 42,000	AADT 43,500	AADT 47,500
	LOS E	LOS F	LOS F	LOS F	LOS F
Maximum	33,500	38,000	42,000	46,500	50,500
	LOS E	LOS F	LOS F	LOS F	LOS F

AADT = Average Annual Daily Traffic; LOS = Level of Service; P1 = Parcel 1; SR = State Road

Table 4-25. LOS Alternative 3, Parcel 1: SR-189 from General Bond Boulevard to SR-85

AADT Level	No Action 2010 4 lane	No Action 2017 4 lane	No Action 2022 4 lane	Alt 3: P1 2017 4 lane	Alt 3: P1 2022 4 lane
Minimum	AADT 21,500	AADT 24,500	AADT 27,000	AADT 29,500	AADT 32,000
	LOS C	LOS C	LOS D	LOS D	LOS D
Maximum	21,500	24,500	27,000	33,000	35,500
	LOS C	LOS C	LOS D	LOS E	LOS F

AADT = Average Annual Daily Traffic; LOS = Level of Service; P1 = Parcel 1; SR = State Road

Table 4-26. LOS Alternative 3, Parcel 1: SR-189 from SR-85 to Eglin AFB Main West Gate

AADT Level	No Action 2010 4 lane	No Action 2017 4 lane	No Action 2022 4 lane	Alt 3: P1 2017 4 lane	Alt 3: P1 2022 4 lane
Minimum	AADT 17,000	AADT 20,000	AADT 22,000	AADT 25,000	AADT 27,000
	LOS C	LOS C	LOS C	LOS C	LOS D
Maximum	17,000	20,000	22,000	28,000	30,000
	LOS C	LOS C	LOS C	LOS D	LOS D

AADT = Average Annual Daily Traffic; LOS = Level of Service; P1 = Parcel 1; SR = State Road

The development of Parcel 1 would add additional traffic to SR-189, which has an LOS of F, from the future entrance of Parcel 1 onto SR-189 to General Bond Boulevard. SR-189 between General Bond Boulevard and SR-85 becomes LOS F under the maximum development of Parcel 1, by the year 2022.

Alternative 3 – Parcels 2 and 3

These adjoining parcels will be discussed together as the transportation impacts will be similar.

- Parcel 2 could have the construction of a maximum of 355 new housing units.
  - Expected increase in trips per day – 3,300
  - Expected increase in AM peak hour trips – 250

  - Expected increase in PM peak hour trips – 350
- Parcel 3 could have the construction of a maximum of 245 new housing units.
  - Expected increase in trips per day – 2,400
  - Expected increase in AM peak hour trips – 200
  - Expected increase in PM peak hour trips – 250

Parcels 2 and 3 would require the construction of internal collection roads and new entrances onto Roberts Boulevard. Roberts Boulevard has an existing entrance onto SR-189, which connects to the Eglin AFB West Gate.

Parcels 2 and 3 are served by Roberts Boulevard to SR-189. Roberts Boulevard connects to SR-189 in a nonsignalized intersection. This intersection does have a short left-turn lane from the eastbound lanes. Roberts Boulevard would not include traffic from Parcels 1, 4, and 5. The total number of housing units to be constructed on all five Alternative 3 parcels is 958. Parcel 2 could contain up to 355 new housing units and Parcel 3 could contain up to 245 new housing units. Therefore, Roberts Boulevard could convey the traffic from a minimum of 245 new housing units to a maximum of 600 housing units. No traffic count data is available for Roberts Boulevard; however, the developed area off of this road is relatively small and the road appears to primarily provide access to a water treatment plant. An AADT of 5,000 VPD was assumed for a baseline condition. The remaining 358 housing units would need to be developed on Parcels 1, 4, or 5. Table 4-27 compares the anticipated LOS associated with certain sections of roadways affected by Alternative 3, Parcels 2 and 3 with the respective No Action Alternative LOS for 2010, 2017, and 2022.

Table 4-27. LOS Alternative 3, Parcel 2 and 3: Roberts Boulevard to SR-189

AADT Level	No Action 2010 2 lane	No Action 2017 2 lane	No Action 2022 2 lane	Alt 3: P2 & P3 2017 2 lane	Alt 3: P2 & P3 2022 2 lane
Minimum – Parcel 3 Only	AADT 5,200	AADT 6,000	AADT 6,600	AADT 8,400	AADT 9,000
	LOS C	LOS C	LOS C	LOS C	LOS C
Maximum – Parcels 2 & 3	5,200	6,000	6,600	11,400	12,000
	LOS C	LOS C	LOS C	LOS D	LOS D

AADT = Average Annual Daily Traffic; LOS = Level of Service; P = Parcel; SR = State Road

Transportation impacts to SR-189 from the development of Parcels 2 and 3 would be similar to the impacts of the development of Parcel 1.

Alternative 3 – Parcels 4 and 5

These adjoining parcels will be discussed together as the transportation impacts will be similar.

- Parcel 4 could have the construction of a maximum of 346 new housing units.
  - Expected increase in trips per day – 3,300
  - Expected increase in AM peak hour trips – 250
  - Expected increase in PM peak hour trips – 350
- Parcel 5 could have the construction of a maximum of 53 new housing units.
  - Expected increase in trips per day – 600
  - Expected increase in AM peak hour trips – 50
  - Expected increase in PM peak hour trips – 60
  - Parcels 4 and 5 would require the construction of internal collection roads and new entrances onto Poplar Road (Parcel 5) or Poquito Road (Parcel 4). Poplar Road and Poquito Road are on the same segment of the same roadway, with the name of the roadway changing at Sunset Road. It would be possible to have the internal collector systems to connect to Sunset Road. Traffic generated by housing units on Parcels 4 and 5 would be expected to travel northward to the existing nonsignalized intersection with SR-189. SR-189 connects to the Eglin AFB West Gate.

Table 4-28 through Table 4-30 compare the anticipated LOS associated with certain sections of roadways affected by Alternative 3, Parcels 4 and 5 with the respective No Action Alternative LOS for 2010, 2017, and 2022.

Table 4-28. LOS Alternative 3, Parcels 4 and 5: Poquito Road from Sunset Lane to SR-189

AADT Level	No Action 2010 2 lane	No Action 2017 2 lane	No Action 2022 2 lane	Alt 3: P24& P5 2017 2 lane	Alt 3: P4 & P5 2022 2 lane
Minimum	AADT 10,000	AADT 11,500	AADT 12,700	AADT 12,100	AADT 13,300
	LOS C	LOS D	LOS D	LOS D	LOS D
Maximum	10,000	11,500	12,700	15,200	16,400
	LOS C	LOS D	LOS D	LOS E	LOS E

AADT = Average Annual Daily Traffic; LOS = Level of Service; P = Parcel; SR = State Road

Table 4-29. LOS Alternative 3, Parcels 4 and 5: SR-189 from Poquito Road to SR-85

AADT Level	No Action 2010 4 lane	No Action 2017 4 lane	No Action 2022 4 lane	Alt 3: P24& P5 2017 4 lane	Alt 3: P24& P5 2022 4 lane
Minimum	AADT 21,500	AADT 24,500	AADT 27,000	AADT 29,500	AADT 32,000
	LOS C	LOS C	LOS D	LOS D	LOS D
Maximum	21,500	24,500	27,000	33,000	35,500
	LOS C	LOS C	LOS D	LOS E	LOS F

AADT = Average Annual Daily Traffic; LOS = Level of Service; P = Parcel; SR = State Road

Poquito Road would not include traffic from Parcels 1, 2, and 3. The total number of housing units to be constructed on all five Alternative 3 parcels is 958. Parcel 4 could contain up to 346 new housing units and Parcel 5 could contain up to 53 new housing units. Therefore, Poquito Road could convey the traffic from a minimum of 53 new housing units to a maximum of 399 housing units. An existing traffic volume of 10,000 VPD was assumed for Poquito Road. Sunset Lane could potentially be a second transportation route between these parcels and Eglin AFB. However there is currently no left turn movement allowed from Sunset Lane onto SR-85, so while Sunset Lane would allow entrance into the parcels from westbound SR-85 or from eastbound SR-85, the only exiting movement allowed is westbound.

Table 4-30. LOS Alternative 3, Parcel 1: SR-189 from SR-85 to Eglin AFB Main West Gate

AADT Level	No Action 2010 4 lane	No Action 2017 4 lane	No Action 2022 4 lane	Alt 3: P1 2017 4 lane	Alt 3: P1 2022 4 lane
Minimum	AADT 17,000	AADT 20,000	AADT 22,000	AADT 25,000	AADT 27,000
	LOS C	LOS C	LOS C	LOS C	LOS D
Maximum	17,000	20,000	22,000	28,000	30,000
	LOS C	LOS C	LOS C	LOS D	LOS D

AADT = Average Annual Daily Traffic; LOS = Level of Service; P = Parcel; SR = State Road

Figure 4-7 and Figure 4-8 illustrate the anticipated LOS on roadways impacted by Alternative 3 for 2017 and 2022. The LOS shown is the worst case result of development of any Alternative 3 parcel.

Regulatory Requirements/Mitigations for Alternative 3

Alternative 3 would have the least impact on transportation if Parcels 4 and 5 are fully developed first. Parcels 1, 2, and 3 would have the most negative impacts on transportation as they increase traffic on roadway segments operating at an LOS of F. There would be some slight advantage to developing the most eastwardly of Parcels 1, 2, and 3 first. No non-discretionary mitigations have been identified for Alternative 3. Discretionary mitigations for Alternative 3 are provided after the following figures.

Parcel 1

- Provide a new entrance on SR-189.
- Do not add traffic to the adjoining local streets.

Parcels 2 and 3

- Provide a new entrance on Roberts Boulevard; if possible, coordinate this entrance with both parcels by making the entrances to the parcels align.
- Do not add traffic to the adjoining local streets.
- Study Roberts Boulevard and evaluate if road upgrades are warranted. Improvements are likely to be required.
- Study the intersection of Roberts Boulevard and SR-189 and evaluate if intersection upgrades are warranted. Improvements are likely to be required.

Parcel 4

- Provide a new entrance on Poquito Road.
- Do not add traffic to the adjoining local streets.
- Study Poquito Road and evaluate if road upgrades are warranted.
- Study the intersection of Poquito Road and SR-189 and evaluate if intersection upgrades are warranted.

Parcel 5

- Provide a new entrance on Poplar Road or Sunset Lane.
- Do not add traffic to the adjoining local streets.
- Study Poplar Road or Sunset Lane and evaluate if road upgrades are warranted.
- Study the intersection of Poquito Road and SR-189 and evaluate if intersection upgrades are warranted.
- Study the intersection of Poplar Road/Poquito Road and Sunset Lane and evaluate if intersection upgrades are warranted.

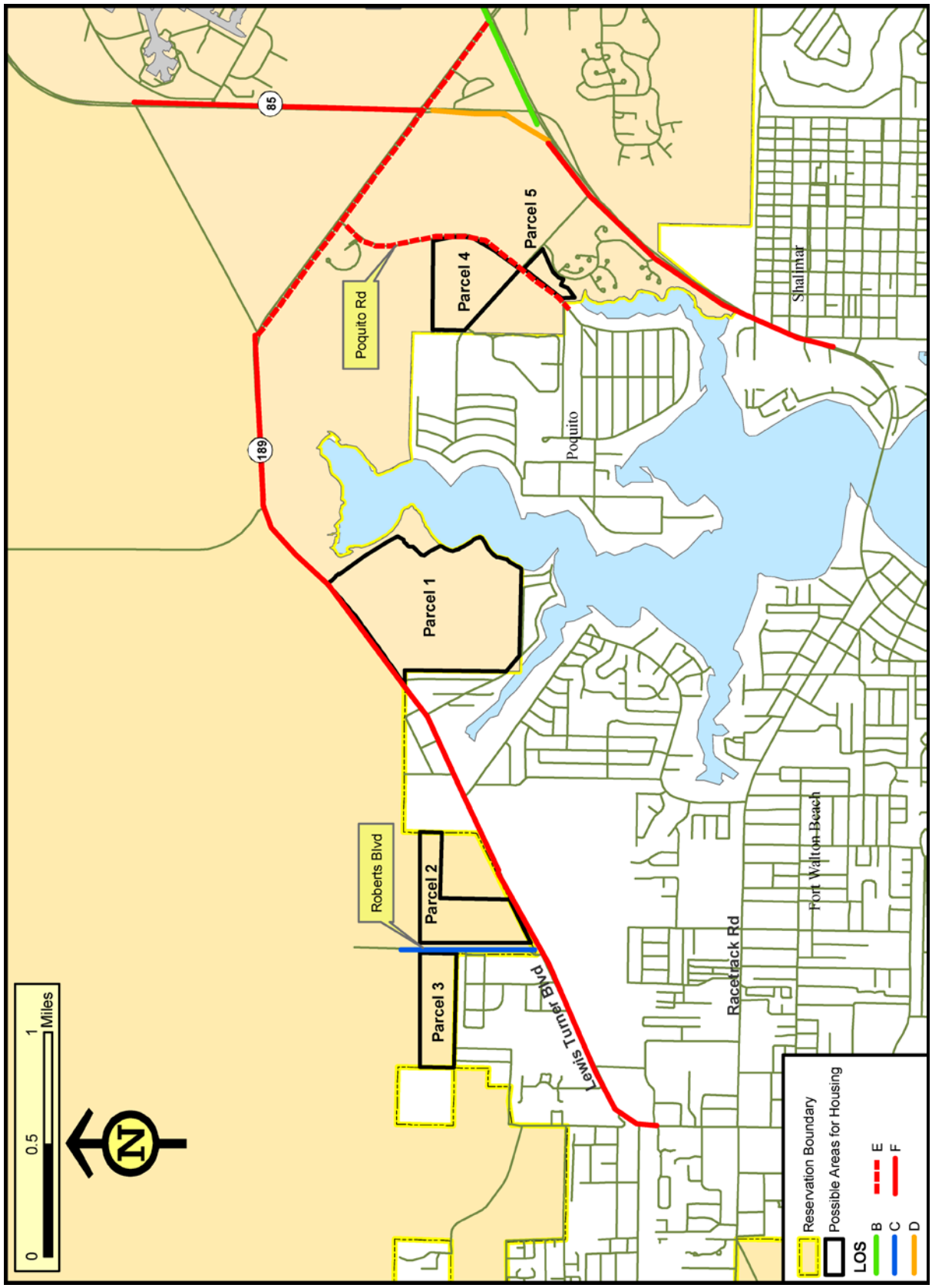

Figure 4-7. Anticipated LOS on Roadways Impacted by Alternative 3: North Fort Walton Beach Area - 2017

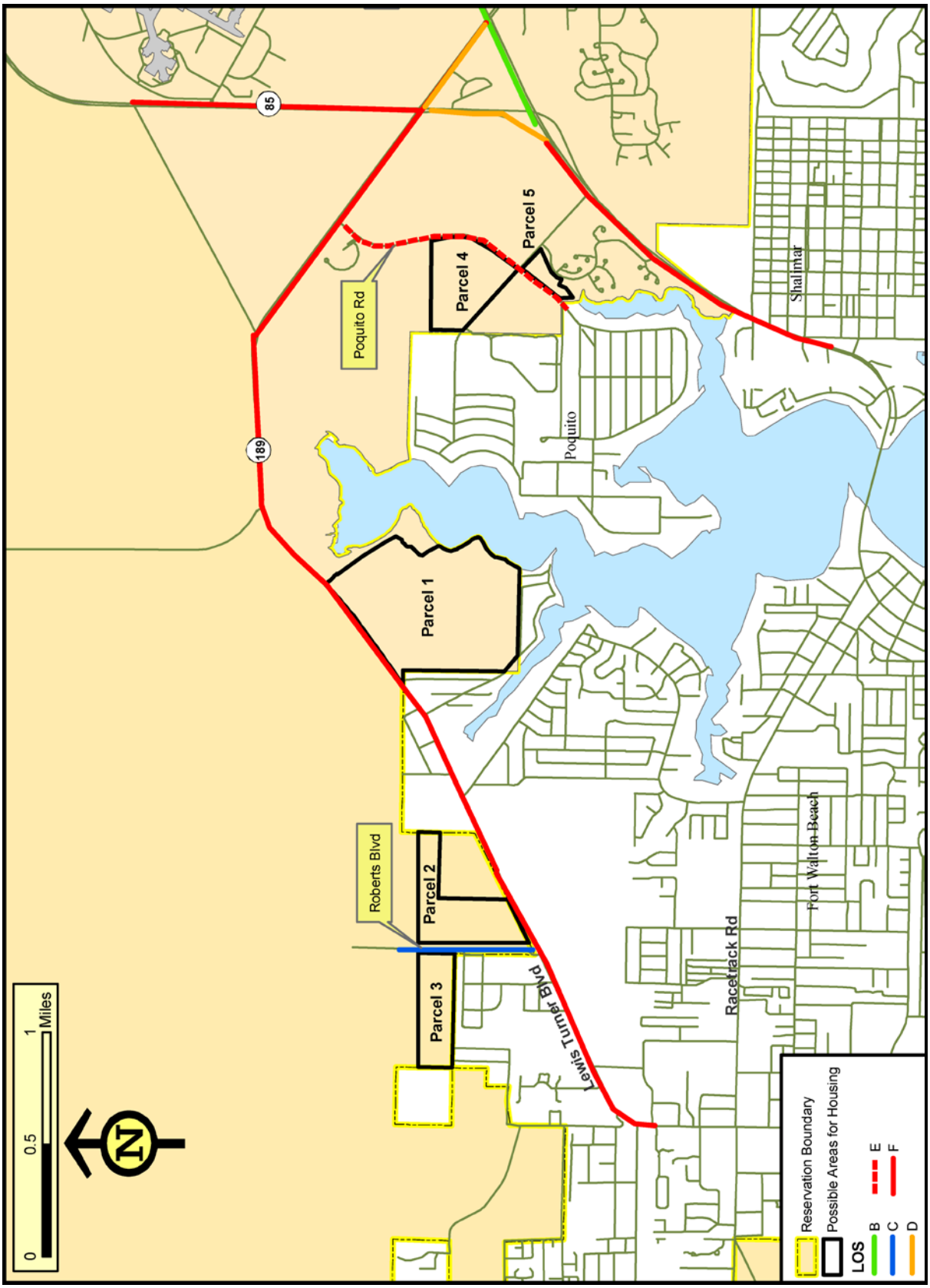

Figure 4-8. Anticipated LOS on Roadways Impacted by Alternative 3: North Fort Walton Beach Area - 2022

4.1.8 Alternative 4: Mix Alternative

The impact of the Proposed Action on base access gates and roadways providing access to those gates varies depending on the alternative/parcel selected. Alternative 1 parcels would increase traffic primarily on the Eglin Main Base East Gate. Alternative 2 parcels would not have significant impacts on the Eglin Main Base Gates; however, Alternative 2, Parcel 8 would have some impact on the Eglin Main East Gate, albeit insignificant. Subalternative 2a would have no impacts on the Eglin Main Base gates. Alternative 3 parcels would increase traffic primarily on the Eglin Main Base West Gate.

Table 4-31 shows the expected traffic entering and exiting Eglin AFB and Hurlburt Field. The placement of 958 housing units off-base would be anticipated to generate 270 additional peak hour trips in the AM peak hour and 500 additional peak hour trips in the PM peak hour. The addition of approximately 122 additional housing units of off-base housing at Hurlburt Field would be anticipated to generate 25 additional peak hour trips in the AM peak hour and 90 additional peak hour trips in the PM peak hour.

Table 4-31. Expected Traffic Entering and Exiting Eglin AFB and Hurlburt Field

Alternative	Peak Hour Trips			
	AM Entering	AM Exiting	PM Entering	PM Exiting
Eglin AFB				
Baseline	4,100	550	950	2,800
Alternative 1 or 3	4,300	600	1,100	3,200
Hurlburt Field				
Baseline	3,200	450	800	2,400
Alternative 1 or 3	3,200	450	900	2,400

The delay for access at the gates depends on the time required for security procedures. The capacity of a security gate depends on many factors, including the speed and efficiency of the guard attendant, the ID procedure required, and the efficiency with which the motorists can produce the required ID. The capacity of an access gate is directly related to the type of processing or Force Protection Condition being used. Checkpoint design capacity is approximately:

- 300–400 vehicles per hour per lane for single ID check.
- 450–600 vehicles per hour per lane for ID check using tandem processing.

The Eglin AFB Transportation Master Plan (HDR, 2008) includes a study of vehicle processing times that is within the range reported above. That document anticipates that the proposed BRAC actions will include a new gate for a new cantonment area. The Hurlburt Field Transportation Plan (Black & Veatch, 2008) indicates that the capacity of the Hurlburt Field gates may be inadequate.

Table 4-32 shows the potential impacts to gate capacity at Eglin AFB and Hurlburt Field under Alternative 1.

Parcels under Alternatives 1 and 3 would increase the traffic at the access gates and may warrant additional increases in gate capacity. It would likely be desirable to mitigate the impact on the base access gates. Possible management actions include:

- Addition of additional lanes or gates.
- Use of tandem processing in the peak AM hour.
- Use of staggered start times for shifts at the base.

Storm evacuations involve the entire region and are not easily measured on the scale of the proposed project, and the proposed project does not impact the overall population of the region.

Table 4-32. Evaluation of Gate Capacity Impacts under Peak AM Traffic Entering the Installation

Alternative	VPH Expected	Total Lanes Available	ID Check VPH	ID Check Tandem Processing
Baseline Eglin	4,100	9	Capacity maximum expected 3,600 vehicles per hour (VPH); increases in gate capacity or other management actions may be needed.	Capacity maximum expected 5,600 VPH; capacity is adequate
Alternatives 1 and 3 Eglin	4,300	9	Capacity maximum expected 3,600 VPH; increases in gate capacity or other management actions may be needed.	Capacity maximum expected 5,600 VPH; capacity is adequate.
Baseline Hurlburt	3,200	5	Capacity maximum expected 2,000 VPH; gate capacity would be adequate.	Capacity maximum expected 3,000 VPH; gate capacity would not be adequate. Three ID checkers per lane would increase capacity 20 percent to 3,600 which would be adequate.
Alternatives 1 and 3 Hurlburt	3,200	5	Capacity maximum expected 2,000 VPH; gate capacity would be adequate.	Capacity maximum expected 3,000 VPH; gate capacity would not be adequate. Three ID checkers per lane would increase capacity 20 percent to 3,600 which would be adequate.

VHP = vehicles per hour

The selection of portions of any of the previously discussed alternatives will have impacts similar to the impacts discussed above on a parcel by parcel basis. Since the mix alternative entails a potential combination of several different parcels, the impacts would vary depending on which parcels are chosen and the extent to which they are developed. Each individual parcel was analyzed previously under its respective alternative. Table 4-33 provides a graphical summary of the impacts by parcel for transportation. Impacts are generally summarized using a color code as follows:

- Green – No beneficial or adverse impact
- Yellow – Potential for adverse impact, but not significant; LOS changes, but remains LOS D or better; or increases in peak hour traffic is less than 100 vehicles per hour.
- Red – Potential for significant adverse impacts; LOS changes to LOS E or worse or additional traffic is expected on roadway segments anticipated to be LOS F.

In general, throughout the document impact analysis considers the implementation of non-discretionary mitigations as part of the Proposed Action or alternatives, because these mitigations would be required to be implemented by permit or other regulatory requirements. Impacts therefore consider non-discretionary mitigations as part of the analysis. Discretionary mitigations are identified after analysis to identify mitigations that can be implemented to minimize or offset any potential impacts identified as a result of analysis. The effect of these discretionary mitigations was then described in terms of how each mitigation would affect the outcome of impact analysis. Therefore, the color coding in Table 4-33 reflects the degree of impact without consideration of discretionary mitigations so that a true assessment of the impacts associated with the Proposed Action and alternatives can be made. For the Transportation resource area, the Air Force has not identified any non-discretionary mitigations for the Proposed Action or alternatives.

Specific discretionary and non-discretionary impacts for each alternative and associated parcel are described previously in the related Transportation analysis sections.

This color coded chart provides a summary of impacts so that the decision maker can easily see how a potential combination of parcels may affect transportation at each respective parcel. A combined summary table is provided in the "Summary of Impacts" section at the end of Chapter 5 that shows each individual parcel's potential impacts under each resource area.

Table 4-33. Alternative 4 – Transportation Summary

Alternative/Parcel	Transportation
Commonalities	
Eglin Main Base	
Hurlburt Field	
Camp Rudder	
Camp Pinchot	
Poquito Bayou	
Alternative 1	
Parcel 1	
Parcel 2	
Parcel 3	
Parcel 4	
Parcel 5	
Parcel 6	**
Parcel 7	**
Alternative 2	
Parcel 1	
Parcel 2	
Parcel 3	
Parcel 4	
Parcel 5	
Parcel 6	
Parcel 7	
Parcel 8	
Parcel 9	
Parcel 10	
Parcel 11	
Subalternative 2a (Preferred Alternative)	
Parcel 1	
Alternative 3	
Parcel 1	
Parcel 2	
Parcel 3	
Parcel 4	
Parcel 5	
No Action*	

Green = No beneficial or adverse impact; Yellow = Potential for adverse impact, but not significant; Red = Potential for significant adverse impacts

*Note: The impacts associated with the No Action Alternative include potential impacts associated with implementation of projects identified under the No Action Alternative in Chapter 2, Section 2.3.1 as they relate to the region of influence for that particular resource.

** Alternative 1 Parcels 6 and 7 would have the least impact to transportation of all the parcels. However, traffic from these Parcels would still impact roadways expected to have an LOS of F in 2017 and 2022.

4.2 SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE

This section discusses potential impacts to socioeconomic resources, including environmental justice and special risks to children.

4.2.1 Analysis Methodology

Socioeconomics is driven by human activities, particularly the demand for goods and services, as well as the employment and income that supplies individuals with the means to fulfill the demand. Because the MHPI does not include a change in base personnel at Eglin AFB or Hurlburt Field, the only economic effect would be generated from the construction dollars spent by the Air Force in the local economy. In order to assess the magnitude of the economic effects, primarily the change in employment caused by the additional construction spending, was compared to the overall capabilities of the regional economy to determine the effects and capability of the local economy to absorb the effects. In addition, the change in the amount of available housing in the regional housing market was assessed to determine the capabilities of the local housing market to absorb any additional military personnel that may relocate off-base or military personnel that may return to on-base housing at the completion of the MHPI.

The analytical methods applied to Environmental Justice are in accordance with the *Guide for Environmental Justice with the Environmental Impact Analysis Process* (U.S. Air Force, 1997). Minority, low-income, and youth populations are defined in the guidance as follows:

- *Minority Population*: Blacks, American Indians, Eskimos, Aleuts, Asians, Pacific Islanders, and persons of Hispanic or Latino origin of any race.
- *Low-Income Population*: Persons living below the poverty level, based on a 2000 equivalent annual income of $17,603 for a family of four persons.
- *Youth Population*: Children under the age of 18 years.

The context is necessary to understand if environmental impacts would disproportionately affect minority, low-income, or youth populations. An appropriate basis for comparison is the community of comparison (COC), where COC is defined as the smallest governmental or geopolitical unit that encompasses the impact footprint for each resource, which in this case is a county.

Data from the 2000 census of population on race, ethnicity, poverty status, and age were collected at the block level (the smallest geographical unit for which this census data are available) for the three affected counties in the region of influence (ROI): Okaloosa County, Santa Rosa County, and Walton County. (Data from the 2010 census is not currently available for the state of Florida at the census tract level.) In addition, general

demographic profiles for the three counties, the state of Florida and the United States were compiled to provide analytical context.

The percent minority and low-income populations in the affected census tracts were compared to the percent minority and low-income populations in the overall COC. Census blocks with a higher percentage of minority or low-income population than for the county as a whole were identified as communities of concern. An affected census tract that has a minority or low-income percentage greater than the state average was presumed to be high, even if the encompassing COC exhibited a higher minority or low-income percentage than the affected tract. If the percent minority and low-income populations in an affected census tract were less than the corresponding percentages in the COC overall, then no disproportionate impacts were presumed to occur on minority or low-income populations.

Children possess different physiologic and behavioral characteristics than adults which makes them more vulnerable to environmental effects. Case studies show that children have become ill or have died from environmental exposures that either did not affect adults or affected them less severely. Among the characteristics leading to children's sensitivity are their limited diets, dividing cells, differentiating organs and organ systems, slow or absent detoxification mechanisms, long life expectancy with the resulting ability to express damage with delayed consequences, and the severe metabolic demands of growth (Johnson, et al., 1999). Children are more sensitive than the adult population to some environmental effects, such as airborne asbestos and lead-based paint (LBP) exposures from demolition, safety with regard to equipment, and the potential for trips, falls, and traps within structures being renovated or demolished. With regard to special risks to children, census blocks exhibiting a higher-than-average youth population were identified, as along with the location of area schools and childcare centers.

Adverse impacts would occur if the Proposed Action or alternatives change the local economy such that some individuals lose employment or income, or if the population or distribution of population changes such that services cannot meet the demands of the local population. For special risks to children and environmental justice, adverse impacts would occur if impacts are identified that disproportionately impact children or populations of concern. Significant adverse impacts would occur if the action impacts the local economy such that services, including housing, would be inadequate to meet the demand from the population or a loss of employment or income would impact a significant portion of the population.

4.2.2 No Action Alternative

Under the No Action Alternative, all activities as identified in Section 2.3.1 are expected to occur and are included in the No Action Alternative analysis. As active bases, Eglin AFB and Hurlburt Field have personnel adjustments and construction activities

occurring continuously. The projects included in Section 2.3.1 contribute to these bases continued economic influence in the ROI through additional employment, sources of income, and additional economic activity. Construction expenditures from Eglin AFB in fiscal year 2007 were over $76 million. Extensive construction expenditures are expected as described actions are implemented. Personnel additions would also contribute to the socioeconomic indicators discussed in Section 3.2. It is anticipated that most of the personnel coming into the area as a result of the BRAC actions or any of the other personnel additions would be dependent on the local housing market for their homes.

4.2.3 Proposed Action Commonalities

For the purposes of socioeconomic analysis, impact assessment focuses on the commonalities that would occur under each alternative. Since socioeconomic resources are dispersed throughout an entire community, the potential impacts from the MHPI would not be localized based on individual parcels. Instead, the MHPI as a whole would have an effect on the economic activity within the three-county ROI, particularly in Okaloosa County. Therefore, the analysis of potential socioeconomic impacts focuses on all of the actions included in the Proposed Action commonalities such as the demolition of housing at Eglin Main Base housing areas, Poquito Bayou housing areas, Camp Pinchot housing area, as well as the demolition and construction proposed in the Camp Rudder housing area and Hurlburt Field housing areas. The only localized effects would be on school capacity because the housing areas' locations in relation to school attendance zones would determine where many of the students in privatized housing would attend.

Implementation of the MHPI would generate jobs and additional income in the ROI over the term of the project, which is expected to be five years. The first year of the housing privatization project would have the most activity, with the developer expected to demolish over 1.5 million square feet and construct over 1.9 million square feet including the housing units, impervious surfaces, and recreational and support facilities. The following four years of the project would maintain a steady rate of demolition of approximately 500,000 square feet and construction of over 730,709 square feet per year.

The construction spending would contribute directly to the employment in construction and other related industries. Project-related expenditures on materials and services, as well as the personal spending by direct workers, provide an added stimulus to the regional economy. In order to fulfill the demand for these materials and services, local and regional businesses must increase their output, which would result in additional economic activity and attendant employment.

Information on construction spending for the relocation of the Hurlburt Field FAMCAMP area has not been determined at this time. The construction and

improvements involved would consist primarily of installing a utility infrastructure to support the sewer, water, and electrical requirements of the FAMCAMP, and connecting those facilities to the existing base utility infrastructure. Land clearing and some road improvements would also be necessary. Additional employment may result from these improvements; however, it is expected that the housing privatization construction spending and related economic activity would have a larger effect on the local economy than the construction related to the FAMCAMP area relocation.

Indications in the region and in the state of Florida are that there is excess inventory in the housing market as a result of the bust in the housing market and national recession which began in 2007. Housing sales have decreased and available units are staying on the market longer than in previous years, in spite of declining prices and values. As a result of the excess housing inventory, housing construction has also slowed. The MHPI project and the related construction spending would have a beneficial effect in that it would provide a new source of construction employment at a time when the private housing market is slow. Also, given the recent levels of activity, it is expected that the construction industry is capable of meeting the demand for labor associated with the construction of the required housing units. Between 2007 and 2008, the construction industry in the Fort Walton Beach-Crestview-Destin metropolitan area lost over 800 jobs. In the state of Florida as a whole, claimants for unemployment insurance increased from 1,912 in 2006 to 3,963 claimants in 2007 at the beginning of the collapse of the housing bubble. It is anticipated that due to the housing downturn and subsequent layoffs in the construction industry, there is additional capacity in the local construction industry that the developer could utilize. Any influx of workers as a result of the increased activity from the MHPI would be negligible and would be mostly daily and/or weekly commuters. Therefore, no substantial in-migration of workers (and their dependents) over the five-year construction time period directly attributable to implementation of this project is expected.

Scoping commenters expressed concern on the expense involved in demolishing and constructing new houses in lieu of renovating existing housing. Construction and demolition (C&D) expenditures have not been determined. The developer leasing the housing areas from the Air Force would be responsible for the expenditures including the cost of installing and connecting utilities to city or county services, representing an investment by the developer. These expenditures would be determined once the site and design plans have been finalized. Once the developer completes the housing units, military members would rent the privatized housing units for the cost of their housing allowance.

Population

In the absence of in-migration of workers to the ROI associated with construction of the project housing units over the five-year time period, no change in local or regional population is anticipated.

The tri-county ROI functions as an integrated economic region within which family members typically commute some distance from home to work. For example, active duty military members and civilian employees assigned to both Hurlburt Field and Eglin AFB currently commute daily from residences in the northern section of Okaloosa County, especially in the vicinity of Crestview; from western Walton County; and from Santa Rosa County. At the conclusion of the MHPI project, there would be 64 additional on-base housing units as compared to the number of units conveyed to the developer. There is the potential that these additional housing units would bring families out of off-base private sector housing. However, the number of families potentially leaving the local housing market would be offset by the large number of families moving into the area as a result of the personnel changes occurring at Eglin AFB and Hurlburt Field.

Schools

As mentioned in Section 3.2, students are allocated to individual schools based on the attendance zones in which the students live. The potential for redistributing students of active duty military members to schools different from the schools they currently attend is addressed under each alternative based on the school attendance zones and the parcels proposed for the housing areas. For each alternative, an estimate was made of the school attendance zones in closest proximity to the proposed parcels for construction of the new MHPI housing areas. Based on these estimates, the individual schools potentially affected by a redistribution of students are identified.

Under the Proposed Action, the C&D proposed to occur at Hurlburt Field would take place. The housing parcels proposed for Hurlburt Field are located along US-98 on the southwestern portion of Hurlburt Field. Since the proposed housing parcel is located in the same location as Hurlburt Field's existing housing, it is not expected that a redistribution of students would occur in the individual schools. Students living in the proposed housing area on Hurlburt Field would have the opportunity to attend the same schools as they currently attend. These schools include: Edwins Elementary School, Eglin Elementary School, Florosa Elementary School, Kenwood Elementary School, Mary Esther Elementary School, Wright Elementary School, Bruner Middle School, and Fort Walton Beach High School. Based on the average class sizes within these schools provided in Table 3-14 in Section 3.2, these schools are in compliance with the maximum class sizes mandated by the state. In addition, under the Proposed Action, the housing area at Camp Rudder would be demolished and new housing units constructed. As the new housing is directly replacing existing housing in terms of geographic area, it is not expected that students living in the Camp Rudder would be redistributed to other schools.

Housing

Given the capacity in the construction industry, it is not expected that workers (and their dependents) would migrate into the ROI as a result of implementation of the project. Therefore, the additional construction employment would not have an effect on local and regional housing markets.

During the construction phases, military members residing in on-base housing may be required to relocate to off-base housing as the on-base housing units are demolished and constructed. For each year of the construction, the demand for off-base housing from these military members may increase. Rental housing, in particular could experience the largest increase in demand, if military members choose or are not able to relocate to on-base housing at the end of the construction. A total of up to 1,413 housing units would be conveyed to a developer; up to 1,477 units would be constructed at Eglin AFB and Hurlburt Field. The RFQ requires the developer to maintain a minimum of 1,283 units at Eglin and Hurlburt and gradually increase to the 1,477 number during the development process; as a result, approximately 194 units would be unavailable for every year of the project. Therefore, approximately 194 military households that were previously housed on-base would require private sector housing in each year. Depending on the preferences of the military households, some of these households may return to on-base housing following the completion of that phase of construction while other households may choose to remain in off-base housing.

As noted previously, the housing market in the region has slowed considerably as a result of the burst in the housing bubble and the nationwide recession. There is a potential surplus inventory in the housing market indicated by declining prices and a decrease in housing sales. Typically, excess inventory in the housing market would allow military members broader choices in housing units. Also, some homeowners that are unable to sell their houses could choose to rent instead, increasing the inventory in the rental market. The recent downturn in the local housing market has led to a decline in housing prices thus making many housing units more affordable for military members. It is expected then that the regional housing market would be able to accommodate the shift of the military households' on- and off-base housing.

Concerns were expressed by scoping commenters that the privatized housing units would compete with the private sector housing units in the local community. Overall, the privatized housing units are replacing outdated housing units currently available to military members on Eglin AFB and Hurlburt AFB. The inventory of military family housing under the MHPI represents an increase of only 64 housing units over the inventory of on-base housing initially conveyed to the developer. These housing units are built by a developer as an investment opportunity to provide housing for active

duty military members and are not funded with federal tax dollars. These housing units would become available to civilians only if the developer is unable to maintain occupancy levels by leasing the housing units to only active duty military. It is anticipated that the privatized housing would be adequately occupied by military members, as is the case with the existing on-base housing units. The number of housing units proposed in the MHPI was based on the military family housing requirement analyzed in the Housing Requirements and Market Analysis for Eglin AFB and Hurlburt Field. The military family housing requirement provides the number of housing units required to fulfill specific criteria considered desirable by the Air Force.

Specifically, the Air Force has determined that a military community on-base is desirable, in recognition of the value the cohesive attributes of a military community have for the morale of military members. Personnel that are required by their positions and duties to remain in close proximity to their duty stations are categorized as key and essential personnel, and are required to live in on-base housing, including privatized housing. The Air Force requires that 28 Eglin AFB and 19 Hurlburt Field Key and Essential personnel live on-base for operational and mission requirements. While these few military families must live on the installation out of necessity, most military families will have the option of living off-base should they so desire. In addition to the military community and key and essential personnel, the Air Force recognizes that some military members may have difficulty obtaining suitable housing in the local housing market due to family size, income, or housing prices. Military families meeting these requirements are given priority access to on-base housing, including privatized housing. The manpower, family demographics, and conditions in the local housing markets served as inputs into determining the number of housing units required in the MHPI to provide these military families with adequate housing. Based on these estimates and the priority status of military members, it is anticipated that military members would maintain occupancy in the privatized housing.

Based on the Housing Requirements and Market Analysis, the Air Force estimates that more than 80 percent of the housing for Eglin AFB and Hurlburt Field families will be provided by the local community with the remainder on the installations. As previously stated, the Proposed Action would only increase the number of housing units by 64 units over existing levels. Thus, the Air Force does not anticipate that the Proposed Action would directly compete with the local housing market.

Environmental Justice

The Air Force anticipates that the construction and demolition of family housing on Eglin AFB and Hurlburt Field would not disproportionately impact minority or low-income COCs. The environmental justice issues that could potentially be

associated with the decision regarding the Proposed Action for the MHPI project are noise and water quality impacts from C&D activities.

Analysis discussed in Section 4.3, *Utilities*, Section 4.4, *Air Quality*, Section 4.6, *Hazardous Materials and Waste*, and Section 4.7, *Noise*, and later in this chapter, found that no impacts would occur under any of the alternatives. As a result, no impacts to low-income or minority populations in the vicinity of the existing or proposed housing areas would occur.

Any increase in construction noise would primarily affect communities located near the development areas. The COCs are generally equally distributed among other portions of the population near project sites. One community near Hurlburt Field contains a high proportion of the minority population in comparison to the other communities of the population. The sites encompass areas adjacent to Live Oak Terrace, Pine Shadows, and Soundside Manor. Although minorities represent a high percentage of residents here, the waterfront communities adjacent to the area are composed of upper-level income individuals who would be subject to the same impacts. Therefore, the Air Force does not anticipate disproportionate environmental justice impacts.

Potential risks to children that could be associated with the Proposed Action commonalities for the housing project are exposure to asbestos, LBP exposure, safety concerns, and noise from construction and demolition. The developer would remove asbestos and LBP from the area, as required, thus providing beneficial impacts through elimination of potential exposure of military family housing (MFH) residents to asbestos and LBPs. (Note: asbestos and LBP would not be removed in cases where it does not pose a concern. For example, in historic structures, the developer may not remove asbestos material or LBP if the material is encapsulated or is not friable.) As discussed, project planning and implementation of proper handling and disposal techniques would offset the potential for impacts to any age group.

Safety concerns for children are associated with construction and demolition activities and the location of housing areas near water. While C&D activities would not use explosive or hazardous materials, other unique risks to children exist. The project design and lease agreement for the developer performing these activities would be required to include safety precautions to protect children in the residential areas surrounding the work sites. Such safety precautions would include adequate measures to restrict access to C&D sites, given that children may be attracted to these areas to play. Additionally, the developer would be required to consider all aspects of child safety during work and nonwork hours. This would include restricted access during work hours, site preparation, and nonwork hours and the minimization of slip/trip/fall hazards associated with C&D activities.

Potential safety concerns for children may exist for operation of housing areas near the waterfront (at Soundside Manor, the Poquito Bayou Expansion area, and Capehart/Wherry). It is reasonable to conclude that risks may arise from children playing in or around Santa Rosa Sound, Poquito Bayou, or Garnier's Bayou who are unsupervised, without a personal flotation device, or unable to swim. These water areas may be attractive to children for play. Safety precautions near the waterfront for child protection would be required. The developer would consider modifying precautionary measures applied to housing sites for the waterfront area. The developer may erect signs at the waterfront to warn residents of the potential drowning hazard, and emphasize the need to supervise children up to the age of 14 and for children to use a personal flotation device. If possible, the developer may locate emergency equipment close to the waterfront area.

Children are more sensitive to noise than adults. Mild hearing loss as a child or young adult may set the stage for significant premature hearing loss. Noise associated with the MFH project would mostly come from construction and demolition equipment. Noise analysis results, discussed in Section 4.7, *Noise*, find that the sounds from these activities would be intermittent and short in duration and would not contribute in any appreciable manner to the existing noise environment. As a result, the Air Force does not anticipate special risks to children from construction noise.

Additionally, while not a minority as dictated by the Air Force's *Guide for Environmental Justice Analysis*, the Air Force will require the developer meet specific needs for handicapped accessible or readily adaptable housing for those military members with disabled dependents. The MHPI RFQ will require 5 percent of housing be handicapped accessible or readily adaptable. The MHPI project owner is subject to the federal Americans with Disabilities Act and state law and local building codes for persons with disabilities and must include those in its designs. The military base housing accommodations for disabilities requirements are set out in Air Force Instruction (AFI) 32-6002, *Family Housing Planning, Programming, Design, and Construction*, and the Air Force Family Housing Guide.

Regulatory Requirements/Mitigations

As standard practice/procedure, the developer would be required to provide adequate measures to restrict access to construction and demolition sites and consider all aspects of child safety during work and nonwork hours. There are some non-discretionary mitigations that could be implemented under the Proposed Action to minimize or offset potential impacts associated with safety of children. Such mitigations include providing safety along shorelines to minimize potential for drowning accidents by erecting signs at the waterfront to warn residents of the potential drowning hazard and emphasizing the need to supervise children up to the age of 14 and for children to use a

personal flotation device. Emergency equipment may also be located close to the waterfront area.

4.2.4 Alternative 1: White Point Area

As described in Section 4.2.3, *Proposed Action Commonalities*, potential socioeconomic impacts are dispersed throughout an entire community and would not be localized to individual parcels. Therefore, the potential socioeconomic impacts for population, employment, and housing would be the same as those described under Section 4.2.3, *Proposed Action Commonalities*.

For schools, there is the potential under Alternative 1 that students would be redistributed to schools other than the ones currently attended by students living on-base. An estimate of the schools potentially affected is based on the current attendance zones that are in close proximity to the proposed housing area. In the White Point Area under Alternative 1, the schools that could potentially receive additional students as a result of the relocation of housing would be: Bluewater Elementary School, Plew Elementary School, Ruckel Middle School, and Niceville High School. Students living in the existing Eglin AFB housing areas currently attend Niceville High School; therefore, no impacts are anticipated. Based on the average class sizes within these schools as provided in Table 3-14 in Section 3.2, Plew Elementary School and Ruckel Middle School are in compliance with the maximum class sizes mandated by the state, indicating that these schools are not at capacity. Bluewater Elementary School currently has an average class size of 17.99 for prekindergarten through third grade and 21.84 for grades 4 through 8. Both of these averages are in compliance with the mandated maximum class sizes. A letter received from the Okaloosa County School District, as well as several other commenters, indicates Bluewater Elementary School is beginning to reach capacity. Depending on the magnitude of the students Bluewater Elementary School would receive from the relocated military housing, there is the potential the additional students would bring the school to maximum capacity. As Bluewater Elementary School reaches capacity, parents may choose to apply for waivers for students to attend other schools in the ROI, and Bluewater Elementary School may choose to deny waivers for students to transfer to Bluewater. Therefore, the proposed housing area in White Point Area may have the potential to adversely impact local schools, specifically Bluewater Elementary School, but these impacts are not anticipated to be significant.

Scoping commenters expressed concern that locating a housing area from the already developed portion of Eglin AFB could have an adverse impact to minorities or low-income populations in regards to a lack of access to base facilities such as shopping, recreation, or medical facilities. While the proposed housing in the White Point Area is located on Air Force-owned property, it is a distance from facilities on Eglin Main.

However, the surrounding area is developed and has shopping and recreational facilities available. Additionally, the military members occupying the proposed housing units would have daily access to facilities on Eglin Main as part of their duties.

Regulatory Requirements/Mitigations

Mitigations for Alternative 1 are the same as those described under the *Proposed Action Commonalities* section.

4.2.5 Alternative 2: Eglin Main Base/Valparaiso

As described in Section 4.2.3, *Proposed Action Commonalities*, potential socioeconomic impacts are dispersed throughout an entire community and would not be localized to individual parcels. Therefore, the potential socioeconomic impacts for population, employment, and housing would be the same as those described under Section 4.2.3, *Proposed Action Commonalities*.

Schools potentially affected by the proposed Eglin Main/Valparaiso housing area would be: Edge Elementary School, Eglin Elementary School, Longwood Elementary School, Valparaiso Elementary School, Shalimar Elementary School, Meigs Middle School, Lewis Middle School, Choctawhatchee High School, and Niceville High School. Most of these schools currently serve students in the existing Eglin Main housing; therefore, it is anticipated that if there is any redistribution of students among these schools, the change would be minimal. Also, all of the schools are in compliance with the mandated maximum class sizes. At this time, there are no other indications of the schools having concerns regarding capacity. Any change in student distribution is not expected to impact capacity or result in a breach of those maximum class sizes.

Under this alternative, military members in privatized housing would have easy access to shopping, recreational, and medical facilities. As described in Section 4.2.3, *Proposed Action Commonalities*, no adverse impacts are expected to disproportionately impact minorities or low-income populations. Additionally there are no environmental consequences associated with the protection of children.

Flight operations of the F-35 aircraft may impact residents of the proposed housing areas, depending on parcel selection. However, as discussed in Section 4.7, *Noise*, the noise levels impacting the proposed housing areas are such that physical harm or hearing loss is not expected. With the flight operations of 59 F-35 aircraft as analyzed for the No Action Alternative in the *Eglin BRAC Supplemental EIS for F-35 Beddown at Eglin AFB* (F-35 SEIS), some parcels proposed under this alternative would be exposed to noise levels above 65 dB day–night average sound levels (DNL) (see Figure 4-9 and Figure 4-10). At these noise levels, residents of the proposed housing units may experience higher levels of annoyance as well as the potential for disruptions in speech,

sleeping, or watching television. Constructing new housing with noise level reduction measures can decrease the level of annoyance and number of disruptions.

Regulatory Requirements/Mitigations

Mitigations for Alternative 2 are the same as those described under the *Proposed Action Commonalities* section; additional mitigations associated with noise are discussed in Section 4.7, *Noise*.

4.2.6 Subalternative 2a: Eglin Main Base (Preferred Alternative)

Potential impacts under Subalternative 2a would be the same as those discussed in Alternative 2. The addition of the 35 Camp Rudder units would not result in any appreciable additional impacts over those described under Alternative 2. Some personnel from Camp Rudder may elect to live in the Crestview area or north Fort Walton Beach as opposed to Eglin Main Base in order to be closer to their place of employment. The Air Force would not expect this to result in any appreciable socioeconomic impact since at a maximum there may be only 35 additional households that would need to be absorbed into the local community.

4.2.7 Alternative 3: North Fort Walton Beach Area

As described in Section 4.2.3, *Proposed Action Commonalities*, potential socioeconomic impacts are dispersed throughout an entire community and would not be localized to individual parcels. Therefore, the potential socioeconomic impacts for population, employment, and housing would be the same as those described under Section 4.2.3, *Proposed Action Commonalities*.

Schools potentially affected by the construction of a housing area in the North Fort Walton Beach Area are: Elliot Point Elementary School, Kenwood Elementary School, Longwood Elementary School, Shalimar Elementary School, Wright Elementary School, Meigs Middle School, Pryor Middle School, Choctawhatchee High School, and Fort Walton Beach High School. Many of these schools currently receive students living in the existing Eglin AFB on-base housing. Therefore, it is anticipated that any redistribution of students would be minimal. Also, as described in Table 3-14 in Section 3.2, *Socioeconomics*, all of these schools are in compliance with the state-mandated maximum class sizes. Therefore, any change in student distribution is not expected to impact capacity or result in a breach of those maximum class sizes.

Some local residents expressed concerns regarding impacts to neighboring property values resulting from the "Waterfall Policy" and development of the Poquito Bayou viewshed. The Waterfall Policy would not be expected to have an impact on property values since the Air Force expects to maintain occupancy with military families. Eglin

AFB and Hurlburt Field are proposing housing at a quanitity that is less than their actual requirement, and with high occupancy rates for existing units, it is unlikely that the new units would be affected by the Waterfall Policy. The Air Force has identified a development setback to minimize the impact to the shoreline and the Poquito Bayou viewshed. As a result, the Air Force believes that this mitigation would serve to minimize any potential associated impact to the viewshed or neighboring property values and that any impact would not be significant enough to affect property values. Additionally, the developer would be required to meet or exceed all applicable building codes and standards, as well as maintain housing and neighborhood grounds on a regular basis per the privatization contract.

Under this alternative, military members in privatized housing would have easy access to shopping, recreational, and medical facilities. As described in Section 4.2.3, *Proposed Action Commonalities*, no adverse impacts are expected to disproportionately impact minorities or low-income populations.

Regulatory Requirements/Mitigations

Mitigations for Alternative 2 are the same as those described under the *Proposed Action Commonalities* section.

4.2.8 Alternative 4: Mix Alternative

Under Alternative 4, a combination of parcels from Alternatives 1 through 3 would be used for the MHPI. The overall socioeconomic and environmental justice impacts would be the same as those described in Section 4.2.3, *Proposed Action Commonalities*. Individual schools are not anticipated to be adversely impacted by a redistribution resulting from a relocation of the on-base housing with the exception of schools in the White Point Area; specifically, Bluewater Elementary has expressed concerns with capacity. Adding students as a result of the construction of military housing in a parcel in the White Point Area would have the potential to bring the school up to or over capacity. However, the Okaloosa County School District implemented a program in which parents have the ability to apply for waivers for their students to attend schools outside of their prescribed attendance zones. If Bluewater Elementary were to reach capacity, parents would have other schools available to choose from.

Since the mix alternative entails a potential combination of several different parcels, the impacts would vary depending on which parcels are chosen and the extent to which they are developed. Each individual parcel was analyzed previously under its respective alternative. The following Table 4-34 provides a graphical summary of the impacts by parcel for socioeconomic and environmental justice. Impacts are generally summarized using a color code as follows:

- Blue – Beneficial impact; Would occur if the action results in contributing to the growth of the local economy, i.e., increased employment, income, or services. These same beneficial impacts may also economically benefit environmental justice populations of concern.

- Green – No beneficial or adverse impact

- Yellow – Potential for adverse impact, but not significant; Would occur if the action changes the local economy such that some individuals lose employment or income or if the population or distribution of population changes such that services cannot meet the demands of the local population. For environmental justice, these impacts would occur if adverse impacts are identified that do not disproportionately impact populations of concern.

As discussed in the analyses, socioeconomics and environmental justice have non-discretionary mitigations associated with protection of children at construction sites and near water bodies; these mitigations are included in the impact analysis, and the color coding in Table 4-34 reflects this analysis. No discretionary mitigations were identified for any of the alternatives. Specific non-discretionary mitigations for each alternative and associated parcels are described previously in the related Socioeconomics analysis sections.

This color coded chart provides a summary of impacts so that the decision maker can easily see how a potential combination of parcels may affect socioeconomics and environmental justice at each respective parcel. A combined summary table is provided in the "Summary of Impacts" section at the end of Chapter 5 that shows each individual parcel's potential impacts under each resource area.

Table 4-34. Alternative 4 – Socioeconomics and Environmental Justice Summary

Alternative / Parcel	Socioeconomics and Environmental Justice				
	Population	Employment	Schools	Housing	Environmental Justice/Protection of Children
Commonalities					
Eglin Main Base					
Hurlburt Field					
Camp Rudder					
Camp Pinchot					
Poquito Bayou					
Alternative 1					
1					
2					
3					
4					
5					

Alternative / Parcel	Socioeconomics and Environmental Justice				
	Population	Employment	Schools	Housing	Environmental Justice/Protection of Children
6					
7					
Alternative 2					
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
Subalternative 2a (Preferred Alternative)					
1					
Alternative 3					
1					
2					
3					
4					
5					
No Action*					

Blue = Beneficial impact; Green = No beneficial or adverse impact; Yellow = Potential for adverse impact, but not significant.

*Note: The impacts associated with the No Action Alternative include potential impacts associated with implementation of projects identified under the No Action Alternative in Chapter 2, Section 2.3.1 as they relate to the region of influence for that particular resource.

4.3 UTILITIES

This section discusses potential impacts to utilities, which include water supply, wastewater treatment, electricity, and natural gas serving the existing and proposed project areas associated with the alternatives. Analysis focuses on assessing the ability of existing utility capacity to accommodate increased or decreased utilization, identifying potential problems related to connecting to existing utilities, and identifying coordinating and procedural requirements associated with establishing new utility infrastructure.

The Air Force would not convey existing utility mains as part of this Proposed Action and would provide utilities to the current housing units until they are all demolished, whereupon the Air Force would abandon the old lines in-place. Points of demarcation are where the lateral service line connects to the main when there is no meter or shut-off valve, otherwise it is the line side of the meter, disconnect, or junction box. In areas of new development, the developer would be responsible for obtaining utilities from off-

base for newly constructed units. Once construction was complete, the developer could either turn systems over to the local utility or to the Air Force, and all new electrical, natural gas, water, and sewer utility systems installed by the developer would be constructed in accordance with all applicable laws and regulations for ownership and operation by the local utility provider or the Government where applicable. Language clarifying utilities privatization requirements would be developed by the Air Force Center for Engineering and the Environment and the Air Force Civil Engineer Support Agency. All residents would eventually be charged a fee for utilities. Unlike civilians who might reside in MHPI housing, military members receive BAH entitlements from which an allowance is deducted for utilities.

4.3.1 Analysis Methodology

Methods for assessing existing utility systems and the environmental consequences associated with the construction and operation of MFH were the same for each of the utility components. Each base system was assessed for adequacy to provide for new utility requirements associated with the Proposed Action. MFH utility requirements were based on direct and indirect program-related demands. Direct construction utility requirements at the candidate bases are assumed to be associated with the use of water (nonpotable if available) for dust suppression during construction. This use would occur only when dust control is necessary as a result of low soil moisture levels.

Direct operational utility requirements for water, wastewater, and natural gas were calculated using an industry standard, per capita estimate for each utility system, and multiplying it by the estimated number of family members that would be residing in the housing units. Changes in the average daily demands for utility service were compared with current demands at each location. Environmental consequences on the utility resource area are related to the new requirements when measured against existing or projected utility capacity. Environmental consequences would be significant if project requirements necessitate major system upgrades that are beyond those projected by the utility system in their capital improvements plans and are necessary to maintain the existing LOS.

In addition, all new construction or major renovation must meet the requirements of Executive Order (EO) 13514, *Guiding Principles for Federal Leadership in High Performance and Sustainable Buildings*, as well as the RFQ's requirement to earn the Energy Star label and its desired feature of eligibility for the Leadership in Energy and Environmental Design (LEED) Silver Certificate, or higher. These requirements would help to minimize utility usage through development of energy-efficient facilities and use of energy-saving appliances and fixtures.

4.3.2 No Action Alternative

Under the No Action Alternative, no change would occur to the existing utility infrastructure of Eglin AFB, Hurlburt Field, or the local community associated with the

current MFH program; however, other potential actions that could have an impact on utilities at Eglin AFB and Hurlburt Field are described in Section 2.3.1. The primary impact on existing utilities at Eglin Main Base and Hurlburt Field would result from the 2005 BRAC actions related to the relocation of the 7th Special Forces Group (Airborne) (7SFG[A]), the Joint Strike Fighter (JSF) Initial Joint Training Site (IJTS), and proposed military construction (MILCON) projects. The *Eglin BRAC Final Environmental Impact Statement* (FEIS) (U.S. Air Force, 2008a) includes a detailed summary of potential impacts from these actions.

Some of the actions represent minor fluctuations in personnel. Generally, the minor changes in levels of use are easily absorbed by the existing utility systems because none of the utilities are currently nearing their maximum permitted levels or capabilities. These types of fluctuations do not impact utilities on Eglin Main Base or Hurlburt Field.

BRAC-related actions could result in a minor increase to the base populations at Eglin AFB and Hurlburt Field; however, existing utility capacities for electricity, natural gas, water, and wastewater are sufficient to absorb any potential increase in consumption, and there would be no significant impact on utilities. Additionally, Okaloosa County has opened a new 10 million gallons per day (MGD) wastewater treatment plant adjacent to the existing Garnier's effluent spray field located on Eglin AFB. If utilized before the Eglin Main Base facilities close, this new facility would reduce the amount of wastewater being treated by the existing Main Base facilities.

4.3.3 Proposed Action Commonalities

Potable Water and Wastewater

For potable water consumptive use and wastewater use, analysis utilized Florida Department of Environmental Protection (FDEP) estimation standards for residential wastewater flows to estimate potential usage decreases at project-specific sites. Section II.5.A.1 of FDEP Form 62-604.300(8)a, *Notification/Application for Constructing a Domestic Wastewater Collection/Transmission System*, requires that any wastewater collection or transmission system be designed to accommodate an average daily flow of 350 gallons per day, the FDEP estimate for the average daily wastewater generation per housing unit. That number, 350 gallons, is derived based on the FDEP's assumption that a single housing unit is occupied by 3.5 people, with each person producing 100 gallons of wastewater per day. This estimation is based on measurements of residential indoor water use, not by actual wastewater flow measurements. This number can be used to estimate potential decreases in potable water use as well.

For purposes of comparison, the analysis estimated average daily use/flow measurements for the existing housing areas for each of the respective utility providers using the FDEP standards, as shown in Table 4-35 (on the following page). The estimated potential decreases in potable water use and wastewater flow was calculated

by multiplying the maximum number of units potentially occurring at each location by 350 gallons per day and comparing this product to existing use.

There would be no change to the Eglin Main wastewater treatment system from the five Georgia Avenue units being utilized for non-housing purposes. The use of four units at Camp Pinchot for activities other than housing would also not result in a change since those units use a septic system. The rest of the housing locations would maintain the use of the Plew Heights wastewater treatment facility and Eglin's main water supply system, and no adverse impacts are expected. However, new construction may necessitate replacement of water distribution and wastewater collection infrastructure that is outdated and/or failing. At Camp Rudder, there would be a net increase of 10 housing units. The slight increase in water use and wastewater flow would have no adverse impacts on the water supply well system and the septic system at that location because each system currently has excess capacity.

The number of new housing units (484) at Hurlburt Field would increase over the existing number (380). The overall increase in the number of housing units would also result in a slight increase in daily water and wastewater use/flow (less than 1 MGD). Potable water for the new FAMCAMP area would either be provided from a new distribution system located on the north side of Heritage Road near the Hurlburt Field wastewater treatment plant or by connecting to an existing water main, owned by Okaloosa County Water and Sewer, which runs along the south side of Martin Luther King Boulevard near Commando Village. A wastewater collection system would be provided through the FAMCAMP with two main trunk lines, which would discharge to a new lift station. A recreational vehicle dump station would also be provided that would discharge directly to the lift station. The lift station would discharge to a new force main and connect to existing sewer. The existing dump station and lift stations would be closed (if applicable) according to the appropriate laws and regulations.

Table 4-35. Current Estimated Average Daily Usage and Flow of Potable Water and Wastewater for Existing Housing Units

Existing Housing Area	No. of Units	Estimated Average Daily Use/Flow (MGD) For Housing Units (based on FDEP standard)						
		Potable Water Supply System			Wastewater Treatment System			
		Okaloosa County Water & Sewer	Hurlburt Field	Eglin Main Base	Garnier Wastewater Facility	Hurlburt Field Advanced Wastewater Facility	Eglin Main Base Treatment Facility	Plew Heights Treatment Facility
Eglin AFB								
Main Base								
Hidden Oaks	126			0.044				0.044
Georgia Avenue	5			0.002			0.002	
Wherry/ Capehart	479			0.168				0.168
New Plew	186			0.065				0.065
Old Plew	58			0.020				0.020
Poquito Bayou								
Poquito Bayou	150	0.053			0.053			
Camp Pinchot								
Camp Pinchot	4	0.001			Septic			
Camp Rudder								
Camp Rudder	25	Supplied by Well			Septic			
Hurlburt Field								
Hurlburt Main								
Live Oak Terrace	110		0.039			0.039		
Pine Shadows	196		0.069			0.069		
Soundside								
Soundside Manor	74		0.026			0.026		

FDEP = Florida Department of Environmental Protection; MGD = million gallons per day

The existing capacity of the Hurlburt Field water supply and wastewater treatment systems and the Okaloosa County Water and Sewer systems are sufficient to handle the slight increase in water and wastewater use/flow, and there would be no adverse impacts. It is also possible that a new connection could be made to the new 10 MGD Arbennie Pritchett Water Reclamation Facility (WRF) located adjacent to the existing Garniers effluent spray field located on Eglin AFB.

Electricity and Natural Gas

Impacts to electric and natural gas utility capacity would not occur from implementation of the Proposed Action at any of the alternative locations. Gulf Power

and Okaloosa County Gas District serve the entire county, which encompasses all existing housing areas. There is sufficient electrical and natural gas utility capacity, and any increase in usage would not have any adverse impacts. Potential impacts to these utility providers are associated with the potential for conflicts related to establishing new utilities at sites without utility connections and identifying buried utility lines that the developer must avoid during ground disturbance activities.

Demolition of the 1,404 units would require coordination with all utility providers to ensure that the developer turns off all utilities prior to demolition activities. Coordination with utility providers is necessary to identify the exact location of utility lines prior to ground-disturbing activities associated with both construction and demolition.

Areas without existing lines would require the installation of new lines. Electrical service at the new FAMCAMP area would be obtained by extending the overhead electrical feeder located east of the proposed site and running along the southbound lanes of Martin Luther King Boulevard; this feeder also currently serves Commando Village. Natural gas usage is not anticipated at the new FAMCAMP. The developer would establish new lines through coordination with Gulf Power and Okaloosa County Gas District. Where applicable, utility lines installed as part of the Proposed Action would be underground.

In summary, coordination with all utility providers prior to demolition or construction would minimize any potential impacts to existing utility infrastructure associated with disruption of buried utility lines. Areas with existing utilities would provide tie-ins for new lines, and new utility infrastructure would be coordinated with utility providers. There would be no adverse impact to electricity or natural gas utility infrastructure associated with the Proposed Action at any of the alternative locations.

4.3.4 Alternative 1: White Point Area

There are no existing utilities located on any of the parcels in this area. The closest public water supply is the Bluewater Bay/Raintree system operated by Okaloosa County Water & Sewer. Wastewater from the new housing units would also need to be connected to the Okaloosa County system. The nearest wastewater treatment plant is the Niceville, Valparaiso, Okaloosa County plant in Niceville.

4.3.5 Alternative 2: Eglin Main Base/Valparaiso

The use of Parcels 1–8 for the construction of the new MFH units on Eglin AFB would have no additional impact beyond what is discussed under the commonalities analysis in Section 4.3.3. The Eglin Main Base water supply and wastewater treatment systems and the Plew Heights Treatment Facility would continue to be utilized regardless of the location of the newly constructed housing units. The use of the undeveloped portion of Parcel 1 and the undeveloped Parcels 2–8 for new construction would require new lines and tie-ins to the existing utility infrastructure.

4.3.6 Subalternative 2a: Eglin Main Base (Preferred Alternative)

The construction of an additional 35 units on Eglin Main Base (as opposed to their construction at Camp Rudder) would not result in any appreciable increase in impacts over those discussed under Alternative 2. Potential impacts would essentially be the same as those discussed for Alternative 2 except there would be less construction needed for new utility lines and tie-ins to the existing Eglin Main Base utility infrastructure.

4.3.7 Alternative 3: North Fort Walton Beach Area

Since Parcels 1–5 are undeveloped, new housing construction would require new lines and tie-ins to the existing, adjacent utility infrastructure. Water for the new housing units would have to be provided from the Eglin housing area system or connections would need to be made to the Garnier Main Water System operated by Okaloosa County Water & Sewer. Wastewater discharges would require construction of new sewer lines. Treatment would be provided by the new Arbennie Pritchett WRF located just north of Parcels 2 and 3.

4.3.8 Alternative 4: Mix Alternative

Since the mix alternative entails a potential combination of several different parcels, the impacts would vary depending on which parcels are chosen and the extent to which they are developed. Each individual parcel was analyzed previously under its respective alternative. Table 4-36 provides a graphical summary of the impacts by parcel for utilities. Impacts are generally summarized using a color code as follows:

- Blue – Beneficial impact; Decrease in overall utility use.
- Green – No beneficial or adverse impact
- Yellow – Potential for adverse impact, but not significant; New utility lines and connections would be required. Exiting utility capacity is sufficient.

In general, throughout the document, impact analysis considers the implementation of non-discretionary mitigations as part of the Proposed Action and alternatives, because these mitigations would be required to be implemented by permit or other regulatory requirements. With regards to utilities, the Air Force has not identified any non-discretionary or discretionary mitigations other than coordination with local utility providers.

The color coding in Table 4-36 provides a summary of impacts so that the decision maker can easily see how a potential combination of parcels may affect utilities at each respective parcel. A combined summary table is provided in the "Summary of Impacts" section at the end of Chapter 5 that shows each individual parcel's potential impacts under each resource area.

Table 4-36. Alternative 4 – Utilities Summary

Alternative/Parcel	Utilities
Commonalities	
Eglin Main Base	
Hurlburt Field	
Camp Rudder	
Camp Pinchot	
Poquito Bayou	
Alternative 1	
1	
2	
3	
4	
5	
6	
7	
Alternative 2	
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
Subalternative 2a (Preferred Alternative)	
1	
Alternative 3	
1	
2	
3	
4	
5	
No Action*	

Blue = Beneficial impact; Green = No beneficial or adverse impact; Yellow = Potential for adverse impact, but not significant.

*Note: The impacts associated with the No Action Alternative include potential impacts associated with implementation of projects identified under the No Action Alternative in Chapter 2, Section 2.3.1 as they relate to the region of influence for that particular resource.

Regulatory Requirements/Mitigations

As standard practice/procedure, the developer would coordinate with local utility providers for water, sewer, electrical, and natural gas utility hook-ups and development and would coordinate with all utility providers prior to ground disturbance activities to identify buried utility lines. In addition, all new construction or major renovation must meet the requirements of EO 13514, *Guiding Principles for Federal Leadership in High Performance and Sustainable Buildings*, as well as the RFQ's requirement to earn the Energy Star label and its desired feature of eligibility for the LEED Silver Certificate, or higher. These requirements would help to minimize utility usage through development of energy-efficient facilities and use of energy-saving appliances and fixtures.

4.4 AIR QUALITY

4.4.1 Analysis Methodology

Potential impacts to air quality are evaluated with respect to the extent, context, and intensity of the impact in relation to relevant regulations, guidelines, and scientific documentation. The Council on Environmental Quality (CEQ) defines significance in terms of context and intensity in Title 40 Code of Federal Regulations Part 1508.27 (40 CFR 1508.27). This requires that the significance of the action must be analyzed in respect to the setting of the proposed action and based relative to the severity of the impact. To evaluate air emissions and their impact on the overall ROI, the emissions associated with the project activities are compared to the total county emissions on a pollutant-by-pollutant basis, using the ROI's 2002 National Emissions Inventory (NEI) data.

For a conservative analysis, the counties were selected as the ROI instead of the U.S. Environmental Protection Agency (USEPA)-designated Air Quality Control Region, which is a much larger area. Calculated air emissions were compared to the annual total emissions of Okaloosa County.

The Air Conformity Applicability Model (ACAM) version 4.3.0 is also utilized to provide a level of consistency with respect to emissions factors and calculations. The ACAM provides estimated air emissions from proposed federal actions in areas designated as nonattainment and/or maintenance for each criterion and precursor pollutant, as defined in the NAAQS. The ACAM is utilized to provide emissions for construction, demolition, grading, and paving activities by providing user inputs for each.

The air quality analysis focuses on emissions associated with the construction activities. The analysis does not address air quality issues associated with operational activities at

Eglin AFB after the completion of construction. Carbon dioxide (CO_2) emissions are approximated using available emission factors for construction equipment. On February 18, 2010, the CEQ released its Draft NEPA Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas (GHG) Emissions, which suggests that the potential effects of GHG emissions from proposed actions are by nature global and cumulative. Given the global nature of climate change and the current state of the science, it is not useful at this time to attempt to link the emissions of CO_2-equivalent, or CO_2(e), quantified for local actions to any specific climatological change or resulting environmental impact. Therefore, the purpose of quantitative analysis of CO_2(e) GHG emissions in this EIS is for informational purposes and potential usefulness in making reasoned choices among alternatives.

With regard to demolition activities, there is the possibility of encountering asbestos. The National Emissions Standards for Hazardous Air Pollutants (NESHAP) for asbestos requires that asbestos-containing material (ACM) is adequately wetted with a wetting agent prior to and during demolition (40 CFR 60 subpart M). This keeps asbestos from becoming airborne while demolition or renovation is taking place. Further discussion on the method of handling ACMs and other materials such as LBP and chlordane is in Section 3.6, *Hazardous Materials and Wastes*.

All new construction or major renovation must meet the requirements of EO 13514, *Guiding Principles for Federal Leadership in High Performance and Sustainable Buildings*. The RFQ requires all new housing and major renovations to earn the Energy Star label and makes eligibility for a LEED Silver certification, or higher, a desired feature. This means operational emissions from the housing will be minimized because developers are required to use mechanical equipment or fixtures incorporated for heating, cooling, ventilating, lighting, and domestic hot water usage that will meet efficiency ratings to achieve the Energy Star label.

4.4.2 No Action Alternative

Based on the projects discussed under the No Action Alternative, there would be an influx of personnel to Eglin AFB with additional facility construction and/or demolition to accommodate new groups or operations. The construction and/or demolition would cause temporary increases in air emissions in the region during these activities. Increased population would cause a lasting increase from vehicular emissions from daily commuting and associated families' use of vehicles. With the implementation of the BRAC decision, aircraft emissions are expected to increase from current levels. The overall air quality of the ROI is good and despite temporary increases from construction/demolition and increases in ongoing vehicle, aircraft, and associated equipment emissions, the Air Force does not expect significant impacts to the regional air quality.

4.4.3 Commonalities Across All Alternatives

Regardless of alternative selected, a total of 1,404 units would be demolished, and 1,477 new units would be constructed, along with additional associated surface area and other nonhousing facilities as described under the Proposed Action. As a result, air emissions from these activities are not alternative dependent as the impact would be the same regardless of alternative chosen. Consequently, air quality impacts for all alternatives are discussed under this section.

The ROI for air quality is Okaloosa County, in which the various parcels are located. As the ROI does not change regardless of the location, the air quality analysis discussed in the commonalities would apply to all alternatives.

For the analysis, emissions associated with the project activities are compared to the total county emissions on an individual pollutant-by-pollutant basis. Impacts are evaluated based on the extent, context, and intensity of the impact in relation to the setting of the Proposed Action and based relative to the severity of the impact. CO_2 is not a criteria pollutant, and no good baselines are available for meaningful comparison at this time. The air analysis focused on the emissions associated with construction and demolition activities—the main issues generated by the alternatives. Air quality issues associated with the operation of facilities other than housing units (e.g., community centers) was included as part of the first year of construction.

Air emissions for the first year are expected to be greater, since 40 percent of the demolition and construction would be completed then, with 15 percent annual project completion in the subsequent years. Emissions expected from project activities are summarized in Table 4-37.

The highest pollutant percentage is for PM, which is 3.25 percent of the ROI's total emissions based on the USEPA 2002 NEI. Table 4-38 summarizes the project emissions annually. Particulate matter would have the highest emission rate at 283 tons per year in the first year and 213 tons per year in the following years. Emissions from construction and demolition activities would cause temporary and short-term increases to the local air quality region. No significant impacts are expected to the regional air quality.

CO_2 emissions were estimated for construction equipment use and vehicle emissions from worker commutes. As there are currently no standards or regulations with which to compare this value, it is provided only for informational purposes.

Table 4-37. Construction Emissions over the Life of the Project

Source Category		Emissions (tons/year)				
		CO	NO_x	PM_{10}	SO_2	VOC
Emissions Year 1	Demolition	0.000	0.000	5.784	0.000	0.000
	Grading Equipment	2.503	9.419	0.774	0.956	1.001
	Grading Operations	0.000	0.000	276.185	0.000	0.000
	Acres Paved	0.000	0.000	0.000	0.000	0.075
	Mobile Equipment	4.117	9.817	0.792	1.214	0.897
	Non-Residential Arch. Ctgs.	0.000	0.000	0.000	0.000	0.073
	Residential Arch. Ctgs.	0.000	0.000	0.000	0.000	63.927
	Stationary Equipment	27.921	0.723	0.021	0.037	1.045
	Workers Trips	33.518	1.663	0.281	0.000	1.535
	Total Year 1	**68.058**	**21.622**	**283.837**	**2.206**	**68.553**
Annual Emissions Years 2–5	Demolition	0.000	0.000	2.166	0.000	0.000
	Grading Equipment	1.902	7.158	0.588	0.726	0.761
	Grading Operations	0.000	0.000	209.901	0.000	0.000
	Acres Paved	0.000	0.000	0.000	0.000	0.028
	Mobile Equipment	3.549	8.463	0.683	1.047	0.774
	Non-Residential Arch. Ctgs	0.000	0.000	0.000	0.000	0.000
	Residential Arch. Ctgs	0.000	0.000	0.000	0.000	23.977
	Stationary Equipment	24.070	0.623	0.018	0.032	0.901
	Workers Trips	12.549	0.623	0.105	0.000	0.575
	Annual Total Years 2–5	**42.069**	**16.867**	**213.461**	**1.805**	**27.015**

arch. ctgs = architectural coatings; CO = carbon monoxide; NO_x = nitrogen oxides; PM_{10} = particulate matter with a diameter of less than or equal to 10 microns; SO_2 = sulfur dioxide; VOC = volatile organic compound

Table 4-38. MFH Construction and Demolition Air Emissions

Project Year	Emissions (tons/year)					
	CO	NO_x	PM	SO_x	VOC	CO_2
1	68.06	21.62	283.84	2.21	68.55	2,899.28
2	42.07	16.87	213.46	1.80	27.01	2,158.90
3	42.07	16.87	213.46	1.80	27.01	2,158.90
4	42.07	16.87	213.46	1.80	27.01	2,158.90
5	42.07	16.87	213.46	1.80	27.01	2,158.90
Highest Annual Emissions	68.06	21.62	283.84	2.21	68.55	2,899.28
Okaloosa County	63,273.74	7,132.43	8,735.85	838.65	10,332.94	243.12 MMT [2]
Highest Annual Emissions as a percent of the County Emissions	*0.11%*	*0.30%*	*3.25%*	*0.26%*	*0.66%*	--

CO = carbon monoxide; CO_2 = carbon dioxide; MMT = million metric tons; NO_x = nitrogen oxides; PM_{10} = particulate matter with a diameter of less than or equal to 10 microns; SO_2 = sulfur dioxide; VOC = volatile organic compound

[1] Carbon dioxide emissions were not calculated in the Air Conformity Applicability Model (ACAM) and are provided for informational purposes.

[2] Carbon dioxide emissions are compared to Florida state's 10-year average of greenhouse gas emissions (1997-2007) reported in million metric tons (MMT)

The ROI is Okaloosa County, and all alternatives are within Okaloosa County. While there may be some slight differences between alternatives in the amount of mobile emissions (construction worker trips to and from job sites, and resident-related trips such as shopping, etc.), the parcels are relatively close between alternatives, and there would not be any appreciable difference in air emissions between alternatives and resultant impacts from that analyzed. Operational emissions (home heating and cooling, etc.), would likely be less than those of the baseline condition due to implementation of Energy Star rating requirements, and the difference in emissions associated with resident trips would be marginal given that most residents would continue to live in the same general area (i.e., on or within a few miles of Eglin Main Base).

4.4.4 Alternative 4: Mix Alternative

Regardless of the mixture of parcels chosen the impacts would be the same as previously discussed. Table 4-39 provides a graphical summary of the impacts by parcel for air quality. Impacts are generally summarized using a color code as follows:

- Green – No beneficial or adverse impact
- Yellow – Potential for adverse impact, but not significant; Pollutants that have elevated emission levels but are less than the 10-percent criteria.

The color coding in Table 4-39 reflects the degree of impact without consideration of any mitigations outside those required by law as a result of regulatory/permits that would be required as part of the Proposed Action and alternatives. As discussed in the analyses, permit-related requirements (i.e., "permit mitigations") that would be part of the Proposed Action and alternatives as required by law (e.g., Title V permit) were included in the analyses of impacts because these "permit mitigations" would be implemented regardless of the outcome of the analysis. This color coded chart provides a summary of impacts so that the decision maker can easily see how a potential combination of parcels may affect air quality at each respective parcel. A combined summary table is provided in the "Summary of Impacts" section at the end of Chapter 5 that shows each individual parcel's potential impacts under each resource area.

Table 4-39. Alternative 4 – Air Quality Summary

Alternative / Parcel	Air Quality				
	CO	NO_x	PM	SO_x	VOC
Commonalities					
Eglin Main Base					
Hurlburt Field					
Camp Rudder					
Camp Pinchot					
Poquito Bayou					
Alternative 1					
1					
2					
3					
4					
5					
6					
7					
Alternative 2					
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
Subalternative 2a (Preferred Alternative)					
1					
Alternative 3					
1					
2					
3					
4					
5					
No Action*					

Green = No beneficial or adverse impact; Yellow = Potential for adverse impact, but not significant.
CO = carbon monoxide; NO_x = nitrogen oxides; PM = particulate matter; SO_2 = sulfur dioxide; VOC = volatile organic compound
*Note: The impacts associated with the No Action Alternative include potential impacts associated with implementation of projects identified under the No Action Alternative in Chapter 2, Section 2.3.1 as they relate to the region of influence for that particular resource.

Regulatory Requirements / Mitigations

As standard practice/procedure, all new construction or major renovation must meet requirements of EO 13514, *Guiding Principles for Federal Leadership in High Performance and Sustainable Buildings*. The RFQ requires all new housing and major renovations to earn the Energy Star label and makes eligibility for a LEED Silver certification, or higher, a desired feature. This means operational emissions from the housing will be minimized because developers are required to use mechanical equipment or fixtures incorporated for heating, cooling, ventilating, lighting, and domestic hot water usage that will meet efficiency ratings to achieve the Energy Star label.

Discretionary mitigations to decrease particulate matter emissions during site preparation activities (i.e., grading) includes using water on soil piles and exposed surfaces from grading activities to decrease particulate releases. For hauling soil, particulate matter emissions may be decreased by using at least 2 feet of freeboard and/or a secured cover and driving on watered unpaved roads or on paved roads to the greatest extent possible.

4.5 SAFETY

This section addresses potential consequences associated with safety. The analyses focused on how and to what degree the proposed activities would increase or decrease safety risks to military personnel, to the public, and to property. Specifically, this section discusses potential issues associated with job site safety.

4.5.1 Analysis Methodology

The analyses focused on how and to what degree the proposed activities increase or decrease safety risks to military personnel, the public, and property. If any proposed activity indicated a major variance from existing conditions, it would be considered an adverse safety impact. The Air Force's capability to adequately manage any associated potential risks was then assessed. A significant impact was defined as an increase in safety risks to personnel from implementation of any phase of the Proposed Action over those risks that are encountered in typical day-to-day operations at the installations.

4.5.2 No Action Alternative

The environmental consequences for projects associated with the No Action Alternative would be the same as those described in the following section, *Proposed Action Commonalities*. As such, no adverse impacts would occur. Additionally, there are no aspects of projects under the No Action Alternative that would cause significant impacts to any element of the Proposed Action commonalities or alternatives discussed below.

4.5.3 Proposed Action Commonalities

All Existing Housing Areas

Job Site Safety - Ground operations and maintenance activities on Eglin AFB and Hurlburt Field would continue to be conducted using the same processes and procedures as under current operations. All actions would be accomplished by technically qualified personnel and would be conducted in accordance with applicable Air Force safety requirements, approved technical data, and Air Force Occupational and Environmental Safety, Fire Protection, and Health (AFOSH) standards.

To support the proposed alternatives, new housing units would be constructed, while other units would be altered or demolished. No unique construction practices or materials are required to construct these housing units. During construction or demolition, standard industrial safety standards and best management practices (BMPs) would be followed. These would include implementing procedures to ensure that equipment guards, housekeeping, and personal protective equipment are in place; establishing programs and procedures for lockout, right-to-know, confined space, hearing conservation, forklift operations, and so on; conducting employee safety orientations and performing regular safety inspections; and developing a plan of action for the correction of any identified hazards. No unusual job site safety risks are expected from these activities.

Demolition of existing housing units with chlordane-impacted soils must also consider the safety of construction workers. Prior to disturbing these soils, the developer would determine chlordane concentrations, which would be compared to Florida and USEPA human-health risk-based screening levels. Based on USEPA guidance, legally applied chlordane is not required to be remediated under either the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980 or the Resource Conservation and Recovery Act (RCRA) of 1976. Soil impacted with pesticide used for its intended purpose can be managed in place. Therefore, as long as disturbed soils are left on-site and covered with topsoil, there is no need for additional sampling or reporting.

Should soils need to be removed, transported, treated and/or disposed off-base, RCRA regulations would apply. These soils would be characterized for the presence of chlordane to determine whether they should be disposed as solid waste or hazardous waste. If soils were classified as hazardous waste, transport and disposal documentation records, including signed manifests, would be required. Implementation of these management requirements would mitigate any adverse impacts resulting from chlordane.

During construction, measures would be taken to prevent fugitive dusts of airborne soil particles and personnel would comply with 29 CFR 1926, *Safety and Health Regulations for Construction*. No unusual safety risks are expected from demolition activities.

The developer would remove asbestos and LBP from the area, as required, thus providing beneficial impacts through elimination of potential exposure of MFH residents to asbestos and LBPs. (Note: asbestos and LBP would not be removed in cases where it does not pose a concern. For example, in historic structures, the developer may not remove asbestos material or LBP if the material is encapsulated or is not friable.) As discussed, project planning and implementation of proper handling and disposal techniques would offset the potential for any adverse impacts.

Safety concerns for children are associated with construction and demolition activities and the location of housing areas near water. While C&D activities would not use explosive or hazardous materials, other unique risks to children exist. The project design and lease agreement for the developer performing these activities would be required to include safety precautions to protect children in the residential areas surrounding the work sites. Such safety precautions would include adequate measures to restrict access to C&D sites, given that children may be attracted to these areas to play. Additionally, the developer would be required to consider all aspects of child safety during work and nonwork hours. This would include restricted access during work hours, site preparation, and nonwork hours and the minimization of slip/trip/fall hazards associated with C&D activities.

Potential safety concerns for children may exist for operation of housing areas near the waterfront (at Soundside Manor, the Poquito Bayou Expansion area, and Capehart/Wherry). It is reasonable to conclude that risks may arise from children playing in or around Santa Rosa Sound, Poquito Bayou, or Garnier's Bayou who are unsupervised, without a personal flotation device, or unable to swim. These water areas may be attractive to children for play. Safety precautions near the waterfront for child protection would be required. The developer would consider modifying precautionary measures applied to housing sites for the waterfront area. The developer would erect signs at the waterfront to warn residents of the potential drowning hazard, and would emphasize the need to supervise children up to the age of 14 and for children to use a personal flotation device. If possible, the developer would locate emergency equipment close to the waterfront area.

Children are more sensitive to noise than adults. Mild hearing loss as a child or young adult may set the stage for significant premature hearing loss. Noise associated with the MFH project would mostly come from construction and demolition equipment. Noise analysis results, discussed in Section 4.7, *Noise*, find that the sounds from these activities would be intermittent and short in duration, and would not contribute in any appreciable manner to the existing noise environment. As a result, the Air Force does not anticipate special risks to children from construction noise.

4.5.4 Alternative 1: White Point Area

Parcels 1–7 are undeveloped; therefore, there is no potential for encountering chlordane-impacted soils from historic pesticide applications in housing areas. For other issues associated with job site safety, there are no environmental consequences which were not previously discussed under *Proposed Action Commonalities*. As such, no adverse impacts would occur.

4.5.5 Alternative 2: Eglin Main Base / Valparaiso

Where housing previously existed in Parcel 1, any chlordane-contaminated soils would be handled as described under the *Proposed Action Commonalities* section. For other issues associated with job site safety, there are no environmental consequences which were not previously discussed under *Proposed Action Commonalities*. As such, no adverse impacts would occur.

4.5.6 Subalternative 2a: Eglin Main Base (Preferred Alternative)

There are no environmental consequences associated with job site safety for Subalternative 2a not previously discussed under Alternative 2 or *Proposed Action Commonalities*. As such, no adverse impacts would occur.

4.5.7 Alternative 3: North Fort Walton Beach Area

Alternative 3 – Parcels 1–5

Parcels 1–5 are undeveloped; therefore, there is no potential for encountering chlordane-impacted soils from historic pesticide applications in housing areas. For other issues associated with job site safety, there are no environmental consequences which were not previously discussed under *Proposed Action Commonalities*. As such, no adverse impacts would occur.

4.5.8 Alternative 4: Mix Alternative

Since the mix alternative entails a potential combination of several different parcels, the impacts would vary depending on which parcels are chosen and the extent to which they are developed. Each individual parcel was analyzed previously under its respective alternative. Table 4-40 provides a graphical summary of the impacts by parcel for safety. Impacts are generally summarized using a color code as follows:

- Green – No beneficial or adverse impact
- Yellow – Potential for adverse impact, but not significant; A major variance from existing safety conditions.

The color coding in Table 4-40 reflects the degree of impact with consideration of non-discretionary mitigations that would be required as part of the Proposed Action and alternatives. Non-discretionary mitigations associated with safety include compliance with Occupational Safety and Health Administration (OSHA) standards. Given the OSHA requirements, the Air Force has not identified any other requirements or safety mitigations.

This color coded chart provides a summary of impacts so that the decision maker can easily see how a potential combination of parcels may affect safety at each respective parcel. A combined summary table is provided in the "Summary of Impacts" section at

the end of Chapter 5 that shows each individual parcel's potential impacts under each resource area.

Table 4-40. Alternative 4 – Safety Summary

Alternative / Parcel	Safety	
	Job Site Safety	Exposure to Chlordane in Soils
Commonalities		
Eglin Main Base		
Hurlburt Field		
Camp Rudder		
Camp Pinchot		
Poquito Bayou		
1		
2		
3		
4		
5		
6		
7		
Alternative 2		
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
Subalternative 2a (Preferred Alternative)		
1		
Alternative 3		
1		
2		
3		
4		
5		
No Action*		

Green = No beneficial or adverse impact; Yellow = Potential for adverse impact, but not significant.
*Note: The impacts associated with the No Action Alternative include potential impacts associated with implementation of projects identified under the No Action Alternative in Chapter 2, Section 2.3.1 as they relate to the region of influence for that particular resource.

Regulatory Requirements / Mitigations

As standard practice/procedure, all actions would be accomplished by technically qualified personnel and would be conducted in accordance with applicable Air Force safety requirements, approved technical data, and OSHA and AFOSH standards, thus minimizing potential worksite and job-related accidents and injuries. The developer would include maintenance of restricted access during work hours, site preparation, and nonwork hours, and the minimization of slip/trip/fall hazards associated with construction and demolition activities.

One non-discretionary mitigation would require the developer to evaluate chlordane concentrations in areas with chlordane-impacted soils prior to disturbing these soils. As required, measures would be taken to prevent fugitive dusts of airborne soil particles. Implementation of these actions would preclude the potential for any significant impacts.

4.6 HAZARDOUS MATERIALS AND WASTE

This section addresses potential consequences associated with hazardous materials and hazardous waste management. Specific issues addressed include hazardous materials and waste management, Environmental Restoration Program (ERP) sites, asbestos and LBP in structures, and chlordane in soils.

4.6.1 Analysis Methodology

The analyses focused on how and to what degree the alternatives affect hazardous materials usage and the management and hazardous waste generation and management. Potential impacts related to hazardous materials and solid and hazardous wastes were analyzed based on the following criteria:

- *Result in an increased likelihood of an uncontrolled release of hazardous materials that could contaminate soil, surface/ground water, or air, such as a petroleum spill from storage tanks or construction equipment.* The analyses identified activities associated with the Proposed Action and, using process knowledge or other available data, predicted the types and hazardous materials that would likely be used during these activities. A significant impact would result if implementation of the Proposed Action resulted in the use of hazardous materials with which are highly toxic or have a potential to cause severe environmental damage (e.g., extremely hazardous substances as listed in the Superfund Amendments and Reauthorization Act Title III).
- *Generation of solid and hazardous wastes types or quantities that could not be accommodated by the current management system, as could result from the generation of waste classified as acute, which are very toxic and can be fatal to humans in small amounts.* The analyses identified activities associated with the Proposed Action and, using process knowledge or other available data, predicted the types of hazardous wastes that would likely be generated from these processes/activities. Significant impacts were identified if the proposed actions resulted in generation of waste in such quantities as to affect the current hazardous waste generator classification of the installation or pose unique disposal problems.
- *Potential for adverse impacts to an existing ERP site, as could be caused by disturbing the ground in a site identified as having contaminated soil, or by causing damage to existing site remediation infrastructures (e.g., pumps, tanks) from proposed activities.* The analysis methodology identified existing ERP sites and compared the

locations of these sites with the locations of proposed activities. Significant impacts were identified when proposed activities overlapped existing ERP sites. In these cases, site-specific conditions, such as the existence of land use controls, were analyzed against proposed construction/training activities to assess the extent of impacts.

- *Potential for adverse health and safety impacts from the presence of asbestos-containing building material (ACBM), LBP, and chlordane in and around MFH units.* The analyses evaluated whether activities associated with the Proposed Action posed any unusual risks to military personnel, visitors, nearby residents, and the general public off-site from exposure to these materials.

4.6.2 No Action Alternative

The environmental consequences for projects associated with the No Action Alternative would be the same as those described in the following section, *Proposed Action Commonalities*. As such, no adverse impacts would occur. Additionally, there are no aspects of projects under the No Action Alternative that would cause significant impacts to any element of the Proposed Action commonalities or alternatives discussed below.

4.6.3 Proposed Action Commonalities

All Existing Housing Areas

Hazardous Materials – Hazardous materials are employed at Eglin AFB to support a variety of mission activities. The Department of Defense Pollution Prevention Strategy established an aggressive program to reduce or eliminate toxic chemicals and extremely hazardous substances associated with new weapons systems. The program integrates environmental considerations into acquisition documentation, strategies, plans, and the planning and awarding of contracts.

New housing units would be constructed/renovated utilizing normal construction methods, which would limit the use, to the extent possible, of hazardous materials. Petroleum products, (e.g., fuel for equipment) and other hazardous materials (e.g., paints and solvents) would be used during construction/renovation activities. These materials would be stored in the proper containers, employing secondary containment as necessary to prevent/limit accidental spills.

Both installations have developed emergency response procedures and site-specific contingency plans for all hazardous materials locations. All spills and accidental discharges of petroleum products or hazardous materials would be reported to the Eglin AFB or Hurlburt Field Spill/Emergency Response Coordinator. The installation Spill/Emergency Response Coordinator would oversee all cleanup activities and would ensure that cleanup activities were conducted according to established procedures.

Hazardous Wastes – There is a potential for housing construction activities to generate small quantities of hazardous wastes because many paints, solvents, and other chemicals used in construction/renovation activities can be hazardous waste when disposed or spilled. Additionally, renovation/demolition of older housing units could result in the production of LBP or asbestos wastes, as well as generation of thermostats and fluorescent lamps containing mercury or ballasts containing polychlorinated biphenyls. The management of theses wastes would be performed according to prescribed procedures already in place (e.g., properly characterizing, storing, and disposing of these wastes). There is also a pollution prevention plan designed to prevent or reduce pollution, reduce safety and health risks, and recycle wastes when possible. Wastes that cannot be recycled are disposed of in a manner approved by the USEPA, at licensed facilities.

Environmental Restoration Program Sites – Based on the analysis, the Air Force does not anticipate impacts from the presence of ERP sites. Planned construction activities would avoid all ERP sites, such as water towers in MFH areas.

Asbestos – Asbestos debris may be generated as a result of proposed building demolition or renovation activities. Asbestos-containing materials, such as mastic and floor tiles, have been identified in older housing units on Eglin AFB and Hurlburt Field. FDEP requires contractors to notify applicable state and local agencies before demolition or renovation of buildings that contain certain threshold amounts of asbestos. The developer would be required to provide written notification to FDEP at least 10 working days before beginning the demolition or any asbestos removal project. Consequently, asbestos surveys would have to be performed on buildings (that have not already undergone survey) prior to any renovation/demolition activities. The developer would also be required to implement appropriate air quality monitoring and containment requirements to mitigate exposure to workers or other personnel.

Proper disposal of asbestos wastes would be conducted as directed by the National Emission Standards for Hazardous Air Pollutants (NESHAP) [40 CFR 61.40–157]. Contractor personnel would have to be trained and certified. Also, the contractor would need to submit an asbestos work/disposal plan for any demolition. Transport and disposal documentation records, including signed manifests, would also be required. Implementation of these management requirements would mitigate any adverse impacts resulting from ACBM. Asbestos would not be employed for new construction; therefore, there would be beneficial impacts associated with the removal of existing ACBM.

Lead-Based Paint – LBP debris may be generated as a result of proposed building demolition or renovation activities. Materials containing LBP have been found in older buildings on Eglin AFB and Hurlburt Field. Demolition/renovation of structures known to contain LBP would be conducted in accordance with applicable regulations.

Proper disposal of lead-containing wastes would also be conducted in accordance with state and federal regulations, including the Toxic Substances Control Act of 1976 and OSHA. Further, these wastes would be accompanied by a waste manifest and disposed at a state-approved facility. The appropriate management of LBP is not expected to create adverse impacts. LBP would not be employed for new construction; therefore, there would be beneficial impacts from the removal of existing LBP.

Chlordane – Chlordane was used in the past in MFH areas for the control of subterranean termites. Based on USEPA guidance, legally applied chlordane is not required to be remediated under either CERCLA or RCRA. Soil contaminated with pesticide used for its intended purpose can be managed in-place. Therefore, as long as disturbed soils are left on-site and covered with top soil, there is no need for additional sampling or reporting. However, should soils need to be removed, transported, treated and/or disposed of off-base, RCRA regulations would apply to the identification, transportation, and disposal of this material. Some chlorinated pesticides may potentially require disposal as hazardous waste based on waste characterization sampling at time of disposal. Demolition of homes with chlordane-impacted soils must also consider the safety of construction workers. Prior to disturbing these soils, construction workers would be given notice of chlordane presence during site safety briefings, provided material safety data sheets for chlordane, and standard health and safety practices in accordance with 29 CFR 1926, Safety and Health Regulations for Construction would be implemented. During construction, efforts should be made to prevent fugitive dusts of airborne soil particles.

4.6.4 Alternative 1: White Point Area

Alternative 1 – Parcels 1–7

Parcels 1–7 are undeveloped; therefore, there is no potential for encountering asbestos, LBP, or chlordane-impacted soils from historic use in housing areas. There are also no documented ERP sites present. However, should any unusual odor, soil, or groundwater coloring be encountered during development activities in any areas, construction would cease and the Eglin AFB Environmental Management Restoration branch would be contacted immediately. Implementation of these actions would preclude the potential for any significant impacts. For other issues associated with hazardous materials and wastes, there are no environmental consequences which were not previously discussed under *Proposed Action Commonalities*. As such, no adverse impacts would occur.

4.6.5 Alternative 2: Eglin Main Base/Valparaiso

Alternative 2 – Parcels 1–11

Parcels 1, 9, and 10 are partially developed; potential issues and associated environmental consequences are similar to those described under the Proposed Action

Commonalities. Parcels 2–8 and 11 are undeveloped; therefore, there is no potential for encountering asbestos, LBP, or chlordane-impacted soils from historic use in these areas. There are also no documented ERP sites present. For other issues associated with hazardous materials and wastes, there are no environmental consequences which were not previously discussed under *Proposed Action Commonalities*. As such, no adverse impacts would occur.

4.6.6 Subalternative 2a: Eglin Main Base (Preferred Alternative)

There are no environmental consequences associated with hazardous materials and wastes for Subalternative 2a not previously discussed under Alternative 2 or *Proposed Action Commonalities*. As such, no adverse impacts would occur.

4.6.7 Alternative 3: North Fort Walton Beach Area

Alternative 3 – Parcels 1–5

Parcels 1–5 are undeveloped; therefore, there is no potential for encountering asbestos, LBP, or chlordane-impacted soils from historic use in housing areas. There are also no documented ERP sites present. For other issues associated with hazardous materials and wastes, there are no environmental consequences which were not previously discussed under Proposed Action Commonalities. As such, no adverse impacts would occur.

4.6.8 Alternative 4: Mix Alternative

Since the mix alternative entails a potential combination of several different parcels, the impacts would vary depending on which parcels are chosen and the extent to which they are developed. Each individual parcel was analyzed previously under its respective alternative. Table 4-41 provides a graphical summary of the impacts by parcel for hazardous materials and waste. Impacts are generally summarized using a color code as follows:

- Blue – Beneficial impact; Reduces exposure potential to personnel and residents.
- Green – No beneficial or adverse impact
- Yellow – Potential for adverse impact, but not significant; Disturbs chlordane contaminated soils, requires hazardous material abatement.

The color coding in Table 4-41 reflects the degree of impact considering implementation of non-discretionary mitigations. Such mitigations include asbestos controls and contaminated soil handling/disposal requirements; a list of mitigations is provided after the table. Given OSHA, NESHAP, CERCLA, and RCRA requirements, the Air Force has not identified any discretionary mitigations over and above the non-discretionary mitigations required.

Table 4-41. Alternative 4 – Hazardous Materials and Waste Summary

Alternative / Parcel	Hazardous Materials / Waste			
	Hazardous Materials/Waste Management	Asbestos/LBP Management	ERP Sites	Chlordane in Soils
Commonalities				
Eglin Main Base				
Hurlburt Field				
Camp Rudder				
Cam Pinchot				
Poquito Bayou				
Alternative 1				
1				
2				
3				
4				
5				
6				
7				
Alternative 2				
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
Subalternative 2a (Preferred Alternative)				
1				
Alternative 3				
1				
2				
3				
4				
5				
No Action*				

Blue = Beneficial impact; Green = No beneficial or adverse impact; Yellow = Potential for adverse impact, but not significant.

*Note: The impacts associated with the No Action Alternative include potential impacts associated with implementation of projects identified under the No Action Alternative in Chapter 2, Section 2.3.1 as they relate to the region of influence for that particular resource.

This color coded chart provides a summary of impacts so that the decision maker can easily see how a potential combination of parcels may affect hazardous materials and waste at each respective parcel. A combined summary table is provided in the "Summary of Impacts" section at the end of Chapter 5 that shows each individual parcel's potential impacts under each resource area.

Regulatory Requirements/Mitigations

The primary issue associated with hazardous materials and wastes are potential releases of hazardous materials during construction activities. These activities would utilize standard construction methods, limiting the use of hazardous materials to the maximum extent possible. Compliance with Air Force best construction practices, including adherence to the Eglin AFB and Hurlburt Field Spill Prevention, Control, and Countermeasure Plans, is standard practice/procedure and would further reduce the potential for adverse impacts associated with spills and hazardous materials and waste handling.

As standard practice/procedure, the FDEP requires the contractor to notify applicable state and local agencies before demolition or renovation of buildings that contain certain threshold amounts of asbestos. The developer must provide written notification to the FDEP at least 10 working days before beginning the demolition or any asbestos removal project. Consequently, the developer must conduct asbestos surveys on buildings (that have not already undergone survey) prior to renovation/demolition.

As part of Air Force procedures at Eglin AFB and Hurlburt Field, the developer would be required to implement the following as part of project activities to minimize potential impacts associated with hazardous materials:

- The developer would be required to submit all construction project programming documents, designs, and contracts to both the 96th Civil Engineer Group/Environmental Compliance Branch and the 1st Special Operations Civil Engineer Squadron Asset Management.
- The developer would be required to conduct LBP surveys for the alteration or demolition of an existing housing structure (unless conducted previously).
- The developer would be required to stipulate appropriate abatement and disposal requirements for LBP in project designs.
- The developer would be required to conduct asbestos surveys on buildings that have not been previously surveyed and utilize a certified contractor when removing ACBMs. Project personnel would be required to adhere to established procedures set forth for the safe handling and transport of these materials as outlined in Eglin's Hazardous Materials Management Plan.
- Planned construction activities would avoid all ERP sites, such as water towers in MFH areas. Regardless, should any unusual odor, soil, or groundwater coloring be encountered during development activities in any areas, construction would cease and the Eglin AFB Environmental Management Restoration branch would be contacted immediately. Implementation of these actions would preclude the potential for any significant impacts.

4.7 NOISE

4.7.1 Analysis Methodology

Because construction activities would be relatively constant and would occur in residential areas, construction noise is evaluated in this EIS. Construction noise was evaluated using Roadway Construction Noise Model (RCNM) version 1.00, the Federal Highway Administration's standard model for the prediction of construction noise (USDOT, 2006). RCNM has the capability to model types of construction equipment that would be expected to be the dominant construction-related noise sources associated with this action. All construction noise analyses were assumed to make use of a standard set of construction equipment. Construction noise is expected be limited to normal working hours (7:00 AM to 5:00 PM). Construction noise impacts are quantified using the 8-hour noise level equivalent ($L_{eq(8)}$) noise metric as calculated on an average busy working day during construction.

Construction noise was evaluated for one construction site and may be applied to each of the sites individually for potential negative effects to sensitive receptors in the vicinity of the construction site. Construction noise was evaluated at various distances from the construction equipment. Noise levels were evaluated for receptors at 100-foot increments. Noise abatement measures were not considered in this analysis, as it is unknown if abatement procedures would be utilized; this provides for a more conservative analysis. The same types of equipment are assumed to be used on each construction site. Annoyance and the possibility of adverse health effects increase at noise levels above 65 A-weighted decibels (dBA); therefore, areas exposed to noise levels above 65 dBA are considered to be significantly impacted.

The F-35 aircraft operational noise is discussed in this analysis by using two methods of determining impacts. The first method is for populations exposed to operational noises in the 65 to 75 dB DNL range. The Schultz curve defines a generally accepted dose-response relationship between transportation noise and annoyance. This relationship, as updated by Finegold in 1994 (Finegold et al., 1994), was used to estimate noise annoyance levels in the communities surrounding installations proposed to support JSF training. Of the population that would be exposed to noise at greater than 75 dB DNL, approximately 37 percent to more than 70 percent (depending on their exact exposure level) would be expected to be highly annoyed by noise. A higher percentage of the population can be expected to be annoyed to a degree less than "highly" annoyed.

The National Academy of Sciences 1977 report, *Guidelines for Preparing Environmental Impact Statements on Noise* (National Research Council [NRC]/National Academy of Sciences [NAS], 1977) states that community response to noise in these areas (greater than 75 dBA) can be expected to be "very severe." Although permanent hearing loss is unlikely, temporary threshold shifts may occur depending on an individual's outdoor exposure to aircraft noise events. Approximately 12 to 37 percent of the individuals

exposed to noise between 65 and 75 dB DNL would be expected to be highly annoyed by noise. Community reaction in these areas is expected to range between "significant" and "severe."

For noise levels greater than 75 dB DNL, it is recommended that a potential hearing loss be calculated for the affected population. This is assessed using a noise induced hearing loss in terms of the Noise-Induced Permanent Threshold Shift (NIPTS), which is a quantity that defines the permanent change in hearing level, or threshold, caused by exposure to noise (USEPA, 1982). For noise exposure within the 80 to 81 dB DNL contour line, the expected lifetime average value of NIPTS (hearing-loss) is 3.0 dB. The most sensitive of the population would be expected to show no more degradation to their hearing than experiencing a 7.0 dB average NIPTS hearing loss at the 80 to 81 dB DNL. The actual noise exposure for any person living in the at-risk area is determined by the time that person is outdoors and directly exposed to the noise. The majority of those living within the applicable DNL contour would not be resident during daytime hours; they may be at work, school, or involved in other activities outside the at-risk area. Many will be inside their homes, thus, exposed to lower noise levels, benefiting from the noise attenuation provided by the house structure. As the actual activity profile is impossible to generalize, it is assumed that residents are fully exposed to the DNL level of noise appropriate for their residence location. According to the USEPA documents titled *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety* and *Public Health and Welfare Criteria for Noise*, changes in hearing level of less than 5 dB are generally not considered noticeable or significant. At-risk populations, such as children, and the impacts from noise are also discussed in Section 4.2, *Socioeconomics*.

Concerns regarding noise relate to certain potential impacts such as hearing loss, nonauditory health effects, annoyance, speech interference, and sleep interference. Impact analysis evaluated construction and demolition noise using a representative maximum noise scenario based on the upper-range housing unit density of six units per acre. Residential noise also represents a long-term change to the existing noise environment. Analysis evaluated potential impacts to the existing noise environment associated with additional residential noise using this scenario. Impact analysis considered and compared noise associated with operational activities, human presence at the installation, transportation related noise, and C&D activities associated with the alternatives to current conditions in order to assess impacts.

Construction and demolition would occur over a multiyear period, and at any one time, a few projects at multiple locations would be expected to be ongoing simultaneously. Therefore, the Air Force expects the noise associated with active construction sites to be intermittent and transitory over time. The analysis assumed that the primary sources of noise during these activities would be truck and vehicle traffic, heavy earth-moving equipment, and other construction equipment or infrastructure powered by internal combustion engines used on-site.

Using the RCNM, construction equipment was assumed for demolition and construction activities to give noise levels at various distances from the project site. Noise levels were calculated as an equivalent noise level (average acoustic energy) over an eight-hour period (i.e., the $L_{eq(8)}$). The maximum sound level shows the sound level of the loudest piece of equipment, which is generally the driver of the $L_{eq(8)}$ sound level. Table 4-42 shows the noise levels expected at receptor distances at 100-feet increments.

Table 4-42. Demolition and Construction Noise

Receptor Distance (feet)	Max Sound Level (dBA)	Sound Level (dBA) ($L_{eq(8)}$)
Demolition		
100	75.6	76.7
200	69.6	70.6
300	66.1	67.1
400	63.6	64.6
500	61.7	62.7
Construction		
100	79.2	80.2
200	73.1	74.2
300	69.6	70.7
400	67.1	68.2
500	65.2	66.2

dBA = A-weighted decibel; $L_{eq(8)}$ = equivalent noise level (average acoustic energy) over an eight-hour period

Onsite, all workers potentially exposed to elevated noise associated with their activities would comply with all hearing-protective requirements specified by OSHA. Any military/federal civilians visiting onsite would adhere to the Air Force standard, which is more stringent (85 dBA versus the 90-dBA OSHA standard).

Offsite, noise experienced on a day-to-day basis depends on the specific activity underway and its proximity to the site edge where a receptor may be present. The relatively low time-averaged noise levels calculated indicate that neither project-related demolition or construction activities would be excessively intrusive.

Most, if not all, of the areas involving demolition and construction are situated within areas already exposed to some form of noise from airfield operations and vehicular highway traffic. Construction noise emanating offsite would probably be noticeable in the immediate site vicinity but would not be expected to create adverse impacts. construction and demolition-related noise is intermittent and transitory and would cease at the completion of the project. Restricting C&D activities on weekends and holidays and maintaining normal working hours during weekdays would serve to further minimize potential adverse impacts to local neighborhoods from noise associated with these activities.

The Sound exposure level (SEL) metric, as described in Section 3.7.1, is used in the following analysis for comparing fast-moving and slow-moving aircraft. SEL does not

directly represent the sound level heard at any given time; rather, it provides a measure of the total sound exposure for an entire event compressed into one second. This metric is a good predictor of several noise impacts including sleep disturbance and speech interference

4.7.2 No Action Alternative

In the No Action Alternative, the projects considered are primarily construction projects. Construction noise would cause localized (within 500 feet of the project site) increases in noise during construction activities and would decrease once construction is complete. The project that would have the greatest impact on the noise environment is the Eglin BRAC action. The BRAC action would bring the F-35 aircraft training operations and the 7th Special Forces Group (Airborne) (7SFG(A)) to Eglin AFB. The F-35 aircraft noise would dominate the noise environment. The F-35 noise contours for the preferred alternative (Alternative 1A) of the F-35 SEIS were used to determine potential noise impacts from air operations to the existing residential areas discussed in this document. This scenario is for 59 F-35 aircraft operating from Eglin Main Base, without the limitations imposed on Runway 19 by the February 2009 ROD for the BRAC FEIS (the "BRAC ROD"). While the existing conditions are represented by the No Action Alternative in the F-35 SEIS (59 F-35 aircraft operating from Eglin Main Base, with BRAC ROD-imposed limitations on Runway 19), those conditions will change over time because the Runway 19 limitations are not sustainable. However, since the Air Force could select any alternative in the F-35 SEIS, including the No Action Alternative, Chapter 6 provides analysis of the potential impacts of each alternative in the F-35 SEIS upon each alternative in this EIS.

Without the implementation of the MHPI, the noise from the F-35 aircraft would affect residents at the current residential areas. The DNL is typically used to determine potential annoyance to affected populations. The Wherry housing area is in the 65 to 70 dB DNL contours (50 to 61 percent of the population may be highly annoyed), and the Capehart housing area is in the 65 to 75 dB DNL contours (61 to 74 percent of population may be highly annoyed) (Figure 4-9). Based on F-35 SEIS data (Draft 2010), receptors located in Capehart housing would experience 177 aircraft noise events with an interior sound level greater than 50 dB L_{max} per average operating day (24-hour period). L_{max} is a measure of the loudest noise level occurring during a noise event. The 50 dB L_{max} threshold was chosen because an average home built to modern building codes, in a "windows closed" environment, provides 25 dB reduction from outdoor noise sources. This may result in some level of interruption of one's activities such as conversing, watching television, or talking on the telephone.

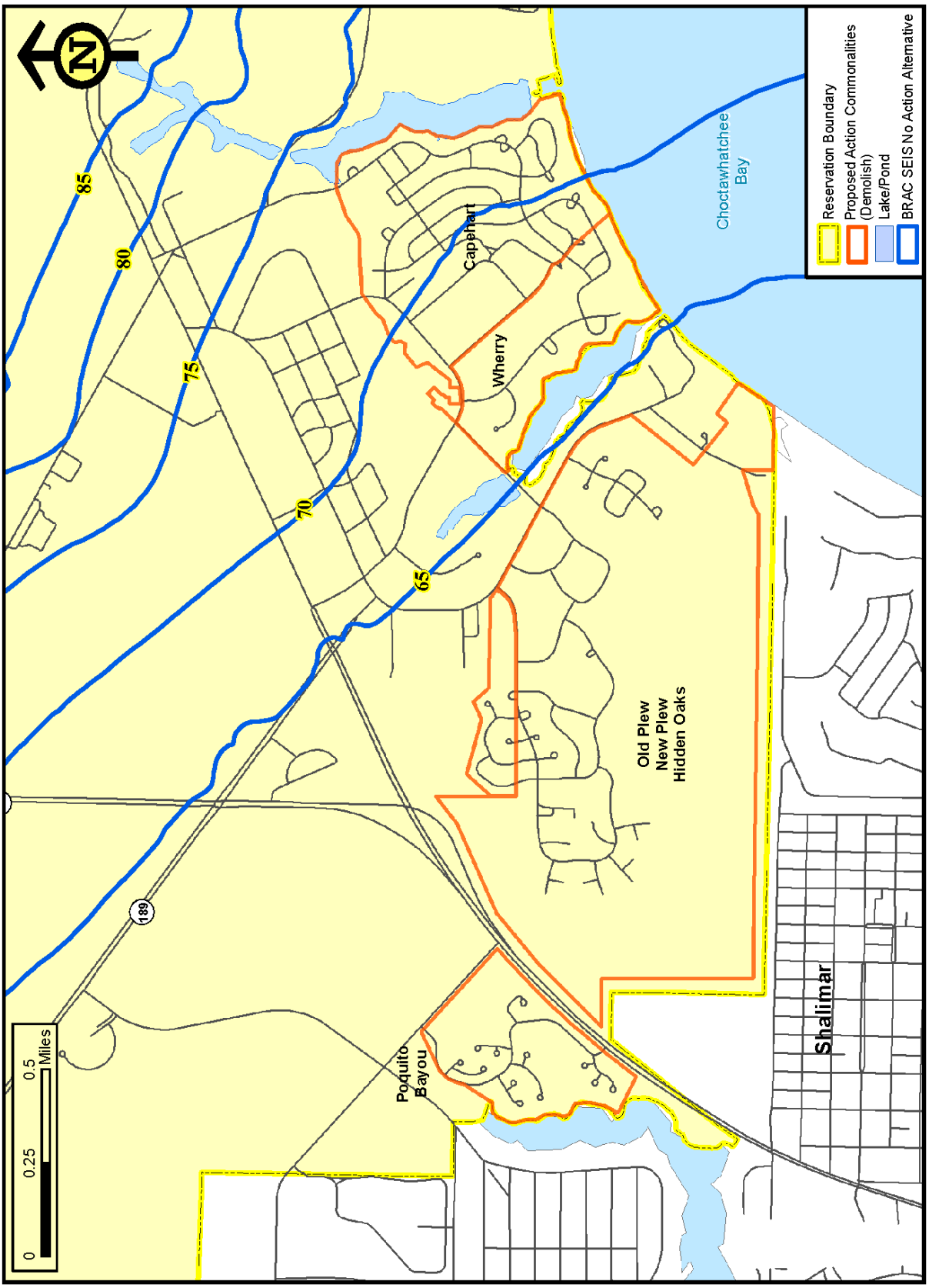

Figure 4-9. MHPI No Action Alternative Current Housing Areas and the F-35 SEIS No Action Alternative Noise Contours

The current Wherry and Capehart housing areas would be subject to aircraft sound exposure levels (SELs) of 99 dB to 112 dB. (While this metric gives a measure of the exposure of the entire acoustic event, it does not represent the sound level heard at any given time.) This level may result in sleep interruptions in approximately 30 percent of the affected population. Current residents would be subjected to increased aircraft noise, which would cause potential increase in annoyance and speech/sleep interruption.

Whenever possible, residential land use should be located below 65 dB DNL according to Air Force land use recommendations, otherwise outdoor-to-indoor noise level reduction measures would be required to reduce the level of noise affecting the residents. A minimum 25-dB noise level reduction is required to be exhibited in construction or renovation in areas exposed to noise at 65–70 dB DNL, and a 30-dB noise level reduction is required to be exhibited in construction or renovation in areas exposed to 70–75 dB DNL.

Individuals spending much of their time indoors are exposed to much less noise than individuals who spend large amounts of time outdoors. Standard, modern construction can be expected to provide 20 to 30 dB of exterior-to-interior noise level reduction when the windows are closed. Persons located on the 75 dB DNL noise contours line who spend all of their time in such a structure would experience a DNL of between 55 and 45 dB. There is very little potential for permanent or temporary hearing loss at noise levels below 75 DNL (NRC/NAS, 1977); however, most of the existing houses are more than 30 years old and do not have sufficient noise abatement in place to accommodate the F-35 overflights. As a result, since the MHPI would not be implemented under the No Action Alternative, retrofitting of existing housing would be required to minimize F-35 noise impacts to residents.

Nonauditory effects, such as high blood pressure, coronary disease, ulcers, colitis, and migraine headaches, have been linked to noise and are possible in areas exposed to high noise levels as part of the BRAC action. Noise is generally viewed as being one of a number of general biological stressors. It is often difficult to determine whether noise has contributed to development of any particular health condition, and no accepted methodology exists for the prediction of these health effects.

Noticeable structural vibration may result from low-level F-35 overflights. Physical effects of vibration are generally experienced at peak noise levels of greater than 130 dB. Vibration may add to the annoyance generated by noise-related activity interruption. In general, under the No Action Alternative, existing housing units in areas falling under elevated noise levels (depending on BRAC alternative selection) would likely need to be retrofitted with noise-dampening materials to minimize noise impacts to residents or users. Such areas may include Georgia Avenue, Old/New Plew, Wherry, and Capehart housing areas, depending on which BRAC alternative is selected.

4.7.3 Proposed Action Commonalities

Eglin Main Base Housing Areas

Under each alternative, demolition activities would cause an increase of noise in the immediate area (within 500 feet of operating equipment). Noise levels would exceed comfortable levels when within 100 feet of any operating equipment (76 dBA $L_{eq(8)}$). Any residents living in units during demolition activities would experience temporary increase in ambient noise. Demolition activities would occur during normal work hours (Monday through Friday, 7:00 AM to 5:00 PM).

Construction is alternative dependent, thus, impacts from construction noise will be discussed in detail for each alternative.

Poquito Bayou Housing Area

The implementation of the MHPI would increase the noise environment during construction activities. Currently this area is wooded with traffic noise from SR-85. Construction or demolition noise would cause a temporary increase in noise in this area; however, since this area would not be redeveloped, noise associated with residential activities would not occur.

Camp Pinchot Housing Area

Depending on the future use of this housing area, sound levels may increase due to increased traffic in the area; however, is not expected to have adverse impacts.

Camp Rudder Housing Area

Demolition and construction noises would increase the sound environment within 500 feet (greater than 60 dB) of the project sites during activity. Once project sites are completed, noises are expected to return to baseline levels (55 dB or less). No adverse impacts are expected from noise.

Hurlburt Field Housing Areas

Noise attributed to demolition and construction would cause a temporary increase in the baseline sound environment in a localized area (within 500 feet of the project site). Based on analysis, the Air Force has not identified any potential for impacts in this area.

4.7.4 Alternative 1: White Point Area

Under the following alternative parcels, Table 4-42 was used to determine potential noise effects to sensitive receptors in the vicinity of the project sites. The parcels proposed for Alternative 1 would not be affected by F-35 aircraft noise greater than

65 dB DNL; therefore, no adverse impacts to residents on these parcels from aircraft operations would occur.

Alternative 1 – Parcel 1

With the introduction of construction equipment, the sound environment would change from that of rural sounds. Residents located along the northern edge would experience elevated noise levels within 500 feet of the construction site and the noise from construction activities may cause minor disruption to the school located 550 feet from the northern border. The sound levels are not expected to cause harm to receptors (less than 65 dBA at distances greater than 500 feet) in the area and may be mitigated with the use of buffers or vegetation. The Air Force has not identified any adverse impacts from construction noise for Parcel 1.

Alternative 1 – Parcel 2

Construction activities on this parcel may affect residents along the north and east borders of this parcel if the developer builds housing up to the parcel borders. Residents within 500 feet of the construction would experience elevated noise levels (an increase from approximately 55 dBA to 65 dBA) while construction activities are occurring. To minimize annoyance to nearby receptors, construction and demolition work would occur during normal work days and working hours. The Air Force has not identified any adverse impacts for Parcel 2 from noise.

Alternative 1 – Parcel 3

Potential receptors are residents approximately 1,500 feet northeast and southwest of this parcel. Noise from construction or demolition equipment decreases sufficiently at these distances to cause no adverse effects to residents. Construction would cause a temporary and short-term increase in the sound environment and would return to low noise levels once development is complete.

Alternative 1 – Parcel 4

Parcel 4 for Alternative 1 would have the utilization of a wooded area to act as a buffer between construction noise and nearby (2,000 feet) residents located northeast, southwest, and south of the parcel borders. Noise from construction activities are not expected to affect nearby residents. The Air Force has not identified any adverse impacts from construction noise for this parcel.

Alternative 1 – Parcel 5

Noise from construction and/or demolition activities may cause some annoyance to residents located along the parcel borders on the west and east. Land that would be

developed to the parcel borders would increase noise levels to residents within 500 feet of operating construction equipment. Within 300 feet of the project site, receptors would experience an eight hour average noise level of 70 dBA. This may cause annoyance and minor disruptions to hearing normal levels of conversation on the phone or outside. The churches are not expected to be adversely affected as the construction activities would occur only during normal work days and working hours. Any activities occurring during daytime hours or administrative jobs may experience increased noise from construction. These would entail minor interruptions in hearing of normal speech. Those at the school located 500 feet south of the southern edge of Parcel 5 would experience elevate noise levels when outside. The construction noise is not expected to cause harmful effects to children or faculty located at the school. This alternative has the potential to cause annoyance to nearby residents and church along the parcel border, but the noise levels would not be sufficient enough to cause any adverse health effects to receptors; therefore, no adverse impacts are expected.

Alternative 1 – Parcel 6

Residents located along the eastern edge of this parcel would be subject to noise levels greater than 65 dBA within 500 feet of the parcel border. As most residents are out of the house during daytime hours when construction activities occur, the potential for adverse effects are minimal. These noise levels apply to a receptor outside; those inside their homes would experience some sound reduction, thus, would be affected less. The Air Force has not identified any adverse impacts from noise for Parcel 6.

Alternative 1 – Parcel 7

Construction noise would cause a temporary, short-term increase in ambient noise. Residential areas adjacent to the eastern and southern parcel borders would be subject to increased daytime noises (greater than 65 dBA within 500 feet). The schools located 1,000 feet from the project site are not expected to be affected by the construction noise, as the sound would have decreased to sufficiently low (less than 55 dBA) levels. Noise levels at the church, 300 feet south, would experience an 8 hour equivalent average of 70 dBA during construction activities. This may cause some interruptions to any church activities occurring during the day but is expected to be minimal as construction would occur during normal work days and hours (Monday through Friday, 7:00 AM to 5:00 PM). The Air Force has not identified any adverse impacts to residents, the school, and minor disturbances maybe experienced by those at the nearby church from noise.

4.7.5 Alternative 2: Eglin Main Base/Valparaiso

Implementation of any of the proposed JSF flight training alternatives would increase noise exposures on and off Eglin AFB (Figure 4-9). Unless additional noise reduction measures (e.g., sound insulation) were incorporated into the affected housing units, the

increased noise exposure and land use incompatibility would be a significant adverse impact. According to Eglin AFB's Air Installation Compatible Use Zone (AICUZ) study (U.S. Air Force, 2006b), residential housing is "discouraged in DNL 65–69 dB" and "strongly discouraged in DNL 70–74 dB" and measures to achieve a noise level reduction (NLR) of 25 and 30 dB, respectively, inside residential housing in such areas must be incorporated into the design and construction. Under the AICUZ program, Air Force policy requires new on-base development to follow the same compatibility criteria that are recommended to surrounding communities, to the maximum extent practical. It should be noted that these NLR criteria for indoor sound attenuation have no effect on outdoor noise and, therefore, measures that reduce outdoor noise should be used whenever practical. Outdoor noise mitigation measures such as site planning and design and the use of berms, barriers, and/or vegetation are practical and useful for ground-level noise, such as jet engine run-ups, motor vehicles, and motorized equipment, but will not reduce overhead noise. Thus, avoiding areas within 65 dB DNL or greater for new residential housing is the preferred course of action whenever practical.

In addition, areas at 75 dB DNL and above are not normally compatible with residential uses, and use of these areas for such purposes should be restricted. The outdoor-to-indoor sound attenuation for housing in areas within 65–74 dB DNL and avoidance of areas within 75 dB DNL and above would be considered non-discretionary mitigations.

Parcels 2–8 are located in a Military Influence Planning Area II, which requires sound attenuation for residential uses for areas exposed to 65–75 dB DNL. Areas experiencing noise above 75 dB DNL would not be suitable for residential uses (U.S. Air Force, 2006b).

Alternative 2 – Parcel 1

Construction activities would add to current noise levels from activities on Eglin AFB (i.e., aircraft, munitions). Residents living in units within this parcel may be affected during construction activities. Depending on the plan for development and the locations of any residents, receptors may be exposed to outside noise levels of 80 dBA at 100 feet from the construction activities. This may be mitigated by phasing construction activities to minimize the number of receptors affected. By using a minimum of 500 feet between potential receptors and the construction site, the effects would be minimized. The location of this parcel would be outside of the BRAC ROD-approved aircraft operations noise contours and would not require additional noise attenuation measures into the residences. With the use of mitigations, the Air Force does not expect adverse impacts from noise to potential receptors.

Alternative 2 – Parcel 2

A middle school is located approximately 1,000 feet east of this parcel and is the primary sensitive receptor. Construction noise would be sufficiently reduced (to less than 65 dBA) at the school location to cause no adverse effects to persons at the school.

Alternative 2 – Parcel 3

Residents located adjacent to parcel borders would be affected by construction noise. Allowing a minimum of 500 feet between residential areas and the construction equipment would reduce annoyance or affects to residents to noise levels within acceptable levels of 65 dBA or less. With the utilization of a 500-foot buffer, the Air Force has not identified any adverse impacts to nearby residents. Receptors closer than 500 feet would experience noise levels that would cause annoyance due to having to shout or the inability to hear normal conversation over the construction equipment. The Air Force has not identified any adverse health effects due to construction noise.

Alternative 2 – Parcels 4–7

There are no known sensitive receptors that would be affected by construction noise for this parcel, therefore, no adverse impacts are expected. Parcels 4, 5, and 6 are affected by the F-35 aircraft operations as shown in Figure 4-10, and the affected acreages are summarized in Table 4-43. Portions of these parcels would be subject to 65 dB DNL noise levels. The Air Force recommends that areas exposed to noise at 65–70 dB DNL, a 25 dB outdoor-to-indoor noise level reduction is required in order for the residence to be considered compatible with those noise levels.

Table 4-43. Noise DNL in Affected Proposed MHPI Parcels Compared to the F-35 SEIS No Action Alternative

Parcel	Acres	dB
Main Base Parcel 6	0.54	65
Main Base Parcel 5	0.82	65
Main Base Parcel 4	651.82	65
Main Base Parcel 9	87.68	65
Main Base Parcel 9	123.82	70
Main Base Parcel 10	94.33	65
Main Base Parcel 11	0.82	65

Alternative 2 – Parcel 8

Parcel 8 also has residential areas along its borders and would have effects on the receptors as described under Alternative 2 Parcel 3. A school is also located within 1,000 feet of the southern border that would not be affected by construction noise activities.

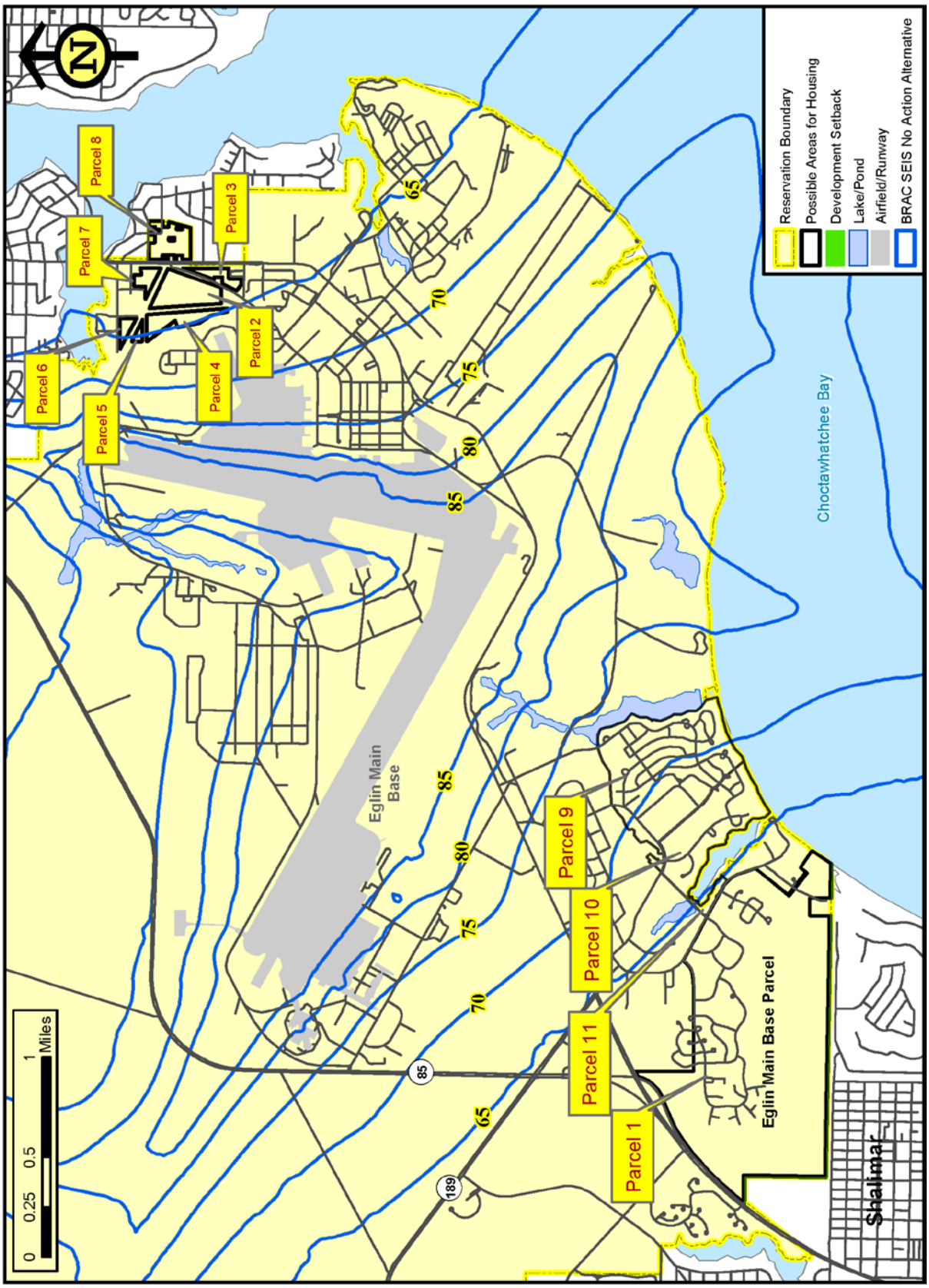

Figure 4-10. F-35 SEIS No Action Alternative Noise Contours and Eglin MHPI Alternative 2 Parcels

Alternative 2 – Parcel 9

Parcel 9 would be affected by the F-35 flight operations with 88 acres within the 65 dB DNL contour and 124 acres in the 70 dB DNL contour (Table 4-43 and Figure 4-10). Houses that are developed within these contours would require at least a 25-dB outdoor-to-indoor noise level reduction to be incorporated into the building design. The residents in these areas while outside would be affected by the elevated noise levels. Based on the analysis, the Air Force expects that this may cause annoyance to residents, but does not expect it to cause hearing loss to those affected. Revised F-35 operational data and noise modeling in the future may change the resulting impacts to this parcel, but the Air Force anticipates that any change will be overall beneficial, not detrimental.

Alternative 2 – Parcel 10

Construction noise would cause a temporary, short-term increase to ambient noise levels. If people are still residing in the Wherry housing while new construction is taking place there is the potential to cause some annoyance to residents that are in their homes during the day within 500 feet of the construction site. Based on analysis, the Air Force does not expect adverse effects, such as hearing loss, from construction noise on Parcel 10.

F-35 flight operations 65 dB DNL noise contour affects 94 acres of this parcel. As discussed under Alternative 2 – Parcels 4-7, houses built in this parcel would need special noise-attenuation measures incorporated into the residences. Revised F-35 operational data and noise modeling in the future may change the resulting impacts to this parcel, but the Air Force anticipates that any change will be overall beneficial, not detrimental.

Alternative 2 – Parcel 11

This parcel is currently undeveloped, which would mean the introduction of construction equipment, temporarily would cause an increase in the ambient sound environment. This parcel also is adjacent to the Old Plew, New Plew, and Hidden Oaks residential areas. Thus, construction along the southwestern border of this parcel may affect residents in the nearby housing area. Construction noise within 500 feet of the site is sufficient to cause disruptions in conversations to people outside their homes. Also the construction would occur during daytime hours when many will not be in their homes. No adverse impacts from construction noise are expected for Parcel 11.

A small portion (0.82 acre) of this parcel falls within the 65 dB DNL contour from flight operations. Housing built in this area would require special noise-attenuation measures incorporated into the structures to remain compatible with the land use. Revised F-35 operational data and noise modeling in the future may change the resulting impacts to this parcel, but the Air Force anticipates that any change will be overall beneficial, not detrimental.

4.7.6 Subalternative 2a: Eglin Main Base (Preferred Alternative)

This alternative would comprise the same actions as described for Alternative 2, except that 35 additional units would be built at Eglin Main Base (as opposed to Camp Rudder), and construction would occur on Alternative 2's Parcel 1. Current data and noise modeling indicate that this parcel would not be affected by operational F-35 aircraft noise contours greater than 65 dB DNL. Revised F-35 operational data and noise modeling in the future may change the resulting impacts to this parcel, but the Air Force anticipates that any change will be overall beneficial, not detrimental. Thus, it is anticipated that houses built in this area should not require special noise-attenuation measures. Potential noise effects were discussed in detail in the commonalities section for this alternative. No adverse impacts are expected from construction noise.

4.7.7 Alternative 3: North Fort Walton Beach Area

Alternative 3 – Parcel 1

This parcel utilizes a vegetative buffer that would reduce noise from construction equipment. Due to the buffer construction noise, the Air Force has not identified any adverse impacts to sensitive receptors.

Alternative 3 – Parcel 2

This parcel is located near a recreational park which is presumed to be used mostly after work hours and on weekends. Construction activities would occur only during normal work days and hours, thus, should have little effect on receptors using the recreational area. A school located 600 feet west of the north eastern border may experience slightly higher noise levels from construction activities (60–65 dBA). The noise is not expected to cause disruptions to classroom activity due to the sound reduction of the building walls. The Air Force has not identified any adverse impacts for Parcel 2.

Alternative 3 – Parcel 3

Residents located along the parcel border would be subject to elevated noise levels as discussed in detail under Alternative 2 Parcel 3. The church located 500 feet from the southern border may have minor increases in the baseline sound, not exceeding 66 dBA over an eight hour period. This is not sufficient to cause any adverse health effects or hearing loss. The Air Force has not identified any adverse impacts to receptors.

Alternative 3 – Parcel 4

A few homes are located near the western border that could be affected by construction noise. Due to the vegetation and distances greater than 500 feet from the parcel, it is expected that noise levels would be reduced to levels that would have no ill effect on any potential receptors. The Air Force has not identified any adverse impacts from construction noise.

Alternative 3 – Parcel 5

This parcel is located adjacent to established residential areas and may affect receptors as described in Alternative 2 Parcel 3. The Air Force has not identified any adverse impacts from construction noise.

4.7.8 Alternative 4: Mix Alternative

Since the mix alternative entails a potential combination of several different parcels, the impacts would vary depending on which parcels are chosen and the extent to which they are developed. Each individual parcel was analyzed previously under its respective alternative. Table 4-44 provides a graphical summary of the impacts by parcel for noise. Impacts are generally summarized using a color code as follows:

- Green – No beneficial or adverse impact
- Yellow – Potential for adverse impact, but not significant; Potential annoyance from construction noise and possibly F-35 noise, but would be temporary and intermittent.
- Red – Potential for significant adverse impacts; Location of housing in areas identified by the JLUS as incompatible due to noise concerns; would require non-discretionary mitigations to attenuate noise; may disturb residents while outside their homes.
- N/A – Not applicable

The color coding in Table 4-44 provides a summary of impacts so that the decision maker can easily see how a potential combination of parcels may affect noise at each respective parcel. A combined summary table is provided in the "Summary of Impacts" section at the end of Chapter 5 that shows each individual parcel's potential impacts under each resource area.

Regulatory Requirements/Mitigations

Discretionary mitigations that would reduce temporary construction noise effects to on- and off-base communities include phasing demolition and construction in a manner to reduce total noise generation, and conducting demolition and construction activities during

normal work days and working hours. The use of a construction noise management buffer (up to 500 feet where practicable) between construction activities and established housing areas would further decrease any potential effects of noise on receptors.

Measures to achieve a noise level reduction of 25 dB in areas between 65–69 dB DNL and a noise level reduction of 30 dB in areas of 70–74 dB DNL must be incorporated into the design and construction of portions of buildings where the public is received, in office areas, in noise sensitive areas, or where the normal noise level is low. Areas at 75 dB DNL and above are not normally compatible with residential uses and use of these areas for such purposes should be restricted (Okaloosa County, 2009). These are considered non-discretionary mitigations.

Table 4-44. Alternative 4 – Noise Summary

Alternative / Parcel	Noise			
	Residents	School(s)	Church(es)	Other Receptor
Commonalities				
Eglin Housing Areas		N/A	N/A	N/A
Hurlburt Field		N/A	N/A	N/A
Camp Rudder		N/A	N/A	N/A
Camp Pinchot		N/A	N/A	N/A
Poquito Bayou		N/A	N/A	N/A
Alternative 1				
1			N/A	N/A
2		N/A	N/A	N/A
3		N/A	N/A	N/A
4		N/A	N/A	N/A
5				N/A
6		N/A	N/A	N/A
7				N/A
Alternative 2				
1		N/A	N/A	N/A
2			N/A	N/A
3		N/A	N/A	N/A
4		N/A	N/A	N/A
5		N/A	N/A	N/A
6		N/A	N/A	N/A
7		N/A	N/A	N/A
8			N/A	N/A
9		N/A	N/A	N/A
10		N/A	N/A	N/A
11		N/A	N/A	N/A

Table 4-44. Alternative 4 – Noise Summary, Cont'd

Alternative / Parcel	Noise			
	Residents	School(s)	Church(es)	Other Receptor
Subalternative 2a (Preferred Alternative)				
1		N/A	N/A	N/A
Alternative 3				
1		N/A	N/A	N/A
2	N/A		N/A	
3		N/A		N/A
4		N/A	N/A	N/A
5		N/A	N/A	N/A
*No Action**				

Green = No beneficial or adverse impact; Yellow = Potential for adverse impact, but not significant; Red = Potential for significant adverse impacts

*Note: The impacts associated with the No Action Alternative include potential impacts associated with implementation of projects identified under the No Action Alternative in Chapter 2, Section 2.3.1 as they relate to the region of influence for that particular resource.

4.8 SOLID WASTE

4.8.1 Analysis Methodology

The alternatives evaluated within this EIS would result in the generation of construction and demolition (C&D) debris associated with the demolition, construction, and renovation of housing units and associated improvements (e.g., streets). The methodology utilized to estimate C&D wastes is discussed below.

Construction and Demolition Debris Estimation

C&D debris includes materials such as construction materials for buildings, concrete and asphalt rubble, and land-clearing debris. Sampling studies documented in *Characterization of Building-Related Construction and Demolition Debris in the United States* (USEPA, 1998) and *Estimating 2003 Building-Related Construction and Debris Materials Amounts* (USEPA, 2009) indicate that the solid waste generation rate during residential construction activities is 4.39 pounds per square foot (lbs/ft^2) of debris (USEPA, 2009). Similarly, the USEPA guidance indicates that the average generation rate associated with the demolition of residential structures within the United States is approximately 115 lbs/ft^2 (USEPA, 1998). Although generation rates were revised within the new USEPA guidance, average generation rates for demolition was highly dependent upon housing unit design; therefore the generation rates provided within the 1998 guidance were utilized for purposes of calculation of estimated debris quantities.

C&D debris would also be generated due to the removal or replacement of asphalt roads and streets within the housing areas. The amount of roadway potentially demolished during the project period was estimated using an average of miles per acre within military family housing areas. An analysis was conducted using geographic information system (GIS) data of several housing areas. The number of road miles

within each housing area was divided by the area's total acreage, producing an average of 0.019 mile of road per acre within family housing areas. For each housing area proposed for demolition, the number of total acres was multiplied by the conversion factor to get an average number of miles of roadway that would also potentially be demolished. The roads within the family housing areas do not have curbs.

Once the miles of roadway were known for each housing area, the total number of miles for all housing areas was multiplied by the road width (24 feet) and the average asphalt depth (0.5 feet). Discussions with the 96th Civil Engineer Group revealed that the asphalt depth on base roads ranges from 2 to 8 inches (in areas that have been resurfaced multiple times); a depth of 6 inches (0.5 feet) was determined to be a good estimate. The asphalt density (125 pounds per cubic foot) was then multiplied by the area to determine the total asphalt weight that would be produced from demolishing all the roadways within the housing areas slated for demolition. The number of pounds was then divided by 2,000 to give the weight in tons. Although the quantity of asphalt has been calculated within the EIS, it is anticipated that the bulk if not all of the asphalt generated will be recycled through milling and reused in construction projects.

For a determination of impacts associated with solid waste, adverse impacts would result if analysis indicates that the overall annual solid waste generation rate from assessed projects is between 20 to 40 percent of the average generation rate within the ROI and reduces landfill capacity by 5 to 10 years; significant adverse impacts would result from an overall annual solid waste generation rate exceeding 40 percent of the average generation rate within the ROI and reduction of landfill capacity by more than 10 years.

4.8.2 No Action Alternative

As described in Section 2.3.1 for the No Action Alternative, several predicted actions would occur at Eglin AFB that are not associated with the MHPI. Those actions are further discussed within this section.

2005 Base Realignment and Closure Decisions at Eglin AFB. Based upon actions currently under consideration, municipal solid wastes, as well as C&D wastes, will be generated from additional personnel and associated construction and demolition activities. It is anticipated that the construction of the cantonment areas and ranges may result in the generation of up to 230,885 tons of debris from construction and demolition. Range operations will also result in the generation of metallic debris from small-caliber weapons and aircraft munitions. Metallic debris is also anticipated to be generated during routine aircraft maintenance activities for the JSF IJTS. Current estimates indicate that approximately 530 tons of debris will be generated from range and flight operations. The addition of personnel from the 7SFG(A) and the JSF IJTS is anticipated to result in the annual generation of approximately 8,995 tons of municipal solid waste (i.e., garbage, paper waste).

Other Projects at Eglin AFB, Duke Field, and Hurlburt Field Listed. Although it is anticipated that the BRAC activities will have the most potential for impact on solid waste resources within the ROI, additional construction and demolition activities are included in Section 2.3.1 in addition to those included within the Comprehensive Plans for the respective facilities. Based upon the project descriptions, an additional construction of 98,880 square feet and demolition of 5,060 square feet have been identified. Debris from these C&D activities is estimated to be approximately 617 tons.

Eglin Main, Duke Field, and Hurlburt Field Comprehensive Plans. A review of the three comprehensive plans has indicated that over 3,581,000 square feet of MILCON projects have been identified, as discussed in Section 2.3.1. The projects include construction, demolition, or renovation of facilities or runways that will result in the generation of C&D wastes and several thousand tons of C&D debris. Depending upon the exact amount of construction or demolition involved, the quantity of C&D debris could range from 9,000 tons to in excess of 275,000 tons. The specific mass of debris generated depends solely on the amount of demolition and construction conducted at the installation.

Municipal Solid Waste

The planned and foreseeable projects at Eglin AFB (including Eglin Main, Duke Field, and Hurlburt Field) will result in the generation of both municipal solid wastes and C&D wastes. According to public data published by the FDEP, an average of approximately 203,616 tons of municipal solid waste (excluding C&D waste) was generated annually in Okaloosa County during calendar years (CY) 2002–2007 (FDEP, 2010a). In Santa Rosa County, the annual average of municipal solid waste generated (excluding C&D waste) for CY 2002–2007 was 184,313 tons (FDEP, 2010a). For Walton County, the annual average of municipal solid waste generated (excluding C&D waste) for CY 2002–2007 was 42,652 tons (FDEP, 2010a). Based upon these average municipal solid waste generation rates, the added 8,995 tons from additional personnel at Eglin AFB would result in an approximate 4.4 percent increase in Okaloosa County, an approximate 4.9 percent increase in Santa Rosa County, and an approximate 21 percent increase when compared to Walton County. Comparing the increase in solid waste to the average generation across the ROI indicates an overall 2.1 percent increase across the three-county area. These percentage increases assume that the average generation rate for the respective counties remains the same. Utilizing the generation rates and comparing to landfill life expectancies, the increase in municipal solid waste generation would equate to 1 year of landfill capacity per every 48 years or approximately 2 years of landfill capacity per 100 years of operation.

Construction and Demolition Waste

Along with the generation of additional municipal solid waste due to personnel increases at Eglin AFB, improvement projects and projects that include construction, demolition, and/or renovation will result in the generation of additional C&D wastes.

Quantities of C&D anticipated from the planned or foreseeable projects are provided in Table 4-45.

Table 4-45. Estimated Construction and Demolition Wastes from Planned Projects

Project	Eglin BRAC	Other Projects	Comprehensive Plans	Total
Estimated C&D Waste (tons)	230,885	617	9,000 – 275,000	240,502 (best case) 506,502 (worst case)

BRAC = Base Realignment and Closure; C&D = construction and demolition

Because the construction timeframes of all projects are not known, it is not possible to estimate how much C&D waste may be generated within a given year. For purposes of evaluation, the same timeframe associated with the MHPI project, (e.g. five years) was used to evaluate potential impacts to C&D disposal resources. This results in approximately 48,100 tons per year in a less conservative scenario, up to approximately 101,300 tons per year in the anticipated most conservative scenario. The debris would increase use at Class III landfills within the three county ROI by approximately 11 to 22 percent (less conservative scenario versus most conservative scenario) over the five-year time period when compared to the total average quantity of C&D debris generated within the three counties. This is based upon the C&D generated within the three-county ROI as discussed in Chapter 3, and the estimated quantity of C&D waste generated from planned or foreseeable projects over a five-year construction time frame.

4.8.3 Commonalities Across All Alternatives

Regardless of the alternative selected, a total of 1,404 units would be demolished and 1,477 new units would be constructed, along with associated additional surface area and other nonhousing facilities as described under the Proposed Action. As a result, generation of solid waste from these activities is not alternative dependent as the impact would be the same regardless of alternative chosen. Consequently, solid waste impacts for all alternatives are discussed under this section.

Demolition – Proposed Action

As discussed in Chapter 2 (Section 2.1, *Proposed Action*), the demolition of existing units will be required regardless of where new housing units are constructed.

At Eglin AFB and Hurlburt Field combined, a total of 1,404 units would be demolished as part of the proposed activities. This includes a total of 849 units on Eglin Main, 150 units at Poquito Bayou, 25 units at Camp Rudder, and 380 at Hurlburt Field. Roadways requiring demolition within these areas was calculated using 0.019 mile per acre based upon GIS data.

The demolition of the existing housing units is calculated to include a total square footage of 3,829,132 square feet and includes 2,102,032 square feet of actual housing

units and 1,790,100 square feet of additional paved surfaces requiring demolition (e.g., patios, driveways, sidewalks, etc.). Using the USEPA generation rate for residential demolition (115 pounds per square foot [lbs/ft^2]), it is estimated that approximately 220,175 tons of debris will be generated by the demolition of the housing units and associated additional surfaces.

In addition to the debris associated with the demolition of the actual structures, the existing infrastructure will require demolition to allow for new development. As previously discussed, GIS data has indicated that approximately 0.019 mile of road exist per acre within the parcels undergoing demolition. This estimate includes all parcels on Eglin AFB and Hurlburt Field (including existing FAMCAMP). Utilizing the acreages provided in Table 2-3 in Chapter 2, a total of 1,234 acres are included within the parcels undergoing demolition. Using the dimensions specified above, this equates to approximately 23.45 miles of roadway or 92,846 tons of debris from the demolition of roads within the transferred parcels at Eglin AFB and Hurlburt Field combined. As Section 4.8.1 mentioned, the bulk of this material will be asphalt and is expected to be reused through milling in the construction process and not require disposal.

Camp Rudder Housing Area New Construction – Proposed Action

As presented in Table 2-1 and Table 2-3 in Chapter 2, a total of 35 housing units would be constructed at Camp Rudder under all alternatives except Subalternative 2a. Approximately 124,175 square feet of housing units and associated additional surface area would be constructed at Camp Rudder. Utilizing this square footage and the USEPA generation rate of 4.39 lbs/ft^2 for residential construction, it is estimated that approximately 273 tons of debris will be generated during construction of the 35 units at Camp Rudder. Although some land clearing and road construction would occur, these activities have been deemed to generate little or no debris requiring disposal and therefore will not impact the solid waste resources within the ROI. Land clearing debris is assumed to either be used as fill (for soil and earth materials) or mulched through chipping and used as groundcover, thereby not requiring disposal at landfills offsite. The bulk of debris associated with roadways would occur from the demolition of existing roads and will be recycled during road construction.

Hurlburt Field New Construction and FAMCAMP – Proposed Action

Regardless of the selected alternative, 484 units would be constructed at Hurlburt Field. Approximately 1,610,120 square feet of housing units and associated additional square feet of additional surfaces would be constructed on 135 acres. Based upon the construction square footage, it is estimated that approximately 3,945 tons of debris would be generated from the construction of the units at Hurlburt Field.

Similar to the unit constructed at Eglin AFB, the plan specifies an additional 8,000 square feet community center/clubhouse be constructed at Hurlburt Field. The construction of this facility would result in the generation of an additional 17.6 tons of debris.

As discussed in Chapter 2, the FAMCAMP facility is to be relocated regardless of the alternative selected. Debris from construction of the new facility would take the form of land clearing wastes as well as debris from construction of the boathouse facility and roadways. As with activities at Camp Rudder, debris from land clearing and roadway construction is expected to be negligible and not impact available solid waste resources within the ROI.

4.8.4 New Construction Associated with Alternatives 1–4

All alternatives would include the construction of 958 housing units on Eglin AFB within one or a combination of several of the parcels associated with each of the alternatives. Because the construction square footage does not change regardless of the parcels utilized to make up the needed area, the estimated quantity of debris associated with the construction of the housing units is the same regardless of which alternative is selected. Although additional handling of land clearing debris and area of roadway construction will vary depending upon the parcels utilized, because these activities are not expected to generate significant quantities of debris requiring disposal, there is no net impact upon the overall quantity of debris associated with construction activities.

Table 2-1 (in Chapter 2) indicates that a total of 4,871,395 square feet of new construction for housing units and additional surface area will be completed during the project. At Eglin AFB, approximately 3,137,100 square feet of new construction for housing units and additional surface area will be completed. Utilizing the USEPA generation rate of 4.39 lbs/ft^2, it is estimated this construction will result in the generation of approximately 6,886 tons of debris.

It should be noted that because the construction footprint for the housing units remains the same across all alternatives, there will be no difference in the quantity of debris generated for disposal. This is due to the assumption that land clearing debris will either be utilized as fill onsite during construction or (in the case of vegetative matter) will be chipped or mulched and utilized as ground cover or otherwise recycled.

Including the activities from actions common to all alternatives, approximately 324,166 tons of debris will be generated for the project. If the bulk of the asphalt debris associated with roadways is recycled during construction, the total quantity of debris for disposal is 231,320 tons. As indicated in Table 2-2 (in Chapter 2), it is estimated that the project duration will be for five years with approximately 40 percent of demolition and construction occurring within the first year and 15 percent of the project completed

each year for the remaining four years. Utilizing this schedule, the quantity of debris expected to be generated during the life of the project is shown in Table 4-46.

Table 4-46. Debris Generated on an Annual Basis and Percent Increase of Disposal Rates Within the Three-County Region of Influence

Category	Year 1	Year 2	Year 3	Year 4	Year 5
Debris (Tons)	129,666.40	48,624.90	48,624.90	48,624.90	48,624.90
Debris Disposal Rate within ROI (Average)	450,481	450,481	450,481	450,481	450,481
Debris Disposal Rate within ROI Maximum in 5-year period[1]	1,121,062	1,121,062	1,121,062	1,121,062	1,121,062
Percent Increase vs Annual Average	20%	8%	8%	8%	8%
Percent Increase vs 6-Year Maximum	8%	3%	3%	3%	3%

1. Maximum disposal rate is total of the debris disposed in the three counties during 2005.

Comparing the annual quantity of debris generated to the average disposal rates (six-year average) of debris within the three county ROI indicates that the impact to existing resources will result in an increase of 20 percent during year one of the project and an increase of 8 percent for the remaining years. When compared to the maximum recorded year for the three counties (2005) the increase is 8 percent for the first year of the project then 3 percent for the four remaining years. Sufficient landfill capacity exists for several years with some landfills not expecting to reach capacity until 2075. Based on this information, the quantity of debris generated from this activity is not expected to significantly impact available disposal capacities or generation rates beyond levels experienced within the ROI as the total debris associated with the project accounts for less than 1 year of remaining disposal capacity based upon current disposal rates when comparing the total quantity of debris (231,320 tons) to the average disposal rate within the ROI (450,481 tons). Because this analysis does not include any recycling activities with the exception of reuse of asphalt from road construction, actual generation rates may be less than those estimated.

All alternatives include the construction of an 8,000 square feet community center/clubhouse for housing. Using the USEPA generation rate of 4.39 lbs/ft^2 for residential construction activities, it is estimated that approximately 17.6 tons of debris will be generated from this construction activity.

Regardless of the alternative selected, certain activities would be completed that would result in the generation of construction debris wastes. This includes approximately 220,175 tons of debris from the demolition of existing housing units and 3,968 tons of debris from construction of new units and infrastructure at Hurlburt Field (including relocation of the FAMCAMP facility). It is estimated that a total of 231,320 tons of debris would be generated from demolition and construction activities common to all

alternatives. Utilizing the most conservative quantity of debris associated with planned actions (Table 4-45) a total of 737,822 tons of debris is estimated to be generated by all projects, including MHPI. This equates to approximately 1.6 years of disposal capacity when compared to existing average disposal rates. Based on the results of the analysis, the Air Force has not identified any adverse impacts associated with solid waste from implementation of the Proposed Action or alternatives.

Regulatory Requirements/Mitigations

Standard Air Force solid waste and recycling programs would apply to the MHPI residents to minimize municipal solid waste generation. Discretionary mitigations that would reduce C&D debris waste include recycling and/or reuse of demolition and waste construction materials as practicable, as well as distribution of C&D wastes to multiple landfills to minimize impacts to any one particular landfill.

Summary

Table 4-47 provides a graphical summary of the impacts by parcel for solid waste.

Impacts are generally summarized using a color code as follows:

- Green – No beneficial or adverse impact

As described previously, impact analysis considers the implementation of non-discretionary mitigations as part of the Proposed Action or alternatives. However, no non-discretionary mitigations have been identified for solid waste. Discretionary mitigations are identified after analysis to identify mitigations that can be implemented to minimize or offset any potential impacts identified as a result of analysis. Therefore, the color coding in Table 4-47 reflects the degree of impact without consideration of discretionary mitigations so that a true assessment of the impacts associated with the Proposed Action and alternatives can be made. Discretionary mitigations for solid waste include recycling and/or reuse of demolition and waste construction materials as practicable, as well as distribution of C&D wastes to multiple landfills to minimize impacts to any one particular landfill.

This color coded chart provides a summary of impacts so that the decision maker can easily see how a potential combination of parcels may affect solid waste at each respective parcel. A combined summary table is provided in the "Summary of Impacts" section at the end of Chapter 5 that shows each individual parcel's potential impacts under each resource area.

Table 4-47. Alternative 4 – Solid Waste Summary

Alternative / Parcel	Solid Waste
Commonalities	
Eglin Main Base	
Hurlburt Field	
Camp Rudder	
Cam Pinchot	
Poquito Bayou	
Alternative 1	
1	
2	
3	
4	
5	
6	
7	
Alternative 2	
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
Subalternative 2a (Preferred Alternative)	
1	
Alternative 3	
1	
2	
3	
4	
5	
No Action*	

Green = No beneficial or adverse impact.
*Note: The impacts associated with the No Action Alternative include potential impacts associated with implementation of projects identified under the No Action Alternative in Chapter 2, Section 2.3.1 as they relate to the region of influence for that particular resource.

4.9 LAND USE

4.9.1 Analysis Methodology

A qualitative method was used to assess potential land use impacts and is based on whether the Proposed Action would result in a change to the existing land use, the

degree to which the existing land use would be affected by the change, and if the change would be compatible with adjacent land uses and development. Land use impacts also considered the effects of Eglin AFB and Hurlburt Field flight operations and if the change in noise exposure would have an adverse impact on land use compatibility. Incompatible land use impacts that would result from noise generated from flight operations were evaluated using the AICUZ guidelines presented in the Eglin AFB AICUZ study (U.S. Air Force, 2006b).

Additional information on noise-level reduction measures is presented in Section 4.7, *Noise*. Land uses that include sensitive noise receptors (e.g., residences, public buildings, schools, churches, hospitals, and certain recreational uses) are generally incompatible when exposed to noise exposures of 75 dB DNL or greater. Almost all land uses except airfields (aprons/runways/taxiways), manufacturing, agriculture, and mining are incompatible with noise exposures greater than 80 dB DNL.

4.9.2 No Action Alternative

Under the No Action Alternative, all activities as identified in Section 2.3.1 are expected to occur and are included in the No Action Alternative analysis. Except for the establishment of the JSF IJTS and the associated change in Eglin AFB flight operations associated with BRAC, there would be no significant impact on the existing land use in the affected areas and there would be no impact on the existing housing areas at Eglin Main Base and Hurlburt Field. Currently, the Georgia Avenue housing area and portions of the Capehart and Ben's Lake housing areas experience noise levels above 65 dB DNL from ongoing flight operations. All other housing areas experience noise levels below 65 dB DNL.

Implementation of any of the proposed JSF flight training alternatives would increase noise exposures on and off Eglin AFB. Unless additional noise reduction measures (e.g., sound insulation) were incorporated into the affected housing units, the increased noise exposure and land use incompatibility could be perceived as a significant adverse impact. According to Eglin AFB's AICUZ study (U.S. Air Force, 2006b), residential housing is "discouraged in DNL 65–69 dB" and "strongly discouraged in DNL 70–74 dB" and measures to achieve an NLR of 25 and 30 dB, respectively, inside residential housing in such areas must be incorporated into the design and construction. Under the AICUZ program, Air Force policy requires new on-base development to follow the same compatibility criteria that are recommended to surrounding communities, to the maximum extent practical. It should be noted that these NLR criteria for indoor sound attenuation have no effect on outdoor noise and, therefore, measures that reduce outdoor noise should be used whenever practical. Outdoor noise mitigation measures such as site planning and design and the use of berms, barriers, and/or vegetation are practical and useful for ground-level noise, such as jet engine run-ups, motor vehicles, and motorized equipment, but will not reduce overhead noise. Thus, avoiding areas within 65 dB DNL, or greater, for new residential housing is the preferred course of action whenever practical.

In addition, areas at 75 dB DNL and above are not normally compatible with residential uses, and use of these areas for such purposes should be restricted. The outdoor-to-indoor sound attenuation for housing in areas within 65–74 dB DNL and avoidance of areas within 75 dB DNL and above would be considered non-discretionary mitigations.

4.9.3 Proposed Action Commonalities

Eglin Main Base Housing Areas

Demolition of the existing housing units in the Capehart, Wherry, Old Plew, New Plew, and Hidden Oaks housing areas would change the existing land use from housing to open space. At this time, it is unknown if any other future uses for these areas have been planned or identified. New housing units could be constructed in the Old Plew, New Plew, and Hidden Oaks housing areas identified as Parcel 1 and the Ben's Lake, Capehart, and Wherry housing areas identified as Parcels 9–11 under Alternative 2 and Subalternative 2a.

The land use associated with the five housing units on Georgia Avenue would be converted from housing to a different use yet to be determined by the Air Force (see Section 4.10, *Cultural Resources*). New uses may include administrative land use such as offices or other similar use. These types of uses are consistent with the Eglin AFB *General Plan* and would also protect the historic significance of the properties.

Poquito Bayou Housing Area

Demolition of the existing housing units in the Poquito Bayou housing area would change the existing land use from housing to open space. At this time no other future uses for this area have been planned or identified.

Camp Pinchot Housing Area

The land use associated with the four units at Camp Pinchot would be returned to the Air Force once suitable units have been constructed. At that time, the Air Force would determine how to best utilize the units (see Section 4.10, *Cultural Resources*). Such decisions would be evaluated at that time to ensure that these uses are consistent with the Eglin AFB *General Plan* and would protect the historic significance of the properties.

Camp Rudder Housing Area

Under all alternatives except Subalternative 2a, demolition of the existing housing units at Camp Rudder and construction of new housing units would not change the existing land use for that area and would have no impact on any surrounding land uses.

Hurlburt Field Housing Areas

A portion of Pine Shadows is currently categorized as open space and the construction of any new housing units in that area would change that land use to housing. There would be no change in land use for Soundside Manor. Construction of new housing units within the existing FAMCAMP would change the current land use from outdoor recreation and open space to housing. All of the demolition and construction activities would be consistent with future land use plans at Hurlburt Field and would have a negligible impact on land use. Live Oak Terrace has been identified for future Air Force Special Operations Command mission/operational reuse such as community service and administrative. Activities within Soundside Manor may impact coastal zone resources and would require a Coastal Zone Management Act (CZMA) consistency determination (provided in Appendix I). The changes would also be compatible with the surrounding off base land use, and no impacts would occur.

The relocation of the FAMCAMP to the northeast side of Hurlburt Field would change the existing land use for the affected area from open space to outdoor recreation. Since the change would affect less than 30 acres of open space, the Air Force does not anticipate significant impacts from utilization of this area.

Any developer proposals would be required to incorporate the Eglin AFB JLUS (2009) requirements to ensure consistency with land use planning requirements. Such requirements include the use of full cut-off fixtures for all area lighting to minimize potential issues with lighting interference with flight operations. Applicable JLUS requirements would be incorporated into the MHPI RFQ so that potential developers can incorporate these aspects into their proposals/development plans.

4.9.4 Alternative 1: White Point Area

Alternative 1 would include implementation of the commonalities and associated land use impacts described in Section 4.9.3 and would include the construction of up to 958 housing units utilizing a combination of the seven White Point area parcels. Use of any of the parcels for the construction of new housing units would change the land use from primarily open space to housing. All of the parcels, except about 4 acres of Parcel 2, are currently open for outdoor recreation use. The construction of new housing units would require that the developed areas be closed to public use. As a result, the general public would not be able to utilize the Maxwell-Gunter recreational area. However, Eglin AFB offers many opportunities for recreational activities, and the Air Force does not expect the loss of this area to result in a significant impact to recreational opportunities on or around Eglin AFB.

Residential areas adjacent to the White Point Area are classified as Low-Density Residential by Okaloosa County (Okaloosa County, 2009). Policy 10.1 of the *Okaloosa County Comprehensive Plan* designates a maximum gross density of 5 units per acre south of Eglin AFB for the Low-Density Residential classification (DCA, 2010). At densities fewer than 6 units per acre the project would be consistent with surrounding land uses. However, development at 6 units per acre would exceed maximum recommendations for Low-Density Residential designations under the Okaloosa County Comprehensive Plan.

As stated previously, applicable JLUS requirements would be incorporated into the MHPI RFQ so that potential developers can incorporate these aspects into their proposals/development plans, thus ensuring consistency with JLUS requirements.

4.9.5 Alternative 2: Eglin Main Base/Valparaiso

Alternative 2 – Parcels 1–11

Portions of Parcel 1 contain existing housing areas (Hidden Oaks, New Plew, and Old Plew) and there would be no change to land use. Construction of new housing units on the remainder of Parcel 1 would change the land use from primarily open space to housing. The southern boundary of Parcel 1 is adjacent to existing low-density residential areas; however, a development setback of 40 feet is proposed for this parcel. Development of new housing units is expected to be compatible with the existing off base residential areas and no adverse impacts are expected. Noise from F-35 aircraft operations under the BRAC ROD decision would be less than 65 dB DNL on Parcel 1. However, under the scenario for JSF Alternative 1I in the FEIS, a small portion of Parcel 1 would be located within the southern accident potential zone (APZ) II for the new runway. Within the APZ II, there is a suggested maximum density of 1 to 2 dwelling units per acre, possibly increased under a Planned Unit Development where maximum lot coverage is less than 20 percent (U.S. Air Force, 1999).

Construction of new housing units on Parcels 2–8 would change the existing land use from open space to housing. Parcel 7 is adjacent to an off base area of low-density residential, vacant property, and an area used for recreation/conservation, open space. At densities fewer than 6 units per acre the project would be consistent with surrounding land uses. However, development at 6 units per acre, would exceed maximum recommendations for Low-Density Residential designations under the Okaloosa County Comprehensive Plan. Additionally, according to the Eglin AFB JLUS (2009), Parcels 2–8 are located in a Military Influence Planning Area II, which requires sound attenuation for residential uses for areas exposed to 65–75 dB DNL. Areas experiencing noise above 75 dB DNL would not be suitable for residential uses (Okaloosa County, 2009). Noise from F-35 aircraft operations under the BRAC ROD

decision would be around 65 dB DNL on Parcels 4, 5, and 6 and less than 65 dB DNL on Parcels 2, 3, 7, and 8.

As stated previously, applicable JLUS requirements (such as full cut-off lighting fixtures) would be incorporated into the MHPI RFQ so that potential developers can incorporate these aspects into their proposals/development plans, thus ensuring consistency with JLUS requirements.

Construction of new housing units on Parcels 9, 10, and 11 would not change the existing land use since they are within the existing Ben's Lake, Capehart, and Wherry housing areas. Noise from F-35 aircraft operations under the BRAC ROD decision would be between 65–75 dB DNL. It is expected that sound attenuation measures would be incorporated into the design and construction of new housing units if these parcels were utilized for new housing.

4.9.6 Subalternative 2a: Eglin Main Base (Preferred Alternative)

Subalternative 2a would include implementation of the commonalities and associated land use impacts described in Section 4.9.3 and under Alternative 2, with the addition of 35 units constructed on Eglin Main Base as opposed to Camp Rudder. Development of new housing units is expected to be compatible with the existing off base residential areas and no adverse impacts are expected. Land area at Camp Rudder currently designated as housing would convert to improved land area and would be set aside for future land use. Development of the Camp Rudder housing area would not be associated with MHPI and would be subject to additional NEPA analysis once a project has been identified. Redevelopment of Camp Rudder acreage formerly used by family housing would necessarily undergo a joint Base/Range planning process to ensure compatibility due to the fact that it is located aboard an active DoD Test and Training Range.

4.9.7 Alternative 3: North Fort Walton Beach Area

Alternative 3 would include implementation of the commonalities and associated land use impacts described in Section 4.9.3. Additionally, Alternative 3 would include the construction of up to 958 housing units utilizing a combination of five parcels. Construction of new housing units on any of the five parcels would change the existing land use from primarily open space to housing (accompanied). Parcels 4 and 5 are located adjacent to the Poquito Bayou housing area, which is classified as medium-density residential. To the southeast of Parcel 2 are a recreation area and the Okaloosa County Fairgrounds. West of Parcel 3 are mixed use and industrial land uses, while to the south is medium-density residential. To the north of both Parcels 2 and 3 are the newly constructed Arbennie Pritchett WRF and existing Garnier's effluent spray field,

which could potentially present compatibility issues with any new housing (Okaloosa County, 2009).

A development setback would be established for any new housing construction on Parcel 1 to minimize any potential compatibility issues with the adjacent off base low-density residential areas. Development of new housing units on Parcels 4 and 5 is expected to be compatible with the adjacent off base residential, commercial, and recreational areas and no adverse impacts are expected.

Applicable JLUS requirements would be incorporated into the MHPI RFQ so that potential developers can incorporate these aspects into their proposals/development plans, thus ensuring consistency with JLUS requirements.

4.9.8 Alternative 4: Mix Alternative

Since the mix alternative entails a potential combination of several different parcels, the impacts would vary depending on which parcels are chosen and the extent to which they are developed. Each individual parcel was analyzed previously under its respective alternative. Table 4-48 provides a graphical summary of the impacts by parcel for land use. Impacts are generally summarized using a color code as follows:

- Blue – Beneficial impact; Change in land use from developed to open space.
- Green – No beneficial or adverse impact
- Yellow – Potential for adverse impact, but not significant; Land use would change from primarily open space to developed and recreational use would be eliminated in certain areas.
- Red – Potential for significant adverse impacts; Noise exposures from F-35 aircraft operations would require that sound attenuation measures be added to existing and new housing units.
- N/A – Not applicable

This color coded chart provides a summary of impacts so that the decision maker can easily see how a potential combination of parcels may affect land use at each respective parcel. A combined summary table is provided in the "Summary of Impacts" section Chapter 5 that shows each individual parcel's potential impacts under each resource area.

Table 4-48. Alternative 4 – Land Use Summary

Alternative / Parcel	Land Use Compatibility
Commonalities	
Eglin Main Base	
Hurlburt Field	
Camp Rudder	
Camp Pinchot	
Poquito Bayou	
Alternative 1	
1	
2	
3	
4	
5	
6	
7	
Alternative 2	
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
Subalternative 2a (Preferred Alternative)	
1	
Alternative 3	
1	
2	
3	
4	
5	
No Action*	

Blue = Beneficial impact; Green = No beneficial or adverse impact; Yellow = Potential for adverse impact, but not significant; Red = Potential for significant adverse impacts

*Note: The impacts associated with the No Action Alternative include potential impacts associated with implementation of projects identified under the No Action Alternative in Chapter 2, Section 2.3.1, as they relate to the region of influence for that particular resource.

Regulatory Requirements/Mitigations

According to Eglin AFB's AICUZ study (U.S. Air Force, 2006b), residential housing is "discouraged in DNL 65–69 dB" and "strongly discouraged in DNL 70–74 dB" and measures to achieve an NLR of 25 and 30 dB, respectively, inside residential housing in such areas must be incorporated into the design and construction.

Under the AICUZ program, Air Force policy requires new on-base development to follow the same compatibility criteria that are recommended to surrounding communities, to the maximum extent practical. It should be noted that these NLR criteria for indoor sound attenuation have no effect on outdoor noise and, therefore, measures that reduce outdoor noise should be used whenever practical. Outdoor noise mitigation measures such as site planning and design and the use of berms, barriers, and/or vegetation are practical and useful for ground-level noise, such as jet engine run-ups, motor vehicles, and motorized equipment, but will not reduce overhead noise. Thus, avoiding areas within 65 dB DNL, or greater, for new residential housing is the preferred course of action whenever practical.

In addition, areas at 75 dB DNL and above are not normally compatible with residential uses, and use of these areas for such purposes should be restricted. The outdoor-to-indoor sound attenuation for housing in areas within 65–74 dB DNL and avoidance of areas within 75 dB DNL and above would be considered non-discretionary mitigations. Other non-discretionary mitigations would include compliance with lighting standards to reduce glare, such as standards adopted by the surrounding community pursuant to the Eglin AFB JLUS 2009 involving the use of "full-cutoff fixtures" for exterior lighting to prevent illumination above the horizontal plane. The Eglin Energy Office preference for reducing glare is induction lighting or light-emitting diode (LED) or plasma lighting that achieves a high color index with high lumens per watt, and/or use of 35-watt or less low-pressure sodium or amber LED lamps. These mitigations would apply at both Eglin AFB and Hurlburt Field.

Implementation of the following discretionary mitigations would lessen the perceived aesthetic impacts and result in the minimization of potential adverse impacts to the surrounding communities. Additionally, according to the *Okaloosa County Comprehensive Plan for 2020* (DCA, 2010), land use compatibility issues can be minimized/mitigated through:

- Variable buffers, combining land and landscaping to achieve adequate separation of uses, appropriate open space, reduction of potential noise, light, glare, and/or pollution, and screening of physical features of a proposed development.
- Variable setbacks, based upon degree of difference in proposed density, intensity, scale, mass, or height.

- Placement and effective screening or shielding of site features such as lights, signs, dumpsters, loading areas, parking areas, outdoor storage, or other features with potential negative impacts.
- Effective transitions of on-site densities, intensities, scale, mass, or height.
- Other innovative site design features that effectively achieve compatibility and effectively mitigate potential negative impacts.

In addition, local neighborhoods may have their own restrictive housing covenants. As an example, according to local residents, when neighborhoods in the Poquito Bayou area were first established, they adopted restrictive covenants calling for "no boat ramps" or boat houses on the water, and maintenance of the water's edge to maintain a "natural" look as much as possible. These covenants have long since expired, but residents say they still adhere to them (Nabors, 2004). As a discretionary mitigation, the Air Force would ensure that, when possible, the chosen developer would utilize "smart growth" concepts (e.g., maintenance of natural areas and use of compact building designs, in the design and construction of the housing developments).

4.10 CULTURAL RESOURCES

4.10.1 Analysis Methodology

Attention to cultural resources is important to Eglin AFB for its required efforts to comply with a host of federal laws, regulations, and Executive Orders. AFI 32-7065, *Cultural Resources Management*, outlines and specifies procedures for Air Force cultural resource management programs. At Eglin AFB, the *Integrated Cultural Resource Management Plan* stipulates Eglin-specific policies and procedures regarding the treatment of cultural resources (U.S. Air Force, 2004b).

Laws pertinent to the Proposed Action include the National Historic Preservation Act of 1966 (NHPA), as amended, the Antiquities Act of 1906, the Historic Sites Act of 1935, the NEPA, the Archeological and Historic Preservation Act of 1974, the Archaeological Resources Protection Act of 1979, the Native American Graves and Repatriation Act of 1990, and the American Indian Religious Freedom Act of 1978 (U.S. Air Force, 2004b). Federal regulations governing Eglin AFB's cultural resource activities include: 36 CFR 800, *Protection of Historic Properties (incorporating amendments effective August 5, 2004)*; 36 CFR 79, *Curation of Federally Owned and Administered Archaeological Collections*; 43 CFR 7, *Protection of Archaeological Resources*; 36 CFR 60, *National Register of Historic Places*; and 36 CFR 63, *Determinations of Eligibility for Inclusion in the National Register*. Cultural resource-related EOs that may affect Eglin AFB actions include: EO 11593, *Protection and Enhancement of the Cultural Environment*; EO 13007, *Indian Sacred Sites*; EO 13175, *Consultation and Coordination with Indian Tribal Governments*; and EO 13287, *Preserve America*.

The NHPA obligations for a federal agency are independent from the NEPA process and must be complied with even when environmental documentation is not required. When both are required, the Air Force typically coordinates NEPA compliance with their NHPA responsibilities to ensure that historic properties, as defined under 36 CFR 800.16(l)(1), are given adequate consideration.

Under NHPA, the Air Force is required to consider the effects of its undertakings on historic properties listed or eligible for listing in the National Register of Historic Places (NRHP). The regulatory NHPA Section 106 compliance process consists of four primary stages. These include: (1) initiation of the Section 106 process (36 CFR 800.3); (2) identification of historic properties (36 CFR 800.4), which includes identifying historic properties potentially affected by undertakings; (3) assessment of adverse effects (36 CFR 800.5), which determines whether the undertaking will affect historic properties and if effects to those properties might be adverse; (4) and resolution of adverse effects (36 CFR 800.6) between affected and consulting parties such as the State Historic Preservation Officer (SHPO), the Advisory Council on Historic Preservation (ACHP), Native American tribes, and interested individuals. Additional stipulations are provided for in the NHPA should a failure to resolve adverse effects occur during this process (36 CFR 800.7).

Cultural resources identified by the Air Force are evaluated according to NRHP criteria, in consultation with the SHPO and other parties. Typically, if the SHPO and other parties and the Air Force agree in writing that a historic property is eligible or not eligible to the NRHP, that judgment is sufficient for Section 106 purposes (36 CFR 800.4[c][2]).

Effects (i.e., impacts) to cultural resources are defined as "alteration to the characteristics of a historic property qualifying it for inclusion in or eligibility for the National Register" (36 CFR 800.16[i]). For the purposes of this analysis, effects are discussed as either adverse or not adverse. An "adverse effect," is "found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the NRHP in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, and association" (36 CFR 800 5[a][1]).

For the purpose of this EIS, cultural resources, with a description of their state of investigation and condition, are presented for analysis as they intersect with the area of potential effect (APE) created by the undertaking. As defined under 36 CFR 800.16(d), the APE is "the geographic area or areas within which an undertaking may directly or indirectly cause changes in the character or use of historic properties, if such properties exist. The APE is influenced by the scale and nature of the undertaking and may be different for different kinds of effects caused by the undertaking." The APE for this project is assumed not to extend beyond the footprint of the project boundaries as defined in Chapter 2 for each alternative area.

The following sections will provide an analysis of identified cultural resources and the potential for adverse effects resulting from implementation of the Proposed Action and alternatives. For projects with complex proposed actions (such as the MHPI), project-specific Programmatic Agreements (PAs) are often appropriate for completing the Section 106 process (36 CFR 800.14(b)). Project-specific PAs describe potential adverse effects to cultural resources and provide for mitigative treatments. The project-specific PA for the MHPI project is located in Appendix E, *Cultural Resources*, of this EIS.

4.10.2 No Action Alternative

Under the No Action alternative, the Air Force would not proceed with the MHPI and the actions described in Section 2.3.1, would occur. If MHPI-related activities were not to occur, and the list of predicted projects was to occur, any adverse effects to cultural resources resulting from the No Action Alternative would be resolved through completion of the NHPA Section 106 process.

4.10.3 Proposed Action Commonalities

Eglin Main Base Housing Areas

No adverse effects to cultural resources would be expected on Eglin Main, as none of the housing areas contain any cultural resources listed on, or eligible for, the NRHP. Capehart/Wherry housing will not be subject to treatment to resolve adverse effect in accordance with the program comments issued by the ACHP (November 18, 2005) to the Air Force for this type of historic buildings.

Poquito Bayou Housing Area

Existing housing in Poquito Bayou housing area is less than 50 years old and is not significant for the Cold War era. In 2004, the Air Force completed archaeological survey, testing, and evaluation, in compliance with Section 106 of the NHPA (Thomas et al., 2004a). As a result of survey and site evaluations in this project area, three prehistoric sites have been determined eligible for listing on the NRHP (see Section 3.10, *Cultural Resources*, for details).

To prevent adverse effects to archaeological sites 8OK107, 8OK952, and 8OK953, all demolition activities in proximity to these areas will be conducted in a manner avoiding disturbance to the archaeological deposits. The PA stipulates in section V.B(1){d} that the developer shall, whenever possible, avoid all ground disturbances within the recorded limits of archaeological sites 8OK107 and 8OK952. This includes crossing over and parking on the sites with work vehicles. To ensure avoidance, the developer shall leave in place all building slabs, sidewalks, and other hardscape features, as well as all utilities that are located within the sites' limits. The developer shall also ensure that all demolition activities are monitored by a professional archaeologist in accordance with Stipulation VI.C. of the PA. If and when it is not possible to avoid ground disturbance

within the limits of the sites, and adverse effect will occur, the developer shall conduct testing and or data recovery following the procedures in Stipulation VI.D. of the PA.

Camp Pinchot Housing Area

The Proposed Action calls for the Air Force to convey structures within the Camp Pinchot Historic District (Table 4-49) to the developer until suitable replacement units are constructed. As part of the Proposed Action, the Air Force would lease the land underlying the Camp Pinchot Historic District to the developer until replacement units are constructed. A visual buffer would also be established between any new development on the parcel and the historic district itself. In addition, a visual buffer would be maintained between any new development and the Camp Pinchot access road.

According to Air Force guidance, the developer would be required to follow stipulations in the underlying land lease to include following the PA to be developed prior to the ROD signature for the MHPI undertaking. The PA includes requirements for Camp Pinchot and Georgia Avenue to be established through discussions among the Air Force and the consulting parties. The PA provides management, maintenance, and repair guidelines for the care and use of the structures comprising the historic district, as well as guidelines for the protection of the archaeological site underlying the district. A portion of the PA consists of the Camp Pinchot Management Plan, which will govern the management of the district during the period it is controlled by the contractor.

Table 4-49. Structures to be Conveyed at Camp Pinchot Historic District (8OK1703)

Bldg No.	Site No.	Current Use	Historic Use	NRHP Status
1550	N/A	tennis courts	tennis courts	non-contributing
1551	N/A	maintenance garage	unknown	contributing
1552	N/A	maintenance garage	unknown	contributing
1553	N/A	kitchen	unknown	contributing
1555	N/A	storage and apartment	garage	contributing
1556	N/A	residence GOQ	ranger's quarters	contributing
1557	N/A	residence CGO	clerk's quarters	contributing
1558	N/A	residence JNCO	deputy's quarters	contributing
1559	8OK1988	residence GOQ	supervisor's quarters	contributing
1560	N/A	bulkhead	bulkhead	non-contributing
1561	N/A	boathouse	boathouse	contributing
1562	N/A	maintenance garage	unknown	contributing
1564	N/A	residence	guest house	non-contributing
1565	N/A	pump house/water supply	pump house/water supply	non-contributing
1569	N/A	water tank storage	water tank storage	non-contributing
1570	N/A	carport	carport	non-contributing
N/A	N/A	security gate entrance	unknown	non-contributing
N/A	N/A	portable generator	N/A	non-contributing

CGO = Company Grade Officer; GOQ = General Officers Quarters; JNCO = Junior Noncommissioned Officer; N/A = not applicable; NRHP = National Register of Historic Places

Conveyance by the Air Force to the developer of all residences and structures within the Camp Pinchot will be conditioned for as long as the developer owns these properties. The developer will be required to conduct all routine maintenance in accordance with the Camp Pinchot Preservation Plan (Appendix E, Programmatic Agreement, Section V (B){1}[a]).

Once replacement units are constructed (5 to 10 years after project implementation) the developer will return to the Air Force the historic buildings at Camp Pinchot. Subsequently, Eglin AFB will determine the future of the historic buildings. Should the Air Force propose any action that may result in an adverse effect, Eglin AFB will consult with the consulting parties to resolve the adverse effect and either amend the project-specific PA or develop a separate agreement document.

All construction related activities in proximity to prehistoric site 8OK871 at Camp Pinchot will be monitored by a professional archaeologist to ensure avoidance (Appendix E, *Cultural Resources:* Programmatic Agreement, Section V (B){1}[c]). A detailed timeline, description and documentation of consultation efforts, determinations of eligibility, and descriptions of fieldwork are provided in Appendix E, *Cultural Resources*.

Camp Rudder Housing Area

The Air Force does not expect adverse effects to cultural resources in this housing area. The housing units are not eligible for the NRHP as Cold War resources and are less than 50 years old. The Air Force has not identified any NRHP-eligible archaeological resources within or near the project area. A detailed timeline, description and documentation of consultation efforts, determinations of eligibility, and descriptions of fieldwork are provided in Appendix E.

Georgia Avenue Housing Area

The Air Force does not expect adverse effects to cultural resources in this housing area. As part of the Proposed Action, the Georgia Avenue Historic District buildings present in Parcel 1 (Table 4-50) would be conveyed to the developer until replacement units are constructed. After this period the units would be returned to the Government for adaptive reuse.

As with Camp Pinchot, protection of cultural resources, would be in compliance with the NHPA, the *Secretary of the Interior's Standards for Rehabilitation* (36 CFR 67), the Eglin AFB PA and Management Plan, the Eglin AFB *Integrated Cultural Resources Management Plan*, and AFI 32-7065. A portion of the PA consist of the Georgia Avenue Management Plan, which will govern the management of the district during the period it is controlled by the contractor.

Table 4-50. Georgia Avenue Historic Buildings in Eglin Field Historic District (8OK1532) to be Conveyed

Bldg No.	Site No.	Current Use	Historic Use	Status
23	8OK1298	garage	NA	non-contributing
25	8OK1294	residence SOQ	residence	contributing
26	8OK1295	residence SOQ	residence	contributing
27	8OK1290	residence SOQ	residence	contributing
28	8OK1292	residence SOQ	residence	contributing
29	8OK1293	residence SOQ	residence	contributing

SOQ = Standard Officers Quarters

As per stipulation V(B){1}[b] the developer shall conduct routine maintenance of buildings 25, 26, 27, 28, and 29 in accordance with Stipulation VI.A.2. Any activity that is not routine maintenance will be an adverse effect. The Preferred Offeror (PO) will ensure that any activities that will result in adverse effects to these buildings will be treated prior to project initiation. PO, in consultation with Eglin AFB, shall follow the treatment recommendations of the Georgia Avenue Housing Historic Preservation Plan in accordance with the procedures in Stipulation V.E. Once the property and buildings at Georgia Avenue are returned by the PO to the Air Force, the Air Force will determine the future of the buildings in accordance with Stipulation XIII.

Conveyance by the Air Force to the developer of all residences and structures within the Georgia Avenue Historic District will be conditioned for as long as the developer owns these properties. The developer will be required to conduct all routine maintenance in accordance with the Georgia Avenue Housing Preservation Plan.

Once replacement units are constructed (between 5 to 10 years) the PO will return to the Air Force the historic Georgia Avenue buildings. Subsequently, Eglin AFB will determine the future of the historic buildings. Should the Air Force propose any action that may result in an adverse effect, Eglin AFB will consult with the consulting parties to resolve the adverse effect and either amend the project-specific PA or develop a separate agreement document.

A detailed timeline, description and documentation of consultation efforts, determinations of eligibility, and descriptions of fieldwork are provided in Appendix E.

Hurlburt Field Housing Areas

The Air Force does not anticipate adverse effects to architectural or archaeological resources in Pine Shadows at Hurlburt Field. The Air Force evaluated these units for historical significance and, in concurrence with the SHPO, found them to be ineligible for listing on the NRHP. Impacts to archaeological resources are not expected. The Air Force did not identify any archaeological resources during a survey of the housing area and previous intensive development makes the location of such resources unlikely.

The Air Force does not anticipate adverse effects to architectural resources at Soundside Manor. The Air Force previously evaluated these housing units for historical significance. In consultation with the SHPO, the Air Force found these units to be ineligible for listing on the NRHP. As of 2004, site testing and evaluation were completed, in compliance with Section 106 of the NHPA, for the sole potentially eligible site in the area. A nearby prehistoric archaeological site (8OK061/8OK167) is considered eligible for nomination to the NRHP; however, this site is located outside of the boundaries of the project area.

The Air Force does not anticipate adverse effects to architectural or archaeological resources in Live Oak Terrace. The housing units are less than 50 years old and are not eligible for the NRHP as Cold War resources. The Air Force has surveyed the area for archaeological resources. Adverse effects could occur to an unnamed historic cemetery (#26) located along the boundary of Live Oak Terrace. Although previous studies have not detected burial features, some of the cemetery may still lie under the edge of the current housing area. Although previous studies have not detected burial features, some of the cemetery may still lay under the edge of the current housing area. The developer will ensure that demolition within 50 meters (164 feet) of the boundary of Live Oak Terrace is monitored by a qualified, third-party archaeologist.

A detailed timeline, description and documentation of consultation efforts, determinations of eligibility, and descriptions of fieldwork are provided in Appendix E.

Existing/Proposed FAMCAMP

The Air Force does not anticipate adverse effects to architectural in the existing or proposed new FAMCAMP areas. Although no archaeological sites have been identified within project boundaries and no historic structures are present within this parcel, one archaeological site (80K133) is located near the boundary of the parcel. The developer will ensure that demolition and construction within 50 meters of the southern boundary of FAMCAMP is monitored by a qualified, third-party archaeologist. Where avoidance is not possible, Eglin AFB will conduct archaeological data recovery to mitigate for any adverse effects (see the PA in Appendix E, *Cultural Resources*).

4.10.4 Alternative 1: White Point Area

Alternative 1 – Parcel 1

The Air Force does not expect adverse effects to cultural resources in this parcel as a result of the Proposed Action. No NRHP-eligible cultural resources are identified in this parcel.

Alternative 1 – Parcel 2

As a result of survey and site evaluations in this project area, one prehistoric site (8OK192) and one historic site (8OK2751) have been recommended ineligible for listing on the NRHP. Two additional historic sites (8OK2753 and 8OK2754), have been recommended as potentially eligible to the NRHP.

Alternative 1 – Parcels 3 and 4

The Air Force does not expect adverse effects to cultural resources in this parcel as a result of the Proposed Action. No NRHP-eligible cultural resources are identified in this parcel.

Alternative 1 – Parcel 5

One prehistoric site (8OK1006) has been determined eligible for listing on the NRHP (see Section 3.10, *Cultural Resources*, for details). If the Air Force selects Alternative 1, the PO shall avoid affecting site 8OK1006 by following the procedures for archaeological monitoring in Stipulation VI.C of the PA for all demolition and construction activities within 50 meters of the site to resolve adverse effects to cultural resources.

Alternative 1 – Parcel 6

One prehistoric site (8OK2627) has been determined eligible for listing on the NRHP (see Section 3.10, *Cultural Resources*, for details). According to the PA (U.S. Air Force, 2011), if the Air Force selects Alternative 1, the PO shall conduct archaeological testing and data recovery at site 8OK2627 following the procedures in Stipulation VI.D prior to demolition and construction activities to resolve adverse effects to cultural resources.

Alternative 1 – Parcel 7

The Air Force does not expect adverse effects to cultural resources in this parcel as a result of the Proposed Action. No NRHP-eligible cultural resources are identified in this parcel.

4.10.5 Alternative 2: Eglin Main Base/Valparaiso

Alternative 2 – Parcel 1

The Air Force does not expect adverse effects to cultural resources in this parcel as a result of the Proposed Action. No NRHP-eligible cultural resources would be adversely affected in this parcel. The treatment and conveyance of the Georgia Avenue housing structures are discussed in the *Proposed Action Commonalities* sections of *Cultural Resources*, Chapters 3 and 4.

Alternative 2 – Parcels 2 through 8

The Air Force does not expect adverse effects to cultural resources in this parcel as a result of the Proposed Action. No NRHP-eligible cultural resources are identified in Parcels 2 and 3. As a result of recent test and evaluation, archaeological site 8OK993 at Parcels 4 and 5 is recommended as ineligible to the NRHP.

Alternative 2 – Parcels 9 and 10

The Air Force does not expect adverse effects to cultural resources in this parcel as a result of the Proposed Action. Wherry housing is present in this parcel but already "treated for" under Section 106. Additional detail can be found in Appendix E, *Cultural Resources*.

Alternative 2 – Parcel 11

The Air Force does not expect adverse effects to cultural resources in this housing area. The Air Force has not identified any NRHP-eligible cultural resources within the project area.

4.10.6 Subalternative 2a: Eglin Main Base (Preferred Alternative)

Environmental consequences under this alternative are identical to those presented in Section 4.10.5, *Alternative 2 – Parcel 1*.

4.10.7 Alternative 3: North Fort Walton Beach Area

Alternative 3 – Parcel 1

One prehistoric site (8OK871) has been determined eligible for listing on the NRHP (see Section 3.10, *Cultural Resources*, for details). In accordance with the PA (U.S. Air Force, 2011), if the Air Force selects Alternative 3, the PO shall avoid affecting the Camp Pinchot Historic District by defining a development setback at least 100 feet wide along the District's property boundary. Included within these boundaries is site 8OK871.

As per B (1) [c], Archaeological Site 8OK871 at Camp Pinchot:

> With the temporary conveyance of Camp Pinchot, archaeological site 8OK871 will become the management responsibility of the PO until returned to the Air Force. The PO shall consult with Eglin AFB prior to the initiation of any ground disturbing activities within the site's limits as follows.
>
> (i) Any ground disturbing activity, including but not limited to planting or removal of trees and other vegetation, affecting intact portions of the

site will require archaeological testing and or data recovery following an approved plan developed in accordance with Stipulation VLD.

(ii) Any ground disturbing activity affecting previously disturbed portions of the site, including but not limited to the in-place removal and replacement of utilities or planting or removing trees or other vegetation, which is strictly limited to previously disturbed soil, shall be monitored by a professional archaeologist in accordance with Stipulation VLC. Discovery of intact archaeological deposits during archaeological monitoring will be treated as an unanticipated discovery under Stipulation VIII.

All new construction shall be prohibited within the development setback to resolve adverse effects to cultural resources.

Alternative 3 – Parcels 2 through 4

The Air Force does not expect adverse effects to cultural resources in this parcel as a result of the Proposed Action. No NRHP-eligible cultural resources are identified in this parcel.

Alternative 3 – Parcel 5

One prehistoric site (8OK107) has been determined eligible for listing on the NRHP (see Section 3.10, *Cultural Resources*, for details). In accordance with the PA, Section B (1) [d] (U.S. Air Force, 2011), the PO shall, whenever possible, avoid all ground disturbances within the recorded limits of archaeological sites 8OKI07 and 8OK952. This includes crossing over and parking on the sites with work vehicles. To ensure avoidance, the PO shall leave in place all building slabs, sidewalks, and other hardscape features, as well as all utilities that are located within the sites' limits. The PO shall also ensure that all demolition activities are monitored by a professional archaeologist in accordance with Stipulation VLC. If and when it is not possible to avoid ground disturbance within the limits of the sites, and adverse effects will occur, the PO shall conduct archaeological testing and/or data recovery following the procedures in Stipulation VI.D.

4.10.8 Alternative 4: Mix Alternative

Since the mix alternative entails a potential combination of several different parcels, the impacts would vary depending on which parcels are chosen and the extent to which they are developed. Each individual parcel was analyzed previously under its respective alternative. Table 4-51 provides a graphical summary of the impacts by parcel for Cultural Resources. Impacts are generally summarized using a color code as follows:

- Green – No beneficial or adverse effect
- Yellow – Potential for adverse effect requiring mitigation through project-specific Programmatic Agreement.

Table 4-51. Alternative 4 – Cultural Resources Summary

Alternative / Parcel	Cultural Resource		
	Archaeological Sites	Historic Buildings/Districts	Historic Cemeteries
Commonalities			
Eglin Main Base			
Hurlburt Field			
Camp Rudder			
Camp Pinchot			
Poquito Bayou			
Alternative 1			
1			
2			
3			
4			
5			
6			
7			
Alternative 2			
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
Subalternative 2a (Preferred Alternative)			
1			
Alternative 3			
1			
2			
3			
4			
5			
No Action*			

Green = No beneficial or adverse effect; Yellow = Potential for adverse effect requiring mitigation through project-specific Programmatic Agreement.

*Note: The impacts associated with the No Action Alternative include potential impacts associated with implementation of projects identified under the No Action Alternative in Chapter 2, Section 2.3.1, as they relate to the region of influence for that particular resource.

Note: No formal studies have been conducted to date to identify TCPs. As such they are not included in this table.

Note: An "adverse effect," is "found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the NRHP in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, and association" (36 CFR 800 5[a][1]).

The color coding in Table 4-51 reflects the degree of impact between alternatives and cultural resources so that the decision maker can easily see how a potential combination

of parcels may affect cultural resources at each respective parcel. A combined summary table is provided in the "Summary of Impacts" section at the end of Chapter 5 that shows each individual parcel's potential impacts under each resource area.

Regulatory Requirements/Mitigations

The Air Force anticipates adverse effects to NRHP-eligible cultural resources under the Proposed Action. Any action with the potential to adversely affect historic properties resulting from the Proposed Action or alternatives will be resolved pursuant to the MHPI PA to be developed in compliance with Section 106 of the NHPA. Within the context of this discussion, and in keeping with other sections of this document, non-discretionary mitigations are those that are required through NHPA Section 106 consultation and are reflected in the project-specific PA. Compliance with the project-specific PA is mandatory and non-discretionary in nature for the signatories of the agreement document. Mitigations as presented in the executed PA are presented in Section V of the PA under Resolution of Adverse Effects.

Section V of the PA describes specific procedures for resolution of adverse effects to project-related resources (U.S. Air Force, 2011). Section V of the PA is presented below:

V. Resolution of Adverse Effects

A. The Air Force shall meet its responsibilities under 36 CFR 800.6 by ensuring that once the Record of Decision is issued and a preferred alternative is selected the Preferred Offeror (PO) at its expense, resolves the adverse effects of the undertaking to historic properties at each installation in accordance with the following stipulations.

B. Eglin AFB

1. Project Commonalities

a. Camp Pinchot Historic District

(i) The PO shall conduct routine maintenance of buildings 1551, 1552, 1553, 1555, 1556, 1557, 1558, 1559, 1561 and 1562 in accordance with Stipulation V[A]. Any activity that is not routine maintenance will be an adverse effect. PO will ensure that any adverse effects to these buildings will be treated prior to the proposed activity. The PO, in consultation with Eglin AFB, shall follow the treatment recommendations of the Camp Pinchot Historic Preservation Plan in accordance with the procedures in Stipulation VLB.

(ii) Building 1564, potentially National Register eligible for its association with the military use of Camp Pinchot, is not included in the Camp Pinchot Historic Preservation Plan. The PO will consult with Eglin AFB prior to conducting routine maintenance and repair of building

1564. Any activities that Eglin AFB determines will have an adverse effect to building 1564 will require treatment in accordance with the procedures in Stipulation VLB.

(iii) The PO will maintain the existing trees in accordance with the general treatment recommendations for landscaping in the Camp Pinchot Preservation Plan. Planting new trees or removing existing trees anywhere on the property will be an adverse effect subject to prior consultation with Eglin AFB.

(iv) Once the property and buildings at Camp Pinchot are returned by the PO to the Air Force, the Air Force will determine the future of the buildings in accordance with Stipulation V.D.

b. Georgia Avenue (Eglin Field Historic District)

(i) The PO shall conduct routine maintenance of buildings 25, 26, 27, 28, and 29 in accordance with Stipulation VLA.2. Any activity that is not routine maintenance will be an adverse effect. The PO will ensure that any adverse effects to these buildings will be treated prior to the proposed activity. The PO, in consultation with Eglin AFB, shall follow the treatment recommendations of the Georgia Avenue Housing Historic Preservation Plan in accordance with the procedures in Stipulation VLB.

(ii) Once the property and buildings at Georgia Avenue are returned by the PO to the Air Force, the Air Force will determine the future of the buildings in accordance with Stipulation V.D.

c. Archaeological Site 80K871 at Camp Pinchot

With the temporary conveyance of Camp Pinchot, archaeological site 80K871 will become the management responsibility of the PO until returned to the Air Force. The PO shall consult with Eglin AFB prior to the initiation of any ground disturbing activities within the site's limits as follows.

(i) Any ground disturbing activity, including but not limited to planting or removal of trees and other vegetation, affecting intact portions of the site will require archaeological testing and or data recovery following an approved plan developed in accordance with Stipulation VLD.

(ii) Any ground disturbing activity affecting previously disturbed portions of the site, including but not limited to the in-place removal and replacement of utilities or planting or removing trees or other vegetation, which is strictly limited to previously disturbed soil, shall be monitored by a professional archaeologist in accordance with Stipulation VLC. Discovery of intact archaeological deposits during

archaeological monitoring will be treated as an unanticipated discovery under Stipulation VIII.

d. Archaeological Sites 80KI07 and 80K952 at Poquito Bayou. The PO shall, whenever possible, avoid all ground disturbances within the recorded limits of archaeological sites 80KI07 and 80K952. This includes crossing over and parking on the sites with work vehicles. To ensure avoidance, the PO shall leave in place all building slabs, sidewalks and other hardscape features, as well as all utilities that are located within the sites' limits. The PO shall also ensure that all demolition activities are monitored by a professional archaeologist in accordance with Stipulation VLC. If and when it is not possible to avoid ground disturbance within the limits of the sites, and adverse effects will occur, the PO shall conduct archaeological testing and or data recovery following the procedures in Stipulation VLD.

2. Project Alternative I (White Point)

a. If the Air Force selects Alternative I, the PO shall avoid affecting site 80KI006 by following the procedures for archaeological monitoring in Stipulation VI.C for all demolition and construction activities within 50 meters of the site.

b. If the Air Force selects Alternative I, the PO shall conduct archaeological testing and data recovery at site 80K2627 following the procedures in Stipulation VI.D prior to demolition and construction activities.

3. Project Alternative 3 (North Fort Walton Beach)

If the Air Force selects Alternative 3, the PO shall avoid affecting the Camp Pinchot Historic District by defining a development setback at least 100 feet wide along the District's property boundary. All new construction shall be prohibited within the development setback.

4. Project Alternative 4 (Mix)

Selection of this project alternative may result in adverse effects to one or more of the historic properties described above and will be resolved as described in Alternatives 1 and 3.

C. Hurlburt Field

The PO shall avoid affecting archaeological sites 80KI33 and 80K061 by following the procedures for archaeological monitoring in Stipulation VI.C for all demolition and construction activities within a 50-meter buffer area around each site.

D. Return of Historic Properties

Once replacement MFH units are constructed, the PO will return to the Air Force, in equal or better condition than received, the buildings and structures at Georgia Avenue and Camp Pinchot as stated in Stipulation II.A.I.b. At that time, Eglin AFB will determine the future of these properties. Should the Air Force propose any action that may result in adverse effects to the Eglin Field or Camp Pinchot Historic Districts, including but not limited to adaptive reuse, Eglin AFB will consult with the consulting parties to resolve the adverse effects and either amend the PA in accordance with Stipulation XIII or develop a separate agreement document.

4.11 WATER RESOURCES

The Proposed Action and alternatives do not have a direct interaction with surface waters, wetlands, or groundwater resources. Some demolition would occur in floodplains. Section 404 of the Clean Water Act (CWA) of 1977 (33 U.S. Code 1251 et seq.), and EO 11990, *Protection of Wetlands*, regulates development activities in or near streams or wetlands. Section 404 also requires a permit from the United States Army Corps of Engineers for dredging and filling in wetlands. EO 11988, *Floodplain Management*, requires federal agencies to take action to reduce the risk of flood damage; to minimize the impacts of floods on human safety, health, and welfare; and to restore and preserve the natural and beneficial values served by floodplains. Federal agencies are directed to consider the proximity of their actions to or within floodplains. For actions occurring within a floodplain, the Air Force would be required to submit a Finding of No Practicable Alternative (FONPA) stating that no alternatives existed for construction of facilities within the floodplain. The Air Force would be required to submit a FONPA for demolition actions in floodplain areas located on Hurlburt Field. No construction activities are planned within floodplain areas.

Although no direct impacts to water resources exist, there is potential for indirect impacts to water resources. Indirect impacts to water resources relate to the potential for increased rate and volume of stormwater runoff from demolition and construction, actions which could increase the amounts of sediment and pollutants transported into surface waters during and after rain events. The addition of new impervious surfaces associated with construction of the new housing in an undeveloped area may also increase the number and kinds of pollutants carried off-site by stormwater runoff from everyday operations. Surface waters and wetlands in proximity to construction are more susceptible to impacts from the increased stormwater, sediment, and pollutant runoff associated with this type of activity.

The creation of impervious area would require the construction of stormwater management systems to provide on-site storage of stormwater. On-site storage of

stormwater would prevent direct discharge of stormwater runoff to any surface waters, thereby reducing potentially adverse impacts to surface water quality (FDEP, 2002). However, infiltration from on-site storage systems can still result in the introduction of contaminants into the Sand and Gravel Aquifer via downward percolation through porous soils. Contaminants include nutrients such as nitrogen and phosphorus from fertilizers and natural sources, pesticides, and petroleum-related compounds from vehicle operations and metals, all of which are typical of urban runoff.

4.11.1 Analysis Methodology

Analysis of potential impacts to water resources began by identifying and mapping the location of each alternative and the water resources in and around each alternative area. This allowed for the determination of direct impacts to water resources (e.g., construction in floodplains) for each alternative. Impacts were identified if any of the following conditions would occur as a result of the Proposed Action.

- A discharge creating pollution as defined in the Florida Administrative Code (FAC) 62-302.
- A discharge that degrades designated beneficial uses of water (FAC 62-4.242 and FAC 62-302.300).
- A change in the absorption rates, drainage patterns, or rate and amount of runoff that would in turn exceed the capacity of storm drain systems.

Impacts were further categorized as adverse if activities resulted in an increase in stormwater runoff but impacts negated through permits and non-discretionary measures and actions occur within the floodplain but not alter elevations; significantly adverse activities are those that would result in impervious surface increases beyond the capacity to manage through mitigations, result in alterations to floodplain elevation, or occur in wetlands.

The Natural Resources Conservation Service (NRCS) computer model, WinTR-55, was used to determine the effects of stormwater at the proposed worksites. This model was used to evaluate stormwater runoff rates and volumes. Details on the model and parameters used can be found in Appendix G, *Water Resources*. Stormwater totals were obtained utilizing the average rainfall of a 25-year rain event (one that theoretically occurs every 25 years and lasts for 24 hours), which is 10.23 inches.

A table of the pre- and post-construction stormwater runoff conditions, as modeled by WinTR-55, is provided for each alternative and parcel to present the total change in runoff at each site. Typically, demolition with no construction and return to a natural, vegetated, or grassed landscape would result in a decrease in stormwater runoff, which would be beneficial with respect to water resources. According to values obtained from the WinTR-55 model, the post-development peak runoff rate and average volume level would be greater than pre-development values for most construction scenarios. Thus,

construction with the associated increase in impervious surface would result in an increase in stormwater runoff, which could potentially have detrimental effects on water resources.

The USEPA provides guidance on acceptable stormwater runoff volumes and velocities as "to the extent practicable, maintain post-development peak runoff rate and average volume at levels that are similar to pre-development levels" (USEPA, 1993). To ensure that pre-development stormwater levels remain similar to post-development levels, and as part of the Proposed Action, the Air Force would adhere to applicable stormwater permitting and management requirements.

Any construction and demolition area larger than 1 acre would require a National Pollutant Discharge Elimination System (NPDES) General Permit for stormwater discharge associated with C&D activities. The NPDES permitting process controls amounts and types of contaminants introduced into U.S. waters from nonpoint sources such as stormwater runoff from construction sites. In Florida, the FDEP implements the NPDES stormwater permitting program. In addition to the NPDES permit, it would be necessary to acquire a stormwater treatment permit (FAC 62-346), a program administered by both FDEP and Northwest Florida Water Management District (NWFWMD).

As part of the NPDES permit, the developer would be required to prepare and implement a Stormwater Pollution Prevention Plan (SWPPP) before beginning construction activities. The SWPPP would include: (1) site evaluation of how and where pollutants may be mobilized by stormwater, (2) site plan for managing stormwater runoff, (3) identification of appropriate erosion and sediment controls and stormwater mitigations, (4) maintenance and inspection schedule, (5) record keeping process, and (6) identification of stormwater exit areas. When preparing the SWPPP, developers would follow the guidance provided in the USEPA publication, *Stormwater Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices* (USEPA, 1992).

The FDEP has issued permits to Eglin AFB and Hurlburt Field for the discharge of stormwater from Phase II MS4 under the provisions of Section 403.0885, Florida Statutes, 40 CFR 122.32-37, and applicable rules of the FAC (FDEP, 2009c). Military installations are required to obtain MS4 permits under Phase II of the NPDES stormwater permitting program. Under these MS4 permits, Eglin AFB and Hurlburt Field are required to implement a number of mitigations with measurable goals, a schedule for implementation/completion, and a list of responsible entities/departments. As part of the mitigations detailed in their MS4 permits, Eglin AFB and Hurlburt Field have committed to the following with respect to construction: (1) developing contractual language requiring mitigation usage at construction sites, (2) reviewing construction site plans for potential stormwater quality impacts through the comprehensive environmental impact analysis review program, (3) formalizing a method of tracking

construction projects and control measures, and (4) performing periodic inspections of construction sites to ensure that mitigations are in place and operational.

Developers must abide by all requirements included in the MS4 permits. Developers would be responsible for obtaining all necessary permits, including the NPDES permit and the FAC 62-346 permit. Discretionary and non-discretionary mitigations that would avoid, minimize, rectify, reduce, or compensate for potential impacts to water resources from demolition, construction, and operation activities are specifically identified during the permitting process. The Air Force cannot identify the specific permit-mandated mitigations that would be required for a particular alternative at this time. However, for purposes of analysis, the Air Force identified non-discretionary mitigations that are likely to be required under the permits identified above, based on similar previous permitted actions at Eglin AFB and within Florida.

Impact analysis of wetlands resources considers the federal wetlands regulations (33 CFR 328.3) under Section 404 of the CWA (30 CFR 330), Section 10 of the Rivers and Harbors Act (30 CFR 329), and Florida's Environmental Resource Permit program (Part IV, Florida Statutes Section 373). The first step in the analysis of potential impacts to wetland and floodplain resources was to determine the location and extent of these resources in relation to the proposed worksites. Maps were examined to locate these areas and to confirm their locations. Next, areas of overlap for the proposed worksites and wetland and floodplain areas were identified. Scientific literature was reviewed for studies that examined similar types of impacts to these resources. The literature review included an examination of basic characteristics and hydrologic functions of wetlands and floodplains. Information was also gathered relative to management considerations, mitigations, and permitting requirements. Impact analyses were then conducted based on the information gathered from the literature review and discussions with experts in these areas. The analyses included an assessment of the impacts on these resources resulting from both construction and demolition activities and daily operations.

Federal agency activities potentially impacting the coastal zone are required to be consistent, to the maximum extent practicable, with approved state Coastal Zone Management Programs. Federal agencies make determinations as to whether their actions are consistent with approved state plans. Consistency determinations are submitted to the state for review and concurrence. All relevant state agencies must review the Proposed Action and issue a consistency determination. The Florida Coastal Management Program is composed of 24 Florida statutes, each of which addresses a particular coastal resource area or topic and is administered by the FDEP (FDEP, 2009d). Components of the Proposed Action and alternatives would take place within the jurisdictional concerns of the state. The Florida Coastal Management Program considers all of Florida as being within the coastal zone; therefore, the Air Force submitted a Coastal Zone Consistency Determination, in accordance with Florida's CZMA, to the Florida State Clearinghouse. The Clearinghouse reviewed the scope of the Proposed Action and determined that the action was consistent with the CZMA in its current state but that continued concurrence would require compliance with Florida

Coastal Management Program authorities, federal and state monitoring of the activity, and resolution of any issues identified in further reviews. The State will issue a final concurrence during the environmental permitting process in accordance with FAC Chapter 373, Section 428, *Federal consistency*. The Air Force Coastal Consistency Determination and the Florida State Clearinghouse response are provided in Appendix I, *CZMA Determination*. With regard to the Proposed Action and alternatives the following Florida Coastal Management Program statute resource areas were determined to be potentially affected: cultural resources, roadway systems, stormwater runoff, utilities, soil and water conservation, water and air quality, and pollution and solid waste control. CZMA coastal resources that would not be affected include Beach and shore management, local government comprehensive plans, state plans for water, land or transportation use, state vulnerability to natural disasters, state public lands, state parks, recreation areas or aquatic preserves, acquisition of land for Greenways and Trails program, tourism, future business opportunities on state lands, finance and planning for state transportation, saltwater fisheries, statutes and regulations regarding state water resources, transfer and storage of pollutants, regional development, coastal infrastructure and state policy on public health. Potentially affected statutes are addressed in the appropriate sections of the EIS, and discussed in more detail in the CZMA consistency determination provided in Appendix I, *CZMA Determination*.

4.11.2 No Action Alternative

Under the No Action Alternative, there is potential for impacts to water resources from major construction actions listed in Chapter 2. Actions associated with current or on-going projects in the area could result in the addition of impermeable surfaces (i.e., concrete, asphalt) and therefore an increase in stormwater runoff. In general, areas that are already developed are expected to have reasonably effective stormwater management facilities or infrastructure in place such that impacts to surface waters from runoff are controlled to a practical degree.

For major construction actions within undeveloped areas, the removal of vegetation and the disturbance of the soil would expose soils to wind and stormwater, in turn facilitating the transport of sediments to nearby surface waters. These actions would not occur without proponents adhering to mandatory state and federal permits for managing stormwater runoff, as discussed in the previous section, thus, the Air Force anticipates minimal impacts to water resources from present and on-going activities associated with the No Action.

4.11.3 Proposed Action Commonalities

Potential changes in stormwater runoff were developed for each common location using analysis methods discussed in Appendix G, *Water Resources*. Table 4-52 provides the results of the modeling, while the subsequent narratives describe these impacts in more detail.

Table 4-52. Commonalities – Modeled Pre- and Post-construction Stormwater Runoff

Location	Peak flow (cfs)			Runoff amount (inches)		
	Pre	Post	Change	Pre	Post	Change
Wherry	687	256	-431	4.97	2.33	-2.64
Capehart	340	127	-213	4.97	2.33	-2.64
Poquito Bayou	286	108	-178	4.14	1.96	-2.18
Camp Pinchot	No construction or demolition					
Camp Rudder	51	71	20	4.97	7.11	2.14
Live Oak Terrace	104	40	-64	4.96	2.23	-2.73
Pine Shadows Parcel	318	629	311	4.97	7.63	2.66
Soundside Manor Parcel	110	224	114	4.42	7.24	2.82
FAMCAMP	105	137	32	3.6	7.24	3.64
Total	2001	1592	**-409**	37	38.07	**1.07**

cfs = cubic feet per second; FAMCAMP = family camping; in = inches

To minimize potential indirect impacts to water resources, a non-discretionary 50-foot mandatory development buffer would be required along all Eglin water bodies per U.S. Fish and Wildlife (USFWS) requirements along with a 100-foot discretionary mitigation buffer (USFWS, 2010). Areas around wetlands would also require a 50-foot mandatory development buffer; these buffers would apply to all parcels under the *Proposed Action Commonalities* section (Figure 4-11). Per draft FDEP Environmental Resource Permit requirements, Hurlburt Field would observe a 25-foot buffer around wetlands (FDEP, 2009e). In addition, the developer would be required to obtain permits and would implement, as required by the FDEP and the NWFWMD, site-specific non-discretionary mitigations as developed during the permitting process. These non-discretionary mitigations would be included in an SWPPP, which would identify mitigations to reduce the rate and volume of stormwater runoff. These stormwater management controls would also be a part of the site designs to minimize pollutants. The Air Force would be required to ensure that the developer has these controls in place prior to any construction activity. These non-discretionary requirements apply to all parcels under this section. A comprehensive list of discretionary and non-discretionary mitigations for water resources is provided in Section 4.11.8, *Mix Alternative*.

At all locations in this section, no new construction would take place within wetlands or within the 100-year floodplain.

Eglin Main Base Housing Areas

Demolition of current housing units on Eglin Main Base would occur in areas where there are no existing water resources and in areas that are already developed. Surface water, wetlands, and floodplains would not be adversely impacted since none of these features exist at the current housing sites. Furthermore, since Eglin Main Base is already urbanized, the area already contains features that address stormwater runoff issues. Therefore, the Air Force anticipates no direct impacts to water resources under this action.

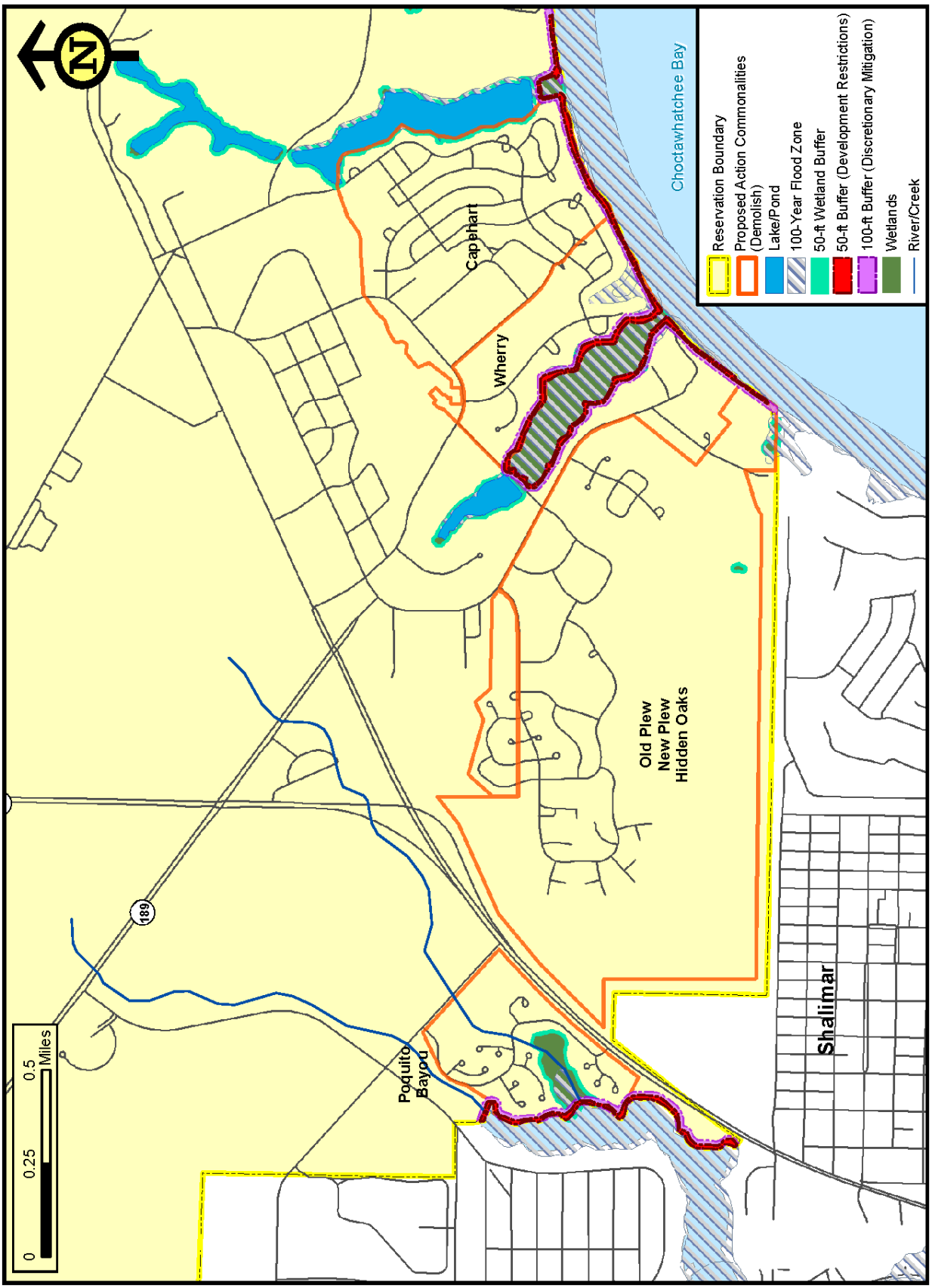

Figure 4-11. Water Resources at Proposed Action: Eglin Main Commonalities

Potential indirect impacts, however, do exist and are associated with changes in stormwater runoff. Potential impacts from stormwater runoff for Eglin Main Base housing areas are presented in Table 4-52. Old/New Plew and Hidden Oaks, with a baseline condition of 873 cubic feet per second (cfs) peak flow, and 2.77 inches runoff, would experience decreased stormwater runoff for demolition only scenario. Since demolition only is not a commonality for this location and there is more than one construction scenario depending on the alternative selected, the change with respect to stormwater runoff from construction is discussed as part of Parcel 1, Alternative 2. Eglin Main Base lies within the jurisdictional concerns of the FDEP under the CZMA. Coastal zone definitions, regulations, and requirements are discussed in Appendix G, *Water Resources.* The Air Force is preparing a CZMA determination to address potential impacts to the coastal zone.

Poquito Bayou Housing Area

Surface waters located within the Poquito Bayou housing area include one unnamed creek that drains into Poquito Bayou. Construction-related erosion would potentially cause a short-term increase in sediment deposition into the creek and ultimately into Poquito Bayou. Construction activities would not occur within a specific water resource; therefore, the Air Force anticipates no direct impacts to surface water resources. Potential indirect impacts to water resources in this area are associated with stormwater runoff and are presented in Table 4-52.

There are approximately 8.56 acres of palustrine wetlands and 4.22 acres of floodplains within the Poquito Bayou housing area. However, no new construction would take place within the wetlands or 100-year floodplain. Using the analysis methods discussed in Appendix G, *Water Resources*, the results of the model indicate that stormwater runoff would decrease by 2.18 inches; therefore, the Air Force has identified beneficial impacts associated with stormwater runoff at Poquito Bayou.

Camp Pinchot Housing Area

There are no surface water bodies or wetlands in the Camp Pinchot housing area, and 1.94 acres of floodplains. Surface water, wetlands, and floodplains would not be impacted since either none of these features exist at the current housing sites, or no activity would occur within these areas. There would not be any additional changes to impervious areas to the existing site; therefore, there will be no impacts to water resources under this action. Camp Pinchot lies within the jurisdictional concerns of the FDEP under the CZMA. Coastal zone definitions, regulations, and requirements are discussed in Appendix G, *Water Resources.* The Air Force has prepared a CZMA determination to address potential impacts to the coastal zone.

Camp Rudder Housing Area

There are no surface water bodies, wetlands, or floodplains within the Camp Rudder housing area; however, some water resources are present in close proximity to the boundaries of the parcel (Figure 4-12). Demolition of current housing units at Camp Rudder would occur in areas where there are no existing water resources and in areas that are already developed.

Since no water resources are located within the Camp Rudder housing area and construction activities within a specific water resource would be avoided, there would be no direct impacts to surface water, wetlands, or floodplains. Potential indirect impacts associated with changes in stormwater runoff for the Camp Rudder housing area are presented in Table 4-52. Using the analysis methods discussed in Appendix G, *Water Resources*, the results of the model indicate that stormwater runoff would increase by 2.14 inches. This runoff would potentially be transported to the nearby water resources as well as over the surrounding land areas. However, non-discretionary mitigations as part of SWPPP requirements, as well as non-discretionary buffers around water bodies and wetlands would serve to minimize stormwater runoff and associated impacts. Therefore, the Air Force has not identified significant adverse impacts associated with stormwater at Camp Rudder.

Hurlburt Field Housing Areas

Water resources and associated buffer areas for all Hurlburt Field parcels are shown in (Figure 4-13).

Live Oak Terrace

There are no surface waters or wetlands within the Live Oak Terrace; therefore, the Air Force anticipates no direct impacts to surface waters or wetlands. However, there is potential for indirect impacts to water resources in the surrounding area associated with stormwater runoff and some of the existing housing is within a floodplain. Potential indirect impacts associated with changes in stormwater runoff for the Hurlburt Field housing areas are presented in Table 4-52.

Using the analysis methods discussed in Appendix G, *Water Resources*, the results of the model indicate that stormwater runoff would decrease by 2.73 inches. Furthermore, the developer would be required to implement SWPPP requirements. As a result, the Air Force has identified beneficial impacts associated with stormwater at Live Oak Terrace.

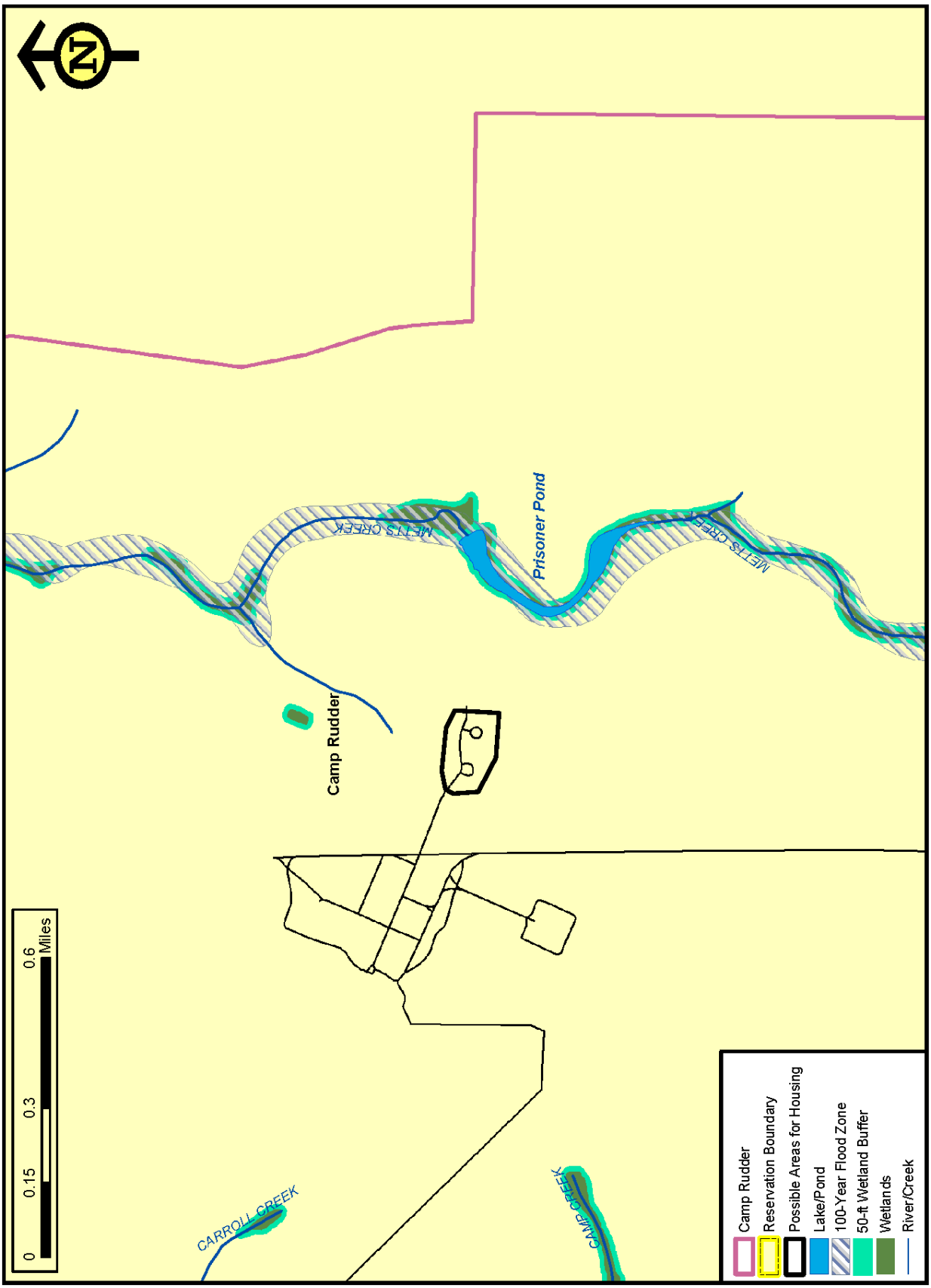

Figure 4-12. Water Resources at Proposed Action: Camp Rudder

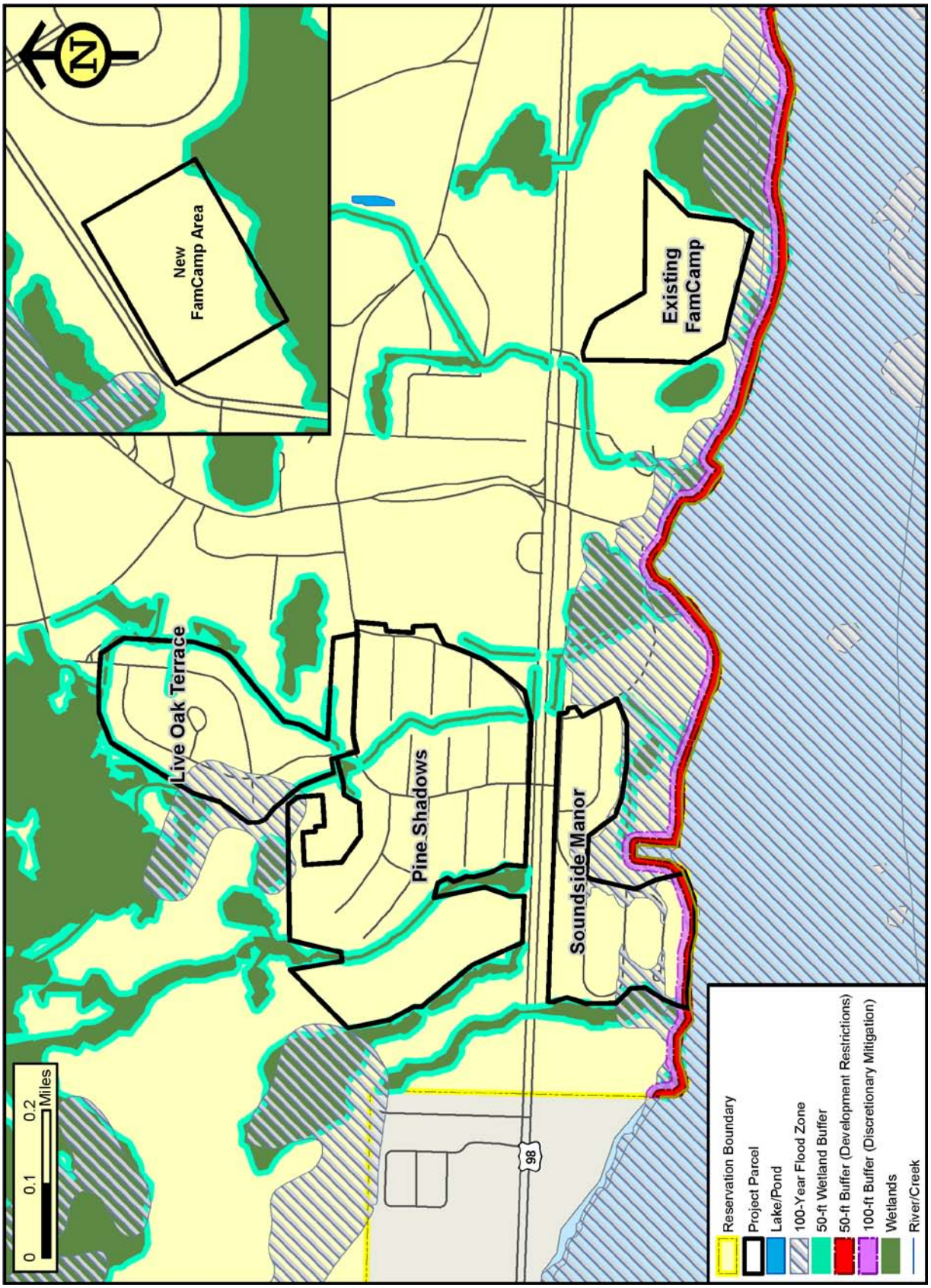

Figure 4-13. Water Resources at Proposed Action: Hurlburt Field

Approximately 4.59 acres of the Live Oak Terrace parcel are located within the floodplain, including nine houses slated for demolition. For any action within a floodplain the Air Force would submit a FONPA as part of the ROD outlining why there are no practicable alternatives to conducting the action within the floodplain. In the case of Live Oak Terrace, there is no practicable alternative to activities within the floodplain because those units within the floodplain need to be demolished; thus a FONPA would be required. However, there would be no new construction at this location.

Pine Shadows

There is approximately 0.7 acre of wetlands within the Pine Shadows parcel; these wetlands are actually man-made drainage ditches that have developed wetland characteristics over time and have been identified as jurisdictional wetlands by the FDEP. Should the developer need to construct culverts within the Pine Shadows location to allow parcel access over the drainage ditches, a FONPA in accordance with EO 11990 would be required, as well as an Environmental Resource Permit from the FDEP. There would be no other construction activities within wetland areas, and the Air Force anticipates no direct impacts to surface waters or wetlands. However, there is potential for indirect impacts to water resources in the surrounding area associated with stormwater runoff. Potential indirect impacts associated with changes in stormwater runoff for the Pine Shadows area are presented in Table 4-52.

Using the analysis methods discussed in Appendix G, *Water Resources*, the results of the model indicate that stormwater runoff would increase by 2.66 inches. This runoff would potentially be transported to the nearby water resources as well as over the surrounding land areas. Implementation of non-discretionary mitigations as part of SWPPP requirements, as well as non-discretionary buffers around water bodies and wetlands would serve to minimize stormwater runoff and associated impacts. Approximately, 0.82 acre of the Pine Shadows parcel is located within the floodplain. However, no activities would occur within the floodplain. As a result, the Air Force has not identified significant adverse impacts associated at Pine Shadows.

Soundside Manor

There are no surface waters or wetlands within the Soundside Manor Parcel though wetlands border the entire west edge of the parcel and an area of wetlands exists just south of the parcel. The Air Force anticipates no direct impacts to surface waters or wetlands. However, there is potential for indirect impacts to water resources in the surrounding area associated with stormwater runoff. Potential indirect impacts associated with changes in stormwater runoff for Soundside Manor are presented in Table 4-52.

Using the analysis methods discussed in Appendix G, *Water Resources*, the results of the model indicate that stormwater runoff would increase by 2.82 inches. This runoff would potentially be transported to the nearby water resources as well as over the surrounding land areas. However, implementation of non-discretionary mitigations as

part of SWPPP requirements, as well as non-discretionary buffers around water bodies and wetlands would serve to minimize stormwater runoff and associated impacts. Approximately 3.93 acres and two houses of the Soundside Manor parcel are located within the floodplain. The demolition of houses within the floodplain would require a FONPA. Existing roads within the floodplain would be continue to be used as is and would not be improved or modified as a result of the Proposed Action. The Air Force has not identified significant adverse impacts at Soundside Manor associated with demolition activities within the floodplain.

Existing FAMCAMP Location

No surface waters or wetland areas have been identified on the FAMCAMP parcel; however, there are wetlands associated with Santa Rosa Sound located within a tenth of a mile of the parcel and there is 0.33 acre of floodplains within the parcel. Construction or demolition activities would not occur within any of the water resource or floodplain areas; therefore, no direct impacts to surface waters, wetlands, and floodplains would occur. A FONPA would not be required for the FAMCAMP parcel. Potential indirect impacts associated with changes in stormwater runoff for the FAMCAMP area are presented in Table 4-52.

Using the analysis methods discussed in Appendix G, *Water Resources*, the results of the model indicate that stormwater runoff would increase by 3.64 inches. This runoff would potentially be transported to the nearby water resources as well as over the surrounding land areas. As with other locations, non-discretionary mitigations as part of SWPPP requirements, as well as non-discretionary buffers around water bodies and wetlands would serve to minimize stormwater runoff and associated impacts. Therefore, the Air Force has not identified significant adverse impacts associated with stormwater at the FAMCAMP location.

New FAMCAMP Location

No surface waters have been identified on the new FAMCAMP location parcel; however, there is 0.31 acre of wetlands located along the southern perimeter of the parcel. Construction activities would not occur within this wetland area; therefore, no direct impacts to surface waters, wetlands, and floodplains would occur. There would be an increase in stormwater runoff for the new FAMCAMP location resulting from the construction of 50 recreational vehicle spaces, a new bath house, and an asphalt roadway with access to SR-189. The amount of runoff would be approximately 3.6 inches based on runoff amounts at the comparable existing FAMCAMP. As with other locations, non-discretionary mitigations as part of SWPPP requirements, as well as non-discretionary buffers around water bodies and wetlands would serve to minimize stormwater runoff and associated impacts. Therefore, the Air Force has not identified significant adverse impacts associated with stormwater at the new FAMCAMP Location.

4.11.4 Alternative 1: White Point Area

As with the Proposed Action commonalities, to minimize potential indirect impacts to water resources, a non-discretionary 50-foot mandatory development buffer would be required along all water bodies along with a 100-foot discretionary mitigation buffer. Areas around wetlands would also require a 50-foot mandatory development buffer; these buffers would apply to all parcels (Figure 4-14). In addition, the developer would be required to obtain permits and would implement, as required by the FDEP and the NWFWMD, site-specific non-discretionary mitigations as developed during the permitting process. These non-discretionary mitigations would be included in a SWPPP which would identify mitigations to reduce the rate and volume of stormwater runoff. These stormwater management controls would also be a part of the site designs to minimize pollutants.

The Air Force would be required to ensure that the developer has these controls in place prior to any construction activity. These non-discretionary requirements apply to all parcels. A comprehensive list of discretionary and non-discretionary mitigations for water resources is provided in Section 4.11.8, *Mix Alternative*.

At all locations in under Alternative 1, no demolition or new construction would take place within wetlands or within the 100-year floodplain. If the area within the floodplain were to be developed, the Air Force would be required to submit a FONPA stating that no alternatives existed for construction within the floodplain. In addition, the developer would be required to follow the American Society of Civil Engineers (ASCE) "minimum requirements for flood-resistant design and construction of structures that are subject to building code requirements that are located, in whole or in part, in flood hazard areas" (ASCE, 2006).

Alternative 1 – Parcel 1

No wetlands or floodplain areas have been identified within Parcel 1; however, some water resources are present in areas outside the boundaries of the parcel. The closest wetland area is located north of the parcel and is associated with Lake Pippin. Since no water resources are located within the parcel and construction within a specific water resource would be avoided, there would be no direct impacts to surface waters or wetlands. The Air Force would avoid constructing new units within the floodplain. Potential indirect impacts associated with water resources in this area relate to stormwater runoff and are addressed below in Table 4-53.

Table 4-53. Alternative 1, Parcel 1 – Modeled Pre- and Post-construction Stormwater Runoff

Runoff	Pre	Post	Change
Peak flow (cfs)	30	233	203
Runoff amount (in)	1.45	7.11	5.66

cfs = cubic feet per second; in = inches

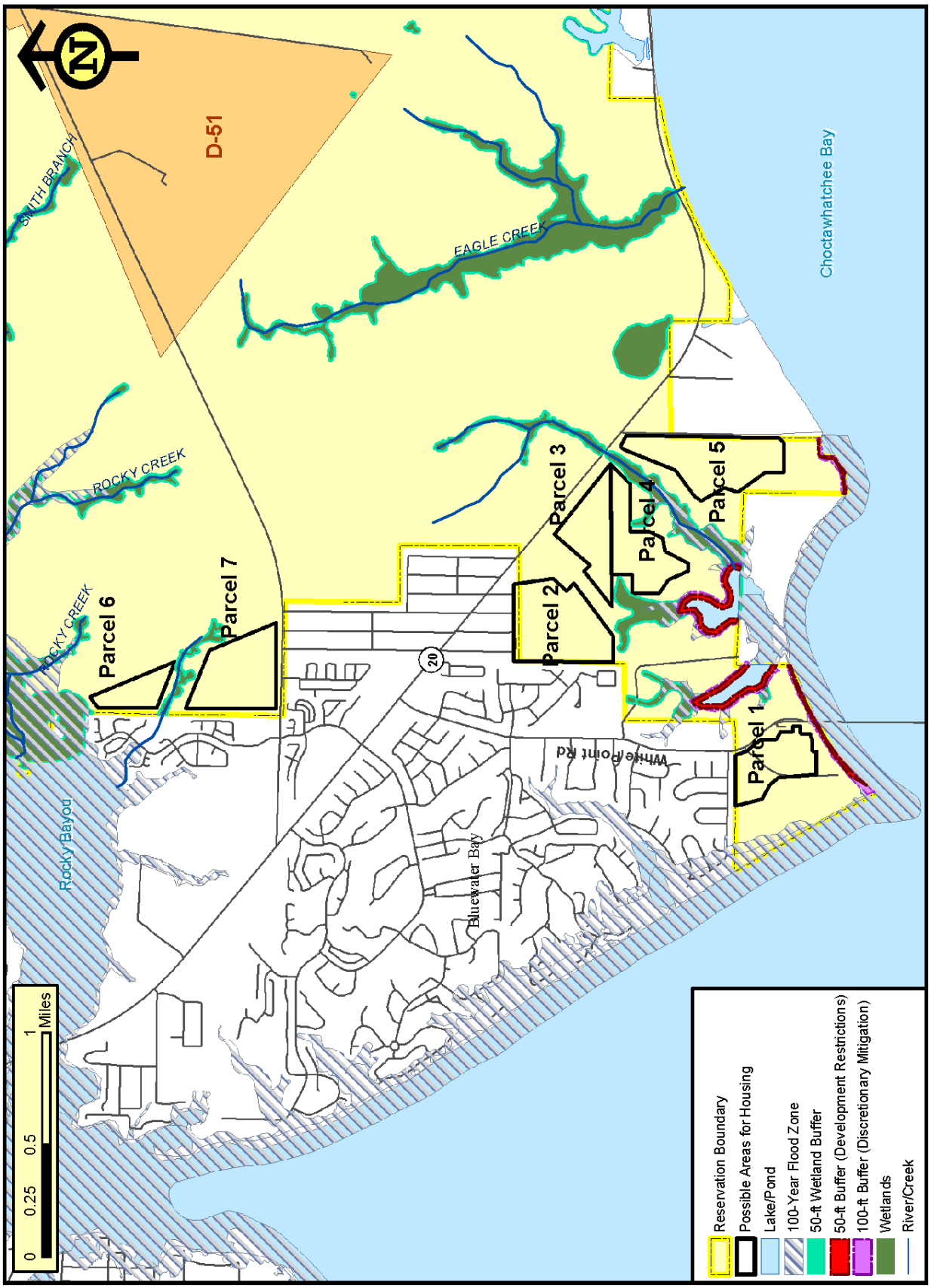

Figure 4-14. Water Resources at Alternative 1: White Point

Using the analysis methods discussed in Appendix G, Water Resources, the results of the model indicate that stormwater runoff would increase by 5.66 inches. However, non-discretionary mitigations as part of SWPPP requirements, as well as non-discretionary buffers around water bodies and wetlands would serve to minimize stormwater runoff and associated impacts. As a result, the Air Force has not identified significant adverse impacts at Parcel 1.

Alternative 1 – Parcel 2

There are no surface waters, wetlands, or floodplains within Parcel 2; however, some water resources are present in areas outside the boundaries of the parcel. The closest wetlands and floodplain areas are located south of the parcel and are associated with Lake Pippin. Since no water resources are located within the parcel and construction within a specific water resource would be avoided, there would be no direct impacts to surface water, wetlands, or floodplains. Potential indirect impacts associated with changes in stormwater runoff at Parcel 2 are presented in Table 4-54.

Table 4-54. Alternative 1, Parcel 2 – Modeled Pre- and Post-construction Stormwater Runoff

Runoff	Pre	Post	Change
Peak flow (cfs)	55	492	437
Runoff amount (in)	1.32	7.11	5.79

cfs = cubic feet per second; in = inches

Using the analysis methods discussed in Appendix G, *Water Resources*, the results of the model indicate that stormwater runoff would increase by 5.79 inches. This runoff would potentially be transported to the nearby water resources as well as over the surrounding land areas. However, non-discretionary mitigations as part of SWPPP requirements, as well as non-discretionary buffers around water bodies and wetlands would serve to minimize stormwater runoff and associated impacts. As a result, the Air Force has not identified significant adverse impacts at Parcel 2.

Alternative 1 – Parcel 3

There are no surface waters, wetlands, or floodplains within Parcel 3; however, some water resources are present in areas outside the boundaries of the parcel. The closest wetlands and floodplain areas are located within 0.5 mile of the parcel and are associated with Lake Pippin and Little Trout Creek. Since no water resources are located within the parcel and construction within a specific water resource would be avoided, there would be no direct impacts to surface water, wetlands or floodplains. Potential indirect impacts associated with changes in stormwater runoff at Parcel 3 are presented in Table 4-55.

Table 4-55. Alternative 1, Parcel 3 – Modeled Pre- and Post-construction Stormwater Runoff

Runoff	Pre	Post	Change
Peak flow (cfs)	38	332	294
Runoff amount (in)	1.32	7.11	5.79

cfs = cubic feet per second; in = inches

Using the analysis methods discussed in Appendix G, Water Resources, the results of the model indicate that stormwater runoff would increase by 5.79 inches. However, non-discretionary mitigations as part of SWPPP requirements, as well as non-discretionary buffers around water bodies and wetlands would serve to minimize stormwater runoff and associated impacts. As a result, the Air Force has not identified significant adverse impacts at Parcel 3.

Alternative 1 – Parcel 4

There are no surface waters, wetlands, or floodplains within Parcel 4; however, some water resources are present in areas outside the boundaries of the parcel. The closest wetlands and floodplain areas are located within 0.5 mile of the parcel and are associated with Lake Pippin and Little Trout Creek. Since no water resources are located within the parcel and construction within a specific water resource would be avoided, there would be no direct impacts to surface water, wetlands, or floodplains. Potential indirect impacts associated with changes in stormwater runoff at Parcel 4 are presented in Table 4-56.

Table 4-56. Alternative 1, Parcel 4 – Modeled Pre- and Post-construction Stormwater Runoff

Runoff	Pre	Post	Change
Peak flow (cfs)	99	298	199
Runoff amount (in)	3.04	7.89	4.85

cfs = cubic feet per second; in = inches

Using the analysis methods discussed in Appendix G, *Water Resources*, the results of the model indicate that stormwater runoff would increase by 4.85 inches. However, non-discretionary mitigations as part of SWPPP requirements, as well as non-discretionary buffers around water bodies and wetlands would serve to minimize stormwater runoff and associated impacts. As a result, the Air Force has not identified significant adverse impacts at Parcel 4.

Alternative 1 – Parcel 5

There are no surface waters, wetlands, or floodplains within Parcel 5; however, some water resources are present in areas outside the boundaries of the parcel. The closest wetlands are located within 0.5 mile of the parcel and are associated with Lake Pippin and Little Trout Creek. A floodplain zone is also located within 0.5 mile of the parcel that is associated with the Choctawhatchee Bay. Since no water resources are located within the parcel and construction within a specific water resource would be avoided, there would be no direct impacts to surface water, wetlands, or floodplains. Potential indirect impacts associated with changes in stormwater runoff at Parcel 5 are presented in Table 4-57.

Table 4-57. Alternative 1, Parcel 5 – Modeled Pre- and Post-construction Stormwater Runoff

Runoff	Pre	Post	Change
Peak flow (cfs)	30	275	245
Runoff amount (in)	1.32	7.11	5.79

cfs = cubic feet per second; in = inches

Using the analysis methods discussed in Appendix G, *Water Resources*, the results of the model indicate that stormwater runoff would increase by 5.79 inches. This runoff would potentially be transported to the nearby water resources as well as over the surrounding land areas. However, non-discretionary mitigations as part of SWPPP requirements, as well as non-discretionary buffers around water bodies and wetlands would serve to minimize stormwater runoff and associated impacts. As a result, the Air Force has not identified significant adverse impacts at Parcel 5.

Alternative 1 – Parcel 6

There are no surface waters, wetlands, or floodplains within Parcel 6; however, some water resources are present in areas outside the boundaries of the parcel. The closest wetlands and floodplain areas are located within 0.1 mile of the parcel and are associated with Rocky Bayou and Rocky Creek. Since no water resources are located within the parcel and construction within a specific water resource would be avoided, there would be no direct impacts to surface water, wetlands, or floodplains. Potential indirect impacts associated with changes in stormwater runoff at Parcel 6 are presented in Table 4-58.

Table 4-58. Alternative 1, Parcel 6 – Modeled Pre- and Post-construction Stormwater Runoff

Runoff	Pre	Post	Change
Peak flow (cfs)	19	166	147
Runoff amount (in)	1.32	7.11	5.79

cfs = cubic feet per second; in = inches

Using the analysis methods discussed in Appendix G, Water Resources, the results of the model indicate that stormwater runoff would increase by 5.79 inches. However, non-discretionary mitigations as part of SWPPP requirements, as well as non-discretionary buffers around water bodies and wetlands would serve to minimize stormwater runoff and associated impacts. As a result, the Air Force has not identified significant adverse impacts at Parcel 6.

Alternative 1 – Parcel 7

There are no surface waters, wetlands, or floodplains within the Parcel 7 area; however, some water resources are present in areas outside the boundaries of the parcel. The closest wetland areas are located within 0.2 mile of the parcel and are associated with an unnamed creek that drains into Rocky Bayou. Since no water resources are located within the parcel and construction within a specific water resource would be avoided, there would be no direct impacts to surface water, wetlands, or floodplains. Potential indirect impacts associated with changes in stormwater runoff at Parcel 7 are presented in Table 4-59.

Table 4-59. Alternative 1, Parcel 7 – Modeled Pre- and Post-construction Stormwater Runoff

Runoff	Pre	Post	Change
Peak flow (cfs)	37	332	295
Runoff amount (in)	1.32	7.11	5.79

cfs = cubic feet per second; in = inches

Using the analysis methods discussed in Appendix G, *Water Resources*, the results of the model indicate that stormwater runoff would increase by 5.79 inches. This runoff would potentially be transported to the nearby water resources as well as over the surrounding land areas. However, non-discretionary mitigations as part of SWPPP requirements, as well as non-discretionary buffers around water bodies and wetlands would serve to minimize stormwater runoff and associated impacts. As a result, the Air Force has not identified significant adverse impacts at Parcel 7.

4.11.5 Alternative 2: Eglin Main Base / Valparaiso

As with the Proposed Action commonalities and Alternative 1, to minimize potential indirect impacts to water resources, a non-discretionary 50-foot mandatory development buffer would be required along all water bodies along with a 100-foot discretionary mitigation buffer. Areas around wetlands would also require a 50-foot mandatory development buffer; these buffers would apply to all parcels (Figure 4-15).

In addition, the developer would be required to obtain permits and would implement, as required by the FDEP and the NWFWMD, site-specific non-discretionary mitigations as developed during the permitting process. These non-discretionary mitigations would be included in a SWPPP which would identify mitigations to reduce the rate and volume of stormwater runoff. These stormwater management controls would also be a part of the site designs to minimize pollutants. The Air Force would be required to ensure that the developer has these controls in place prior to any construction activity. These non-discretionary requirements apply to all parcels. A comprehensive list of discretionary and non-discretionary mitigations for water resources is provided in Section 4.11.8, *Mix Alternative*.

At all locations under Alternative 2, no demolition or new construction would take place within wetlands or within the 100-year floodplain. If the area within the floodplain were to be developed, the Air Force would be required to submit a FONPA stating that no alternatives existed for construction within the floodplain. In addition, the developer would be required to follow the ASCE "minimum requirements for flood-resistant design and construction of structures that are subject to building code requirements that are located, in whole or in part, in flood hazard areas" (ASCE, 2006).

Alternative 2 – Parcel 1

There are no surface waters located on Parcel 1; however, there is approximately 0.63 acre of estuarine wetlands, 0.12 acre of palustrine wetlands, and 1.25 acres of floodplains within Parcel 1. Potential indirect impacts associated with water resources in this area relate to stormwater runoff and are presented in Table 4-60.

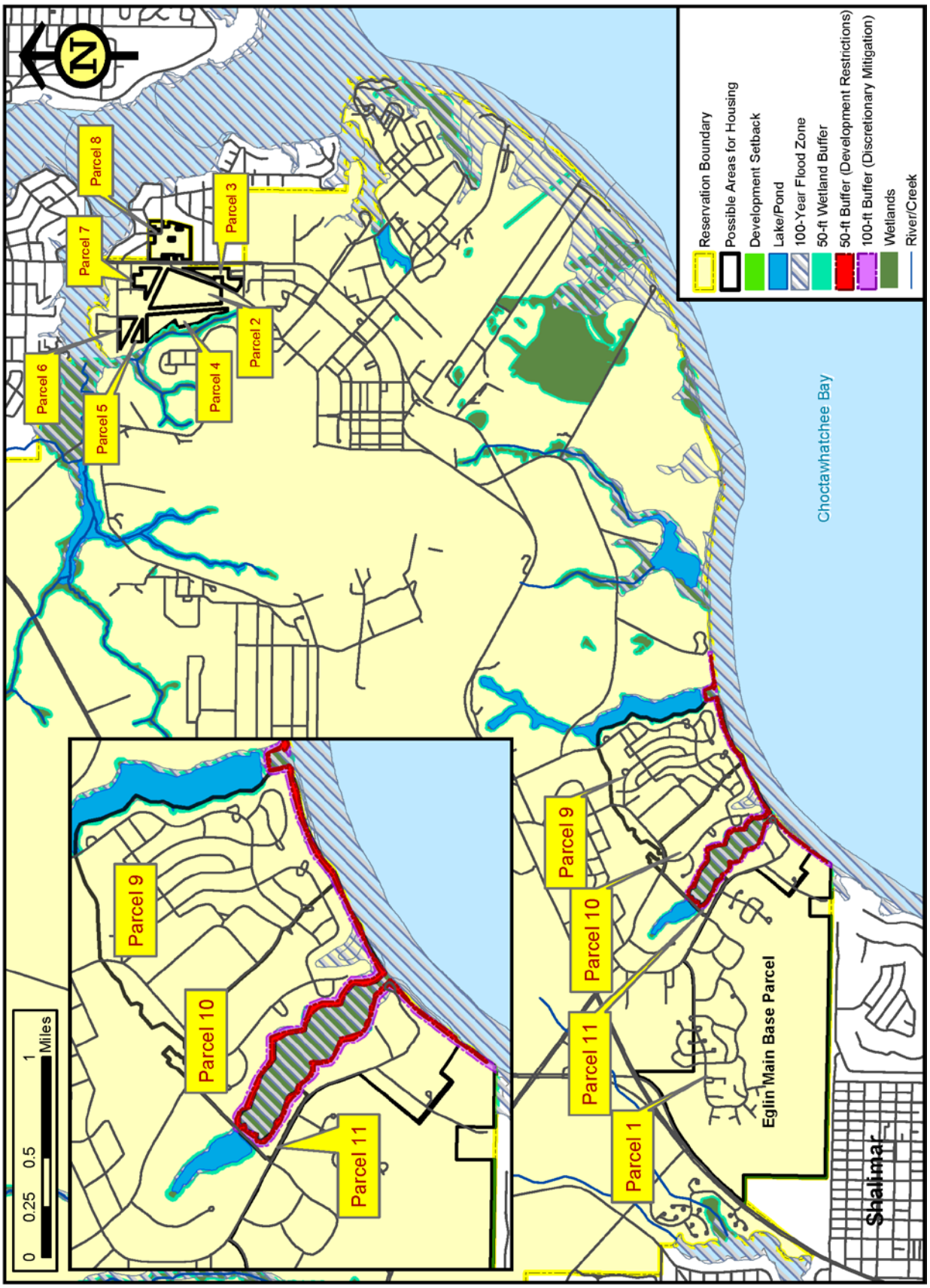

Figure 4-15. Water Resources at Alternative 2: Eglin Main

Using the analysis methods discussed in Appendix G, Water Resources, the results of the model indicate that stormwater runoff would increase by 1.24 inches. However, non-discretionary mitigations as part of SWPPP requirements, as well as non-discretionary buffers around water bodies and wetlands would serve to minimize stormwater runoff and associated impacts. As a result, the Air Force has not identified significant adverse impacts at Parcel 1.

Table 4-60. Alternative 2, Parcel 1 – Modeled Pre- and Post-construction Stormwater Runoff

Runoff	Pre	Post	Change
Peak flow (cfs)	480	769	289
Runoff amount (in)	2.63	3.87	1.24

cfs = cubic feet per second; in = inches

Alternative 2 – Parcel 2

There are no surface waters, wetlands, or floodplains within Parcel 2; however, some water resources are present in areas outside the boundaries of the parcel. The closest wetland area is located within 0.25 mile west of the parcel and is associated with an unnamed creek. A floodplain area exists within 0.5 mile of the parcel that is associated with the Tom's Bayou and Boggy Bayou. Since no water resources are located within the parcel and construction within a specific water resource would be avoided, there would be no direct impacts to surface water, wetlands, or floodplains. Potential indirect impacts associated with changes in stormwater runoff at Parcel 2 are presented in Table 4-61.

Table 4-61. Alternative 2, Parcel 2 – Modeled Pre- and Post-construction Stormwater Runoff

Runoff	Pre	Post	Change
Peak flow (cfs)	19	172	153
Runoff amount (in)	1.32	7.11	5.79

cfs = cubic feet per second; in = inches

Using the analysis methods discussed in Appendix G, *Water Resources*, the results of the model indicate that stormwater runoff would increase by 5.79 inches. However, implementation of non-discretionary mitigations as part of SWPPP requirements, as well as non-discretionary buffers around water bodies and wetlands would serve to minimize stormwater runoff and associated impacts. As a result, the Air Force has not identified significant adverse impacts at Parcel 2.

Alternative 2 – Parcel 3

There are no surface waters, wetlands, or floodplains within Parcel 3; however, some water resources are present in areas outside the boundaries of the parcel. A floodplain area exists within a mile of the parcel that is associated with Boggy Bayou. Since no water resources are located within the parcel and construction within a specific water resource would be avoided, there would be no direct impacts to surface water,

wetlands, or floodplains. Potential indirect impacts associated with changes in stormwater runoff at Parcel 3 are presented in Table 4-62.

Table 4-62. Alternative 2, Parcel 3 – Modeled Pre- and Post-construction Stormwater Runoff

Runoff	Pre	Post	Change
Peak flow (cfs)	5	43	38
Runoff amount (in)	1.32	7.11	5.79

cfs = cubic feet per second; in = inches

Using the analysis methods discussed in Appendix G, *Water Resources*, the results of the model indicate that stormwater runoff would increase by 5.79 inches. This runoff would potentially be transported to the nearby water resources as well as over the surrounding land areas. However, non-discretionary mitigations as part of SWPPP requirements, as well as non-discretionary buffers around water bodies and wetlands would serve to minimize stormwater runoff and associated impacts. As a result, the Air Force has not identified significant adverse impacts at Parcel 3.

Alternative 2 – Parcel 4

There are no surface waters, wetlands, or floodplains within Parcel 4; however, some water resources are present in areas outside the boundaries of the parcel. A floodplain area exists within 0.5 mile of the parcel that is associated with an unnamed creek that connects to Tom's Bayou. Since no water resources are located within the parcel and construction within a specific water resource would be avoided, there would be no direct impacts to surface water, wetlands, or floodplains. Potential indirect impacts associated with changes in stormwater runoff at Parcel 4 are presented in Table 4-63.

Table 4-63. Alternative 2, Parcel 4 – Modeled Pre- and Post-construction Stormwater Runoff

Runoff	Pre	Post	Change
Peak flow (cfs)	12	107	95
Runoff amount (in)	1.32	7.11	5.79

cfs = cubic feet per second; in = inches

Using the analysis methods discussed in Appendix G, *Water Resources*, the results of the model indicate that stormwater runoff would increase by 5.79 inches. This runoff would potentially be transported to the nearby water resources as well as over the surrounding land areas. However, non-discretionary mitigations as part of SWPPP requirements, as well as non-discretionary buffers around water bodies and wetlands would serve to minimize stormwater runoff and associated impacts. As a result, the Air Force has not identified significant adverse impacts at Parcel 4.

Alternative 2 – Parcel 5

There are no surface waters, wetlands, or floodplains within Parcel 5; however, some water resources are present in areas outside the boundaries of the parcel. A floodplain area exists within 0.5 mile of the parcel that is associated with an unnamed creek that

connects to Tom's Bayou. Since no water resources are located within the parcel and construction within a specific water resource would be avoided, there would be no direct impacts to surface water, wetlands, or floodplains. Potential indirect impacts associated with changes in stormwater runoff at Parcel 5 are presented in Table 4-64.

Using the analysis methods discussed in Appendix G, Water Resources, the results of the model indicate that stormwater runoff would increase by 5.78 inches. However, non-discretionary mitigations as part of SWPPP requirements, as well as non-discretionary buffers around water bodies and wetlands would serve to minimize stormwater runoff and associated impacts. As a result, the Air Force has not identified significant adverse impacts at Parcel 5.

Table 4-64. Alternative 2, Parcel 5 – Modeled Pre- and Post-construction Stormwater Runoff

Runoff	Pre	Post	Change
Peak flow (cfs)	2	13.6	11.6
Runoff amount (in)	1.32	7.095	5.78

cfs = cubic feet per second; in = inches

Alternative 2 – Parcel 6

There are no surface waters, wetlands, or floodplains within Parcel 6; however, some water resources are present in areas outside the boundaries of the parcel. The closest wetland and floodplain areas are within 0.25 mile of the parcel that is associated with an unnamed creek that connects to Tom's Bayou. Since no water resources are located within the parcel and construction within a specific water resource would be avoided, there would be no direct impacts to surface water, wetlands, or floodplains. Potential indirect impacts associated with changes in stormwater runoff at Parcel 6 are presented in Table 4-65.

Table 4-65. Alternative 2, Parcel 6 – Modeled Pre- and Post-construction Stormwater Runoff

Runoff	Pre	Post	Change
Peak flow (cfs)	3	25.3	22.3
Runoff amount (in)	1.32	7.11	5.79

cfs = cubic feet per second; in = inches

Using the analysis methods discussed in Appendix G, *Water Resources*, the results of the model indicate that stormwater runoff would increase by 5.79 inches. This runoff would potentially be transported to the nearby water resources as well as over the surrounding land areas. However, implementation of non-discretionary mitigations as part of SWPPP requirements, as well as non-discretionary buffers around water bodies and wetlands would serve to minimize stormwater runoff and associated impacts. As a result, the Air Force has not identified significant adverse impacts at Parcel 6.

Alternative 2 – Parcel 7

There are no surface waters, wetlands, or floodplains within Parcel 7; however, some water resources are present in areas outside the boundaries of the parcel. The closest

wetland area is located within a mile of the parcel and is associated with Tom's Bayou. A floodplain area exists within 0.25 mile of the parcel that is associated with Boggy Bayou. Since no water resources are located within the parcel and construction within a specific water resource would be avoided, there would be no direct impacts to surface water, wetlands, or floodplains. Potential indirect impacts associated with changes in stormwater runoff at Parcel 7 are presented in Table 4-66.

Table 4-66. Alternative 2, Parcel 7 – Modeled Pre- and Post-construction Stormwater Runoff

Runoff	Pre	Post	Change
Peak flow (cfs)	7	49.9	42.9
Runoff amount (in)	1.32	7.11	5.79

cfs = cubic feet per second; in = inches

Using the analysis methods discussed in Appendix G, *Water Resources*, the results of the model indicate that stormwater runoff would increase by 5.79 inches. This runoff would potentially be transported to the nearby water resources as well as over the surrounding land areas. However, non-discretionary mitigations as part of SWPPP requirements, as well as non-discretionary buffers around water bodies and wetlands would serve to minimize stormwater runoff and associated impacts. As a result, the Air Force has not identified significant adverse impacts at Parcel 7.

Alternative 2 – Parcel 8

There are no surface waters, wetlands, or floodplains within Parcel 8; however, some water resources are present in areas outside the boundaries of the parcel. A floodplain area exists within 0.25 mile of the parcel that is associated with Boggy Bayou. Since no water resources are located within the parcel and construction within a specific water resource would be avoided, there would be no direct impacts to surface water, wetlands, or floodplains. Potential indirect impacts associated with changes in stormwater runoff at Parcel 8 are presented in Table 4-67.

Table 4-67. Alternative 2, Parcel 8 – Modeled Pre- and Post-construction Stormwater Runoff

Runoff	Pre	Post	Change
Peak flow (cfs)	13	114	101
Runoff amount (in)	1.32	7.11	5.79

cfs = cubic feet per second; in = inches

Using the analysis methods discussed in Appendix G, *Water Resources*, the results of the model indicate that stormwater runoff would increase by 5.79 inches. This runoff would potentially be transported to the nearby water resources as well as over the surrounding land areas. However, implementation of non-discretionary mitigations as part of SWPPP requirements, as well as non-discretionary buffers around water bodies and wetlands would serve to minimize stormwater runoff and associated impacts. As a result, the Air Force has not identified significant adverse impacts at Parcel 8.

Alternative 2 – Parcel 9

There are no surface waters within Parcel 9; therefore, the Air Force anticipates no direct impacts to surface waters. However, there is potential for indirect impacts to water resources in the surrounding area associated with stormwater runoff. Potential indirect impacts associated with changes in stormwater runoff for Parcel 9 are presented in Table 4-68.

Table 4-68. Alternative 2, Parcel 9 – Modeled Pre- and Post-construction Stormwater Runoff

Runoff	Pre	Post	Change
Peak flow (cfs)	340	865	525
Runoff amount (in)	4.97	5.92	0.95

cfs = cubic feet per second; in = inches

There is approximately 0.79 acre of wetlands and 4.69 acres of floodplains within Parcel 9. However, no new construction would take place within the wetlands or within the 100-year floodplain. Using the analysis methods discussed in Appendix G, *Water Resources*, the results of the model indicate that stormwater runoff would increase by 0.95 inch. However, non-discretionary mitigations as part of SWPPP requirements, as well as non-discretionary buffers around water bodies and wetlands would serve to minimize stormwater runoff and associated impacts. As a result, the Air Force has not identified significant adverse impacts at Parcel 9.

Alternative 2 – Parcel 10

There are no surface waters within Parcel 10; therefore, the Air Force anticipates no direct impacts to surface waters. However, there is potential for indirect impacts to water resources in the surrounding area associated with stormwater runoff. Potential indirect impacts associated with changes in stormwater runoff for Parcel 10 are presented in Table 4-69.

Table 4-69. Alternative 2, Parcel 10 – Modeled Pre- and Post-construction Stormwater Runoff

Runoff	Pre	Post	Change
Peak flow (cfs)	340	604	264
Runoff amount (in)	4.97	7.11	2.14

cfs = cubic feet per second; in = inches

There is approximately 0.67 acre of wetlands and 7.58 acres of floodplains within Parcel 10. However, no new construction would take place within the wetlands or 100-year floodplain. Using the analysis methods discussed in Appendix G, *Water Resources*, the results of the model indicate that stormwater runoff would increase by 2.14 inches. However, non-discretionary mitigations as part of SWPPP requirements, as well as non-discretionary buffers around water bodies and wetlands would serve to minimize stormwater runoff and associated impacts. As a result, the Air Force has not identified significant adverse impacts at Parcel 10.

Alternative 2 – Parcel 11

There are no surface waters within Parcel 11; therefore, the Air Force anticipates no direct impacts to surface waters. However, there is potential for indirect impacts to water resources in the surrounding area associated with stormwater runoff. Potential indirect impacts associated with changes in stormwater runoff for Parcel 11 are presented in Table 4-70.

Table 4-70. Alternative 2, Parcel 11 – Modeled Pre- and Post-construction Stormwater Runoff

Runoff	Pre	Post	Change
Peak flow (cfs)	12	45	33
Runoff amount (in)	2.23	7.11	4.88

cfs = cubic feet per second; in = inches

There is approximately 0.69 acre of wetlands and 3.37 acres of floodplains within Parcel 11. However, no new construction would take place within the wetlands or 100-year floodplain. Using the analysis methods discussed in Appendix G, *Water Resources*, the results of the model indicate that stormwater runoff would increase by 4.88 inches. However, non-discretionary mitigations as part of SWPPP requirements, as well as non-discretionary buffers around water bodies and wetlands would serve to minimize stormwater runoff and associated impacts. As a result, the Air Force has not identified significant adverse impacts at Parcel 11.

4.11.6 Subalternative 2a: Eglin Main Base (Preferred Alternative)

Surface waters, wetlands, and floodplains impacts associated with this alternative are the same as those discussed for Parcel 1 under Alternative 2. The Air Force has not identified significant adverse impacts at this location given the implementation of non-discretionary mitigations as part of SWPPP requirements, as well as non-discretionary buffers around water bodies and wetlands that would serve to minimize stormwater runoff and associated impacts.

4.11.7 Alternative 3: North Fort Walton Beach Area

As with the previous locations, to minimize potential indirect impacts to water resources, a non-discretionary 50-foot mandatory development buffer would be required along all water bodies along with a 100-foot discretionary mitigation buffer. Areas around wetlands would also require a 50-foot mandatory development buffer; these buffers would apply to all parcels (Figure 4-16). In addition, the developer would be required to obtain permits and would implement, as required by the FDEP and the NWFWMD, site-specific non-discretionary mitigations as developed during the permitting process. These non-discretionary mitigations would be included in a SWPPP which would identify mitigations to reduce the rate and volume of stormwater runoff. These stormwater management controls would also be a part of the site designs to minimize pollutants.

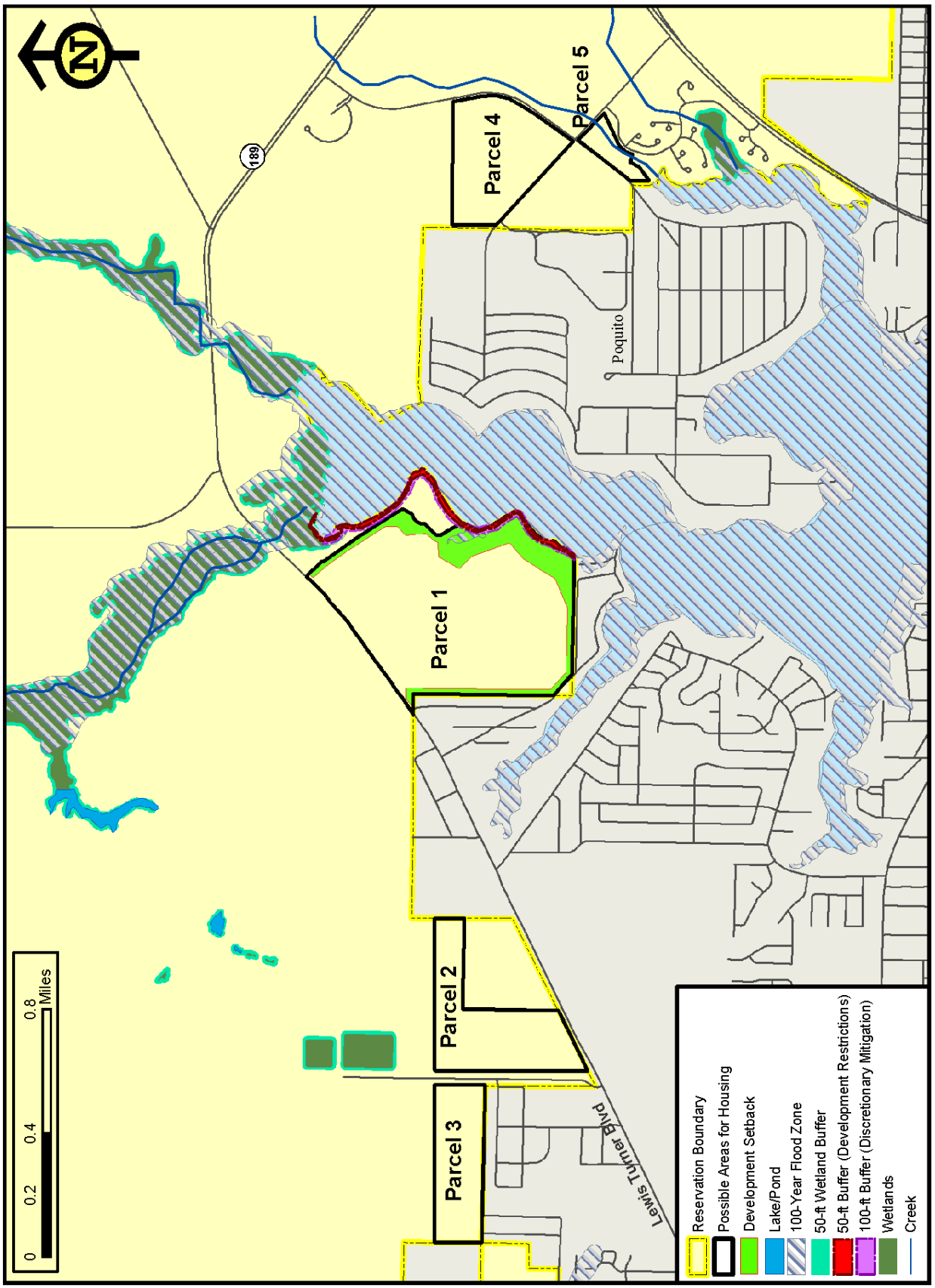

Figure 4-16. Water Resources at Alternative 3: North Fort Walton Beach

The Air Force would be required to ensure that the developer has these controls in place prior to any construction activity. These non-discretionary requirements apply to all parcels. A comprehensive list of discretionary and non-discretionary mitigations for water resources is provided in Section 4.11.8, *Mix Alternative*.

At all locations under Alternative 3, no demolition or new construction would take place within wetlands or within the 100-year floodplain. If the area within the floodplain were to be developed, the Air Force would be required to submit a FONPA stating that no alternatives existed for construction within the floodplain. In addition, the developer would be required to follow the ASCE "minimum requirements for flood-resistant design and construction of structures that are subject to building code requirements that are located, in whole or in part, in flood hazard areas" (ASCE, 2006).

Alternative 3 – Parcel 1

There are no surface waters or wetlands within Parcel 1 but there are approximately 4.9 acres of floodplains within the area. However, no new construction would take place within the 100-year floodplain. As a result, there would be no direct impacts to surface waters, wetlands, or floodplains. Potential indirect impacts associated with water resources in this area relate to stormwater runoff and are presented in Table 4-71.

Table 4-71. Alternative 3, Parcel 1 – Modeled Pre- and Post-construction Stormwater Runoff

Runoff	Pre	Post	Change
Peak flow (cfs)	180	1269	1089
Runoff amount (in)	1.32	5.51	4.19

cfs = cubic feet per second; in = inches

Using the analysis methods discussed in Appendix G, *Water Resources*, the results of the model indicate that stormwater runoff would increase by 4.19 inches. However, non-discretionary mitigations as part of SWPPP requirements, as well as non-discretionary buffers around water bodies and wetlands would serve to minimize stormwater runoff and associated impacts. As a result, the Air Force has not identified significant adverse impacts at Parcel 1.

Alternative 3 – Parcel 2

There are no surface waters, wetlands, or floodplains within Parcel 2; however, some water resources are present in areas outside the boundaries of the parcel. A floodplain area exists within 0.2 mile of the parcel. Since no water resources are located within the parcel and construction within a specific water resource would be avoided, there would be no direct impacts to surface water, wetlands, or floodplains. Potential indirect impacts associated with changes in stormwater runoff at Parcel 2 are presented in Table 4-72.

Table 4-72. Alternative 3, Parcel 2 – Modeled Pre- and Post-construction Stormwater Runoff

Runoff	Pre	Post	Change
Peak flow (cfs)	178	452	274
Runoff amount (in)	3.18	7.11	3.93

cfs = cubic feet per second; in = inches

Using the analysis methods discussed in Appendix G, *Water Resources*, the results of the model indicate that stormwater runoff would increase by 3.93 inches. This runoff would potentially be transported to the nearby water resources as well as over the surrounding land areas. However, non-discretionary mitigations as part of SWPPP requirements, as well as non-discretionary buffers around water bodies and wetlands would serve to minimize stormwater runoff and associated impacts. As a result, the Air Force has not identified significant adverse impacts at Parcel 2.

Alternative 3 – Parcel 3

There are no surface waters, wetlands, or floodplains within Parcel 3; however, some water resources are present within 0.2 mile of the parcel. Since no water resources are located within the parcel and construction within a specific water resource would be avoided, there would be no direct impacts to surface water, wetlands, or floodplains. Potential indirect impacts associated with changes in stormwater runoff at Parcel 3 are presented in Table 4-73.

Table 4-73. Alternative 3, Parcel 3 – Modeled Pre- and Post-construction Stormwater Runoff

Runoff	Pre	Post	Change
Peak flow (cfs)	47	316	269
Runoff amount (in)	1.57	7.11	5.54

cfs = cubic feet per second; in = inches

Using the analysis methods discussed in Appendix G, *Water Resources*, the results of the model indicate that stormwater runoff would increase by 5.54 inches. This runoff would potentially be transported to the nearby water resources as well as over the surrounding land areas. However, implementation of non-discretionary mitigations as part of SWPPP requirements, as well as non-discretionary buffers around water bodies and wetlands would serve to minimize stormwater runoff and associated impacts. As a result, the Air Force has not identified significant adverse impacts at Parcel 3.

Alternative 3 – Parcel 4

There are no surface waters, wetlands, or floodplains within Parcel 4; however, some water resources are present in areas outside the boundaries of the parcel. A wetland and floodplain area exists within 0.6 mile of the parcel that is associated with Poquito Bayou. Since no water resources are located within the parcel and construction within a specific water resource would be avoided, there would be no direct impacts to surface water, wetlands, or floodplains. Potential indirect impacts associated with changes in stormwater runoff at Parcel 4 are presented in Table 4-74.

Table 4-74. Alternative 3, Parcel 4 – Modeled Pre- and Post-construction Stormwater Runoff

Runoff	Pre	Post	Change
Peak flow (cfs)	47	421	374
Runoff amount (in)	1.32	7.11	5.79

cfs = cubic feet per second; in = inches

Using the analysis methods discussed in Appendix G, *Water Resources*, the results of the model indicate that stormwater runoff would increase by 5.79 inches. This runoff would potentially be transported to the nearby water resources as well as over the surrounding land areas. However, non-discretionary mitigations as part of SWPPP requirements, as well as non-discretionary buffers around water bodies and wetlands would serve to minimize stormwater runoff and associated impacts. As a result, the Air Force has not identified significant adverse impacts at Parcel 4.

Alternative 3 – Parcel 5

There are no surface waters, wetlands, or floodplains within Parcel 5; however, some water resources are present in areas outside the boundaries of the parcel. Since no water resources are located within the parcel and construction within a specific water resource would be avoided, there would be no direct impacts to surface waters, wetlands, or floodplains. Potential indirect impacts associated with changes in stormwater runoff at Parcel 5 are presented in Table 4-75.

Table 4-75. Alternative 3, Parcel 5 – Modeled Pre- and Post-construction Stormwater Runoff

Runoff	Pre	Post	Change
Peak flow (cfs)	59	77.9	18.9
Runoff amount (in)	5.24	7.11	1.87

cfs = cubic feet per second; in = inches

Using the analysis methods discussed in Appendix G, *Water Resources*, the results of the model indicate that stormwater runoff would increase by 1.87 inches. This runoff would potentially be transported to the nearby water resources as well as over the surrounding land areas. However, non-discretionary mitigations as part of SWPPP requirements, as well as non-discretionary buffers around water bodies and wetlands would serve to minimize stormwater runoff and associated impacts. As a result, the Air Force has not identified significant adverse impacts at Parcel 5.

4.11.8 Alternative 4: Mix Alternative

Since the mix alternative entails a potential combination of several different parcels, the impacts would vary depending on which parcels are chosen and the extent to which they are developed. Each individual parcel was analyzed previously under its respective alternative. Table 4-76 provides a graphical summary of the impacts by parcel for Water Resources. Impacts are generally summarized using a color code as follows:

- Blue – Beneficial impact; Decrease in stormwater runoff.

- Green – No beneficial or adverse impact
- Yellow – Potential for adverse impact, but not significant; Increase in stormwater runoff but impacts negated through permits and non-discretionary measures; actions may occur within the floodplain but not alter elevations.

Table 4-76. Alternative 4 – Water Resource Summary

Alternative / Parcel	Resource Area				
	Surface Water	Groundwater	Storm Water	Wetlands	Floodplains
Commonalities					
Eglin Main Base					
Hurlburt Field					
Camp Rudder					
Camp Pinchot					
Poquito Bayou					
Alternative 1					
1					
2					
3					
4					
5					
6					
7					
Alternative 2					
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
Subalternative 2a (Preferred Alternative)					
1					
Alternative 3					
1					
2					
3					
4					
5					
No Action*					

Blue = Beneficial impact; Green = No beneficial or adverse impact; Yellow = Potential for adverse impact, but not significant.

*Note: The impacts associated with the No Action Alternative include potential impacts associated with implementation of projects identified under the No Action Alternative in Chapter 2, Section 2.3.1, as they relate to the region of influence for that particular resource.

In general, throughout the document analysis considers the implementation of non-discretionary mitigations as part of the Proposed Action or alternatives, because these mitigations would be required to be implemented by permit or other regulatory requirements. Impacts therefore consider non-discretionary mitigations as part of the analysis. In the case of water resources, non-discretionary mitigations include development buffers and setbacks, as well as permit-related mitigations. Therefore, the

color coding in Table 4-76 reflects the degree of impact considering the implementation of these non-discretionary mitigations. Site-specific non-discretionary mitigations as part of the SWPPP requirements would be developed during the permitting process, and would be tailored to the specific development site. However, general mitigations that are typically included in SWPPPs and other related regulatory requirements were considered as part of analysis and are included in the list of regulatory requirements/mitigations after Table 4-76.

This color coded chart provides a summary of impacts so that the decision maker can easily see how a potential combination of parcels may affect water resources at each respective parcel. A combined summary table is provided in the "Summary of Impacts" section at the end of Chapter 5 that shows each individual parcel's potential impacts under each resource area.

Regulatory Requirements/Mitigations

A FONPA in accordance with EO 11988 would be required for demolition activities within floodplains and in accordance with EO 11990 if the drainage ditches located in Hurlburt's Pine Shadows location (identified as jurisdictional wetlands by the FDEP) must be disturbed or culverted in order to allow for parcel access. An Environmental Resource Permit from the FDEP would also be required for work in the drainage ditches. For all actions, the Air Force will comply with the stormwater requirements of FAC Chapter 62-346.

For all commonalities and alternatives, in order to minimize impacts associated with stormwater runoff, the Air Force would obtain the aforementioned permits and would implement, as required by the FDEP, site-specific non-discretionary mitigations. To reduce the rate and volume of stormwater runoff, stormwater management controls and development of an SWPPP would be a part of the site designs to minimize pollutants. The developer must ensure that these controls are in place prior to any construction activity. The SWPPP would include: (1) site evaluation of how and where pollutants may be mobilized by stormwater, (2) site plan for managing stormwater runoff, (3) identification of appropriate erosion and sediment controls and stormwater mitigations, (4) maintenance and inspection schedule, (5) record keeping process, and (6) identification of stormwater exit areas. When preparing the SWPPP, developers would follow the guidance provided in the USEPA publication, *Stormwater Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices* (USEPA, 1992). Potential actions the developer could implement as a component of site design to minimize potential impacts and facilitate environmental compliance would be:

- Limit slope for runoff from housing units near water bodies to no greater than approximately 15 percent to allow for natural percolation versus sheet flow.

- Use porous asphalt allowing water to infiltrate into the subsurface areas versus significant increase to new/existing storm drainage systems.
- Provide appropriate retention, drainage, and discharge of flows from larger storms where it is needed (e.g., a minimum storage capacity for rain precipitation from a 24-hour, 25-year storm, or 5 or more inches).
- Use vegetation buffer strips to slow stormwater runoff and to trap particulate pollutants.
- A 50-foot mandatory development buffer along all Eglin water bodies; 25-foot mandatory for Hurlburt Field
- Minimize the overall development footprint to reduce stormwater runoff.
- Areas that are slated for demolition with no reconstruction should be returned to a natural vegetated landscape in order to decrease stormwater runoff and benefit surrounding water resources.
- Consider multiple stormwater treatment management ponds with rate attenuation to reduce potential erosion and downstream flooding.

Any mitigations included as part of SWPPP development would be considered non-discretionary.

As standard practice/procedure, developers must abide by all requirements included in the Municipal Separate Storm Sewer System (MS4) permits. As part of the mitigations detailed in their respective MS4 permits, Eglin AFB and Hurlburt Field will each ensure they adhere to the following with respect to construction: (1) developing contractual language requiring mitigation usage at construction sites, (2) reviewing construction site plans for potential stormwater quality impacts through the comprehensive environmental impact analysis review program, (3) formalizing a method of tracking construction projects and control measures, and (4) performing periodic inspections of construction sites to ensure that mitigations are in place and operational.

- A discretionary mitigation to further minimize any potential impacts to water resources associated with specific parcels would be to restrict development activity within 100 feet of all water bodies. This would serve to enhance SWPPP and MS4 mitigations.

4.12 SOIL RESOURCES

4.12.1 Analysis Methodology

The soil surveys prepared by the NRCS (an agency of the U.S. Department of Agriculture), and their associated spatial and tabular databases, provide soils information in a single data source for both Eglin AFB and Hurlburt Field (as well as

the FAMCAMP), including physical, chemical, and engineering properties, as well as the hazards and limitations relevant for construction and demolition activities. The analysis methodology recognizes that the soil characteristics and limitations, or suitability, are important to consider when planning for construction and maintenance of buildings and roads.

Direct effects on soils would primarily be caused by accelerated erosion, increased soil compaction, loss of protective vegetation, the loss of soil productivity through erosion or the removal of land from production, and by disruption of the biological processes in topsoil that affect the successful stabilization of disturbed areas. Soil erosion occurs when soil particles are detached from the surface and are transported offsite, often by wind or water. Erosion is accelerated when soil is disturbed and exposed to the abrasive action of wind and water. Water erosion may cause sediment to enter downstream surface water bodies, and wind erosion may impair air quality by adding particulate matter from detached soil particles.

Indirect effects that may be caused by the disruption of soil stability, increased compaction, and reduced productivity include reduced surface water infiltration and associated increased surface water runoff and sedimentation. Adverse impacts to soils and the associated potential indirect impacts to water resources can be minimized through the implementation of BMPs such as those typically required to be in compliance with the CWA.

Stable and productive soils in the ROI provide the foundation for other resources and resource uses. Actions that disturb or compact soil, disrupt soil stability, or reduce soil productivity are considered adverse impacts. If an action were to substantially affect these features, impacts would be considered significant. Generally, impacts associated with soils can be avoided or minimized to a level of insignificance if proper construction techniques and erosion control measures are incorporated into project development. Beneficial impacts to soil include actions that stabilize soil, increase soil productivity, or minimize soil compaction and erosion. To determine the potential for adverse impacts to soils, the soil survey was used to identify the soil characteristics, suitability for use, and hazards relevant to the proposed facility construction within each of the housing area parcels at Eglin AFB and Hurlburt Field and the FAMCAMP. Analyses then used the percentage of each area containing each relevant soil characteristic to project the potential for impacts to soils and the suitability of each area for the proposed uses.

Soil characteristics such as susceptibility to drainage/erosion, suitability for construction, and corrosion of steel and concrete are important to consider when evaluating potential impacts due to construction, demolition, and/or stabilization of disturbed areas; they are a function of many physical and chemical properties of each soil, in combination with the climate, topography, and vegetation. The current soil hazards and limitations for use that are relevant to the proposed activities for the MHPI at Eglin AFB and Hurlburt Field are summarized in Section 3.12, *Soil Resources*, with

consideration given to how these hazards and limitations may be altered by the proposed activities, or how they may affect the proposed activities.

4.12.2 No Action Alternative

Under the No Action Alternative, no construction or land clearing would occur in the housing area parcels at Eglin AFB and Hurlburt Field and at the FAMCAMP. Therefore, soil resources within the alternative sites and the Proposed Action would remain as they are currently. With the No Action Alternative, all activities as identified in Section 2.3.1 are expected to occur and are included in the No Action Alternative analysis. Soil resources for this area are described in Chapter 3 (Section 3.12, *Soil Resources*). Construction projects described under the No Action Alternative would not have any direct or indirect effect on the existing housing areas.

4.12.3 Proposed Action Commonalities

Under the Proposed Action, the soil at both Eglin AFB and Hurlburt Field would be disturbed by construction and demolition activities. All soils at Eglin AFB and Hurlburt Field within the proposed housing areas and the FAMCAMP are considered highly susceptible for wind erosion but not, in general, for water erosion. Wind erosion can be accelerated if the surface is disturbed and the vegetation is damaged or removed. Under the activities associated with the Proposed Action, while soils would be changed by earthmoving activities, the effects would be localized and would not result in indirect impacts to water resources or air quality because non-discretionary mitigations associated with permit requirements, such as erosion and sediment controls, and stormwater management measures would be implemented. The developer would be required to implement mitigations associated with construction permitting requirements as discussed in Section 4.11.3 (*Proposed Action Commonalities* for water resources). Use of appropriate wind erosion control mitigations such as application of water or chemical dust palliatives, as necessary, would be required to prevent or alleviates dust nuisance. In addition, soil stabilization practices such as the preservation of existing vegetation, hydraulic mulch, hydroseeding, soil binders, or erosion control mats may be necessary.

Mitigations implemented as part of the SWPPP during and after construction would minimize soil erosion and off-site sedimentation in drainages. Well maintained silt fences, detention basins, daily site inspections, and other mitigations that may be used to limit or to eliminate soil movement, to stabilize runoff, and to control sedimentation. Following construction, disturbed areas not covered with impervious surfaces, like roofs and paved areas, would be reestablished with appropriate vegetation or other ground cover and managed to minimize erosion. Appropriate excavation practices would reduce the chance for sides to cave during excavation of trenches for such structures as footers and utility lines. The Air Force does not anticipate significant

adverse impacts associated with soil erosion at any location described below given the implementation of required permit-related non-discretionary mitigations.

Eglin Main Base Housing Areas

The Eglin Main Base housing area parcel is predominantly (99 percent) comprised of soils that are excessively or moderately well drained with negligible to medium runoff, depending on the slope. The slope throughout the site is primarily less than 12 percent, indicating negligible to low runoff potential.

Poquito Bayou Housing Area

The Poquito Bayou housing area parcel is predominantly (80 percent) comprised of soils that are excessively or moderately well drained with negligible to medium runoff, depending on the slope. The remaining portion of the parcel is somewhat or very poorly drained with areas of high runoff potential. Given the proximity of water bodies, land clearing would modify the terrain such that the potential for erosion is a concern. Demolition over the widespread area of the Poquito Bayou housing area parcel would involve soil disturbance and the removal of stabilizing vegetation. These factors would potentially lead to substantial amounts of soil transported off site and into Garnier's and Poquito Bayous.

Camp Rudder Housing Area

The Camp Rudder housing area parcel is comprised of soils that are excessively drained with negligible to medium runoff depending on the slope. The slope throughout the site is primarily less than 12 percent, indicating negligible to low runoff potential. In addition, the Camp Rudder housing parcel is comprised of soils with a building site development rating that varies depending on the slope of the site; a slope range of 0 to 5 corresponds to a building site development rating that is not limited, a slope range of 5 to 12 corresponds to a building site development rating that is somewhat limited, and a slope higher than 12 corresponds to a building development rating that is very limited. The slope throughout the site is predominantly less than 12 percent, which corresponds to anticipated low maintenance needs after construction.

All soils within this parcel are rated as moderately susceptible to concrete corrosion with low susceptibility to uncoated steel corrosion. The Air Force and developer would take these limitations into account during the design and selection of building materials (such as coated steel) to ensure that the facilities would not adversely affect soils and would minimize maintenance needs.

Hurlburt Field Housing Areas

The Hurlburt Field housing area parcel is minorly (25 percent) comprised of soils that are excessively or moderately well drained with negligible to medium runoff

depending on the slope; slightly more than half (58 percent) of the parcel soils are somewhat or very poorly drained with varying runoff potential. The remaining portion of the parcel is urban/landscaped and therefore does not maintain a drainage or runoff classification. Given the proximity of coastal water bodies, land clearing and construction would modify the terrain such that the potential for erosion is a concern. Construction and demolition over the widespread area of the Hurlburt Field housing area parcel would involve soil disturbance and the removal of stabilizing vegetation.

Additionally, a minor portion (41 percent) of the area is not limited with respect to construction of small buildings; slightly less acreage (35 percent) in the area is very limited due to the potential for flooding/ponding which corresponds to anticipated high maintenance needs after construction; and the remaining acreage construction limitation varies depending on the slope within the site. Only a small portion (7 percent) of the area maintains soils that are moderately susceptible to concrete corrosion with low susceptibility to uncoated steel corrosion. The remaining acreage has soils that are highly susceptible to concrete corrosion and varying susceptibility to uncoated steel corrosion. The Air Force and developer would take these limitations into account during the design and selection of building materials (such as coated steel) to ensure that the facilities would not adversely affect soils and would minimize maintenance needs.

Regulatory Requirements/Mitigations

As standard practice/procedure, construction activity that disturbs an area of more than 1 acre must comply with the Stormwater General Permit for Construction Activities according to the rules established under the state of Florida NPDES. Compliance with the permit is intended to improve or to maintain water quality by minimizing pollutants in storm water runoff that is discharged into the drainage system. The permit guidelines include issuance of a Notice of Intent, development and implementation of a site-specific SWPPP that includes erosion and sediment control measures, and implementation and maintenance of BMPs to minimize offsite erosion and sediment yield during and after construction. These BMPs would be considered non-discretionary mitigations. Specific BMPs/mitigations would be alternative dependent and would be developed during the permit process; as a result, it is unknown at this time what specific requirements would be implemented. However, typical BMPs/mitigations associated with the SWPPP include annual monitoring and assessment of potential stormwater pollution sources, well maintained silt fences, detention basins, daily site inspections, and other mitigations may be used to limit or eliminate soil movement, stabilize runoff, and control sedimentation. Following construction, disturbed areas not covered with impervious surfaces like roofs and paved areas would be reestablished with appropriate vegetation or other ground cover and managed to minimize erosion. Appropriate excavation practices would reduce the chance for sides to cave during excavation of trenches for such structures as footers and utility lines.

4.12.4 Alternative 1: White Point Area

Under Alternative 1, all soils within the proposed White Point housing areas are considered highly susceptible for wind erosion but not, in general, for water erosion. Wind erosion can be accelerated if the surface is disturbed and the vegetation is damaged or removed. Use of appropriate wind erosion control BMPs such as application of water or chemical dust palliatives, as necessary, prevents or alleviates dust nuisance. In addition, soil stabilization practices such as the preservation of existing vegetation, hydraulic mulch, hydroseeding, soil binders, or erosion control mats may be necessary.

Alternative 1 – Parcel 1

Parcel 1 of the White Point housing area is predominantly (96 percent) comprised of soils that are excessively or moderately drained with negligible to medium runoff, depending on the slope. The slope throughout the site is primarily less than 12 percent, indicating negligible to low runoff potential. In addition, the majority (90 percent) of Parcel 1 is comprised of soils with a building site development rating that varies depending on the slope of the site; with low slope throughout the site, the anticipated maintenance needs after construction are low.

Additionally, Parcel 1 primarily (90 percent) maintains soils rated as moderately susceptible to concrete corrosion with low susceptibility to uncoated steel corrosion. The Air Force and developer would take these limitations into account during the design and selection of building materials (such as coated steel) to ensure that the facilities would not adversely affect soils and would minimize maintenance needs.

Alternative 1 – Parcel 2

All of the acreage within Parcel 2 is considered excessively drained with low runoff potential. In addition, all of the acreage maintains a building site development rating that varies in rating depending on the slope of the site; with low slope throughout the site, the anticipated maintenance needs after construction are low. The entire area maintains soils that are moderately susceptible to concrete corrosion with low susceptibility to uncoated steel corrosion. As with Parcel 1, the Air Force and developer would take these limitations into account during the design and selection of building materials (such as coated steel) to ensure that the facilities would not adversely affect soils and would minimize maintenance needs.

Alternative 1 – Parcel 3

All of the acreage within Parcel 3 is considered excessively drained with low runoff potential. In addition, all of the acreage maintains a building site development rating that varies in rating depending on the slope of the site; with low slope throughout the site, the anticipated maintenance needs after construction are low. The entire area maintains soils that are moderately susceptible to concrete corrosion with low

susceptibility to uncoated steel corrosion. As with Parcel 1, the Air Force and developer would take these limitations into account during the design and selection of building materials (such as coated steel) to ensure that the facilities would not adversely affect soils and would minimize maintenance needs.

Alternative 1 – Parcel 4

Slightly more than half (54 percent) of the Parcel 4 soils are excessively or moderately drained, with negligible to medium runoff depending on the slope. The slope throughout the site is primarily less than 12 percent, indicating negligible to low runoff potential. Approximately 45 percent of the parcel is somewhat or very poorly drained, with nearly 2 acres (3 percent) of very high runoff potential. Less than one percent of the parcel soils are unknown. In addition, the majority (78 percent) of Parcel 4 is comprised of soils with a building site development rating that is not limited. The portion of the parcel identified as very poorly drained with very high runoff potential maintains a corresponding very limited building site development rating, due to the potential for flooding/ponding. Maintenance needs after construction would likely be high within this small area; however, site planning within the parcel could potentially avoid this small section. The remaining 19 percent of Parcel 4 has a building site development rating that varies with slope; with low slope throughout the site, the anticipated maintenance needs after construction would be low.

Additionally, Parcel 4 primarily (83 percent) maintains soils rated as highly susceptible to concrete corrosion with low and high susceptibility to uncoated steel corrosion. The Air Force and developer would take these limitations into account during the design and selection of building materials (such as coated steel) to ensure that the facilities would not adversely affect soils and would minimize maintenance needs.

Alternative 1 – Parcel 5

Parcel 5 of the White Point housing area is predominantly (98 percent) comprised of soils that are excessively or moderately drained with negligible to medium runoff depending on the slope. The slope throughout the site is primarily less than 12 percent, indicating negligible to low runoff potential. In addition, the soils within the parcel have a building site development rating that varies between not limited and somewhat limited; the anticipated maintenance needs after construction are low.

Additionally, Parcel 5 mainly (65 percent) maintains soils rated as moderately susceptible to concrete corrosion with low susceptibility to uncoated steel corrosion; the remaining area is highly susceptible to concrete corrosion. The Air Force and developer would take these limitations into account during the design and selection of building materials (such as coated steel) to ensure that the facilities would not adversely affect soils and would minimize maintenance needs.

Alternative 1 – Parcel 6

All of the acreage within Parcel 6 is considered excessively drained with low runoff potential. In addition, all of the acreage maintains a building site development rating that varies in rating depending on the slope of the site; with low slope throughout the site, the anticipated maintenance needs after construction are low. The entire area maintains soils that are moderately susceptible to concrete corrosion with low susceptibility to uncoated steel corrosion. As with Parcel 1, the Air Force and developer would take these limitations into account during the design and selection of building materials (such as coated steel) to ensure that the facilities would not adversely affect soils and would minimize maintenance needs.

Alternative 1 – Parcel 7

All of the acreage within Parcel 7 is considered excessively drained with low runoff potential. In addition, all of the acreage maintains a building site development rating that varies in rating depending on the slope of the site; with low slope throughout the site, the anticipated maintenance needs after construction are low. The entire area maintains soils that are moderately susceptible to concrete corrosion with low susceptibility to uncoated steel corrosion. As with Parcel 1, the Air Force and developer would take these limitations into account during the design and selection of building materials (such as coated steel) to ensure that the facilities would not adversely affect soils and would minimize maintenance needs.

Regulatory Requirements/Mitigations

Mitigations under Alternative 1 would be the same as those described under the *Proposed Action Commonalities* section. Non-discretionary mitigations associated with NPDES/SWPPP requirements would be developed during the permitting process and would take into account the soils types and topography of each proposed development location.

4.12.5 Alternative 2: Eglin Main Base/Valparaiso

Under Alternative 2, soils within the proposed housing areas are considered highly susceptible for wind erosion but not, in general, for water erosion. Wind erosion can be accelerated if the surface is disturbed and the vegetation is damaged or removed. Use of appropriate wind erosion control BMPs, such as application of water or chemical dust palliatives, as necessary, prevents or alleviates dust nuisance. In addition, soil stabilization practices such as the preservation of existing vegetation, hydraulic mulch, hydroseeding, soil binders, or erosion control mats may be necessary.

Alternative 2 – Parcel 1

Parcel 1 is predominantly (99 percent) comprised of soils that are excessively or moderately drained with negligible to medium runoff, depending on the slope. The

slope throughout the site is primarily less than 12 percent, indicating negligible to low runoff potential. In addition, nearly all of Parcel 1 is comprised of soils with a building site development rating that is not limited or that varies depending on the slope of the site; with low slope throughout the site, the anticipated maintenance needs after construction are low.

Additionally, Parcel 1 primarily (97 percent) maintains soils rated as moderately susceptible to concrete corrosion with low susceptibility to uncoated steel corrosion. The Air Force and developer would take these limitations into account during the design and selection of building materials (such as coated steel) to ensure that the facilities would not adversely affect soils and would minimize maintenance needs.

Site planning would follow guidelines outlined in the NPDES permit and SWPPP, and would include a buffer placed between the housing area and the southern and western Eglin Main Base boundary to allow for a vegetated buffer between the privatized housing and neighboring public property.

Alternative 2 – Parcels 2 through 8

All of the acreage within these parcels is considered excessively drained with low runoff potential. In addition, all of the acreage maintains a building site development rating that varies in rating depending on the slope of the site; with low slope throughout the site, the anticipated maintenance needs after construction are low. The entire area maintains soils that are moderately susceptible to concrete corrosion with low susceptibility to uncoated steel corrosion. The Air Force and developer would take these limitations into account during the design and selection of building materials (such as coated steel) to ensure that the facilities would not adversely affect soils and would minimize maintenance needs.

Alternative 2 – Parcel 9

All of the acreage within Parcel 9 is considered excessively drained. The slope throughout the site is primarily less than 12 percent, indicating negligible to low runoff potential. In addition, all of the acreage maintains a building site development rating that varies in rating depending on the slope of the site; with low slope throughout the site, the anticipated maintenance needs after construction are low. Additionally, Parcel 9 primarily (99 percent) maintains soils rated as moderately susceptible to concrete corrosion with low susceptibility to uncoated steel corrosion. The Air Force and developer would take these limitations into account during the design and selection of building materials (such as coated steel) to ensure that the facilities would not adversely affect soils and would minimize maintenance needs.

Alternative 2 – Parcel 10

The Parcel 10 is predominantly (98 percent) comprised of soils that are excessively or moderately well drained with negligible to medium runoff, depending on the slope.

The slope throughout the site is primarily less than 12 percent, indicating negligible to low runoff potential. In addition, nearly 6 acres (6 percent) within the area maintain a building site development rating that is not limited for structures less than three-stories, approximately 87 acres (93 percent) are within the building site development rating that varies in rating depending on the slope, and the remaining acreage of the site is very limited due to potential for flooding/ponding; with low slope throughout the site, the anticipated maintenance needs after construction are low. Parcel 10 primarily (89 percent) maintains soils that are moderately susceptible to concrete corrosion with low susceptibility to uncoated steel corrosion; the remaining area is highly susceptible to concrete corrosion with low and high susceptibility to uncoated steel corrosion. The Air Force and developer would take these limitations into account during the design and selection of building materials (such as coated steel) to ensure that the facilities would not adversely affect soils and would minimize maintenance needs.

Alternative 2 – Parcel 11

All of the acreage within Parcel 11 is considered excessively drained with low runoff potential. In addition, all of the acreage maintains a building site development rating that varies in rating depending on the slope of the site; with low slope throughout the site, the anticipated maintenance needs after construction are low. The entire area maintains soils that are moderately susceptible to concrete corrosion with low susceptibility to uncoated steel corrosion. The Air Force and developer would take these limitations into account during the design and selection of building materials (such as coated steel) to ensure that the facilities would not adversely affect soils and would minimize maintenance needs.

Regulatory Requirements/Mitigations

Mitigations under Alternative 2 would be the same as those described under the Proposed Action Commonalities section. Non-discretionary mitigations associated with NPDES/SWPPP requirements would be developed during the permitting processed and would take into account the soils types and topography of each proposed development location.

4.12.6 Subalternative 2a: Eglin Main Base (Preferred Alternative)

Under Subalternative 2a, the impacts and associated mitigations would be the same as those identified for Alternative 2, Parcel 1.

4.12.7 Alternative 3: North Fort Walton Beach Area

Under Alternative 3, soils within the proposed housing areas are considered highly susceptible for wind erosion but not, in general, for water erosion. Wind erosion can be accelerated if the surface is disturbed and the vegetation is damaged or removed. Use of appropriate wind erosion control non-discretionary mitigations such as application

of water or chemical dust palliatives, as necessary, prevents or alleviates dust nuisance. In addition, soil stabilization practices such as the preservation of existing vegetation, hydraulic mulch, hydroseeding, soil binders, or erosion control mats may be necessary.

Alternative 3 – Parcels 1 through 5

All of the acreage within these parcels is considered excessively drained with low runoff potential. In addition, all of the acreage maintains a building site development rating that varies in rating depending on the slope of the site; with low slope throughout the site, the anticipated maintenance needs after construction are low. The entire area maintains soils that are moderately susceptible to concrete corrosion with low susceptibility to uncoated steel corrosion. The Air Force and developer would take these limitations into account during the design and selection of building materials (such as coated steel) to ensure that the facilities would not adversely affect soils and would minimize maintenance needs.

At Parcel 1, site planning would include a buffer area between the shoreline and the housing development on the eastern side, and an additional vegetative buffer of approximately 100 feet between the housing development and the Camp Pinchot historic district and associated entry-way, as well as the southern and western boundaries.

Regulatory Requirements/Mitigations

Mitigations under Alternative 3 would be the same as those described under the *Proposed Action Commonalities* section. Non-discretionary mitigations associated with NPDES/SWPPP requirements would be developed during the permitting processed and would take into account the soils types and topography of each proposed development location.

4.12.8 Alternative 4: Mix Alternative

Since the mix alternative entails a potential combination of several different parcels, the impacts would vary depending on which parcels are chosen and the extent to which they are developed. Each individual parcel was analyzed previously under its respective alternative. Table 4-77 provides a graphical summary of the impacts by parcel for soils. Impacts specific to soils are generally summarized using a color code as follows:

- Green – No beneficial or adverse impact
- Yellow – Potential for adverse impact, but not significant; Disturb or compact soil, disrupt soil stability, or reduce soil productivity.

Table 4-77. Alternative 4 – Soils Summary

Alternative / Parcel	Soils / Erosion
Commonalities	
Eglin Main Base	
Hurlburt Field	
Camp Rudder	
Cam Pinchot	
Poquito Bayou	
Alternative 1	
1	
2	
3	
4	
5	
6	
7	
Alternative 2	
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
Subalternative 2a (Preferred Alternative)	
1	
Alternative 3	
1	
2	
3	
4	
5	
No Action*	

Green = No beneficial or adverse impact; Yellow = Potential for adverse impact, but not significant.
*Note: The impacts associated with the No Action Alternative include potential impacts associated with implementation of projects identified under the No Action Alternative in Chapter 2, Section 2.3.1 as they relate to the region of influence for that particular resource.

The color coding in Table 4-77 reflects the degree of impact including consideration of non-discretionary mitigations associated with NPDES/SWPPP requirements, as described previously for each location. While there will likely be soil erosion as a result

of project activities, implementation of non-discretionary mitigations described previously would serve to minimize erosion impacts such that they would not be considered significant. As discussed previously, non-discretionary NPDES/SWPPP mitigations would be site specific, and developed during the NDPES permit process.

This color coded chart provides a summary of impacts so that the decision maker can easily see how a potential combination of parcels may affect soils at each respective parcel. A combined summary table is provided in the "Summary of Impacts" section at the end of Chapter 5 that shows each individual parcel's potential impacts under each resource area.

4.13 BIOLOGICAL RESOURCES

This section discusses potential impacts to biological resources located within and adjacent to the action area. Analysis focuses on assessing the potential for impacts to biological resources from demolition, land clearing, construction, and daily activities in the MFH areas, as well as on identifying methods to reduce the potential for negative impacts to biological resources from these activities. A significant impact would be one that is likely to jeopardize the continued existence of a species.

4.13.1 Analysis Methodology

The first step in the analysis of potential impacts to biological resources was to determine the locations of sensitive habitats and species in relation to the Proposed Action. Maps were examined to locate sensitive species and habitats, and where necessary, site visits and additional surveys were conducted to confirm locations (Herring et al., 2006; Entrix, 2010). Next, areas of overlap for the Proposed Action and sensitive habitats and species were identified. Scientific literature was reviewed for studies that examined similar types of impacts to biological resources. The literature review included a review of basic characteristics and habitat requirements of each sensitive species. Where available, information was also gathered relative to management considerations, incompatible resource management activities, and threats to each sensitive species. Impact analyses were then conducted based on the information gathered from the literature review and discussions with experts in these areas. The analyses included an assessment of the impacts on biological resources resulting from demolition, land clearing, construction, and daily activities in the MFH areas.

Where appropriate, projected conditions were compared to the baseline and a determination was made as to whether the impact would be beneficial or adverse. Direct and indirect impacts to the species and its habitat are included in the analysis. A beneficial impact would be one that improves habitat quality or species health, while an adverse impact would degrade habitat quality or diminish species health, but not to the degree that the continued existence of a species would be jeopardized. A significant

adverse impact would be one that is likely to jeopardize the continued existence of a species (USFWS, 2010).

Until specific development plans are available, site-specific impacts cannot be completely identified and have to be predicted within certain assumptions. Therefore, analysis assumed the maximum impact at each site. Analysis also assumed that any proposed construction within an area would affect the entire site regardless of the number of units the developer would construct there. The following assumptions were made for this analysis:

- Construction occurring within a particular parcel would affect the entire parcel.
- No new development would take place within wetlands or floodplains.
- The Air Force and developer would adhere to all applicable federal, state, and local regulations.
- The developer and the Air Force would execute all applicable regulatory requirements and associated mitigations.

4.13.2 No Action Alternative

The No Action Alternative would involve activities on and near the main base areas of Eglin AFB and Hurlburt Field, D-51, Camp Rudder, 7SFG(A) Special Operations Forces Compound, Duke Field, and other established test areas. Most of Eglin Main Base, Hurlburt Field Main Base, D-51, and Duke Field is landscaped/urban or grassland/shrubland, with the surrounding areas dominated by degraded sandhills, degraded flatwoods, or additional development. Camp Rudder and the 7SFG(A) Compound have grassland/shrubland and landscaped/urban areas, but are surrounded by high quality sandhills habitat with active red-cockaded woodpecker (RCW) clusters and foraging habitat. On Eglin Main Base, inactive RCW trees and one Okaloosa darter stream are present. SR-123 and the Mid-Bay Bridge Connector cross over multiple Okaloosa darter streams. Transient species such as the black bear, gopher tortoise, pine snake, and indigo snake may traverse any of the Eglin AFB and Hurlburt Field areas.

The primary potential impacts to biological resources that might occur under the No Action Alternative would be associated with noise, stormwater runoff, excess sedimentation, and habitat loss. Almost all of the predictable actions that are to occur at Eglin AFB and Hurlburt Field through the year 2015 would be located on main base sites, at established test areas, along existing roadways, or in degraded habitats where wildlife habitat quality is poor. New construction on and near Eglin AFB and Hurlburt Field main base areas would occur primarily in areas that are already developed or in degraded habitats. Under the No Action Alternative, impacts would continue from daily activities at existing MFH areas, and occasional renovations or replacement of old MFH units in accordance with existing Air Force policy and resources. However, no

new impacts to biological resources would occur from land clearing, demolition, building construction, or daily MFH activities associated with the MHPI.

Given that almost all of the areas that would be affected under the No Action Alternative are either unsuitable for wildlife or are in very poor condition to support wildlife or sensitive species, impacts to biological resources from the No Action Alternative would not be significant.

4.13.3 Proposed Action Commonalities

The following narrative discusses the potential impacts and associated discretionary and non-discretionary mitigations for biological resources that would be common across all proposed locations; more specific discussions per area follow. Consultations were conducted with the USFWS to comply with Section 7 of the Endangered Species Act for earlier iterations of the MHPI EIS (U.S. Air Force, 2005b; U.S. Air Force, 2008b). Eglin received concurrence letters supporting the No Effect determinations (USFWS, 2005; USFWS, 2005a; USFWS, 2008). To cover changes in the proposed action for the current MHPI EIS, Eglin re-initiated consultation (U.S. Air Force, 2010a) and received concurrence supporting the No Effect determination (USFWS, 2010a). The consultation includes non-discretionary mitigations resulting from this consultation (USFWS, 2010a) as part of the *Discretionary and Non-discretionary Mitigations* section. After review of the Proposed Action and analysis presented in this EIS, the Florida Fish and Wildlife Conservation Commission (FWC) determined that while some negative impacts may occur due to construction related to the proposed action, the mitigation requirements identified in this EIS should have a positive effect on listed species and their habitats (FWC, 2011).

General Wildlife Impacts. Demolition, land clearing, construction, and daily operations may have a localized effect on native wildlife species such as squirrels, raccoons, and rabbits. The potential exists for impacts to wildlife from noise and direct encounters (e.g., crushing) with vehicles and equipment. However, almost all of the proposed areas are already developed, with little wildlife value. Additionally, due to fire suppression, invasive species, and proximity to developed areas, any undeveloped habitats at the sites where new construction would occur have become degraded and are poor quality wildlife habitat. However, development plans would leave as many trees as possible on the MFH sites both for potential wildlife value and for aesthetic value. The proposed areas represent less than 0.1 percent of the total land area that Eglin AFB and Hurlburt Field maintain; thousands of forested acres would continue to be managed for wildlife value.

Although the project is anticipated to take five years to complete, the location of demolition and construction activities would continuously be moving as units were finished, and would occur only during daylight hours. Any animals disturbed by demolition/construction noise and human presence would likely move to nearby

available habitats during noisy activities. Also, existing wildlife are already exposed and habituated to visual and noise disturbances from nearby developed areas, roads, and aircraft activity.

Given the abundance of better quality wildlife habitat on other portions of Eglin AFB and Hurlburt Field and the current loud noise environment, impacts to wildlife would not be significant. The remaining sections focus on sensitive habitats and species.

General Aquatic Species and Habitat Impacts. No new development would occur in wetlands; thus, no direct impacts would occur to wetlands or the species that reside there. However, indirect impacts from runoff during demolition, construction, and daily MFH activities may degrade water quality in nearby wetlands, streams, and bays/bayous. Runoff may increase the amount of sediment and pollutants, as well as the volume of water (thus altering hydrology) entering the wetland or water body. Refer to Section 3.11, *Water Resources*, for a more detailed discussion of impacts to water resources, specifically stormwater runoff amounts and peak flows.

Alteration of the quality and/or quantity of water in a wetland or water body may affect the plants and animals that live in that habitat. Increases in water volume in a wetland may alter the plant community, as some wetland plants are more or less tolerant of wet conditions. Increases in water volume to a bay or bayou could locally alter salinity, again affecting plants, dependent upon their salinity tolerance. Degradation of water quality can negatively affect the health of plants and animal inhabitants, particularly increases in turbidity, nutrients, and metals. For plants, this turbidity can block light and nutrients can cause changes in growth rates. In animals, there may be impacts to respiration, reproduction, nervous system functions, and other physiological functions.

To minimize these impacts, on Eglin Main Base a 50-foot mandatory development buffer would be maintained around wetlands and water bodies, with a desired feature of at least 100 feet. No new areas (i.e., trees and undeveloped land) would be cleared along the Sound shoreline at Hurlburt. Development would remain within the boundaries of the FAMCAMP parcel as shown in Figure 3-36 (Habitat Types at Hurlburt Field, in Chapter 3), which allows for a vegetative buffer between the housing area and the shoreline. The existing Soundside housing area is already improved grounds up to the shoreline.

Vegetated buffers serve to treat pollutants, uptake excess nutrients, control erosion, slow the flow of water, decrease the volume of water reaching the wetland or water body, and enhance wildlife habitat. Additional discretionary and non-discretionary mitigations developed through coordination with regulatory agencies and implemented by the developer through lease agreement requirements (such as utilization of stormwater management and erosion control measures during land clearing, demolition, and construction; refer to Section 3.11, *Water Resources*, for a more detailed

discussion of mitigations), would further minimize potential water quality and quantity impacts. Indirect impacts to wetlands and water bodies would be minimized by the required buffers, and stormwater and erosion control measures; thus, impacts to biological resources in wetlands and water bodies would not be significant.

Eastern Indigo Snake, Florida Pine Snake, and Gopher Tortoise. The state-listed Florida pine snake and gopher tortoise, and federally threatened indigo snake may be found anywhere on Eglin. While these species prefer frequently burned pine forests, they may traverse lower quality habitats, and may also use open areas such as road right-of-ways and sandy spots within developed areas. Because there is the potential to encounter these species anywhere on the Reservation, this discussion applies to all proposed MFH demolition and construction sites.

Land clearing, demolition, and construction activities must abide by certain non-discretionary mitigations per the *Indigo Snake Programmatic Biological Opinion for Eglin AFB* (USFWS, 2009). One month prior to any demolition, land clearing or construction, a gopher tortoise/indigo snake survey must be completed. If any tortoises or indigo snakes are found, Natural Resources personnel would relocate the animals in accordance with FWC guidelines. Only an individual who has been authorized by a section 10(a)(1)(A) permit issued by the USFWS and authorized by the FWC for such activities, is permitted to come into contact with or relocate an indigo snake.

Before any clearing or construction activities begin, all personnel must view a brief on Eglin threatened and endangered species, including the indigo snake. Informational brochures containing the following information must be distributed to all contractors, and signs with this same information must be posted at land clearing, demolition, and construction sites:

- A description of the indigo snake, its habits, and protection under Federal Law.
- Instructions not to injure, harm, harass, or kill this species.
- Directions to stop clearing activities and allow the indigo snake sufficient time to move away from the site on its own before resuming clearing.
- Telephone number to call if a live or dead eastern indigo snake is encountered. Only individuals with the appropriate state and federal permits are allowed to come into contact with eastern indigo snakes, so if one is sighted it should not be handled.

Although unlikely, there is the possibility that one of these species may traverse a demolition or construction area; thus, vehicle and equipment operators would be directed to cease any activities should an indigo snake, pine snake, or gopher tortoise be sighted, and allow the animal sufficient time to move away from the site on its own before resuming activities. Personnel should immediately report any sightings of an indigo snake or gopher tortoise to the Natural Resources Section. If a gopher tortoise

burrow is discovered during demolition, land clearing, or construction, all activities should be avoided within 25 feet of the burrow until Natural Resources staff have had a chance to examine the burrow and relocate the animal and any commensal species if necessary.

Given the poor habitat quality of most of the proposed MFH sites, and implementation of non-discretionary mitigations from the *Indigo Snake Programmatic Biological Opinion for Eglin AFB* (USFWS, 2009), impacts to the gopher tortoise, pine snake, and indigo snake would not be significant at any of the proposed MFH sites. The USFWS concurred that there would be no effect on the indigo snake (USFWS, 2010a).

Florida Black Bear. Most of the areas where demolition and construction would occur have documented occurrences of the Florida black bear. Because there is the potential to encounter this species anywhere on the Reservation, this discussion applies to all proposed MFH demolition and construction sites. While bears may be attracted to the bayou and bay water interfaces near some of the proposed housing areas, they may also be drawn to the areas due to a human presence (garbage, etc.), as many sightings are located near urbanized areas. The attraction of bears to the housing areas could be reduced by educating workers and residents on how to contain their wastes in such a manner as to not attract bears, and on the importance of using predator proof trash cans. Residents and workers would be directed to report any nuisance bears immediately to the Natural Resources Section.

During demolition and construction, any bears in the area would likely move away due to noise and human presence, thus reducing the potential for vehicle or equipment collisions. However, if a bear were to be encountered, impacts would be reduced by instructing vehicle/equipment operators to stop activities if a black bear is sighted and allow the animal to move away from the area before resuming activities. Personnel should report any sightings of black bears to the Natural Resources Section.

Given the minimal chance of an encounter, impacts to the black bear from demolition, construction, and daily housing activities at the proposed MFH sites would not be significant.

Migratory Birds. Noise and human presence associated with demolition, construction, and daily activities may affect migratory birds using nearby habitats; however, neither Hurlburt Field nor Eglin AFB is considered an important stopover area or concentration site for neotropical migratory birds (Tucker et al., 1996). Migratory birds that do use the area may avoid habitats along the border with the development, but would still have many acres of suitable habitat in the nearby area. Thus, although MFH noise may affect migratory birds, Hurlburt Field and Eglin AFB would still maintain a sizeable area of habitat to support migratory birds during spring and fall migrations; thus, impacts to migratory bird populations would not be significant.

Invasive Nonnative Species. Disturbance to soil and vegetation from demolition and construction could enhance conditions for the establishment and spread of invasive nonnative plant species. Requiring that off-site equipment be cleaned prior to first time use on Eglin and Hurlburt would reduce the possibility of invasive species introduction. Spot checking the MFH areas during demolition and construction would help catch any early infestations so that they could be treated.

Once construction is completed, the majority of the MFH area would be covered by buildings, pavement, or landscaped areas, so there would not be many areas with the proper environment for the establishment of invasive nonnative plants. However, the developer would coordinate with the Natural Resources Section to remove any invasive nonnative plant species identified at a MFH location. All landscaping and plantings of vegetation would conform to the Presidential Memorandum dated 26 April 1994, *Environmentally and Economically Beneficial Practices on Federal Landscaped Grounds*, and EO 13112, *Invasive Species*, both which require the planting of regional natives in landscaping. The developer would be required to coordinate with Eglin Natural Resources to ensure the utilization of native vegetation for landscaping.

Use of native species in landscaping would minimize the potential for invasive species problems; impacts from invasive nonnative plant species to biological resources would not be significant.

Eglin Main Base Housing Areas

This discussion applies only to demolition activities in the Eglin Main Base housing areas; land clearing, construction, and daily MFH activities for the Eglin Main housing area are covered in the Alternative 2 and Subalternative 2a sections. All of the Main Base areas where demolition would occur are currently landscaped/urban areas, with little to no habitat value due to fire suppression and invasive species. The only sensitive species documented during recent surveys of the Main Base MFH areas was one inactive gopher tortoise burrow on the Main Base Parcel 1 (Entrix, 2010). Potential impacts and requirements for the indigo snake, pine snake, gopher tortoise, and black bear were discussed previously in the *Proposed Action Commonalities* section.

Gulf Sturgeon, Sturgeon Critical Habitat, and Essential Fish Habitat. Demolition at Capehart and Wherry would occur in close proximity to bay shoreline, and may result in erosion and increased turbidity in nearby Choctawhatchee Bay where there is Gulf sturgeon critical habitat and essential fish habitat (EFH).

Adverse effects to Gulf sturgeon and Gulf sturgeon critical habitat from sedimentation could include species avoidance of the impact area, minor physiological effects (such as interference with respiratory functions), and indirect effects related to the reduction of light and degradation of bottom substrates where prey items reside. However, turbidity would be localized (less than one mile of shoreline) and temporary, and would not

result in significant or long-term effects to water quality or the quality of bottom sediments. Additionally, potential runoff would be minimized by permitting requirements and discretionary and non-discretionary mitigations developed through coordination with regulatory agencies and implemented by the developer through lease agreement requirements, such as utilization of erosion control measures and sediment curtains (refer to Section 3.11, *Water Resources*, for a more detailed discussion of mitigations).

Increases in sedimentation may also affect EFH (particularly seagrasses), water quality, and bottom sediments. The Gulf of Mexico Fisheries Management Council considers all the estuarine areas of the Gulf of Mexico as EFH. Increased turbidity may block the sunlight necessary for seagrasses to grow, and decreases in water quality or the quality of bottom sediments could affect the prey items and habitats available to managed species. However, as with Gulf sturgeon critical habitat, only a small area would potentially be affected and permitting requirements for erosion control would minimize sediment runoff.

Due to the small area affected and the use of sediment and erosion control measures, impacts to the Gulf sturgeon, Gulf sturgeon critical habitat, and EFH from MFH demolition at Eglin Main Base would not be significant. These activities would have no effect on the Gulf sturgeon or Gulf sturgeon critical habitat (USFWS, 2010a).

Poquito Bayou Housing Area

Because the demolition area would be close to Poquito Bayou and there is a stream in the housing area, there is the potential for increases in sedimentation and polluted runoff. Permitting requirements and discretionary and non-discretionary mitigations for stormwater and erosion control would minimize the introduction of excess sedimentation to nearby waters (refer to Section 3.11, *Water Resources*, for a more detailed discussion of mitigations). The potential for impacts could be further reduced by instructing equipment operators to stay out of wet areas and off of steep slopes. Potential impacts and requirements for the indigo snake, pine snake, gopher tortoise, and black bear were discussed previously in the *Proposed Action Commonalities* section. With the use of sediment and erosion control measures, impacts to biological resources from MFH demolition at the Poquito Bayou housing area would not be significant.

Camp Pinchot Housing Area

There would be no ground disturbing activities or tree clearing associated with activities at Camp Pinchot. Impacts from any new use would likely be similar to those already taking place at the site (i.e., vehicle traffic, maintenance activities). Potential impacts and requirements for the indigo snake, pine snake, gopher tortoise, and black bear were discussed previously in the *Proposed Action Commonalities* section. No new

impacts to wildlife or habitat would occur; thus, impacts to biological resources at Camp Pinchot would not be significant.

Camp Rudder Housing Area

Demolition, construction, and daily housing operations have the potential to affect sensitive species in the Camp Rudder area due to noise, vehicle impacts, and human presence. Potential impacts and mitigations for the indigo snake, pine snake, gopher tortoise, and black bear were discussed previously in the *Proposed Action Commonalities* section.

Red-cockaded Woodpecker. The Camp Rudder parcel is bordered on three sides by high quality sandhills habitat, much of which serves as foraging habitat for the federally endangered RCW. The housing area is approximately 0.25 mile from RCW foraging habitat and 0.75 mile from the nearest active RCW cavity tree. No direct impacts to RCW foraging habitat or cavity trees would occur, but noise impacts from demolition, construction, and daily housing activities may occur. Only 25 units would be demolished and 35 built at the Camp Rudder site, so demolition/construction noise impacts would be short-term. If the nearby RCW cluster was disturbed by demolition/construction activities, the birds would likely just utilize other portions of their foraging habitat during that short time period. Over the long-term, daily housing operations would not constitute a significant impact to RCWs in the Camp Rudder area because these birds are already exposed and habituated to visual and noise disturbances from the existing development and roads. The USFWS concurred that there would be no effect on the RCW (USFWS, 2010a).

Hurlburt Field Housing Areas

Demolition, construction, and daily housing operations have the potential to affect biological resources in the Hurlburt Field area due to stormwater runoff, noise, vehicle impacts, lighting, habitat destruction/degradation, and human presence. The indigo snake, pine snake, gopher tortoise, and black bear may occur at any of the Hurlburt parcels, including the new FAMCAMP area; potential impacts and requirements for those species were discussed previously in the *Proposed Action Commonalities* section.

Flatwoods Salamander. Buffer habitat for confirmed ponds for the federally endangered reticulated flatwoods salamander is about 0.25 mile to the west of Pine Shadows. As discussed previously, stormwater runoff may increase the amount of sediment, pollutants, and the volume of water (thus altering hydrology) entering wetlands. However, the 1,500-foot vegetated buffer around the pond would serve to treat pollutants, uptake excess nutrients, control erosion, slow the flow of water, and decrease the volume of water reaching the wetland. Thus, impacts to the flatwoods salamander would not be significant. The USFWS concurred that there would be no effect on the flatwoods salamander (USFWS, 2010a).

Gulf Sturgeon, Sturgeon Critical Habitat, and Essential Fish Habitat. One issue for the Gulf sturgeon, Gulf sturgeon critical habitat, and EFH is the conversion of vegetated land to impervious surface, and the associated increases in stormwater runoff rate, volume, and pollutant content. Section 3.11, *Water Resources*, provides details on potential impacts to water quality from stormwater runoff. To summarize here, the primary pollutants of concern for biological resources include fertilizers, pesticides, excess sediment, and oil products. To reduce the rate, volume, and pollutant content of stormwater runoff, the developer must implement stormwater management and erosion control measures as mandated by permits (refer to Section 3.11, *Water Resources*, for a more detailed discussion of mitigations). The purpose of these controls is to help slow the velocity of the water, to allow infiltration, to allow sediments to settle out, and to treat pollutants in the runoff.

One of the most effective methods for reducing the water quality impacts of stormwater runoff is a vegetative buffer adjacent to a water body. A buffer zone is a natural, undisturbed strip or "green belt" surrounding a development or land disturbance activity bordering a water body. Vegetative buffers are a proven method to reduce polluted runoff to water bodies. These buffers allow increased infiltration opportunity time for nutrients and contaminants from runoff, trap sediment, and help to stabilize shorelines and reduce erosion. No new areas (i.e., trees and undeveloped land) would be cleared along the sound shoreline at Hurlburt. Development would remain within the boundaries of the FAMCAMP parcel as shown in Figure 3-36, which allows for a vegetative buffer between the housing area and the shoreline.

The developer would limit the number of access points to the water to maintain the vegetated buffer such that it would filter most runoff from the MFH area. Any access point that became an erosion problem would be temporarily closed and rehabilitated to minimize sedimentation issues in the sound. The developer would also rope off designated swimming areas and provide educational materials (i.e., signs, brochures) to residents on the importance of protecting these habitats.

Discretionary and non-discretionary stormwater management and access controls and a vegetated buffer would serve to minimize stormwater impacts to nearby waters. Therefore, impacts to the Gulf sturgeon, Gulf sturgeon critical habitat, and EFH would not be significant. There would be no effect to the Gulf sturgeon or Gulf sturgeon critical habitat (USFWS, 2010a).

Sea Turtles. Several species of sea turtles utilize Santa Rosa Island for nesting. Urban glow associated with street and house lighting can disorient nesting turtles and hatchlings. To minimize the effect of urban glow on sea turtles and hatchlings on Santa Rosa Island, exterior lighting (outside building lights including houses, recreational facilities and all street lights) at Soundside Manor and new housing at the old FAMCAMP site must be sea turtle friendly lighting. In addition, at Pine Shadows, full cut-off low-pressure sodium street lighting only is needed. Impacts to sea turtles would

not be significant. The USFWS concurred that there would be no effect on sea turtles (USFWS, 2010a).

Regulatory Requirements/Mitigations

The developer (through lease agreement) would implement all permitting requirements and discretionary and non-discretionary mitigations developed through coordination with regulatory agencies, such as utilization of stormwater management techniques (refer to Section 3.11, *Water Resources*, for a more detailed discussion of mitigations). All landscaping and plantings of vegetation would conform to the Presidential Memorandum dated 26 April 1994, *Environmentally and Economically Beneficial Practices on Federal Landscaped Grounds*, and EO 13112, *Invasive Species*, both which require the planting of regional natives in landscaping; selection of natives must be coordinated with Eglin Natural Resources. Additionally, all non-discretionary mitigations resulting from consultations with the USFWS (USFWS, 2010a) (summarized below) would be implemented.

- Maintain at least a 50-foot vegetated buffer around all wetlands and water bodies on Eglin Main Base, with a suggested minimum of 100 ft.
- Do not clear any new areas (i.e., trees and undeveloped land) along the sound shoreline or around wetlands at the Hurlburt Field parcels. Development of the FAMCAMP parcel must remain within the boundaries as shown in Figure 3-36.
- Avoid construction in jurisdictional wetlands.
- Control suspended sediments and increases in turbidity through management practices such as sediment curtains.
- Implement the highest standards possible for stormwater management.
- Limit the number of access points to the water to maintain the vegetated buffer such that it would filter most runoff from the MFH area.
- Temporarily close and rehabilitate any access point that begins to become an erosion problem to minimize sedimentation issues in nearby waters.
- Designate swimming areas to minimize disturbance to shoreline vegetation and resulting turbidity in the water column.
- Provide educational materials (i.e., signs, brochures) to residents on the importance of protecting water quality and shoreline vegetation.
- One month prior to land clearing, demolition, or construction activities, conduct rare or imperiled plant and wildlife species surveys, and relocate any animals in accordance with FWC guidelines.

- Provide project personnel with a description of the eastern indigo snake, its habitat, and protection under federal law. Instruct personnel not to injure, harm, or kill this species.
- Direct project personnel and residents to cease any activities if an eastern indigo snake or gopher tortoise were sighted, and to allow the animal sufficient time to move away from the site on its own before resuming such activities.
- Direct project personnel and residents to report any sightings of eastern indigo snakes or gopher tortoises to the Eglin Natural Resources Section.
- Direct personnel to contact Natural Resources staff if a gopher tortoise burrow is discovered during demolition, land clearing, or construction. All activities should be avoided within 25 feet of the burrow until Natural Resources personnel have had a chance to examine the burrow and relocate the animal and any commensal species if necessary.
- To minimize the effect of urban glow on sea turtles and hatchlings on Santa Rosa Island, exterior lighting (outside building lights including houses, recreational facilities and all street lights) at Soundside Manor and new housing at the old FAMCAMP site must be sea turtle friendly lighting. In addition, lighting at Pine Shadows must be full cut-off low-pressure sodium street lighting.

Additional discretionary mitigations would serve to reduce or remove impacts to biological resources from MFH activities.

- Maintain natural areas within MFH locations to allow foraging habitat for native species.
- Require the developer to remove any invasive non-native species within the MFH areas to avoid competition with native species.
- Minimize clearing of maritime hammock habitat which would provide habitat for native species, particularly migratory birds.
- Instruct equipment operators to stay out of wet areas and off of steep slopes.
- Educate workers and residents on the need to contain their household wastes in a manner so as to not attract bears, to avoid human-bear interactions.
- Educate vehicle/equipment operators and residents on the need to stop the vehicle or equipment if a bear is sighted and to allow the bear to move away from the site before resuming activities to reduce bear injuries/mortalities.
- Direct personnel and residents to report any sightings of black bears to the Eglin Natural Resources Section so that staff can address any nuisance issues and enter sightings into the bear database.
- Do not construct any new roads or conduct utility work in rights of way that would impact federally listed species.

- Require off-site equipment to be cleaned for invasive nonnative species prior to first-time use on Eglin.
- Coordinate with Eglin Natural Resources to monitor the MFH areas during demolition, construction, and post-construction to catch any infestations early so that they can be treated.

4.13.4 Alternative 1: White Point Area

Construction and daily housing operations have the potential to affect biological resources in the White Point area due to storm water runoff, noise, vehicle impacts, habitat destruction/degradation, and human presence. All of the White Point parcels have the potential for gopher tortoises, pine snakes, indigo snakes, and black bears. Potential impacts and mitigations for these species were discussed previously in the *Proposed Action Commonalities* section.

Alternative 1 – Parcel 1

Outstanding Natural Area. The majority of Parcel 1 overlaps with the White Point Outstanding Natural Area, the best example of old-growth mesic flatwoods in the Southeast. This area requires prescribed fire on a two- to three-year interval and is already limited by development to the north. Development of Parcel 1 would involve clearing of high quality longleaf pine forest, and would reduce or eliminate the ability to burn the remaining portion of this Outstanding Natural Area, which would lead to degradation of the habitat. Fuel loads would also increase if burning frequency was reduced, increasing the likelihood of wildfire. To maintain the quality of this Outstanding Natural Area, it would be necessary to find a way to burn the area without impacting the surrounding urban areas. Although habitats at the White Point Outstanding Natural Area would degrade, some prescribed fire would likely be possible, but at a lower frequency; impacts would not be significant.

Gulf Sturgeon, Sturgeon Critical Habitat, and Essential Fish Habitat. Parcel 1 would be within 0.25 mile of Gulf sturgeon critical habitat and EFH. As per the discussion in the *Proposed Action Commonalities* section, these habitats are most vulnerable to stormwater runoff (i.e., excess sedimentation, polluted water) and disturbance of bottom substrates. While construction would not have any direct impacts on these habitats, the potential exists for polluted runoff. The developer must install stormwater and erosion controls to reduce the rate, volume, and pollutant content of stormwater runoff as mandated by permits (refer to Section 3.11, *Water Resources*, for a more detailed discussion of mitigations). A 50-foot mandatory development buffer would be maintained along the bay shoreline, with a desired feature of 100 feet.

The developer would limit the number of access points to the water to maintain the vegetated buffer such that it would filter most runoff from the MFH area. Any access point that became an erosion problem would be temporarily closed and rehabilitated to minimize sedimentation issues in the sound. Recreational activities of MFH residents

may disturb bay-bottom sediments and degrade or destroy areas of submerged vegetation. The developer would also rope off designated swimming areas and provide educational materials (i.e., signs, brochures) to residents on the importance of protecting these habitats.

Non-discretionary and discretionary stormwater management, access and erosion controls, and a vegetated buffer would serve to minimize stormwater impacts to nearby waters. Therefore, impacts to the Gulf sturgeon, Gulf sturgeon critical habitat, and EFH from construction and daily housing activities would not be significant. There would be no effect to the Gulf sturgeon or Gulf sturgeon critical habitat.

Alternative 1 – Parcel 2

Two acres of high quality wetland/riparian habitat are present in the southern portion of Parcel 2. The Mid-Bay Bridge Connector is currently being built along the southern and southeastern boundaries of the property, and has already cut off the area from the rest of the system. A 50-foot development buffer would be maintained around the wetland. The remainder of the parcel is medium quality sandhills with no documented sensitive animal species, other than one black bear sighting. Thus, impacts to biological resources would not be significant.

Alternative 1 – Parcel 3

Little Trout Creek is approximately 230 feet from the eastern tip of Parcel 3. No land clearing or construction would occur within 50 feet of the stream, leaving a vegetated buffer to help filter pollutants and to prevent erosion from stream slopes. Permits would mandate stormwater management and erosion controls (refer to Section 3.11, *Water Resources*, for a more detailed discussion of mitigations). One discretionary mitigation that would minimize impacts from daily operations would be to instruct maintenance workers and residents not to disturb soils or vegetation within the 50-foot stream buffer. No sensitive animal species were documented at this site. With the implementation of buffers and stormwater and erosion control measures mandated by permits, impacts to biological resources would not be significant.

Alternative 1 – Parcel 4

Little Trout Creek, which runs to the south of Parcel 4, is within 225 feet of the parcel and Pippin Lake is approximately 580 feet to the south of the parcel. No land clearing or construction would occur within 50 feet of the stream or lake, leaving a vegetated buffer to help filter pollutants and to prevent erosion from stream slopes. Permits would mandate stormwater management and erosion controls (refer to Section 3.11, *Water Resources*, for a more detailed discussion of mitigations). One discretionary mitigation that would minimize impacts from daily operations would be to instruct maintenance workers and residents not to disturb soils or vegetation within the 50-foot stream buffer. No sensitive species were documented at this site. With the implementation of

buffers and stormwater and erosion controls mandated by permits, impacts to biological resources would not be significant.

Alternative 1 – Parcel 5

Little Trout Creek, which runs north of the parcel, is within 270 feet of Parcel 5, and Pippin Lake is approximately 1,800 feet to the west of the parcel. No land clearing or construction would occur within 50 feet of the stream or lake, leaving a vegetated buffer to help filter pollutants and prevent erosion from stream slopes. Permits would mandate stormwater management and erosion control measures (refer to Section 3.11, *Water Resources*, for a more detailed discussion of mitigations). One discretionary mitigation that would minimize impacts from daily operations would be to instruct maintenance workers and residents not to disturb soils or vegetation within the 50-foot stream buffer. With the implementation of buffers and stormwater controls mandated by permits, impacts to stream and lake habitats and species would not be significant.

Flatwoods Salamander. The wetland/flatwoods area along the western boundary of the parcel is considered potential habitat for the federally endangered reticulated flatwoods salamander (73 acres); however, Eglin Natural Resources biologists state there is almost no potential for flatwoods salamanders at this pond given the degraded condition of the habitat (Gault, 2010). No land clearing or construction would occur within 50 feet of the wetland, leaving a vegetated buffer to help filter pollutants and prevent erosion. Permits would mandate stormwater management and erosion control measures (refer to Section 3.11, *Water Resources*, for a more detailed discussion of mitigations). Given the low likelihood of occurrence and the implementation of mandatory buffer and stormwater requirements, impacts to the flatwoods salamander would not be significant and there would be no effect on the flatwoods salamander.

Gulf Sturgeon, Sturgeon Critical Habitat, and Essential Fish Habitat. Parcel 5 would be within 0.5 mile of Gulf sturgeon critical habitat and EFH. As per the discussion in the *Proposed Action Commonalities* section, these habitats are most vulnerable to stormwater runoff (i.e., excess sedimentation, polluted water) and disturbance of bottom substrates. While construction would not have any direct impacts on these habitats, the potential exists for polluted runoff. Permits would require the developer to install erosion control and stormwater management measures to reduce the rate, volume, and pollutant content of stormwater runoff (refer to Section 3.11, *Water Resources*, for a more detailed discussion of mitigations). A 50-foot mandatory development buffer would be maintained along the bay shoreline, with a desired feature of 100 feet.

The developer would limit the number of access points to the water to maintain the vegetated buffer such that it would filter most runoff from the MFH area. Any access point that became an erosion problem would be temporarily closed and rehabilitated to minimize sedimentation issues in the sound. Recreational activities of MFH residents may disturb bay-bottom sediments and degrade or destroy areas of submerged

vegetation. The developer would also rope off designated swimming areas and provide educational materials (i.e., signs, brochures) to residents on the importance of protecting these habitats.

Non-discretionary stormwater management, access and erosion control measures, and a vegetated buffer would serve to minimize stormwater impacts to nearby waters. Therefore, impacts to the Gulf sturgeon, Gulf sturgeon critical habitat, and EFH from construction and daily housing activities would not be significant. There would be no effect to the Gulf sturgeon or Gulf sturgeon critical habitat.

Alternative 1 – Parcel 6

An unnamed steep ravine stream runs parallel to the southern boundary of Parcel 6 at a distance of approximately 125 feet. No land clearing or construction would occur within 50 feet of the stream, leaving a vegetated buffer to help filter pollutants and prevent erosion from stream slopes. Given the steep slopes for this stream, a wider buffer of at least 100 feet is a desired feature. Permits would mandate stormwater management and erosion control measures (refer to Section 3.11, *Water Resources*, for a more detailed discussion of mitigations). One measure that would minimize impacts from daily operations would be to instruct maintenance workers and residents not to disturb soils or vegetation within the 50-foot stream buffer. No sensitive animal species were documented at this site. With the implementation of buffer and stormwater and erosion controls mandated by permits, impacts to biological resources would not be significant.

Alternative 1 – Parcel 7

An unnamed steep ravine stream runs parallel to the northern boundary of Parcel 7, within 360 feet. Potential impacts at Parcel 7 would be similar to those at Parcel 6. There would be a 50-foot mandatory development buffer along the stream, with a desired feature of100 feet. Permits would mandate stormwater management and erosion control measures (refer to Section 3.11, *Water Resources*, for a more detailed discussion of mitigations). One discretionary mitigation that would minimize impacts from daily operations would be to instruct maintenance workers and residents not to disturb soils or vegetation within the 50-foot stream buffer. No sensitive animal species were documented at this site. With the implementation of buffer and erosion and stormwater controls mandated by permits, impacts to biological resources would not be significant.

Regulatory Requirements/Mitigations

Discretionary and non-discretionary mitigations from the *Proposed Action Commonalities* section also apply for the Alternative 1 sites. These additional non-discretionary mitigations would further minimize impacts from MHPI at Alternative 1 sites:

- Minimize tree clearing within the White Point Outstanding Natural Area to preserve as much of the natural habitat as possible within this unique area.
- Conduct prescribed burns at least every two to three years at the White Point Outstanding Natural Area to maintain the natural character and function of this rare habitat.
- Instruct maintenance workers and residents not to disturb soils or vegetation within the stream buffer, to prevent erosion and excess sedimentation.
- Address erosion issues near water bodies immediately with erosion control measures and rehabilitation.

4.13.5 Alternative 2: Eglin Main Base/Valparaiso

Construction and daily housing operations have the potential to affect biological resources in the Eglin Main Base/Valparaiso area due to storm water runoff, noise, vehicle impacts, habitat destruction/degradation, and human presence. All of the parcels have the potential for gopher tortoises, pine snakes, indigo snakes, and black bears. Potential impacts and mitigations for these species were discussed previously in the *Proposed Action Commonalities* section.

Alternative 2 – Parcel 1

Flatwoods Salamander. On the southeast portion of the site, there is a small area of overgrown flatwoods surrounding a shallow depression that is considered potential habitat for the federally endangered reticulated flatwoods salamander (120 acres); however, Eglin Natural Resources biologists state this pond has very low potential to support the flatwoods salamander as it is more of a sand pit than a natural pond (Gault, 2010). No land clearing or construction would occur within 50 feet of the wetland, leaving a vegetated buffer to help filter pollutants and prevent erosion. Permits would mandate stormwater management and erosion control measures (refer to Section 3.11, *Water Resources*, for a more detailed discussion of mitigations). Given the low likelihood of occurrence and the implementation of buffer and stormwater and erosion control mitigations, impacts to the flatwoods salamander would not be significant and there would be no effect on the flatwoods salamander (USFWS, 2010a).

Red-cockaded Woodpecker. Two inactive cavity trees for the federally endangered RCW are located along the northwestern boundary of Parcel 1. No good foraging habitat is available near the trees, with most of the surrounding habitat consisting of sand pine. Additionally, the closest active clusters are over five miles away, and RCWs do not fly this great a distance, particularly with no foraging habitat available.

These areas are not significant or of importance in future RCW management or as an emphasis area as designated by the *Eglin Integrated Natural Resources Management Plan* (U.S. Air Force, 2006c). Furthermore, the USFWS concurred with the Natural Resources Section that any future developments impacting inactive RCW trees on Eglin Main Base

were not likely to adversely affect the RCW (USFWS, 1997). Thus, impacts to the RCW from land clearing, construction, and daily housing activities at Parcel 1 would not be significant. The USFWS concurred that there would be no effect on the RCW (USFWS, 2010a).

Gulf Sturgeon, Sturgeon Critical Habitat, and Essential Fish Habitat. Parcel 1 borders Gulf sturgeon critical habitat and EFH. As per the discussion in the *Proposed Action Commonalities* section, these habitats are most vulnerable to stormwater runoff (i.e., excess sedimentation, polluted water) and disturbance of bottom substrates. While construction would not have any direct impacts on these habitats, the potential exists for polluted runoff. Permits would mandate stormwater management and erosion control measures to reduce the rate, volume, and pollutant content of stormwater runoff (refer to Section 3.11, *Water Resources*, for a more detailed discussion of mitigations). A 50-foot mandatory development buffer would be maintained along the bay shoreline, with a desired feature of 100 feet.

The developer would limit the number of access points to the water to maintain the vegetated buffer such that it would filter most runoff from the MFH area. Any access point that became an erosion problem would be temporarily closed and rehabilitated to minimize sedimentation issues in the sound. Recreational activities of MFH residents may disturb bay-bottom sediments and degrade or destroy areas of submerged vegetation. The developer would also rope off designated swimming areas and provide educational materials (i.e., signs, brochures) to residents on the importance of protecting these habitats.

Required stormwater management, access and erosion control measures, and a vegetated buffer would serve to minimize stormwater impacts to nearby waters. Therefore, impacts to the Gulf sturgeon, Gulf sturgeon critical habitat, and EFH from construction and daily housing activities would not be significant. There would be no effect to the Gulf sturgeon or Gulf sturgeon critical habitat (USFWS, 2010a).

Alternative 2 – Parcel 2

Parcel 2 is a combination of low quality sandhills and flatwoods, with no documented sensitive animal species. Due to the low habitat quality and lack of any documented sensitive animals species, impacts to biological resources would not be significant.

Alternative 2 – Parcel 3

Parcel 3 is almost entirely low quality sandhills, with no documented sensitive species. Due to the low habitat quality and lack of any documented sensitive animals species, impacts to biological resources would not be significant.

Alternative 2 – Parcel 4

An unnamed tributary to Tom's Creek, an Okaloosa darter stream, runs parallel to the Parcel 4 western boundary at a distance of approximately 100 feet. Other than the Okaloosa darter, there are no documented sensitive animal species at or near the site. Excess sedimentation is the major threat to stream habitats of the federally endangered Okaloosa darter; therefore, minimization of erosion near the Okaloosa darter stream adjacent to Parcel 4 is extremely important. While construction would not have any direct impacts the stream, the potential exists for polluted runoff. Permits would mandate stormwater management and erosion control measures (refer to Section 3.11, *Water Resources*, for a more detailed discussion of mitigations). A 50-foot mandatory development buffer would be maintained along the stream, with a desired feature of 100 feet.

Mitigations that would minimize impacts from daily operations include:

- Maintain at least a 100-foot vegetated buffer for the Okaloosa darter stream.
- Direct maintenance workers and residents not to disturb soils or vegetation within the stream buffer.
- Install a fence between the housing area and the stream; fencing should not be installed on the stream slope.
- Address erosion issues immediately with erosion control measures and rehabilitation.
- Provide educational materials (i.e., signs, brochures) to residents on the importance of protecting the darter stream and streamside buffer area.

With the implementation of required stormwater management, access and erosion control measures and the minimum 50-foot stream buffer, impacts to biological resources would not be significant. Land clearing, construction and daily housing activities at Parcel 4 may affect, but are not likely to adversely affect the Okaloosa darter.

Alternative 2 – Parcel 5

The same Okaloosa darter stream that flows parallel to Parcel 4 also runs near the Parcel 5 western boundary at a distance of approximately 220 feet. Potential impacts and mitigations for the Okaloosa darter stream are the same as those for Parcel 4. Other than the Okaloosa darter, there are no documented sensitive animal species at or near the site.

Alternative 2 – Parcel 6

With the implementation of the requirements for stormwater management, access and erosion control measures, and the minimum 50-foot stream buffer, impacts to biological

resources would not be significant. Land clearing, construction, and daily housing activities at Parcel 6 may affect, but are not likely to adversely affect the Okaloosa darter.

Alternative 2 – Parcel 7

Parcel 7 is dominated by low quality sandhills, and is surrounded by urban areas on three sides. There are no documented sensitive animal species at this site. Due to the low habitat quality and lack of any documented sensitive animals species, impacts to biological resources would not be significant.

Alternative 2 – Parcel 8

Parcel 8 is a combination of low quality sandhills and landscaped/urban areas. There are no documented sensitive animal species at this site. Due to the low habitat quality and lack of any documented sensitive animals species, impacts to sensitive habitats and species would not be significant.

Alternative 2 – Parcel 9

After demolition, this site would be bare dirt and grass until new construction begins. As described for Alternative 2-Parcel 1, the primary biological concerns for Parcel 9 are Gulf sturgeon critical habitat and EFH. Approximately 0.5 mile of Parcel 9 is adjacent to Choctawhatchee Bay. Potential impacts and mitigations for Gulf sturgeon critical habitat and EFH are the same as those for Parcel 1. Other than sturgeon habitat and EFH, there are no documented sensitive species at the site.

With the implementation of the requirements for stormwater management, access and erosion control measures, and the 50-foot mandatory development buffer, impacts to biological resources would not be significant. Construction and daily housing activities at Parcel 9 would have no effect on the Gulf sturgeon, Gulf sturgeon critical habitat, or EFH.

Alternative 2 – Parcel 10

Potential impacts and discretionary and non-discretionary mitigations for Gulf sturgeon critical habitat and EFH are the same as those for Parcel 9. Less than 0.5 mile of Parcel 10 is adjacent to Choctawhatchee Bay. There are no other documented sensitive species at this site.

With the implementation of the requirements for stormwater management, access and erosion control measures, and the 50-foot mandatory development buffer, impacts to biological resources would not be significant. Construction and daily housing activities at Parcel 10 would have no effect on the Gulf sturgeon, Gulf sturgeon critical habitat, or EFH.

Alternative 2 – Parcel 11

No new construction would occur in wetlands, so only half of this parcel would be developed. Given the proximity of this parcel to Ben's Lake, there is the potential for impacts to the lake from erosion, sedimentation, and stormwater runoff. Potential impacts and discretionary and non-discretionary mitigations would be the same as those discussed in the *Proposed Action Commonalities* section. There are no documented sensitive species at this site.

With the implementation of the requirements for stormwater management, access and erosion control measures, and the 50-foot mandatory development buffer, impacts to biological resources would not be significant.

Regulatory Requirements/Mitigations

Discretionary and non-discretionary mitigations from the *Proposed Action Commonalities* section also apply for the Alternative 2 sites. These additional mitigations would further minimize impacts from MHPI:

- Leave a minimum 100-foot vegetated buffer for Okaloosa darter streams to treat stormwater runoff, and protect the instream and riparian habitat.
- Direct maintenance workers and residents not to disturb soils or vegetation within the stream buffer, to prevent erosion and excess sedimentation.
- Install a fence between the housing area and the stream; fencing should not be installed on the stream slope. Fencing would serve to prevent erosion and excess sedimentation that would result from foot trails to the stream.
- Address erosion issues near water bodies immediately with erosion control measures and rehabilitation.
- Provide educational materials (i.e., signs, brochures) to residents on the importance of protecting the darter stream and streamside buffer area.

4.13.6 Subalternative 2a: Eglin Main Base (Preferred Alternative)

Subalternative 2a consists of Parcel 1 as described under Alternative 2; as a result, the impact analysis and mitigations would be the same as described previously for this parcel.

4.13.7 Alternative 3: North Fort Walton Beach Area

Construction and daily housing operations have the potential to affect sensitive species and habitats in the North Fort Walton Beach area due to storm water runoff, noise, vehicle impacts, habitat destruction/degradation, and human presence. All of the parcels have the potential for gopher tortoises, pine snakes, indigo snakes, and black

bears. Potential impacts and mitigations for these species were discussed previously in the *Proposed Action Commonalities* section.

Alternative 3 – Parcel 1

Parcel 1, which does not include the Camp Pinchot historic district, is primarily low quality sandhills. Recent surveys of the site found only one abandoned gopher tortoise burrow and one state listed plant species, the pineland hoary pea (Entrix, 2010). Transient species may traverse the site, including the black bear, gopher tortoise, indigo snake, and pine snake. Bald eagles and ospreys may forage in the waters close to Parcel 1, but no nests are present on the parcel (Entrix, 2010). Noise from construction or daily housing operations may deter eagles and ospreys from using the immediate area, but these animals could easily use other parts of the bayou for feeding and roosting.

The Gulf sturgeon and West Indian manatee may move through Garnier's Bayou, but no critical habitat has been designated within the bayou, and it is extremely rare to see a manatee in this area. Potential impacts to the sturgeon and the manatee would be similar, including possible species avoidance of the impact area, minor physiological effects, and indirect effects related to the reduction of light and degradation of bottom substrates from excess sedimentation. Additional detail on the potential impacts and mitigations for the sturgeon is available in the *Proposed Action Commonalities* section.

The eastern boundary of this parcel runs along Garnier's Bayou. As discussed in the *Proposed Action Commonalities* section, stormwater runoff has the potential to degrade water quality and habitats in nearby waters. To reduce the rate, volume, and pollutant content of stormwater runoff, the developer must use erosion control measures during construction and install stormwater controls before construction is completed (refer to Section 3.11, *Water Resources*, for a more detailed discussion of mitigations). Forty-nine acres of Parcel 1 would be maintained as a buffer area, including a minimum 50-foot vegetated buffer between Eglin housing and the shoreline and the housing development on the eastern side. A 100-ft waterfront buffer would be a desired feature and would be considered as a discretionary mitigation.

The developer would limit the number of access points to the water to maintain the vegetated buffer such that it would filter most runoff from the MFH area. Any access point that became an erosion problem would be temporarily closed and rehabilitated to minimize sedimentation issues in the sound. Recreational activities of MFH residents may disturb bay-bottom sediments and degrade or destroy areas of submerged vegetation. The developer would also rope off designated swimming areas and provide educational materials (i.e., signs, brochures) to residents on the importance of protecting these habitats.

The combination of required stormwater management and erosion controls and a vegetated buffer would serve to minimize impacts to water quality, aquatic habitats,

and aquatic plant and animal species. Thus, impacts to biological resources would not be significant. There would be no effect on the Gulf sturgeon or manatee.

Alternative 3 – Parcel 2

Parcel 2 is a combination of low quality sandhills and urban/landscaped areas, with sprayfields to the north and developed areas on the other sides. There are no documented sensitive animal species at this site. Due to the low habitat quality and lack of any documented sensitive animals species, impacts to biological resources would not be significant.

Alternative 3 – Parcel 3

Parcel 3 is entirely landscaped/urban and is adjacent to sprayfields and developed areas. There are no documented sensitive animal species at this site. Due to the low habitat quality and lack of any documented sensitive animals species, impacts to biological resources would not be significant.

Alternative 3 – Parcel 4

All of Parcel 4 is medium quality sandhills habitat. Twenty-one inactive RCW trees are present on Parcel 4; however, no good foraging habitat is available near the trees, with most of the surrounding habitat consisting of degraded sandhills. Additionally, the closest active clusters are over five miles away, and RCWs do not fly this great a distance, particularly with no foraging habitat available. These areas are not significant or of importance in future RCW management or as an emphasis area as designated by the *Eglin Integrated Natural Resources Management Plan* (U.S. Air Force, 2006c). Furthermore, the USFWS concurred with the Natural Resources Section that any future developments impacting inactive RCW trees on Eglin Main Base were not likely to adversely affect the RCW (USFWS, 1997). Thus, impacts to the RCW from land clearing and development at Parcel 4 would not be significant.

An unnamed stream runs parallel to the eastern parcel boundary at a distance of approximately 195 feet. No land clearing or construction would occur within 50 feet of the stream, leaving a vegetated buffer to help filter pollutants and to prevent erosion from stream slopes. Permits would mandate erosion control and stormwater management controls (refer to Section 3.11, *Water Resources*, for a more detailed discussion of mitigations). One measure that would minimize impacts from daily operations would be instructing maintenance workers and residents not to disturb soils or vegetation within the 50-foot stream buffer. With the implementation of the requirements for stormwater management and erosion control measures and the minimum 50-foot stream buffer, impacts to biological resources would not be significant.

Alternative 3 – Parcel 5

The southern tip of Parcel 5 is approximately 100 feet north of the northern portion of Poquito Bayou. There is also an unnamed creek that runs through the southeastern portion of the site. No land clearing or construction would occur within 50 feet of the stream or bayou, leaving a vegetated buffer to help filter pollutants and to prevent erosion from stream slopes. Site designs would mandate stormwater management controls that must be installed before construction is completed (refer to Section 3.11, *Water Resources*, for a more detailed discussion of mitigations). Impacts from daily operations would be minimized by instructing maintenance workers and residents not to disturb soils or vegetation within the 50-foot stream buffer.

Parcel 5 is completely low quality sandhills habitat. There are no documented sensitive animal species at this site. With the implementation of the buffer and stormwater controls mandated by permits, impacts to sensitive habitats and species would not be significant.

Regulatory Requirements/Mitigations

Discretionary and non-discretionary mitigations from the *Proposed Action Commonalities* section also apply for the Alternative 3 sites. These additional mitigations would further minimize impacts from MHPI:

- Instruct maintenance workers and residents not to disturb soils or vegetation within the stream buffer, to prevent erosion and excess sedimentation.
- Address erosion issues near water bodies immediately with erosion control measures and rehabilitation.

4.13.8 Alternative 4: Mix Alternative

Since the mix alternative entails a potential combination of several different parcels, the impacts would vary depending on which parcels are chosen and the extent to which they are developed. Each individual parcel was analyzed previously under its respective alternative. Table 4-78 provides a graphical summary of the impacts by parcel for biological resources. Impacts are generally summarized using a color code as follows:

- Green – No beneficial or adverse impact
- Yellow – Potential for adverse impact, but not significant; Degrades habitat or diminishes species health, but not to the degree that the continued existence of a species is jeopardized.

This color coded chart provides a summary of impacts so that the decision maker can easily see how a potential combination of parcels may affect biological resources at each respective parcel. A combined summary table is provided in the "Summary of

Impacts" section at the end of Chapter 5 that shows each individual parcel's potential impacts under each resource area.

Table 4-78. Alternative 4 – Biological Resources Summary

Alternative / Parcel	Biological Resources				
	Flora/Fauna	Sensitive Habitats**	Federally-listed Species	State-listed Species	Invasive Species
Commonalities					
Eglin Main Base					
Hurlburt Field					
Camp Rudder					
Camp Pinchot					
Poquito Bayou					
Alternative 1					
1					
2					
3					
4					
5					
6					
7					
Alternative 2					
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
Subalternative 2a (Preferred Alternative)					
1					
Alternative 3					
1					
2					
3					
4					
5					
No Action*					

Green = No beneficial or adverse impact; Yellow = Potential for adverse impact, but not significant.
*As associated with "MHPI-related" impacts. Evaluation of the significance or demeanor (i.e., beneficial or adverse) of impacts associated with other non-MHPI past, present, or reasonably foreseeable actions is not within the purview of this document outside the context of cumulative impacts, and subsequent comparison to MHPI-related impacts is not conducted in this document.
**Sensitive habitats include Outstanding Natural Areas, Significant Botanical Sites, Gulf sturgeon critical habitat, and Essential Fish Habitat.

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5. SUMMARY OF POTENTIAL IMPACTS

5.1 INTRODUCTION

The information provided in this chapter essentially summarizes the potential impacts associated with Alternatives 1 through 4 and the No Action Alternative and provides the reader with information necessary to compare Alternative impacts by resource area. Also included is a summary of discretionary and non-discretionary mitigations organized by resource area for those that exhibit the potential for adverse impact (detailed descriptions are provided in respective resource sections of Chapter 4). The Air Force will identify in the Record of Decision (ROD) any regulatory requirements and discretionary or non-discretionary mitigations to be implemented; those identified in the ROD and mitigation plan must be implemented. Unless identified as alternative-specific, management actions apply to all alternatives. The MHPI RFQ requires that the developer incorporate all mitigations from the MHPI EIS (whether discretionary or non-discretionary), associated ROD, and Mitigation Plan into an Environmental Management Plan (EMP) detailing how the developer will implement and monitor compliance with mitigation requirements. The Air Force will review and approve the EMP prior to any development activities to ensure consistency between the EMP and NEPA requirements. During the EMP review, the Air Force will determine whether additional NEPA analysis is required.

After the narrative, Table 5-1 graphically compares the alternatives by degree of impact under each resource area.

5.2 SUMMARY OF POTENTIAL IMPACTS BY RESOURCE AREA

5.2.1 Transportation

A number of traffic segments within and surrounding the base are currently operating at less-than-desirable levels of service (LOS). Future roadway improvements can be expected to mitigate some, but not all, of these deficiencies. Roadway traffic is projected to increase under the baseline scenario and will further reduce future LOS.

Commonalities

- **Demolition of existing housing on Eglin Main Base –** This action could result in some improvement to existing on-base roadway LOS. Based on the analysis, the Air Force has not identified a potential for significant impacts.
- **Demolition of existing housing on Poquito Bayou Housing Area –** This action could result in some improvement to adjoining roadways. Based on the analysis, the Air Force has not identified any potential for significant impacts.

- **Camp Pinchot Housing Area –** This action's potential use of housing units for other uses might or might not result in an increase in traffic on adjoining roadways. Based on the analysis, the Air Force has not identified any potential for significant impacts.
- **Camp Rudder Housing Area –** Under all alternatives except Subalternative 2a, potential demolition of 25 housing units and the construction of 35 new housing units would result in a net increase of 10 housing units. This would result in an increase in traffic on adjoining roadways. Based on the analysis, the Air Force does not expect this impact to be significant.
- **Soundside Manor –** This action's potential demolition of 74 housing units and the construction of 100 housing units would result in a net increase of 26 housing units. This would result in an increase in traffic on adjoining roadways. This impact is not expected to be significant. This traffic would have to utilize the intersection with U.S. Highway 98 (US-98), which is expected to be operating at an LOS of F. While any increase in traffic to a roadway feature operating at LOS F is not desirable, this increase is small. This traffic would also utilize the Hurlburt Field Main Gate, which is operating near capacity. Based on the analysis, the Air Force does not expect these impacts to be significant.
- **Existing Family Camping (FAMCAMP) redevelopment –** The demolition of the existing FAMCAMP recreational vehicle park and the construction of 96 units on the FAMCAMP location will increase traffic on roadways between this location and the Hurlburt Main Gate. The site is connected to Hurlburt Main Base by the intersection of US-98, which is expected to be operating at an LOS of F. This increase in traffic is large enough to potentially have a small impact on LOS on this intersection. Any increase in traffic on an LOS F intersection is not desirable. The streets within Soundside Manor and Cody Avenue on the base will operate at an acceptable LOS. This traffic would also utilize the Hurlburt Field Main Gate, which is operating near capacity. Based on the analysis, the Air Force does not expect these impacts to be significant, and the impacts can be mitigated.
- **New FAMCAMP Development –** The construction of a 50-unit recreational vehicle campground would result in a small increase in traffic on the adjoining street. Based on the analysis, the Air Force does not expect the addition of a new entrance and this small increase in traffic to be significant.

State Road 30 (SR-30) (US-98) near the Hurlburt Field main entrance is currently operating near its capacity. Unless this roadway is improved from four lanes to a greater number of lanes, it would not be expected to function at an acceptable LOS in the 2017 to 2022 time period. However, this deficient LOS is not caused by the Proposed Action, as this highway would be expected to have an unacceptable LOS under the baseline case. The intersection of SR-30 (US-98) and Champaign Street/Cody Avenue is currently operating at an LOS of F. This LOS would be expected to decrease over

time unless this intersection is improved. Again, this undesirable LOS is not caused by the Proposed Action.

Alternative 1: White Point Area

Increased traffic from this alternative will impact some sections of SR-20 and SR-85 that are anticipated to have LOS F in 2017 and 2022. It is not desirable to increase traffic on roadway segments already operating at LOS F. This alternative would have the least impact on transportation if Parcels 6 and 7 are developed. Parcel 1 would have the most negative impacts on transportation. There would be some slight advantage to developing the most westward of Parcels 2, 3, 4, and 5 first.

Alternative 2: Eglin Main Base/Valparaiso

The development of these parcels would not be expected to have significant impacts to existing base roads, base access gates, or the public roadways. There would be some impacts from the development of Alternative 2's Parcel 8 because this parcel would be anticipated to add additional traffic onto existing collector roads and some additional traffic to the Eglin Main Base East access control point (ACP). All other parcels would not be expected to have significant impacts to existing base roadways. Parcel 1 would be able to reuse existing roadways and roadway entrances onto Eglin Boulevard.

Subalternative 2a: Eglin Main Base (Preferred Alternative)

The development of this parcel would not be expected to have significant impacts to existing base roads, base access gates, or the public roadways. This alternative would be able to reuse some existing roadways and roadway entrances onto Eglin Boulevard.

Alternative 3: Fort Walton Beach

The development of Alternative 3's Parcels 1, 2, or 3 would add additional traffic to SR-189, which has an LOS of F from the parcels to General Bond Boulevard. SR-189 from General Bond Boulevard to SR-85 becomes LOS F under the maximum development of these parcels by 2022. It is not desirable to increase traffic on roadway segments already operating at LOS F. The development of Alternative 3's Parcels 4 and 5 would not have significant impacts on transportation.

Alternative 4: Mix Alternative

The selection of portions of any of the previously discussed alternatives will have impacts similar to the impacts discussed above on a parcel by parcel basis.

Constructing any replacement housing off-base would increase traffic to the base ACPs. The access gates at Hurlburt Field and Eglin AFB may be inadequate by the 2017 to 2022 time period under the No Action Alternative. Alternatives 1 and 3 would increase

traffic at the Eglin base gates. To minimize the incremental impacts and to reduce travel delay, it may be necessary for the access gate capacity to be improved to better support the expected increases in traffic. The number of lanes for base entrance gates should be evaluated and increased if necessary.

Regulatory Requirements/Mitigations

As standard practice/procedure, all transportation infrastructure would be designed and developed in accordance with federal U.S. Department of Transportation and Florida Department of Transportation (FDOT) requirements to ensure traffic safety. Detailed discussion of the many discretionary mitigations that would serve to minimize traffic impacts at specific parcels are provided in the alternative-specific sections above, and would involve utilization of turn lanes, acceleration lanes, and signage. Discretionary mitigations to minimize traffic build-up at the Eglin AFB gates include establishing additional lanes or gates and using tandem processing in the peak morning hour and staggered start times for shifts at the base. Traffic congestion within existing Eglin AFB and Hurlburt Field housing area roadway systems could be reduced and safety would be enhanced through provision of adequate parking on roadways, pedestrian walkways, and roadways designed to terminate at a collector road in less than 0.5 mile if possible and to convey the traffic from the local road system to the arterial road system. The collector road would also provide access to adjoining properties and possibly for the movement of through traffic.

Okaloosa County and FDOT would need to review and approve proposed new signals external to the development area. Such approval is possible, but not certain (Showers, 2004). This could include new signals for some exits at the White Point parcels onto SR20, perhaps Valparaiso Parcel 8 and/or some of the Fort Walton Beach parcels onto SR-189. The developer would be required per Okaloosa County and FDOT requirements to conduct specific engineering design and traffic studies for site plans for related road systems and proposed highway interchanges.

5.2.2 Socioeconomics

Impacts to socioeconomic resources would be common across all alternatives (with the exception of the No Action Alternative). Eglin AFB has demolished over 60 percent of their housing inventory over recent years. Based on the Housing Requirements and Market Analysis, the Air Force estimates that more than 80 percent of the housing for Eglin AFB and Hurlburt Field families will be provided by the local community with the remainder on the installations. The Proposed Action would only increase the number of housing units by 64 units over existing levels. Thus, the Air Force does not anticipate that the Proposed Action would directly compete with the local housing market. Impacts to employment would be beneficial since the project would induce the creation of jobs that would help sustain low unemployment levels in the local and regional economy. It is most probable that the pool of locally available workers would

fill the demand for labor associated with the implementation of the project, thus negating the potential in-migration of workers (and their family members) from outside the region. In the absence of an influx of new residents, negligible change would be expected in regional population or the demand for additional housing as a result of the project. Although a redistribution of persons within the region could result in potential impacts to the local school district in terms of facility capacity, staffing levels, and revenue sources, these potential impacts would be relatively minor. Alternative 1 has the largest potential for adverse impacts to schools when compared to the other alternatives. The Air Force has not identified any impacts associated with environmental justice under any of the alternatives.

Regulatory Requirements/Mitigations

As standard practice/procedure, the developer would be required to provide adequate measures to restrict access to construction and demolition sites and consider all aspects of child safety during work and nonwork hours. There are some non-discretionary mitigations that could be implemented under the Proposed Action to minimize or offset potential impacts associated with safety of children. Such mitigations include providing safety along shorelines to minimize potential for drowning accidents by erecting signs at the waterfront to warn residents of the potential drowning hazard and emphasizing the need to supervise children up to the age of 14 and for children to use a personal flotation device. Emergency equipment may also be located close to the waterfront area.

5.2.3 Utilities

Potential impacts associated with utility infrastructure are related to the potential for disruption of utility service and the potential for utility use at site-specific locations to exceed the design or permit capacity of the respective utility system. The Air Force has not identified any adverse impacts to utility infrastructure design or permit capacity associated with demolition and construction of any of the units. Although electric, water and wastewater on both Hurlburt Field and Eglin AFB may be privatized in the future, no impacts to infrastructure, service, or capacity are expected.

Regulatory Requirements/Mitigations

As is standard practice/procedure, the developer would coordinate with local utility providers for water, sewer, electrical, and natural gas utility hook-ups and development. The developer would also coordinate with all utility providers prior to ground disturbance activities to identify buried utility lines.

5.2.4 Air Quality

The Air Force has identified no significant adverse impacts to regional air quality from implementation of the Proposed Action or alternatives.

Regulatory Requirements/Mitigations

As discretionary mitigations to decrease particulate matter emissions during site preparation activities (i.e., grading), the use of water on soil piles and exposed surfaces from grading activities would decrease particulate releases. For hauling soil, particulate matter emissions may be decreased by using at least 2 feet of freeboard and/or a secured cover and driving on watered unpaved roads or on paved roads to the greatest extent possible.

5.2.5 Safety

No specific aspects of the Proposed Action or alternatives would create any unique impacts to safety from housing construction activities, housing operations, or the presence of unexploded ordnance in Military Family Housing (MFH) areas.

Regulatory Requirements/Mitigations

As standard procedure/practice, all actions would be accomplished by technically qualified personnel and would be conducted in accordance with applicable Air Force safety requirements, approved technical data, and Occupational Safety and Health Administration and Air Force Occupational and Environmental Safety, Fire Protection, and Health standards, thus minimizing potential impacts. The developer would restrict access during work hours, site preparation, and nonwork hours and would minimize slip/trip/fall hazards associated with construction and demolition activities.

One non-discretionary mitigation would require the contractor to evaluate chlordane concentrations in areas with chlordane-impacted soils prior to disturbing these soils. As required, measures would be taken to prevent fugitive dusts of airborne soil particles. Implementation of these actions would be non-discretionary and preclude the potential for any significant impacts.

5.2.6 Hazardous Materials and Waste

Adverse impacts associated with hazardous materials/waste from demolition of any of the units may result from asbestos and lead-based paint (LBP) exposure and disposal. However, these impacts would be mitigated provided that developers follow established regulations and guidance for handling and disposal.

Overall, various beneficial impacts would result from implementation of the Proposed Action at any of the alternative sites. These benefits are primarily associated with the elimination of potential exposure of MFH residents to asbestos fibers from asbestos-containing building material (ACBM) and lead in LBP, both of which have been determined to be present in older housing units.

Regulatory Requirements/Mitigations

The primary issue associated with hazardous materials and wastes are potential releases of hazardous materials during construction activities. These activities would utilize standard construction methods, limiting the use of hazardous materials to the maximum extent possible. Compliance with Air Force best construction practices, including adherence to the Eglin AFB and Hurlburt Field Spill Prevention, Control and Countermeasure Plans, would be non-discretionary and further reduce the potential for adverse impacts.

Air Force best construction practices are prescribed in Air Force Instruction (AFI) 32-1023, *Design and Construction Standards and Execution of Facility Construction Projects*, and AFI 32-6002, *Family Housing Planning, Programming, Design, and Construction* (U.S. Air Force, 1994; U.S. Air Force, 2008c). These AFIs require that Air Force personnel monitor contractor compliance with all applicable environmental and safety requirements. They also mandate compliance with all applicable federal, state, and local environmental regulations, including any environmental permit requirements. Additionally, AFI 32-6002 requires that for projects to maintain, repair, improve, replace or construct MFH, appropriate environmental compliance plans be developed and implemented.

The Florida Department of Environmental Protection (FDEP) requires the contractor to notify applicable state and local agencies before demolition or renovation of buildings that contain certain threshold amounts of asbestos. The developer must provide written notification to the FDEP at least 10 working days before beginning the demolition or any asbestos removal project. Consequently, asbestos surveys must be performed on buildings (that have not already undergone survey) prior to renovation/demolition.

The developer would implement the following Eglin AFB and Hurlburt Field standard procedures as part of project activities to minimize potential impacts associated with hazardous materials:

- The developer would be required to submit all construction project programming documents, designs, and contracts to both 96th Civil Engineer Group, Environmental Compliance Branch and 1st Special Operations Civil Engineering Squadron Asset Management Flight for review.
- The developer would be required to conduct LBP surveys for the alteration or demolition of an existing housing structure (unless conducted previously).
- The developer would be required to stipulate appropriate abatement and disposal requirements for LBP in project designs.
- The developer would be required to utilize a certified contractor when removing ACBMs. Project personnel would be required to adhere to established

procedures set forth for the safe handling and transport of these materials as outlined in Eglin's Hazardous Materials Management Plan.

- Planned construction activities would avoid all ERP sites, such as water towers in MFH areas. Regardless, should any unusual odor, soil, or groundwater coloring be encountered during development activities in any areas, construction would cease and the Eglin AFB Environmental Management Restoration branch would be contacted immediately. Implementation of these actions would preclude the potential for any significant impacts.

5.2.7 Noise

Under all alternatives, the relatively low time-averaged noise levels associated with demolition and construction activities indicate that neither activity would be excessively intrusive; noise associated with these activities would be short-term and would conclude upon completion of construction and demolition (C&D) actions. The Air Force has not identified any significant adverse noise impacts associated with implementation of the Proposed Action under any of the alternatives.

The greatest impact on the noise environment would result from the F-35 beddown action, which is a component of the No Action Alternative. The F-35 aircraft noise would dominate the noise environment. Residents located in areas under noise contours greater than 65 decibels (dB) may experience varying degrees of annoyance and potential negative health effects depending on the amount of time the residents spend outdoors and noise abatement measures retrofitted on current housing. Noticeable structural vibration may result from low-level F-35 overflights. Physical effects of vibration are generally experienced at peak noise levels of greater than 130 dB. Vibration may add to the annoyance generated by noise-related activity interruption. In general, existing or new housing units in areas falling under elevated noise levels would likely need to be retrofitted with noise-dampening materials to minimize noise impacts to residents.

Regulatory Requirements/Mitigations

Discretionary measures that would reduce temporary effects of construction noise to on- and off-base communities include phasing demolition and construction in a manner to reduce total noise generation and conducting demolition and construction activities during normal work days and working hours. The use of a 500-foot construction noise management buffer between construction activities and established housing areas would further decrease any potential effects of noise on receptors.

Considered non-discretionary, measures to achieve a noise level reduction of 25 dB in areas between 65–69 dB day-night average sound level (DNL) must be incorporated into the design and construction of portions of buildings where the public is received, office areas, noise sensitive areas, or where the normal noise level is low. Measures to

achieve a noise level reduction of 30 dB in areas of 70–74 dB DNL must be incorporated into the design and construction of portions of these buildings. Areas at 75 dB DNL and above are not normally compatible with residential uses, and use of these areas for such purposes should be restricted (Okaloosa County, 2009).

5.2.8 Solid Waste

C&D wastes associated with MHPI and other planned/foreseeable actions will result in an increased demand on solid waste disposal resources within the area. Although the estimated C&D wastes generated are expected to increase waste disposal rates within the counties, sufficient landfill capacity appears to exist within the respective counties to accommodate the wastes. Many landfills also have the capacity for significant expansion, which could further minimize any real or perceived impact to available solid waste disposal resources. As a result, significant impacts have not been identified.

Regulatory Requirements/Mitigations

Standard Air Force solid waste and recycling programs would apply to the MHPI residents to minimize municipal solid waste generation. Discretionary mitigations that would reduce C&D debris waste include recycling and/or reuse of demolition and waste construction materials as practicable, as well as distribution of C&D wastes to multiple landfills to minimize impacts to any one particular landfill.

5.2.9 Land Use

In general, activities associated with the Proposed Action and alternatives occurring on Eglin Main Base and/or Hurlburt Field are consistent with installation future land use plans.

All new structures would adhere to local building codes. All alternative locations would involve development on Eglin lands that are adjacent to established Okaloosa County communities (i.e., outside Eglin Main Base). Although Eglin AFB is not required to comply with the *Okaloosa County Comprehensive Plan*, Policy 10.1 of that Plan designates a maximum gross density of 5 units per acre south of Eglin AFB for the Low-Density Residential classification (DCA, 2010). At densities fewer than 6 units per acre the project would be consistent with surrounding land uses. However, development at 6 units per acre would exceed maximum recommendations for Low-Density Residential designations under the *Okaloosa County Comprehensive Plan*.

Alternative 2: Eglin Main Base/Valparaiso

Under the scenario for JSF Alternative 1I, a small portion of Parcel 1 would be located within the southern accident potential zone (APZ) II for the new runway. Within the APZ II, there is a suggested maximum density of 1 to 2 dwelling units per acre, possibly

increased under a Planned Unit Development where maximum lot coverage is less than 20 percent (U.S. Air Force, 1999). According to the Eglin AFB Joint Land Use Study (Okaloosa County, 2009), Parcels 2–8 are located in a Military Influence Planning Area II, which requires sound attenuation for residential uses for areas exposed to 65–75 dB DNL. Areas experiencing noise above 75 dB DNL would not be suitable for residential uses (Okaloosa County, 2009). The use of Parcels 9 and 10 could also require that new housing units incorporate sound attenuation measures due to potential noise exposures above 65 dB DNL from F-35 aircraft operations.

Alternative 3: North Fort Walton Beach Area

West of Parcel 3 are mixed use and industrial land uses, while to the south is medium-density residential. To the north of both Parcels 2 and 3 are the newly constructed Arbennie Pritchett Water Reclamation Facility and existing Garnier's effluent spray field, which could potentially present compatibility issues with any new housing (Okaloosa County, 2009).

A development setback would be established for any new housing construction on Parcel 1 to minimize any potential compatibility issues with the adjacent off-base low-density residential areas. Development of new housing units on Parcels 4 and 5 is expected to be compatible with the adjacent off-base residential, commercial, and recreational areas, and no adverse impacts are expected.

Regulatory Requirements/Mitigations

According to the Eglin AFB Joint Land Use Study (2009), residential areas (not including mobile homes) in noise levels of 65–74 dB DNL are generally compatible with restrictions implemented. Measures to achieve a noise level reduction of 25 dB in areas between 65–69 dB DNL must be incorporated into the design and construction of portions of buildings where the public is received, office areas, noise sensitive areas, or where the normal noise level is low. Measures to achieve a noise level reduction of 30 dB in areas of 70–74 dB DNL must be incorporated into the design and construction of portions of these buildings. Areas at 75 dB DNL and above are not normally compatible with residential uses, and use of these areas for such purposes should be restricted (Okaloosa County, 2009). These would be considered non-discretionary mitigations.

Other non-discretionary mitigations would include compliance with lighting standards to reduce glare, such as standards adopted by the surrounding community pursuant to the Eglin AFB JLUS 2009 involving the use of "full-cutoff fixtures" for exterior lighting to prevent illumination above the horizontal plane. The Eglin Energy Office preference for reducing glare is induction lighting or LED or plasma lighting that achieves a high color index with high lumens per watt, and/or use of 35-watt or less low-pressure sodium or amber LED lamps. Applicable requirements would be associated with all development

areas and incorporated into the MHPI RFQ so that potential developers can incorporate these aspects into their proposals/development plans.

Implementation of the following discretionary mitigations would lessen perceived aesthetic impacts and result in the minimization of potential adverse impacts to the surrounding communities. Additionally, according to the *Okaloosa County Comprehensive Plan for 2020* (DCA, 2010), land use compatibility issues can be minimized/mitigated through:

- Variable buffers, combining land and landscaping to achieve adequate separation of uses, appropriate open space, reduction of potential noise, light, glare, and/or pollution, and screening of physical features of a proposed development;
- Variable setbacks, based upon degree of difference in proposed density, intensity, scale, mass, or height;
- Placement and effective screening or shielding of site features such as lights, signs, dumpsters, loading areas, parking areas, outdoor storage, or other features with potential negative impacts;
- Effective transitions of on-site densities, intensities, scale, mass, or height; and
- Other innovative site design features that effectively achieve compatibility and effectively mitigate potential negative impacts.

In addition, local neighborhoods may have their own restrictive housing covenants. As an example, according to local residents, when neighborhoods in the Poquito Bayou area were first established, they adopted restrictive covenants calling for "no boat ramps" or boat houses on the water and maintenance of the water's edge to maintain a "natural" look as much as possible. These covenants have long since expired, but residents say they still adhere to them (Nabors, 2004). As a discretionary mitigation, the Air Force would ensure that, when possible, the chosen developer would utilize "smart growth" concepts, such as maintenance of natural areas and use of compact building designs, in the design and construction of the housing developments.

5.2.10 Cultural Resources

The Air Force executed a project-specific Programmatic Agreement (PA) to address adverse effects resulting from the Proposed Action and alternatives. The project-specific PA found in Appendix E, *Cultural Resources* highlights planned cultural resource actions and procedures.

Regulatory Requirements/Mitigations

Section V of the PA describes specific procedures for resolution of adverse effects to project-related resources (U.S. Air Force, 2011). Section V of the PA is presented below:

V. Resolution of Adverse Effects

A. The Air Force shall meet its responsibilities under 36 CFR 800.6 by ensuring that once the Record of Decision is issued and a preferred alternative is selected the Preferred Offeror (PO) at its expense, resolves the adverse effects of the undertaking to historic properties at each installation in accordance with the following stipulations.

B. Eglin AFB

1. Project Commonalities

a. Camp Pinchot Historic District

(i) The PO shall conduct routine maintenance of buildings 1551, 1552, 1553, 1555, 1556, 1557, 1558, 1559, 1561 and 1562 in accordance with Stipulation V[A]. Any activity that is not routine maintenance will be an adverse effect. PO will ensure that any adverse effects to these buildings will be treated prior to the proposed activity. The PO, in consultation with Eglin AFB, shall follow the treatment recommendations of the Camp Pinchot Historic Preservation Plan in accordance with the procedures in Stipulation VLB.

(ii) Building 1564, potentially National Register eligible for its association with the military use of Camp Pinchot, is not included in the Camp Pinchot Historic Preservation Plan. The PO will consult with Eglin AFB prior to conducting routine maintenance and repair of building 1564. Any activities that Eglin AFB determines will have an adverse effect to building 1564 will require treatment in accordance with the procedures in Stipulation VLB.

(iii) The PO will maintain the existing trees in accordance with the general treatment recommendations for landscaping in the Camp Pinchot Preservation Plan. Planting new trees or removing existing trees anywhere on the property will be an adverse effect subject to prior consultation with Eglin AFB.

(iv) Once the property and buildings at Camp Pinchot are returned by the PO to the Air Force, the Air Force will determine the future of the buildings in accordance with Stipulation V.D.

b. Georgia Avenue (Eglin Field Historic District)

(i) The PO shall conduct routine maintenance of buildings 25, 26, 27, 28, and 29 in accordance with Stipulation VLA.2. Any activity that is not routine maintenance will be an adverse effect. The PO will ensure that any adverse effects to these buildings will be treated prior to the proposed activity. The PO, in consultation with Eglin AFB, shall follow the treatment recommendations of the Georgia Avenue Housing Historic Preservation Plan in accordance with the procedures in Stipulation VLB.

(ii) Once the property and buildings at Georgia Avenue are returned by the PO to the Air Force, the Air Force will determine the future of the buildings in accordance with Stipulation V.D.

c. Archaeological Site 80K871 at Camp Pinchot

With the temporary conveyance of Camp Pinchot, archaeological site 80K871 will become the management responsibility of the PO until returned to the Air Force. The PO shall consult with Eglin AFB prior to the initiation of any ground disturbing activities within the site's limits as follows.

(i) Any ground disturbing activity, including but not limited to planting or removal of trees and other vegetation, affecting intact portions of the site will require archaeological testing and or data recovery following an approved plan developed in accordance with Stipulation VLD.

(ii) Any ground disturbing activity affecting previously disturbed portions of the site, including but not limited to the in-place removal and replacement of utilities or planting or removing trees or other vegetation, which is strictly limited to previously disturbed soil, shall be monitored by a professional archaeologist in accordance with Stipulation VLC. Discovery of intact archaeological deposits during archaeological monitoring will be treated as an unanticipated discovery under Stipulation VIII.

d. Archaeological Sites 80KI07 and 80K952 at Poquito Bayou. The PO shall, whenever possible, avoid all ground disturbances within the recorded limits of archaeological sites 80KI07 and 80K952. This includes crossing over and parking on the sites with work vehicles. To ensure avoidance, the PO shall leave in place all building slabs, sidewalks and other hardscape features, as well as all utilities that are located within the sites' limits. The PO shall also ensure that all demolition activities are monitored by a professional archaeologist in accordance with Stipulation VLC. If and when it is not possible to avoid ground disturbance within the limits of the sites, and adverse

effects will occur, the PO shall conduct archaeological testing and or data recovery following the procedures in Stipulation VLD.

2. Project Alternative I (White Point)

a. If the Air Force selects Alternative I, the PO shall avoid affecting site 80KI006 by following the procedures for archaeological monitoring in Stipulation VI.C for all demolition and construction activities within 50 meters of the site.

b. If the Air Force selects Alternative I, the PO shall conduct archaeological testing and data recovery at site 80K2627 following the procedures in Stipulation VI.D prior to demolition and construction activities.

3. Project Alternative 3 (North Fort Walton Beach)

If the Air Force selects Alternative 3, the PO shall avoid affecting the Camp Pinchot Historic District by defining a development setback at least 100 feet wide along the District's property boundary. All new construction shall be prohibited within the development setback.

4. Project Alternative 4 (Mix)

Selection of this project alternative may result in adverse effects to one or more of the historic properties described above and will be resolved as described in Alternatives 1 and 3.

C. Hurlburt Field

The PO shall avoid affecting archaeological sites 80KI33 and 80K061 by following the procedures for archaeological monitoring in Stipulation VI.C for all demolition and construction activities within a 50-meter buffer area around each site.

D. Return of Historic Properties

Once replacement MFH units are constructed, the PO will return to the Air Force, in equal or better condition than received, the buildings and structures at Georgia Avenue and Camp Pinchot as stated in Stipulation II.A.I.b. At that time, Eglin AFB will determine the future of these properties. Should the Air Force propose any action that may result in adverse effects to the Eglin Field or Camp Pinchot Historic Districts, including but not limited to adaptive reuse, Eglin AFB will consult with the consulting parties to resolve the adverse effects and either amend the PA in accordance with Stipulation XIII or develop a separate agreement document.

5.2.11 Water

Potential impacts associated with water resources are related to the potential for increased rate and volume of stormwater runoff, increased amounts of sediment and pollutant runoff during construction and demolition, turbidity and leaching from dock construction, and polluted stormwater runoff from everyday operations within the housing areas post-construction. Each of these has the potential to adversely affect aquatic systems mainly through the degradation of water quality. The developer would adhere to all applicable regulatory requirements, which would serve to either offset or minimize potential impacts to water quality from demolition, construction, and housing operations. The permitting process would identify specific non-discretionary mitigations. Maintenance of a shoreline green space at Alternative 3's Parcel 1 would serve to reduce the amount of runoff associated with construction at this site. Demolition of some units at Live Oak Terrace and Soundside Manor would occur in a floodplain and a Finding of No Practicable Alternative (FONPA) is required for that activity. Work within the drainage ditches at Pine Shadows would require an Environmental Resource Permit from the FDEP. No other actions would occur either in a floodplain or wetland area. Impacts to water quality associated with construction and demolition of housing units would be temporary, and the Air Force does not anticipate any significant, long-term impact.

Regulatory Requirements/Mitigations

A FONPA would be required for demolition activities within floodplains in accordance with Executive Order (EO) 11988 and in accordance with EO 11990 if the drainage ditches located in Hurlburt's Pine Shadows location (identified as jurisdictional wetlands by the FDEP) must be disturbed or culverted in order to allow for parcel access. An Environmental Resource Permit from the FDEP would also be required for work in the drainage ditches. For all actions, the Air Force will comply with the stormwater requirements of Chapter 62-346, FAC.

To reduce the rate and volume of stormwater runoff, stormwater management controls and development of a Stormwater Pollution Prevention Plan (SWPPP) would be a part of the site designs to minimize pollutants, as is standard practice/procedure. The developer must ensure that these controls are in place prior to any construction activity. The SWPPP would include (1) site evaluation of how and where pollutants may be mobilized by stormwater, (2) a site plan for managing stormwater runoff, (3) identification of appropriate erosion and sediment controls and stormwater mitigations, (4) a maintenance and inspection schedule, (5) the record-keeping process, and (6) identification of stormwater exit areas. When preparing the SWPPP, developers would follow the guidance provided in the U.S. Environmental Protection Agency (USEPA) publication, *Stormwater Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices* (USEPA, 1992). Potential actions that the developer may be required to implement through the SWPPP process as a

component of site design to minimize potential impacts and facilitate environmental compliance would be:

- Limit slope for runoff from housing units near water bodies to no greater than approximately 15 percent to allow for natural percolation versus sheet flow.
- Use porous asphalt allowing water to infiltrate into the subsurface areas versus significant increase to new/existing storm drainage systems.
- Provide appropriate retention, drainage and discharge of flows from larger storms where it is needed (e.g., a minimum storage capacity for rain precipitation from a 24-hour, 25-year storm, or 5 or more inches).
- Use vegetation buffer strips to slow stormwater runoff and trap particulate pollutants.
- A 50-foot mandatory development buffer along all Eglin water bodies; 25-foot mandatory for Hurlburt Field
- Minimize the overall development footprint to reduce stormwater runoff.
- Areas that are slated for demolition with no reconstruction should be returned to a natural vegetated landscape in order to decrease stormwater runoff and benefit surrounding water resources.
- Consider multiple stormwater treatment management ponds with rate attenuation to reduce potential erosion and downstream flooding.

Developers must abide by all requirements included in the Municipal Separate Storm Sewer System (MS4) permits. Appendix G, *Water Resources*, provides these mitigations, goals, schedules, and names. As part of the mitigations detailed in their MS4 permits, Eglin AFB and Hurlburt Field have committed to the following with respect to construction: (1) developing contractual language requiring mitigation usage at construction sites, (2) reviewing construction site plans for potential stormwater quality impacts through the comprehensive environmental impact analysis review program, (3) formalizing a method of tracking construction projects and control measures, and (4) performing periodic inspections of construction sites to ensure that mitigations are in place and operational.

A discretionary mitigation to further minimize any potential impacts to water resources associated with specific parcels would be to restrict development activity within 100 feet of all water bodies. This would serve to enhance reduce potential runoff and erosion impacts to nearby water resources and enhance SWPPP and MS4 mitigations.

5.2.12 Soils

All soils at the Eglin AFB and Hurlburt Field within the proposed housing areas are considered to have severe limitations for wind erosion but not, in general, for water erosion. All soils within the region of influence (ROI) are rated as moderately to

severely corrosive to steel, while approximately one-quarter of the soils are corrosive to concrete—the primary building material that would be in contact with the soil. The design and selection of building materials, such as coated steel, should take these limitations into account to ensure that the facilities would not adversely affect soils and would minimize maintenance needs. Under the Proposed Action and alternatives, direct adverse impacts on soils can be expected from surface disturbance and construction due to the alteration of the soil profile and loss of soil productivity. However, these impacts would not be considered significant, and off-site impacts can be minimized through implementing mitigation measures in compliance with laws and regulations. Use of appropriate wind-erosion control best management practices (BMPs), such as application of water or chemical dust palliatives, as necessary, prevents or alleviates dust nuisance. In addition, soil stabilization practices such as the preservation of existing vegetation, hydraulic mulch, hydroseeding, soil binders, or erosion control mats may be necessary.

As a result, while soils would be changed by earthmoving activities, the effects would be localized and would not result in indirect impacts to water resources or air quality because BMPs, erosion and sediment controls, and stormwater management measures would be implemented, in compliance with the requirements of the National Pollutant Discharge Elimination System (NPDES) Construction General Permit. Therefore, no impacts to soils are expected from the proposed activities, given the attainment of the required permits and the implementation of BMPs defined in the SWPPP.

Regulatory Requirements/Mitigations

As is standard practice/procedure, construction activities associated with the Proposed Action and alternatives would require a General Permit for Construction Activities according to the rules established under the Florida NPDES. Compliance with the permit is intended to improve or maintain water quality by minimizing pollutants in stormwater runoff that is discharged into the drainage system. The permit guidelines include issuance of a Notice of Intent, development and implementation of a site-specific SWPPP that includes erosion and sediment control measures, and implementation and maintenance of BMPs to minimize off-site erosion and sediment yield during and after construction. These BMPs would be considered non-discretionary mitigations. Specific BMPs/mitigations would be alternative dependent and would be developed during the permit process; as a result, it is unknown at this time what specific requirements would be implemented. However, typical BMPs/mitigations associated with the SWPPP include annual monitoring and assessment of potential stormwater pollution sources, well maintained silt fences, detention basins, daily site inspections, and other mitigations may be used to limit or eliminate soil movement, stabilize runoff, and control sedimentation. Following construction, disturbed areas not covered with impervious surfaces like roofs and paved areas would be reestablished with appropriate vegetation or other ground cover and managed to minimize erosion. Appropriate excavation practices would reduce the

chance for sides to cave during excavation of trenches for such structures as footers and utility lines.

5.2.13 Biological Resources

The primary potential impacts to biological resources that might occur under the No Action Alternative would be associated with noise, stormwater runoff, excess sedimentation, and habitat loss. Almost all of the predictable actions that are to occur at Eglin AFB and Hurlburt Field through 2015 would be located either on main base sites, at established test areas, or in degraded habitats where wildlife habitat quality is poor. Impacts would continue from daily activities at existing MFH areas, and occasional renovations or replacement of old MFH units in accordance with existing Air Force policy and resources. Given that almost all of the areas that would be affected under the No Action Alternative are either unsuitable for or in very poor condition to support wildlife or sensitive species, impacts to biological resources from the No Action Alternative would not be significant.

Consultation was conducted with the U.S. Fish and Wildlife Service (USFWS) to comply with Section 7 of the Endangered Species Act (U.S. Air Force, 2010a). Eglin received concurrence supporting the No Effect determination (USFWS, 2010a). Requirements from this consultation are included as part of the Discretionary and Non-discretionary Mitigations section.

Demolition, land clearing, and construction may have a localized effect on native wildlife species such as squirrels, raccoons, and rabbits. The potential exists for impacts to wildlife from noise and direct encounters (e.g., crushing) with vehicles and equipment. However, almost all of the proposed areas are already developed, with little wildlife value. Additionally, due to fire suppression, invasive species, and proximity to developed areas, any undeveloped habitats at the sites where new construction would occur have become degraded and are poor quality wildlife habitat. The proposed areas represent less than 0.1 percent of the total land area that Eglin AFB and Hurlburt Field maintain; thousands of forested acres would continue to be managed for wildlife value. Also, existing wildlife are already exposed and habituated to visual and noise disturbances from nearby developed areas, roads, and aircraft activity. Given the abundance of better quality wildlife habitat on other portions of Eglin AFB and Hurlburt Field, and the current loud noise environment, impacts to wildlife would not be significant. After review of the proposed action and analysis presented in this EIS, the Florida Fish and Wildlife Conservation Commission (FWC) agrees that while some negative impacts may occur due to construction related to the Proposed Action, the mitigation requirements identified in this EIS should have a positive effect on listed species and their habitats (FWC, 2011).

Invasive nonnative species tend to be more common in urban areas due to constant disturbances and the introduction of invasive species by humans. Because the majority of the MFH area would be covered by buildings, pavement, or landscaped areas, there

would not be many areas with the proper environment for the establishment of invasive nonnative plants. However, the developer would remove any invasive nonnative plant species identified during the project at any location in coordination with Eglin AFB's Natural Resources Section, Wildlife (96 CEG/CEVSNW). The developer would be required to coordinate with 96 CEG/CEVSNW to ensure the utilization of native vegetation for landscaping. Management actions are available to reduce the potential for invasive nonnative species infestations. Impacts from invasive nonnative plant species to biological resources would not be significant.

Discretionary and Non-discretionary Mitigations

The developer (through lease agreement) would implement all permitting requirements and discretionary and non-discretionary mitigations developed through coordination with regulatory agencies, such as utilization of stormwater management techniques (refer to Section 3.11, *Water Resources*, for a more detailed discussion of mitigations). All landscaping and plantings of vegetation would conform to the Presidential Memorandum dated April 26, 1994, *Environmentally and Economically Beneficial Practices on Federal Landscaped Grounds*, and EO 13112, *Invasive Species*, both of which require the planting of regional natives in landscaping; selection of natives must be coordinated with Eglin Natural Resources. Additionally, all requirements resulting from consultation with the USFWS (2010) (summarized below) would be implemented across all alternatives.

- Maintain at least a 50-foot vegetated buffer around all wetlands and water bodies on Eglin Main Base, with a suggested minimum of 100 feet.
- Do not clear any new areas (i.e., trees and undeveloped land) along the sound shoreline or around wetlands at the Hurlburt Field parcels. Development of the FAMCAMP parcel must remain within the boundaries as shown in Figure 3-36.
- Avoid construction in jurisdictional wetlands.
- Control suspended sediments and increases in turbidity through management practices such as sediment curtains.
- Implement the highest standards possible for stormwater management.
- Limit the number of access points to the water to maintain the vegetated buffer such that it would filter most runoff from the MFH area.
- Temporarily close and rehabilitate any access point that begins to become an erosion problem to minimize sedimentation issues in nearby waters.
- Designate swimming areas to minimize disturbance to shoreline vegetation and resulting turbidity in the water column.
- Provide educational materials (i.e., signs, brochures) to residents on the importance of protecting water quality and shoreline vegetation.

- One month prior to land clearing, demolition, or construction activities, conduct rare or imperiled plant and wildlife species surveys, and relocate any animals in accordance with Florida Fish and Wildlife Conservation Commission guidelines.
- Provide project personnel with a description of the eastern indigo snake, its habitat, and protection under federal law. Instruct personnel not to injure, harm, or kill this species.
- Direct project personnel and residents to cease any activities if an eastern indigo snake or gopher tortoise were sighted, and to allow the animal sufficient time to move away from the site on its own before resuming such activities.
- Direct project personnel and residents to report any sightings of eastern indigo snakes or gopher tortoises to the Eglin Natural Resources Section.
- Direct personnel to contact Natural Resources staff if a gopher tortoise burrow is discovered during demolition, land clearing, or construction. All activities should be avoided within 25 feet of the burrow until Natural Resources personnel have had a chance to examine the burrow and relocate the animal and any commensal species if necessary.
- To minimize the effect of urban glow on sea turtles and hatchlings on Santa Rosa Island, exterior lighting (outside building lights including houses, recreational facilities and all street lights) at Soundside Manor and new housing at the old FAMCAMP site must be sea turtle friendly lighting. In addition, at Pine Shadows, full cut-off low-pressure sodium street lighting only is needed.

Additional discretionary mitigations would serve to reduce or remove impacts to biological resources from MFH activities.

- Maintain natural areas within MFH locations to allow foraging habitat for native species.
- Require the developer to remove any invasive nonnative species within the MFH areas to avoid competition with native species.
- Minimize clearing of maritime hammock habitat, which would provide habitat for native species, particularly migratory birds.
- Instruct equipment operators to stay out of wet areas and off of steep slopes.
- Educate workers and residents on the need to contain their household wastes in a manner so as to not attract bears, to avoid human-bear interactions.
- Educate vehicle/equipment operators and residents on the need to stop the vehicle or equipment if a bear is sighted and to allow the bear to move away from the site before resuming activities to reduce bear injuries/mortalities.
- Direct personnel and residents to report any sightings of black bears to the Eglin Natural Resources Section so that staff can address any nuisance issues and enter sightings into the bear database.

- Do not construct any new roads or conduct utility work in rights of way that would impact federally listed species.
- Require off-site equipment to be cleaned for invasive nonnative species prior to first-time use on Eglin.
- Coordinate with Eglin Natural Resources to monitor the MFH areas during demolition, construction, and post-construction to catch any infestations early so that they can be treated.
- Instruct maintenance workers and residents not to disturb soils or vegetation within the stream buffer, to prevent erosion and excess sedimentation.
- Address erosion issues near water bodies immediately with erosion control measures and rehabilitation.

In addition to the mitigations/management actions identified above that would apply to all alternatives, the following would be associated with a particular alternative:

Alternative 1 Site:

- Minimize tree-clearing within the White Point Outstanding Natural Area to preserve as much of the natural habitat as possible within this unique area.
- Conduct prescribed burns at least every two to three years at the White Point Outstanding Natural Area to maintain the natural character and function of this rare habitat.

Alternative 2 Sites:

- Leave a minimum 100-foot vegetated buffer for Okaloosa darter streams to treat stormwater runoff, and protect the instream and riparian habitat.
- Install a fence between the Valparaiso housing areas and Tom's Creek (Okaloosa darter stream); fencing should not be installed on the stream slope. Fencing would serve to prevent erosion and excess sedimentation that would result from foot trails to the stream.
- Provide educational materials (i.e., signs, brochures) to residents on the importance of protecting the darter stream and streamside buffer area.

5.3 ALTERNATIVE COMPARISON

The following Table 5-1 provides a graphical summary of the impacts by resource area associated with all proposed alternatives for the Proposed Action, as well as the No Action Alternative.

Table 5-1. Summary of Impacts by Resource Area

Alternative / Parcel	Resource Area												
	Transportation	Socioeconomics	Utilities	Air Quality	Safety	Hazmat/Waste	Noise	Solid Waste	Land Use	Cultural Resources	Water	Soils	Bio Resources
Commonalities													
Eglin Housing Areas	Green	Blue	Blue	Yellow	Yellow	Yellow	Yellow	Green	Green	Yellow	Green	Yellow	Yellow
Hurlburt Field	Yellow	Blue	Green	Yellow	Yellow	Yellow	Yellow	Green	Green	Yellow	Yellow	Yellow	Yellow
Camp Rudder	Green	Blue	Green	Yellow	Yellow	Yellow	Yellow	Green	Green	Green	Yellow	Yellow	Yellow
Camp Pinchot	Yellow	Blue	Green	Yellow	Green	Yellow	Green	Green	Green	Yellow	Green	Yellow	Yellow
Poquito Bayou	Green	Blue	Blue	Yellow	Yellow	Yellow	Yellow	Green	Blue	Yellow	Green	Yellow	Yellow
Alternative 1 – White Point Area													
1	Red	Yellow	Yellow	Yellow	Green	Green	Yellow	Green	Yellow	Green	Yellow	Yellow	Yellow
2	Red	Yellow	Yellow	Yellow	Green	Green	Green	Green	Yellow	Yellow	Yellow	Yellow	Yellow
3	Red	Yellow	Yellow	Yellow	Green	Green	Green	Green	Yellow	Green	Yellow	Yellow	Yellow
4	Red	Yellow	Yellow	Yellow	Green	Green	Green	Green	Yellow	Green	Yellow	Yellow	Yellow
5	Red	Yellow	Yellow	Yellow	Green	Green	Yellow	Green	Yellow	Yellow	Yellow	Yellow	Yellow
6	Red	Yellow	Yellow	Yellow	Green	Green	Yellow	Green	Yellow	Yellow	Yellow	Yellow	Yellow
7	Red	Yellow	Yellow	Yellow	Green	Green	Yellow	Green	Yellow	Green	Yellow	Yellow	Yellow
Alternative 2 – Eglin Main Base/Valparaiso													
1	Green	Blue	Green	Yellow	Yellow	Yellow	Yellow	Green	Yellow	Green	Yellow	Yellow	Yellow
2	Green	Blue	Yellow	Yellow	Green	Green	Red	Green	Red	Green	Yellow	Yellow	Yellow
3	Green	Blue	Yellow	Yellow	Green	Green	Red	Green	Red	Green	Yellow	Yellow	Yellow
4	Green	Blue	Yellow	Yellow	Green	Green	Red	Green	Red	Green	Yellow	Yellow	Yellow
5	Green	Blue	Yellow	Yellow	Green	Green	Red	Green	Red	Green	Yellow	Yellow	Yellow
6	Green	Blue	Yellow	Yellow	Green	Green	Red	Green	Red	Green	Yellow	Yellow	Yellow
7	Green	Blue	Yellow	Yellow	Green	Green	Red	Green	Red	Green	Yellow	Yellow	Yellow
8	Yellow	Blue	Yellow	Yellow	Green	Green	Red	Green	Red	Green	Yellow	Yellow	Yellow
9	Green	Blue	Green	Yellow	Yellow	Yellow	Red	Green	Red	Green	Yellow	Yellow	Yellow
10	Green	Blue	Green	Yellow	Yellow	Yellow	Red	Green	Red	Green	Yellow	Yellow	Yellow
11	Green	Blue	Yellow	Yellow	Green	Green	Yellow	Green	Yellow	Green	Yellow	Yellow	Yellow
Subalternative 2a – Eglin Main Base (Preferred Alternative)													
1	Green	Blue	Green	Yellow	Yellow	Yellow	Yellow	Green	Yellow	Green	Yellow	Yellow	Yellow
Alternative 3 – North Fort Walton Beach Area													
1	Red	Blue	Yellow	Yellow	Green	Green	Green	Green	Green	Yellow	Yellow	Yellow	Yellow
2	Red	Blue	Yellow	Yellow	Green	Green	Yellow	Green	Yellow	Green	Yellow	Yellow	Yellow
3	Red	Blue	Yellow	Yellow	Green	Green	Yellow	Green	Yellow	Green	Yellow	Yellow	Yellow
4	Yellow	Blue	Yellow	Yellow	Green	Green	Yellow	Green	Green	Green	Yellow	Yellow	Yellow
5	Yellow	Blue	Yellow	Yellow	Green	Green	Yellow	Green	Green	Yellow	Yellow	Yellow	Yellow
No Action	Green	Blue	Green	Yellow	Green	Green	Red	Green	Red	Yellow	Yellow	Green	Yellow

Blue = Beneficial impact; Green = No beneficial or adverse impact; Yellow = Potential for adverse impact, but not significant; Red = Potential for significant adverse impacts

Note: The impacts associated with the No Action Alternative include potential impacts associated with implementation of projects identified under the No Action Alternative in Chapter 2, Section 2.3.1 as they relate to the ROI for that particular resource.

Impacts are generally summarized using a color code as follows:

- Blue – Beneficial impact (Note: no *significant* beneficial impacts have been identified for any resource area.)

- Green – No beneficial or adverse impact
- Yellow – Potential for adverse impact, but not significant; Management actions or mitigations are required to minimize impacts.
- Red – Potential for significant adverse impacts

This is a summary of the detailed tables provided at the end of each respective resource discussion in Chapter 4; specific details regarding significance determinations associated with color ratings for each resource area are provided in each respective Chapter 4 resource discussion. In some sections several subissues are discussed. For purposes of this summary, the greatest potential for impact is summarized. If there is the potential for adverse impact under one subissue then the entire rating for that resource area would be yellow, even if all the other subissues had no impacts. As an example, under Biological Resources subissues consist of such categories as threatened and endangered species, sensitive habitats, flora and fauna, etc. While there may be no adverse impacts associated with flora and fauna for a particular parcel, there may be adverse impacts associated with endangered species. As a result, in the summary table Biological Resources would be rated as yellow. Specific, detailed ratings per parcel for each subissue can be found in the respective Chapter 4 resource area discussion.

The No Action Alternative impact rating below includes impacts to existing housing areas for resource area ROIs associated with all the actions identified in Section 2.3.1, while the Alternatives 1–3 impact ratings include only impacts from MHPI activities on the proposed alternative locations. The potential impacts associated with Alternative 4 (Mix Alternative) can generally be derived from comparing the impact ratings associated with the individual parcels under each alternative. Chapter 6 provides a discussion of cumulative impacts (e.g., MHPI plus actions described under the No Action Alternative).

As discussed previously, impact analysis throughout the document considers the implementation of non-discretionary mitigations as part of the Proposed Action or alternatives, because these mitigations would be required to be implemented by permit or other regulatory requirements. Impacts therefore consider non-discretionary mitigations as part of the analysis. Discretionary mitigations are identified after analysis to identify mitigations that can be implemented to minimize or offset any potential impacts identified as a result of analysis. The effect of these discretionary mitigations was then described in terms of how each mitigation would affect the outcome of impact analysis. Therefore, the color coding in Table 5-1 reflects the degree of impact without consideration of discretionary mitigations so that a true assessment of the impacts associated with the Proposed Action and alternatives can be made. The actual discretionary mitigations that would be implemented by the Air Force and the privatization developer are alternative-dependent and will not be known until the Air Force selects an alternative. All mitigations identified in this document, whether discretionary or non-discretionary, that would be implemented as a result of the Air Force choosing an alternative for implementation will be identified in the ROD and

subsequent mitigation plan. While the developer is responsible for acquiring all permits and implementing the associated mitigations, as well as any Air Force-imposed discretionary mitigations, the Air Force is responsible for ensuring that all required permits are acquired and any mitigations are implemented effectively.

With respect to avoidance and minimization measures as management actions, the use of adaptive management (as described by the USEPA for ecological management purposes) under all alternatives is key to ensuring that minimization and/or mitigation procedures and management actions are effective in reducing or offsetting the extent of adverse impacts and that conservation continues. Essentially, adaptive management incorporates research into conservation action and is the integration of design, management, and monitoring. Through this integration, conservation goals and objectives are developed; operational projects are then designed to meet the goals and objectives; monitoring protocols are developed to measure the status of the goals and objectives; and then the operational projects are implemented. Throughout the process, the projects are monitored to measure the effectiveness of the processes. The data resulting from monitoring is then used to adjust operational aspects of projects to ensure that the goals and objectives are met. Thus, the management of conservation efforts adapts throughout the process as information is gathered and effectiveness is evaluated.

The most important aspect of the adaptive management process is the monitoring or evaluation phase and development of relevant and effective monitoring protocols. Monitoring protocols consist of measurable objectives, sampling design, field methodology, data analysis and reporting, personnel requirements, training procedures, and operational requirements. The protocols specifically identify standard operating procedures (i.e., instructions) for how all aspects of the protocol will be implemented. Once an alternative is selected for MHPI, the Air Force would identify those mitigations, management actions, and/or minimization procedures that would be implemented and a mitigation plan would be developed, a component of which would be monitoring protocols to measure their effectiveness. The mitigation plan would be developed specifically for the identified mitigations, management actions, and/or minimization procedures and would specify protocols for monitoring activities that describe specific activities and monitoring aspects, as well as metrics to be utilized for measuring the effectiveness of the actions. The mitigation plan would be developed after the ROD signature; the developer would be required to implement the mitigation requirements, while the Air Force would be required to ensure that the mitigation plan is properly implemented.

6. CUMULATIVE IMPACTS

6.1 INTRODUCTION

According to Council on Environmental Quality regulations, cumulative effects analysis in an EIS should consider the potential environmental impacts resulting from "the incremental impacts of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions" (Title 40 Code of Federal Regulations Part 1508.7).

Cumulative effects may occur when there is a relationship between a proposed action or alternative and other actions expected to occur in a similar location or during a similar time period. This relationship may or may not be obvious. The effects may then be incremental (increasing) in nature and result in cumulative impacts. Actions overlapping with or in proximity to the proposed action or alternatives can reasonably be expected to have more potential for cumulative effects on "shared resources" than actions that may be geographically separated. Similarly, actions that coincide temporally will tend to offer a higher potential for cumulative effects.

In this EIS, the Air Force has made an effort to identify actions on or near the action areas associated with each alternative that are under consideration and in the planning stage at this time. These actions are included in the cumulative analysis sections to the extent that details regarding such actions exist and the actions have a potential to interact with the Proposed Action and alternatives. Although the level of detail available for those future actions varies, this approach provides the decision maker with the most current information to evaluate the consequences of the alternatives. The EIS addresses cumulative impacts in order to assess the incremental contribution of the alternatives to impacts on affected resources from all factors.

Analysis is conducted by first identifying past, present, and reasonably foreseeable actions as related to the region of influence (ROI) for the particular resource. Cumulative impacts are then identified if the combination of proposed Military Housing Privatization Initiative (MHPI) actions and past, present, and reasonably foreseeable actions interact with the resource to the degree that incremental or additive effects occur.

6.2 PAST, PRESENT, AND REASONABLY FORESEEABLE FUTURE ACTIONS

Past, present, and reasonably foreseeable actions are the same as those identified for the No Action Alternative as described in Section 2.3.1.

6.3 CUMULATIVE IMPACT ANALYSIS

6.3.1 Transportation

Programmed and planned improvements in the Okaloosa Walton County area may affect the study area. Programmed projects are currently funded for construction within the next five years and were generally considered to be complete for the end-state analyses. Planned projects are not currently funded but have been included in the Okaloosa- Walton's Transportation Planning Organization's *2030 Long Range Transportation Plan* (OWTPO 2030 LRTP) (OWTPO, 2007) and *Cost Feasible Plan*. The *Cost Feasible Plan* projects reasonably available future funding, based on past funding, and identifies projects anticipated to be built with the projected revenues. The 2030 plan identifies several projects that will positively impact roadways in the study area. Specifically, these projects include the following.

Projects currently under construction include (OWTPO 2030 LRTP):

- Flyover Interchange project at SR 123 & SR 85
- Mid-Bay Bridge Phase I

Projects included in the OWTPO Fiscal Years (FY) 2011–2015 Project Priorities Amended January 21, 2010 (OWTPO 2011-2015 Projects) or in the OWTPO FY 2010-2014 Transportation Improvement Program (OWTPO 2010-2014 TIP) as funded for construction include:

- SR-123 from SR-85S to SR-85N improve to 4 lanes
- SR-85 at SR-123 from General Bond Boulevard to North of Okaloosa Regional Airport improve to six lanes and Interchange.

Cost Feasible Plan Projects:

- Design and right-of-way acquisition for four-lane SR-123 from SR-85S to SR-85N
- 4-lane SR-20 from White Point Road to the Mid-Bay Bridge connector
- 4-lane Mid-Bay Bridge connector from Mid-Bay Bridge north approach to Range Road (Phase 1)
- 4-lane Mid-Bay Bridge connector from Range Road to SR-285 (Phase 2)
- 4-lane Mid-Bay Bridge connector from SR-285 to SR-85 (Phase 3)
- Bicycle and pedestrian projects per the OWTPO Bicycle and Pedestrian Plan
- Intelligent Transportation System Master Plan projects

Addendum Projects (not funded at this time)

- New 4-lane NWTCA Project 33 Niceville-Freeport Connector from Mid-Bay Bridge connector to U.S. Highway 331 (US-331)/Freeport.
- US-98 (State Road 30 [SR-30])/Hurlburt Field Gate Interchange

The construction of an interchange at SR-30 (US-98) at Hurlburt Field Gate is included in the list of the OWTPO's addendum projects. The addendum projects are the projects considered most needed.

Other upgrades that have been identified as being needed by the OWTPO, but that have not been funded, include the following (OWTPO 2030 LRTP):

Needed projects (not funded at this time)

- Widen US-98/SR-30 to 6 lanes from Santa Rosa County Line to Mary Esther Boulevard
- Widen SR-189 to 6 lanes from Martin Luther King Boulevard to SR-85
- Widen SR-85 to 6 lanes from US-98/SR-30 to SR-189
- Improve intersection SR-189 and SR-85
- Widen SR-20 to 6 lanes from SR-293 to SR-85
- Widen SR-85 to 6 lanes from SR-20 to John Sims Parkway

These roadways are projected to be built by 2030, eight years past the planning horizon of this study. While the OWTPO may prioritize projects, there is no specific list of projects anticipated to be complete by the project end state.

The Northwest Florida Transportation Corridor Authority adopted its Phase II Master Plan in June 2007. The Phase II Master Plan identified a potential new corridor in the region. This proposed project begins at SR-79 in Bay County, runs east-west approximately parallel to SR-20 to the Mid-Bay Bridge (SR-293), and then traverses the southern edge of Eglin AFB, intersecting SR-285 and SR-85 running parallel to SR-20, then following north of and parallel to SR-85, intersecting SR-123, then running north of and parallel to Gen. Bond Blvd and north and east of SR-189 and SR-393 parallel, bypassing Fort Walton Beach and Mary Esther to SR-87 in Santa Rosa County. The current alignment is general in nature, as the proposed bypass is still under study and discussion. No funding is currently associated with this project; however, should this project move forward, it may become an alternative to widening some of the facilities identified as deficient in this analysis.

The Mid-Bay Bridge Authority is currently constructing a new arterial bypass roadway from White Point Road (SR-293) around Niceville to the east and north intersections with SR-285 and terminating at SR-85. Also, as part of the Mid-Bay Bridge Authority's

Capital Improvement Plan, the Authority intends to build a second span (identical to the existing bridge and built to the east of the existing bridge) to carry northbound traffic (and the existing bridge would carry the southbound traffic). May 2011 is the opening date for the portion from the toll plaza to Lakeshore Drive to SR-20, and will eliminate most of White Point Road traffic. The portion to Range Road will open in late June 2011. The portion to SR-85 will open in January 2014. When completed, the Mid-Bay Bridge Connector and the additional span would provide an alternative route for traffic that would be expected to improve LOS on the roadways serving Alternative 1.

From a cumulative perspective, impacts would be relatively minor from the standpoint that the MHPI would not appreciably affect the transportation impacts resulting from other reasonably foreseeable future activities. The planned 2030 roadway projects may partially address some of the needed improvements identified in these analyses. However, these projects, may not be funded until after the Proposed Action is complete (such as the Construct Perimeter Fence project). The bypass projects may also have an impact on the needed improvements; however, they are still conceptual in nature, and exact impacts are unknown. Any of these projects would help in addressing the roadway needs identified in these analyses and would have a positive impact on the roadway network in general. The results of the analyses indicate that there are many roadways operating deficiently in the study area today, and the number of deficient roadway segments would increase by 2017 when area growth is taken into consideration.

6.3.2 Socioeconomics

The implementation of the MHPI at Eglin AFB and Hurlburt Field would have minimal incremental socioeconomic impacts to the ROI when combined with the present and reasonably foreseeable actions. The beneficial impacts from the construction expenditures to be spent by the developer over the project term would be small as compared with the construction program being conducted by the Air Force as a result of ongoing actions at Eglin AFB, particularly the base realignment and closure (BRAC)-related actions for the basing of the 7th Special Forces Group (Airborne) or 7SFG(A), and the proposed construction being considered for the Joint Strike Fighter (JSF) Initial Joint Training Site (IJTS). Additionally, the number of personnel proposed to enter the ROI as a result of those actions would have a greater and farther reaching impact on the ROI as compared with the temporary nature of the MHPI construction. Several operational alternatives for the F-35 at Eglin AFB are being considered in the Eglin BRAC Supplemental EIS. Noise levels impacting the proposed MHPI housing areas would vary depending on these alternatives; more discussion is provided in the Noise and Land Use sections. Based on the analysis, the Air Force does not anticipate the implementation of the MHPI to result in cumulative impacts from a socioeconomic perspective.

6.3.3 Utilities

Of the actions described as potentially creating cumulative impacts, several pertain to utilities on Eglin Main Base. Most of the regional development projects would not create cumulative impacts to the utilities that would be utilized under the MHPI; the SR-20 waterline project would not have an impact on MHPI utility use since the project does not involve utilities at any of the proposed MHPI parcels. Since the overall use of electricity and natural gas is projected to be less than current capacity, it is not expected that the relevant reasonably foreseeable actions would have a cumulative impact when combined with the Eglin BRAC-related actions. Likewise, the Proposed Action would result in only a slight increase in water use and wastewater generation and should not have a cumulative impact when combined with the BRAC-related actions and other building demolition/construction projects anticipated to occur on Eglin AFB.

The most influential factor that may reduce the amount of wastewater treatment required by the reasonably foreseeable actions on Eglin Main Base is the opening of the new 10-million gallon per day Arbennie Pritchett Water Reclamation Facility located adjacent to the existing Garnier's effluent spray field. To alleviate the amount of wastewater being treated by the facilities on Eglin Main Base and Hurlburt Field, some of the wastewater may be treated by the new facility. Other factors that may reduce the overall amount of wastewater requiring treatment is the final size of the buildings to be constructed and the final number of housing units to be built for the privatization initiative.

Cumulative impacts are also not expected to occur at Hurlburt Field from the anticipated new construction projects when combined with the construction of new military family housing units. The Hurlburt Field water supply and wastewater treatment systems have sufficient capacity to accommodate the potential utility increases.

6.3.4 Air Quality

Implementation of the projects listed under the No Action Alternative and the MHPI would result in a net increase in emissions. A number of construction/demolition type projects may occur concurrently with the MHPI, which would cause temporary increases in the regional air emissions cumulatively when compared against the three counties within which Eglin AFB is located (Okaloosa, Santa Rosa, and Walton Counties). This is a conservative approach to impact analysis since emissions are often compared to an Air Quality Control Region, which consists of a much larger land area and which would show no adverse impacts from these actions cumulatively. Also, the construction activities occurring around the base would cause a temporary net increase in greenhouse gas (GHG) emissions from construction vehicles and worker commutes. Overall these projects are expected to cause temporary increases in regional air

emissions. However, based on the analysis presented in Chapter 4 of GHG and other air emissions associated with the MHPI, when considered with the MHPI Proposed Action, there would not be a significant adverse impact to regional air quality or GHG emissions from a cumulative perspective.

6.3.5 Safety

Based on the analysis, the Air Force does not anticipate cumulative impacts to safety from implementing the Proposed Action or alternatives and the activities identified under the No Action Alternative as past, present, or reasonably foreseeable.

6.3.6 Hazardous Materials

Based on the analysis, the Air Force does not anticipate cumulative impacts to hazardous materials and hazardous wastes from implementing the Proposed Action or alternatives and activities identified under the No Action Alternative as past, present, or reasonably foreseeable.

6.3.7 Noise

Cumulative impacts would occur wherever noise impacts from proposed MHPI actions would overlap with noise impacts resulting from other reasonably foreseeable actions planned to occur at Eglin AFB. The majority of the relevant past and present actions considered in the cumulative impacts analysis involve construction of a new facility or demolition of an existing facility. Construction noise is temporary, lasting only for the duration of the construction project, and is typically limited to normal working hours (7:00 AM to 5:00 PM). Construction noise impacts associated with these projects are expected to be limited to within the boundaries of Eglin AFB and would be insignificant either separately or cumulatively.

The projects that would have the greatest cumulative noise impacts are the BRAC-related actions at Eglin AFB, including the JSF aircraft flight training operations. At this time it is unknown which F-35 alternative would be selected. However, based on analysis in the *Eglin BRAC Supplemental EIS for F-35 Beddown at Eglin AFB* (the "F-35 SEIS"), only parcels associated with MHPI Alternative 2, Subalternative 2a, and Alternative 3 – Parcel 4 would have potentially significant impacts from F-35 noise depending on the F-35 SEIS alternative selection. As a result, a summary table of proposed MHPI Alternative 2, Subalternative 2a, and Alternative 3 parcels and potential impacts associated with the various F-35 SEIS alternatives is provided below (Table 6-1).

Table 6-1. Proposed MHPI Alternative Parcels Potentially Affected by F-35 Noise*

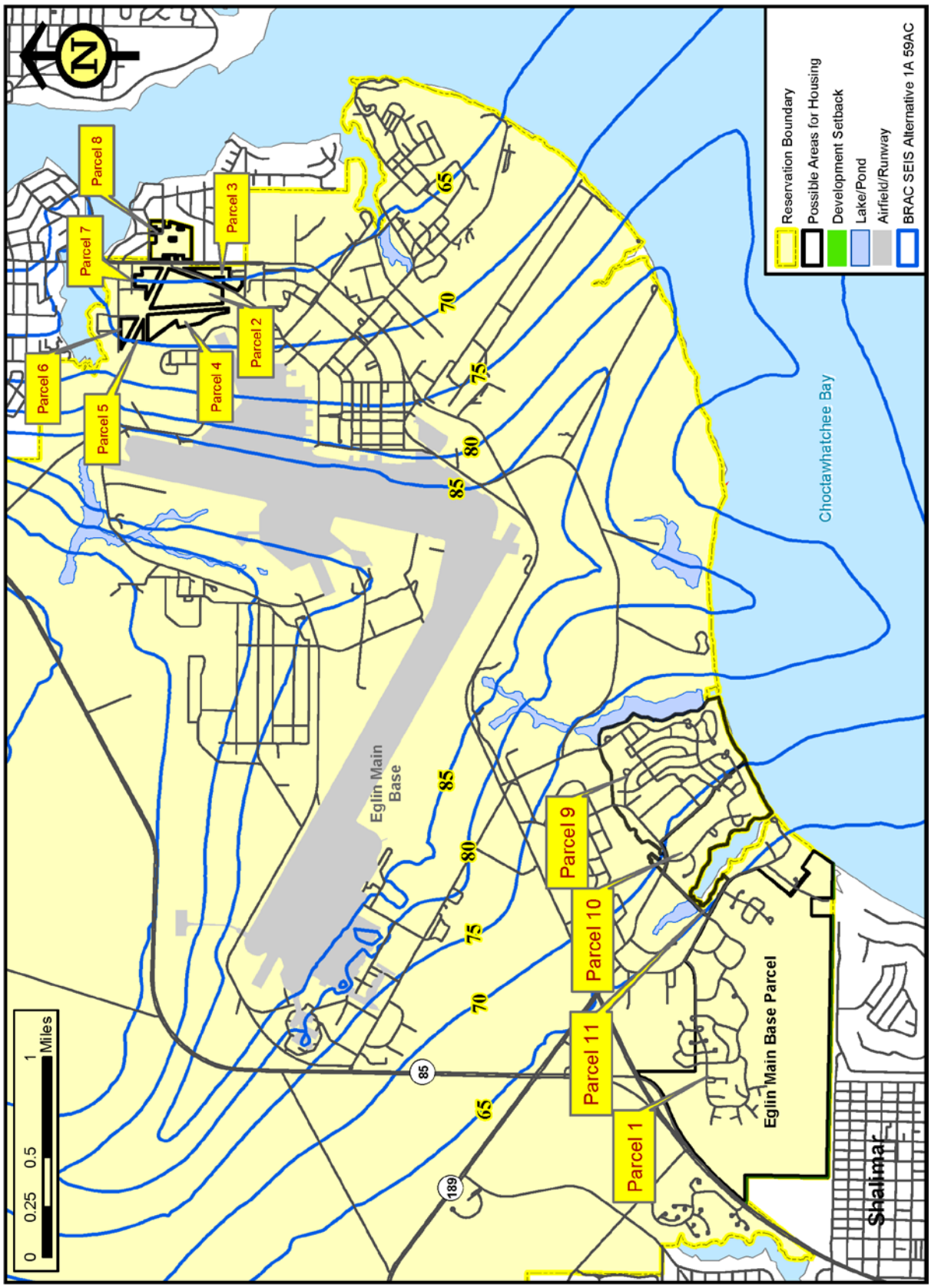
F-35 SEIS Alternative	dB Level	MHPI Alternative 2/2a Parcels (Acres)											MHPI Alternative 3 Parcels
		1 (673)	2 (29)	3 (8)	4 (16)	5 (2)	6 (4)	7 (7)	8 (21)	9 (212)	10 (94)	11 (6)	4 (72)
		Estimated Acres Potentially Affected by F-35 Noise											
No Action	65–70				1.82	0.82	0.54			87.68	94.33	0.82	
	70–75									123.82			
1A	65–70	0.91	24.62	2.4	16.02	1.81	3.67	2.25		13.09	93.66	5.36	
	70–75						0.39			198.41	0.66		
1I	65–70				0.36		0.13			154.24	94.33	0.38	
	70–75									57.26			
2A	65–70									75.51			
	70–75												
2B	65–70				0.83	0.92	0.72			203.96	93		
	70–75									7.54			
2C	65–70				0.06	0.08	0.21			211.5	57.47		
	70–75									0.01			
2D	65–70				0.77	0.88	0.68			199.85	91.1		
	70–75									11.65			
2E	65–70									76.73			
	70–75												

dB = decibel
Cells shaded gray represent areas not affected by F-35 noise.
*Revised F-35 operational data and noise modeling in the future may change impacts to these parcels, but we anticipate that any change will be overall beneficial, not detrimental.

Figure 6-1 through Figure 6-7 visually represent the noise contours associated with each F-35 SEIS alternative and their potential impact on MHPI alternatives. Revised F-35 operational data and noise modeling in the future may change the resulting noise contours, but we anticipate that any change will be overall beneficial, not detrimental. As an example, the noise contours from the F-35 SEIS that has the greatest potential to impact MHPI parcels is provided in Figure 6-1. This figure shows that noise from JSF flight training operations would dominate the noise environment. Under any of the JSF flight training action alternatives, time-averaged aircraft noise levels at several known noise-sensitive locations would increase to a level that may be considered by the public to be significant. Alternative 2 Parcels 2, 3, 4, 5, 6, 7, 9, 10, and 11 would be located in areas exposed to sound levels ranging from 65 to 75 dB DNL for the 59 aircraft scenario where Eglin Main Base is the primary airfield used by the JSF.

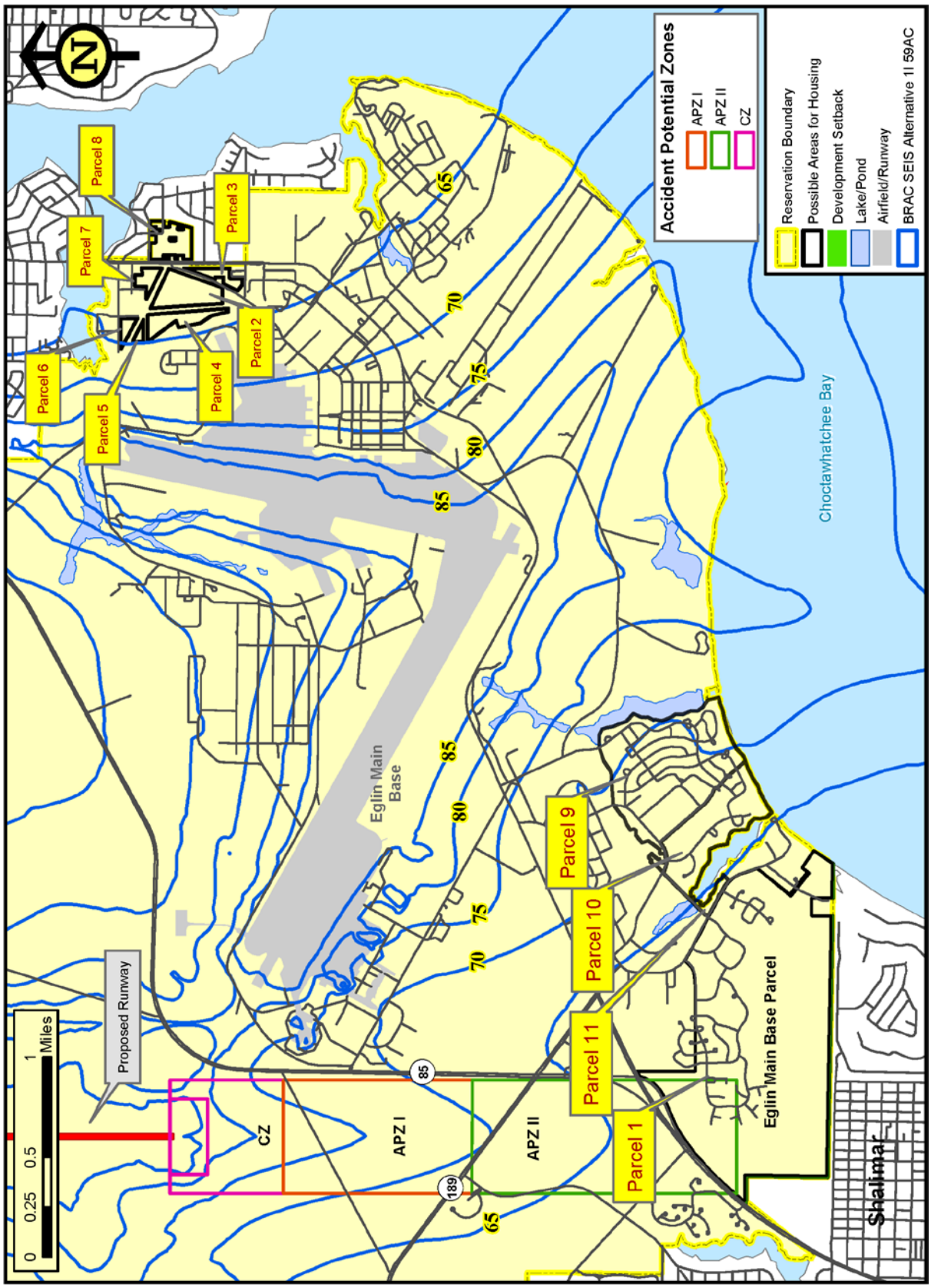
The noise level translated into supplemental metrics of "percent of population highly annoyed", "speech interruptions," and "percent of population whose sleep is interrupted" gives more information on possible effects of aircraft noise. Parcels 2 through 7 would have a 50 to 61 percent of the population being highly annoyed by aircraft noise. An average of 166 noise events that are loud enough to cause speech interruption (television, telephone conversations, etc.) and approximately 32 percent of the population may be roused from sleep due to noise in Parcels 2 through 7. For Parcels 9 through 11, approximately 50 percent of the population would be highly annoyed; there would be an average of 54 noise events per operation day that may interfere with normal speech, and approximately 30 percent of the population may experience interrupted sleep. In general, the noise events would occur primarily during the day when residents are not sleeping or in their house, which would reduce the effects to receptors.

The developer would be required to construct any units in the affected areas with proper noise abatement. Whenever possible, residential land use should be located below 65 dB DNL according to Air Force land use recommendations (Air Force Handbook [AFH] 32-7084). New facilities proposed to be constructed on Eglin AFB may be exposed to high noise levels due to aircraft overflight and munitions use. Where practicable, on-base structures should incorporate noise attenuation measures in accordance with the Air Force noise guidelines published in the U.S. Air Force Family Housing Guide and AFH 32-7084, *AICUZ Program Managers Guide.*



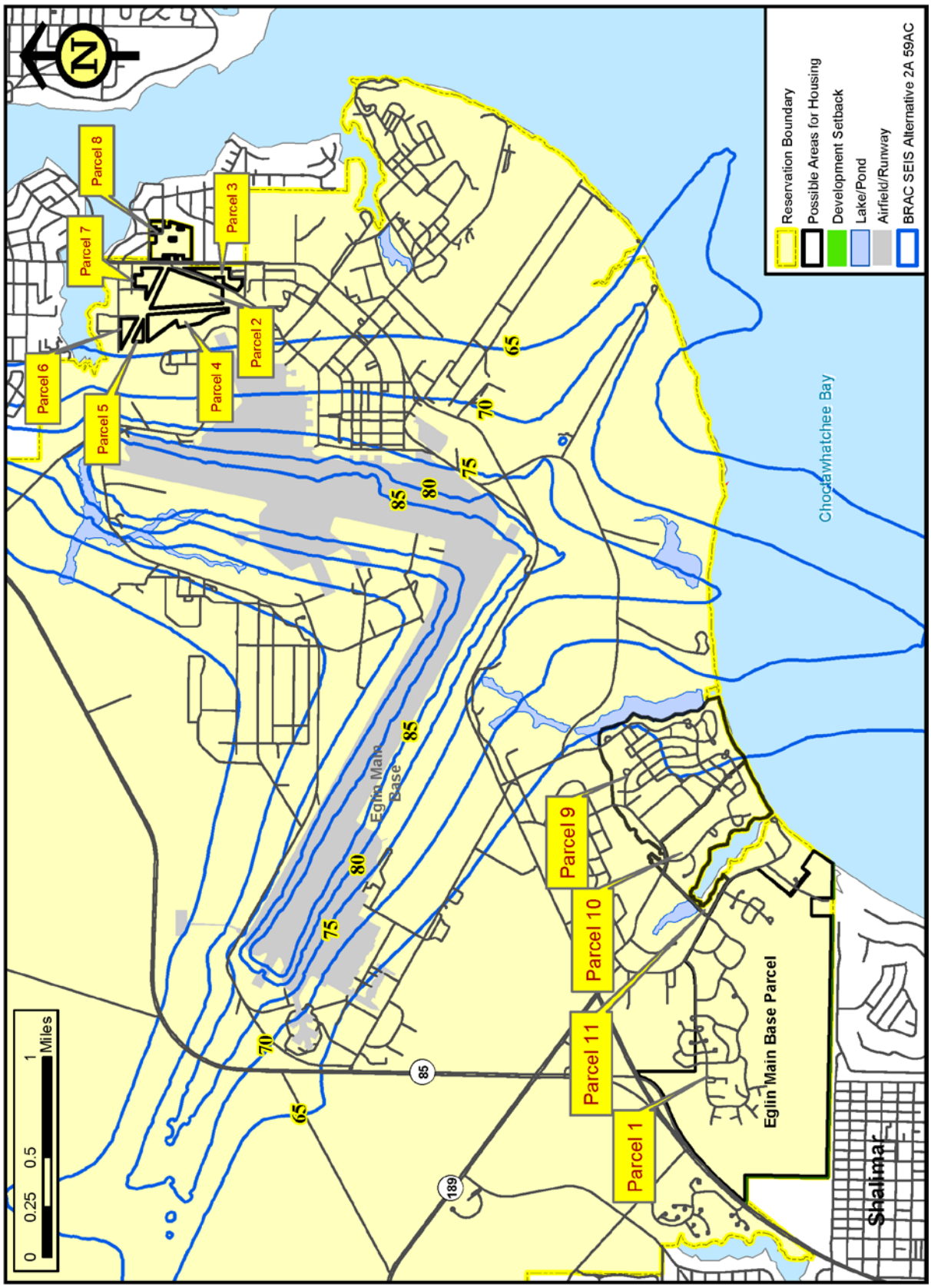
Revised F-35 operational data and noise modeling in the future may change the resulting noise contours, but the Air Force anticipates that any change will be overall beneficial, not detrimental.

Figure 6-1. Noise Contours for the JSF Aircraft and All Other Aircraft and the Affected Eglin MHPI Parcels Under the F-35 SEIS's Alternative 1A



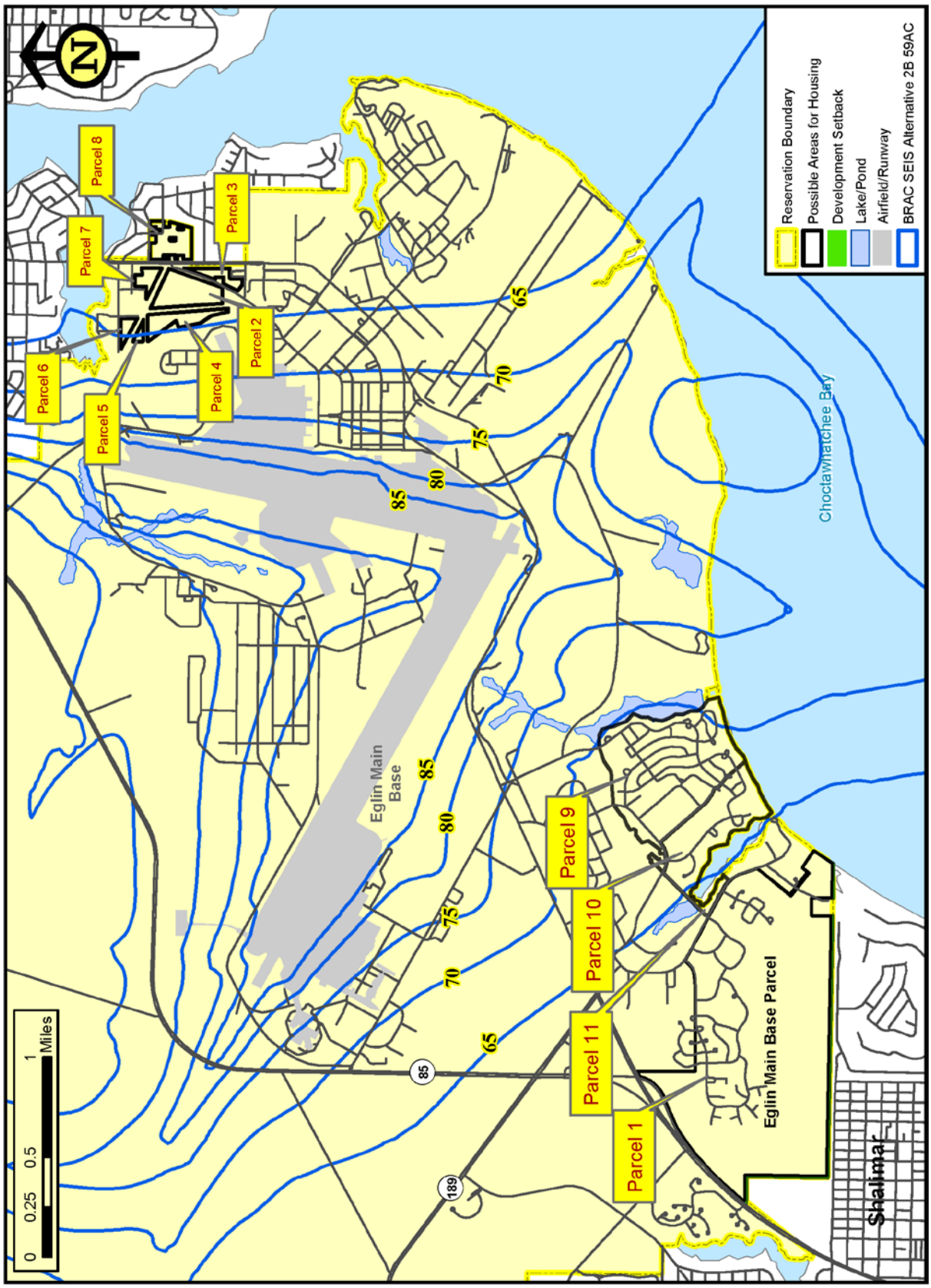
Revised F-35 operational data and noise modeling in the future may change the resulting noise contours, but the Air Force anticipates that any change will be overall beneficial, not detrimental.

Figure 6-2. Noise Contours for the JSF Aircraft and All Other Aircraft and the Affected Eglin MHPI Parcels Under the F-35 SEIS's Alternative 1I



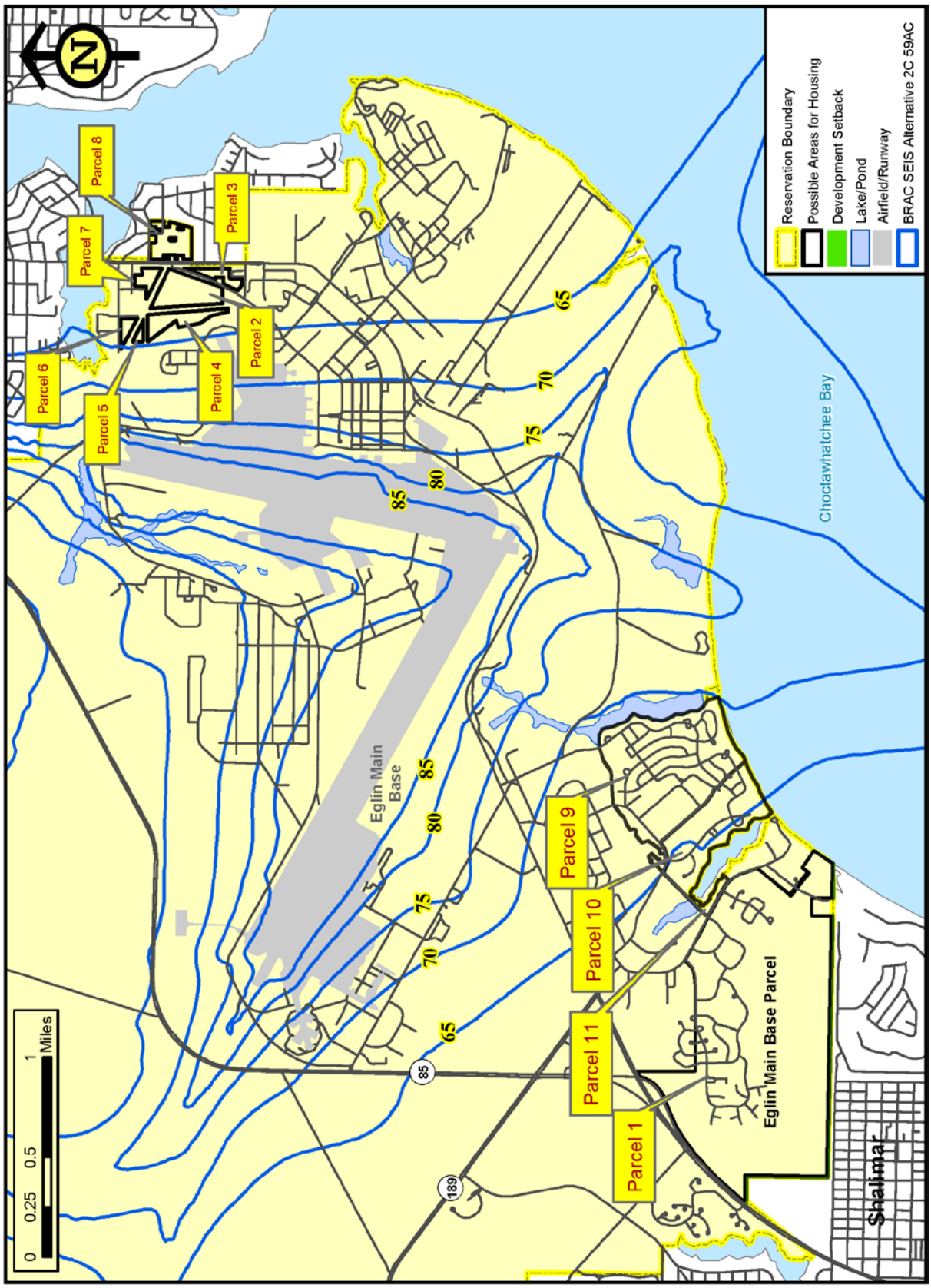
Revised F-35 operational data and noise modeling in the future may change the resulting noise contours, but the Air Force anticipates that any change will be overall beneficial, not detrimental.

Figure 6-3. Noise Contours for the JSF Aircraft and All Other Aircraft and the Affected Eglin MHPI Parcels Under the F-35 SEIS's Alternative 2A



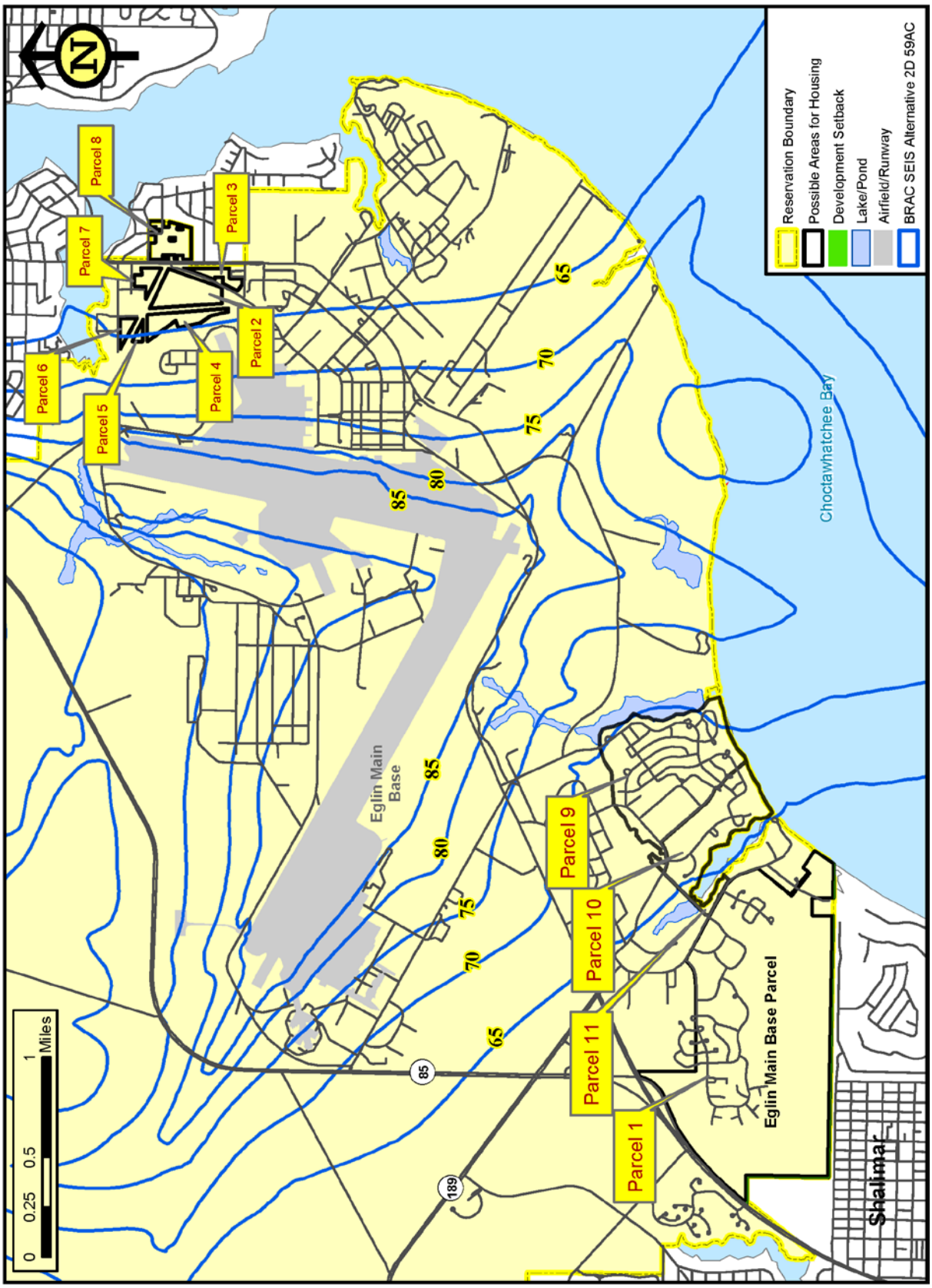
Revised F-35 operational data and noise modeling in the future may change the resulting noise contours, but the Air Force anticipates that any change will be overall beneficial, not detrimental.

Figure 6-4. Noise Contours for the JSF Aircraft and All Other Aircraft and the Affected Eglin MHPI Parcels Under the F-35 SEIS's Alternative 2B



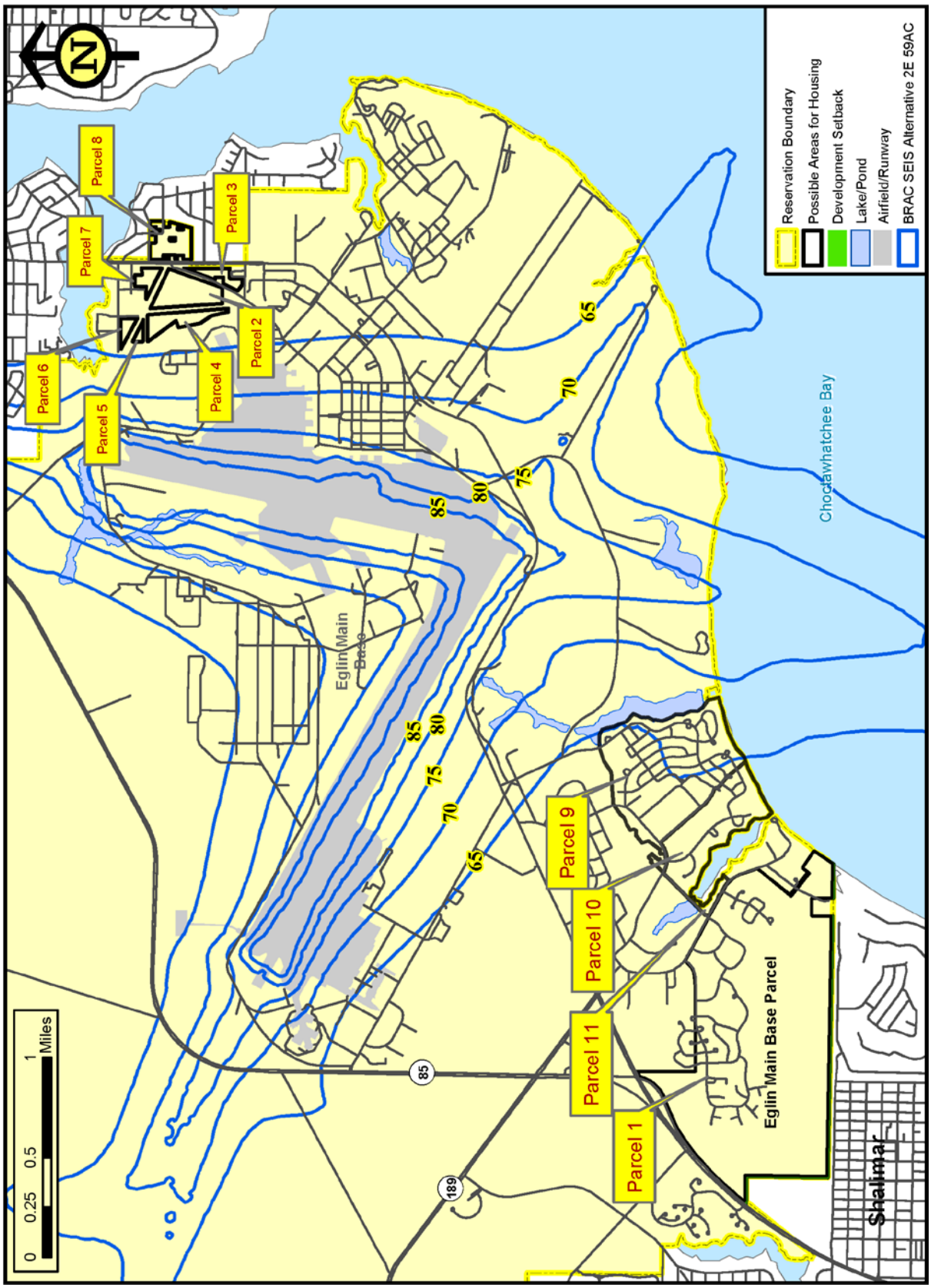
Revised F-35 operational data and noise modeling in the future may change the resulting noise contours, but the Air Force anticipates that any change will be overall beneficial, not detrimental.

Figure 6-5. Noise Contours for the JSF Aircraft and All Other Aircraft and the Affected Eglin MHPI Parcels Under the F-35 SEIS's Alternative 2C



Revised F-35 operational data and noise modeling in the future may change the resulting noise contours, but the Air Force anticipates that any change will be overall beneficial, not detrimental.

Figure 6-6. Noise Contours for the JSF Aircraft and All Other Aircraft and the Affected Eglin MHPI Parcels Under the F-35 SEIS's Alternative 2D



Revised F-35 operational data and noise modeling in the future may change the resulting noise contours, but the Air Force anticipates that any change will be overall beneficial, not detrimental.

Figure 6-7. Noise Contours for the JSF Aircraft and All Other Aircraft and the Affected Eglin MHPI Parcels Under the F-35 SEIS's Alternative 2E

6.3.8 Solid Waste

The total quantity of construction and demolition (C&D) waste generated during MHPI implementation is estimated to be approximately 231,320 tons. Additional planned and foreseeable projects at Eglin AFB will also contribute to overall C&D generation within the ROI. It is estimated that these projects, discussed in Section 2.3.1, *No Action Alternative*, will generate between 240,502 and 506,502 tons of additional debris. The exact quantity of debris generated from these additional projects is difficult to accurately determine due to uncertainties with regard to the specific amount of construction or demolition that would occur and when such activities may be conducted. These factors impact actual C&D debris to be generated on a given project and how much debris is generated on an annual basis.

It is estimated that, in total, the planned projects and MHPI will potentially result in the generation of approximately 737,822 tons of C&D debris as well as an additional 8,995 tons per year of municipal solid waste from personnel. Although the specific schedules are not known, if the planned projects occur within the same timeframe as the MHPI, then an average of 147,564 tons of C&D debris may be generated annually (average generation rate over the five-year period) from C&D activities (assuming all C&D occurs over a five-year period). This rate of generation would result in a 33 percent increase in the C&D rate across the three-county ROI when compared with the average rate of generation from calendar year (CY) 2002 through CY 2007. Although the generation rate will be raised during the construction phase of the project, the overall impact to landfill resources within the area (when compared to the disposal rate of 450,481 tons per year) is approximately 1.6 years of existing capacity from all planned or foreseeable projects within the ROI.

The exact impact to a given landfill within the ROI is difficult to ascertain as the increase assumes that waste generation and disposal rates will remain the same within the respective counties, which is unlikely as these rates are impacted by generation activities associated with construction within the communities and natural events such as hurricanes, which result in increased C&D. In addition, it is considered unlikely that all projects included within the evaluation will overlap for the entire five-year period of the MHPI and the estimated increase does not take into account any recycling of construction materials such as concrete or asphalt, which could be reutilized.

6.3.9 Land Use

Land use changes associated with the majority of the activities identified in Section 2.3.1 would incrementally contribute to the changing character of the area. Key elements of these actions, including facility construction and flight activities, are generally consistent with the existing land use plans for Eglin Main Base and would not be expected to substantially affect land use patterns in these areas. The BRAC-related actions at Eglin would have the greatest cumulative impacts on land use compatibility. The Eglin BRAC-related actions include JSF aircraft flight training operations and the

associated aircraft noise; Figure 6-1 to Figure 6-7 and Table 6-1 provide more information regarding potential F-35 noise impacts on proposed MHPI parcels. The Air Force will identify the areas exposed to aircraft noise once a BRAC decision is made, and the agreement with the developer would require any units in such areas to be constructed with noise abatement, as needed. However, whenever possible, residential land use should be located below 65 dB DNL according to Air Force land use recommendations.

Although potential land use compatibility impacts have been identified for various MHPI parcel alternatives, the Air Force does not anticipate that the Proposed Action, when considered with other reasonably foreseeable future projects, would have any cumulative land use impacts on Eglin AFB, including Hurlburt Field, or the surrounding community beyond those that have been identified previously for the MHPI alone.

6.3.10 Cultural Resources

The loss of integrity of cultural resources can have a cumulative impact if that loss or impact is compounded by other events with the same end result. The demolition of historic structures or removal of archaeological artifacts may incrementally impact the historical landscape of Eglin AFB. Any potential adverse effects to NRHP-eligible or listed cultural resources that may result from the MHPI project Proposed Action or alternatives will be presented and mitigated via the project-specific Programmatic Agreement. Based on the analysis, the Air Force does not anticipate any reasonably foreseeable cumulative effects to cultural resources from the Proposed Action or alternatives.

6.3.11 Water

Direct and indirect impacts to water resources can have a cumulative impact when viewed on a regional scale if that loss or impact is compounded by other events with the same end result. For example, multiple construction projects occurring at different locations around Choctawhatchee Bay would have a potential for cumulative impacts to the waters of the Bay since all of the projects would on some scale allow for increased wind- and waterborne sediment to be transported off-site. Many area tributaries and drainage conveyances terminate at Choctawhatchee Bay. Other area projects could affect surface waters such as Poquito Bayou, Garnier's Bayou, and Santa Rosa Sound, ultimately affecting Choctawhatchee Bay. Sediment transport into these surface waters would result in changes to water quality that may be perceived by the Florida Department of Environmental Protection (FDEP) as potentially adverse.

The effect to water resources from land-disturbing activities conducted at Hurlburt Field and Eglin would be minimized through the use of non-discretionary stormwater control techniques, erosion and sedimentation control measures, and vegetative buffers mandated by regulatory agencies. It is expected that proponents of other major actions

would adhere to the same regulatory requirements as the Air Force. Adherence to stormwater management measures and compliance with the stormwater requirements of Chapter 62-346, FAC, would reduce the potential for degradation of adjacent water bodies. Although negative impacts would occur to some water resources, the proposed activities, coupled with other foreseeable future activities, would not pose a significant impact to water resources given uniform application of non-discretionary stormwater management measures. Cumulatively, impacts to water resources would not be significant.

The Air Force would obtain construction and stormwater permits as part of the Proposed Action. As required by the FDEP, the Air Force would develop a comprehensive stormwater, erosion, and sedimentation control plan (or Stormwater Pollution Prevention Plan) and implement site-specific management practices to control erosion.

If all projects include implementation of site-specific management non-discretionary mitigations it is unlikely that adverse cumulative impacts to water resources would occur.

6.3.12 Soils

Past development (e.g., housing developments) in the areas surrounding the alternative locations have likely contributed to erosion and soil loss in the vicinity due to inadequate stormwater management. However, the extent to which this has occurred is difficult to determine. Implementation of the Proposed Action would involve the utilization of permit-mandated erosion control and stormwater management measures to minimize the potential to adversely impact adjacent wetland areas and water quality. Implementation of the Proposed Action would not likely contribute in any appreciable manner to erosion that has occurred in the past.

Future development within a regional context, to include projects identified in Section 2.3.1, would contribute to an overall change in regional landscape. However, the scope of these impacts is likely to be minimal assuming that developers would implement permit-mandated erosion control and stormwater management measures as required by law. The Proposed Action and alternatives, including facility construction and demolition are generally consistent with existing uses for Eglin AFB and Hurlburt Field and would not be expected to substantially affect the soils in these areas. However, construction-related soil disturbance at multiple adjacent locations can have cumulative impacts. If the actions are concurrent, windborne eroded soil and transport through stormwater runoff can have cumulative impacts on soil and, consequently, water quality. Any potential construction activities proposed within the Proposed Action and alternatives locations would primarily occur in sandy soils. While sandy soils allow for rapid infiltration of water, they can also erode quite easily if situated on a steep slope, increasing potential for stormwater degradation. Surface disturbance due

to earthmoving, off-road vehicle traffic, and field training operations can lead to accelerated erosion, also resulting in off-site sediment delivery to downstream wetlands and water bodies. The potential levels of erosion can be mitigated in all areas by implementing and maintaining erosion and sediment controls, stormwater management practices, and other standard non-discretionary regulatory-related mitigations, during and after earthmoving.

Generally, impacts can be avoided or minimized if proper construction techniques, erosion control measures, and structural engineering designs are incorporated into project development. If all projects include implementation of site-specific non-discretionary mitigations associated with permit requirements, it is unlikely that adverse cumulative impacts to soil resources would occur.

6.3.13 Biological Resources

Localized loss of habitat, degradation of habitat, noise impacts, or direct physical impacts to species can have a cumulative impact when viewed on a regional scale if that loss or impact is compounded by other events with the same end result. Analysis of potential impacts from the Proposed Action and Alternatives has identified minimal potential for direct physical impacts or noise impacts to sensitive species, provided that Eglin and Hurlburt user groups implement discretionary and non-discretionary mitigations. Regionally and cumulatively, very few acres of sensitive habitat would be cleared for the MHPI, BRAC, and other upcoming Eglin and Hurlburt activities (less than 0.1 percent of Eglin and Hurlburt land). Similar habitats exist on other portions of Eglin and Hurlburt and on nearby public lands (e.g., Blackwater River State Forest, Conecuh National Forest); these areas would continue to be managed as high quality, significant habitats. Thus, on a regional scale, upcoming land clearing at Eglin and Hurlburt would result in only a small reduction in sensitive habitats and would not be significant.

Although upcoming land clearing would directly affect only a small portion of Eglin (approximately 1 percent), far-reaching indirect impacts may occur due to increased mission activity (from the 7SFG(A), JSF IJTS, and other user groups), new construction, and continued development in the communities surrounding Eglin. The primary cumulative impact to biological resources would be related to reductions in prescribed fire. Multiple species (i.e., flatwoods salamander, red-cockaded woodpecker [RCW]) are dependent on fire to maintain quality habitat. Flatwoods salamander habitat and RCW foraging habitat are priority areas for burning, and Eglin and Hurlburt land managers would continue to focus resources in these areas as much as possible. The long-term effectiveness of alternate management techniques such as mechanical understory control is uncertain, but may be employed in foraging habitat, salamander habitat, and other high priority areas where prescribed burning is restricted. Although it may become more difficult to conduct prescribed fires, land managers would prioritize flatwoods salamander habitat for understory control either by mechanical

means, or by increasing fire resources; thus, cumulative impacts to the flatwoods salamander would not be significant.

Due to the importance of the Eglin RCW population regionally (Eglin is a core population), reductions in quality foraging habitat may affect future growth potential because Eglin would not be able to put recruitment clusters in previously designated areas, thus threatening Eglin's recent population recovery. Also, Eglin would likely lose the ability to use a number of clusters as donors for translocation. This may affect not only the potential for Eglin's population to grow, but also other partners in the Southern Regional Translocation cooperative because Eglin may not be able to provide as many birds for translocation. Cumulatively, reductions in prescribed fire may negatively affect RCWs on Eglin through group isolation, habitat fragmentation, habitat degradation, and loss of foraging habitat, but group demography, population level, and recovery unit level would not be affected.

Land clearing, building construction, and bridge construction associated with upcoming on- and off-site road projects and development are likely to adversely affect the Okaloosa darter in the southern reaches of multiple darter streams. Because the range of the darter is so limited, impacts to multiple darter streams within the same time frame could cause cumulative negative effects to the population. However, because it is necessary to consult with the USFWS on all actions that may affect the Okaloosa darter, cumulative impacts should be minimized through required mitigations.

Any land clearing, construction, or other ground-disturbing activities near Santa Rosa Sound or Choctawhatchee Bay may affect Gulf sturgeon critical habitat and essential fish habitat (EFH). Urban development borders most of the Sound and Bay. Land-disturbing activities conducted by Hurlburt and Eglin would affect less than 0.1 percent of the shoreline, and stormwater control measures, erosion control measures, and buffers mandated by regulatory agencies would be implemented at these sites, thereby reducing the potential for degradation of Gulf sturgeon critical habitat and EFH. Cumulatively, impacts to Gulf sturgeon critical habitat and EFH would not be significant.

Although negative impacts would occur to some biological resources, overall, upcoming MHPI actions, in concert with other regional and upcoming future activities, would not threaten the continued existence of any biological resources; thus, impacts would not be significant. Implementation of discretionary and non-discretionary mitigations, and an increase in Eglin and Hurlburt prescribed fire support would further reduce the potential for negative impacts to biological resources.

7. RELATIONSHIP BETWEEN SHORT-TERM USES AND LONG-TERM PRODUCTIVITY

Short-Term Uses

All alternatives would have minor short-term effects related to their construction activities through the use of construction materials, fuels, etc. As a mitigating component of short-term uses of the environment, each Alternative would create economic benefits during construction, in the form of jobs and the direct and indirect demand for goods and services (see Section 4.2, *Socioeconomics*).

Long-Term Productivity

Because the scope of impacts related to the Proposed Action (i.e., demolition, construction, and renovation) would be relatively short-term, the Air Force has not identified any long-term adverse impacts to productivity as a result of unmitigated short-term impacts. Similar to identification of long-term adverse impacts, the scope of activities associated with the Military Housing Privatization Initiative (MHPI) result in the lack of long-term productivity benefits, as the economic benefits of the MHPI would be realized over the short-term while demolition, construction, and renovation activities are occurring. Long-term benefits associated with quality of life for military families would be realized through improved housing; however, this is not an easily quantifiable impact.

Short-Term Uses versus Long-Term Productivity

The assessment of effects on long-term productivity is related to whether the project is consistent with long-term regional and local planning objectives. Across all alternatives there would be a short-term increase in employment, income, and net fiscal benefits and revenues to the surrounding community during the construction period. Additionally, there would be a short-term increase in the amount of local building supplies needed to execute the project. Nevertheless, this increase would not necessarily result in a significant short-term or long-term decrease in the availability of these resources for other users. Local short-term impacts to resources from all alternatives would be consistent with the regional, state, and local long-term planning objectives. Some resources that would be valuable in the long term (i.e., natural resources) are being "spent" to achieve higher productivity per unit resource in the long term through the development of improved and more energy-efficient housing facilities. Investment of resources in the short term for future productivity over the long term results in the need for fewer resources in the future to achieve the same level of productivity. As an example, making housing more energy-efficient results in productivity savings over the long term through reduced energy consumption, more efficient resource use, and reduced financial cost.

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8. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

The National Environmental Policy Act requires that environmental analysis identify any irreversible and irretrievable commitments of resources involved in the implementation of the Proposed Action or alternatives. Irreversible and irretrievable resource commitments are related to the use of nonrenewable resources and the effects that the use of these resources have on future generations. Irreversible effects primarily result from the use or destruction of a specific resource (e.g., energy and minerals) that cannot be replaced within a reasonable time frame. Irretrievable resource commitments involve the loss in value of an affected resource that cannot be restored as a result of the action (e.g., extinction of a threatened or endangered species or the disturbance of a cultural site).

Implementing the Proposed Action through any of the alternatives would require a commitment of natural, physical, human, and fiscal resources. In all of these categories, irreversible and irretrievable commitments of resources would occur, with these commitments similar in nature across all alternatives. Land required for new construction would be irreversibly committed during the functional life of the facilities; in some cases land uses would change from undeveloped to developed. Although it is possible for land to revert to its former state if the facilities were abandoned and destroyed, the likelihood of such an occurrence for established facilities would be low.

Considerable amounts of fossil fuels and construction materials such as steel, cement, aggregate, and bituminous material would be expended under the action alternatives. However, these physical resources should generally be in sufficient supply during the proposed project that their commitment would not have an adverse effect on the resources' local, regional, or national continued or future availability.

Some biological resources would be irreversibly and irretrievably lost with construction of the proposed project, and some areas of wildlife habitat would be lost. However, based on the amount of open areas at the installation compared to the amount of acreage that would be used for housing, the loss would be minimal. Significant or sensitive habitat areas would be avoided to the extent practicable, and impacts to sensitive species would be mitigated as discussed in the Environmental Impact Statement.

In terms of human resources, labor would be used in preparation, fabrication, and construction related to the project. Labor is generally not considered to be a resource in short supply, and commitment to the project would not have an adverse effect on the continued availability of these resources. Project construction would require a substantial expenditure of funds. It is anticipated that businesses, employees, and residents of the local area would benefit from improved economics resulting from implementation of the Proposed Action.

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9. UNAVOIDABLE ADVERSE IMPACTS

Temporary unavoidable adverse impacts associated with construction and demolition (C&D) would occur under all alternatives.

C&D activities would temporarily increase noise, dust pollution, personnel, and traffic density. Noise levels and air emissions would increase around the action areas. Water quality and soil erosion impacts may also occur. In addition, loss of relatively undisturbed areas at Hurlburt Field and Eglin AFB would occur due to land-clearing activities.

Management actions and permitting requirements would mitigate all the above impacts. Normal construction and demolition management would mitigate noise or dust impacts. Air quality impacts would be minor due to the vast region of influence of this resource; any additional air emissions would be distributed over such a wide area as to be negligible. The developer would handle and dispose of all hazardous materials in accordance with applicable laws, regulations, and Air Force management action requirements. Stormwater management designs and erosion control measures would minimize the potential for erosion and water quality impacts. The maintenance of natural areas as parks and recreational areas, as well as maintaining a minimal unit density in these areas, may somewhat offset the loss of natural areas.

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10. PUBLIC INVOLVEMENT PROCESS

10.1 INTRODUCTION

This section presents a summary of the public participation efforts associated with the Military Housing Privatization Initiative (MHPI) Air Force environmental impact analysis process (EIAP). The National Environmental Policy Act requires that federal agencies involve the public in the decision-making process for major federal actions that may significantly affect the environment.

Several opportunities for public involvement were available during the MHPI EIAP, including the following:

- Public scoping meetings and comment periods (2004 and 2010)
- Handouts and fact sheets regarding the project
- Public hearings and comment periods for the four iterations of the Draft Environmental Impact Statement (EIS) (2005, 2006, 2008, 2010)

10.2 SCOPING PROCESS

The scoping period for the initial Air Force MHPI EIAP began when a Notice of Intent was published in the *Federal Register* on January 26, 2004 (refer to the Appendix B, *Public Involvement*). The closing date for that scoping period was March 23, 2004. Newspaper display advertisements and press releases placed in local newspapers announced the following dates for the scoping meetings (Appendix B, *Public Involvement*):

- 17 February 2004 – Mary Esther
- 19 February 2004 – Fort Walton Beach

Regional radio and television stations also aired public service announcements (PSAs). Table 10-1 outlines an overview of the number of comments received from these initial scoping meetings.

Table 10-1. Comment Letters, Forms, or Testimony Received – Initial Scoping

Comment Format	Number of Commenters
Scoping meeting testimonials	14
Mailed or emailed comment forms or letters	72
Total	**86**

The Air Force's intent during the scoping process was to provide the greatest level of opportunity for government agencies, special interest groups, and the general public to learn about the Air Force's proposal and to offer several ways for those interested to express their thoughts regarding the proposal. Although the receipt of public

comments is most useful during the early stage of the EIAP, the Air Force stated during the scoping sessions that they would welcome comments throughout the EIS analysis and preparation process.

The Air Force reinitiated public scoping in 2009 with another Notice of Intent on December 30 , 2009, with that public scoping period ending on February 3, 2010. The Air Force also sent letters of notification and postcards to all previous participants in the EIS process notifying them of the reinitiation of the EIS process (see Appendix A for the mailing list) and the following dates for the scoping meetings (Appendix B, *Public Involvement*):

- January 12, 2010 – Niceville
- January 13, 2010 – Crestview
- January 14, 2010 – Fort Walton Beach

The Air Force also announced the reinitiation of the EIS process and associated scoping meetings through newspaper display advertisements published in the *Northwest Florida Daily News* on Saturday, December 26, 2009, and Saturday, January 2, 2010, and in the *Navarre Press* on Thursday, December 24 and Thursday, December 31, 2009. The Air Force distributed press releases and flyers with similar information in the weeks prior to the scoping meetings. Approximately 188 individuals attended these scoping meetings. Table 10-2 outlines an overview of the number of comments received from these additional scoping meetings.

Table 10-2. Comment Letters, Forms, or Testimony Received – Additional Scoping

Comment Format	Number of Commenters
Scoping meeting testimonials	21
Mailed or emailed comment forms or letters	54
Total	**75**

During both sets of scoping meetings, Air Force representatives explained why the MHPI was necessary, described the proposed alternatives, summarized the EIAP, and provided a tentative schedule of milestones.

During the scoping process, the public could make comments in several different ways:

1. Give verbal testimony at the scoping meetings, captured by a court reporter.
2. Provide comments written prior to the scoping meeting or complete a written comment form provided at the meeting by the Air Force.
3. Take blank written comment forms with them from the meetings, to be filled out and submitted at a later time.

4. Submit comments at any time via mail, phone, or email to Mike Spaits, Eglin AFB Public Affairs Office, 101 West D Avenue, Suite 110, Eglin Air Force Base, FL 32542-5499, phone (850) 882-2836, email: mike.spaits@eglin.af.mil.

Appendix B, *Public Involvement*, provides transcripts of both the 2004 and 2010 scoping meetings and the written comments submitted during both scoping periods.

In addition to the 2004 and 2010 scoping meetings, the Air Force attended a meeting and site visit on March 19, 2004 at the Poquito Bayou Expansion area to hear concerns from residents of the Longwood subdivision. Several representatives from the Air Force and from the Garnier Bayou Community Association were present. Appendix B, *Public Involvement,* provides the meeting minutes for this meeting.

The Air Force also held two other "Town Hall" meetings, one in December 2003 and another in June 2004, to provide the public with information regarding the privatization effort at the time and to relay the status of the environmental studies.

10.3 PUBLIC HEARING/COMMENT PROCESS

10.3.1 1st Draft EIS (2005)

The public hearing and public comment process for the first MHPI Draft EIS (DEIS) took place from April 8 to June 2, 2005. The process began with the publication of the Notice of Availability (NOA) of the DEIS (refer to Appendix B, *Public Involvement*) in the Federal Register on April 8, 2005. Public distribution of the DEIS began on April 1, 2005, continuing through mid-April. The Air Force distributed either a hard copy or a compact disc (CD) of the DEIS to individuals who requested a copy and to agencies and library repositories that are required to have a copy. Appendix B includes copies of the letters that accompanied the DEIS as well as other government correspondence. The Air Force also posted the DEIS on a public website.

The Air Force placed newspaper advertisements announcing the availability of the DEIS and scheduled public hearings in the *Northwest Florida Daily News* on Sunday, May 1, and Sunday, May 8, 2005, and the *Navarre Press* on Thursday, May 5, 2005 (refer to Appendix B, *Public Involvement*). The Air Force also issued numerous PSAs and press releases to local news media in early May. Appendix B contains a detailed schedule of the dates and recipients of the PSAs and press releases.

The Air Force held public hearings on May 17 and 18, 2005 from 6:00 PM to 9:00 PM at Okaloosa Walton College (now Northwest Florida State College) and the Fort Walton Beach Civic Center. The objectives of the public hearings were to provide the public and government entities a copy of the DEIS, a forum to learn more about the DEIS, and an ample opportunity to comment on the DEIS. Pursuant to the requirements of the Council on Environmental Quality regulations and 32 Code of Federal Regulations 989,

the hearings were designed to provide enough relevant information to affected individuals and groups to give them better informed perspectives on the Proposed Action.

Overall, 194 citizens signed in for the hearings. Twenty (20) attendees provided verbal testimony during the first public hearing and 22 during the second. Thirty (30) of those 42 attendees who spoke provided comments that required a response. Official transcripts of the verbal testimony are located in Appendix B. Public hearing attendees submitted 21 comment forms or letters during the first public hearing and six during the second hearing. Copies of written comment forms and letters are in Appendix B.

The public hearings received both newspaper and television coverage. The *Northwest Florida Daily News* covered the first public hearing. Channel 3 WEAR provided television coverage of the second public hearing. Following the public hearings, several newspaper articles appeared in local papers describing the public's response to the DEIS.

The Air Force provided the public several opportunities and methods for commenting on the DEIS:

1. By mail – The NOA, the DEIS Announcement Letter, and newspaper advertisements in local newspapers invited interested parties to submit comments by mail to the Air Force.
2. Via email – The DEIS Announcement Letter and the NOA provided an email address for comment submittal. Additionally, the Air Force provided those who attended the public hearings the same email contact information.
3. Via fax – The newspaper advertisements released by local newspapers and the DEIS Announcement Letter included a fax number for comment submittal.
4. At public hearings – The Air Force made written comment forms available at both meetings, which commenters could hand in at the meeting or after. Additionally, the Air Force gave meeting attendees the opportunity to submit verbal comments, which were officially captured by a court reporter. Appendix B contains official transcripts of the public hearing verbal comments.

While the public comment period ended on June 2, 2005, Eglin received and accommodated one additional comment letter after the closing of the comment period. Consequently, by August 16, 2005, the Air Force received 99 comment forms or written letters via mail, email, and the public hearings. Forty-two (42) public hearing attendees signed up to speak at the public hearings. Members of the public presented 40 oral testimonials during the public hearings. Table 10-3 outlines an overview of the number of comments received in each format.

Table 10-3. Comment Letters, Forms, or Testimony Received – 1st DEIS

Comment Format	Number of Commenters
Public hearing testimonials	40
Public hearing written comment forms or letters	27
Mailed or emailed comment forms or letters	72
Total	**139**

Several public hearing attendees indicated that they did not receive a copy of the DEIS and would like one. The Air Force provided some public hearing attendees with a copy of the DEIS and Executive Summary during the meetings. The Air Force instructed others to fill out a comment form requesting a copy of the DEIS. The Air Force then mailed copies of the DEIS to these individuals within three days following the public hearings.

Appendix B contains the Air Force responses to the first DEIS public and agency comments.

10.3.2 2nd Draft EIS (2006)

Given input during the first DEIS public involvement process and new developments associated with the BRAC process, the Air Force revised the DEIS accordingly and released it for additional public review and comment on April 1, 2006. The public hearing and public comment process for the MHPI Revised DEIS took place from April 1 to May 15, 2006. The process began with the publication of the NOA of the Revised DEIS (see Revised DEIS NOA in Appendix B, *Public Involvement*) in the Federal Register on March 31, 2006. Public distribution of the Revised DEIS began on March 27, 2006, coinciding with Congressional drops on March 27, 2006, and continued into April. The Air Force distributed the Revised DEIS in either hard copy format with a CD of the appendices or in the form of an Executive Summary with a CD of the Revised DEIS and appendices. The Air Force made distributions to individuals who requested a copy and to agencies and library repositories required to have a copy. The Air Force also distributed several copies to meeting attendees during the public hearing.

In late March, the Air Force published newspaper advertisements and issued PSAs and press releases to local news media advertising the availability of the Revised DEIS and the public hearings (Appendix B). On April 25, 2006, the Air Force held one public hearing at the Fort Walton Beach Civic Center. During the public hearing the Air Force stood by to answer questions and encouraged citizens to provide verbal or written comments or to mail written comments on or before May 15, 2006, the close of the formal public comment period. Additionally, the Air Force presented information regarding the proposal and the public involvement process.

At the close of the public comments period the public had submitted 12 comment forms or written letters and 32 verbal testimonies. Table 10-4 presents an overview of the number of comments received.

Table 10-4. Comment Letters, Forms, or Testimony Received – 2nd DEIS

Comment Format	Number of Commenters
Public hearing verbal commenters	32
Public hearing written comment forms or letters	4
Mailed or emailed comment forms or letters	8
Total	**44**

10.3.3 3rd Draft EIS (2008)

Given input during the 2nd DEIS public involvement process and new developments associated with the BRAC process, the Air Force revised the DEIS accordingly and released it for additional public review and comment on June 2008. The public hearing and public comment process for the MHPI Revised DEIS (the 3rd DEIS) took place from August 8, 2008 through September 22, 2008. The process began with the publication of the NOA of the DEIS (see Appendix B, *Public Involvement*) in the Federal Register on August 8, 2008. Public distribution of the DEIS began on August 8, 2008, coinciding with Congressional drops a week prior. The Air Force distributed the DEIS in either hard copy format with a CD of the appendices or in the form of an Executive Summary with a CD of the Revised DEIS and appendices. The Air Force made distributions to individuals who requested a copy and to agencies and library repositories required to have a copy. The Air Force also distributed several copies to meeting attendees during the public hearing.

In early August 2008, the Air Force published newspaper advertisements and issued PSAs and press releases to local news media advertising the availability of the Revised DEIS and the public hearings (Appendix B). On August 26, 2008, the Air Force held one public hearing at the Hurlburt Field Soundside Club. During the public hearing, the Air Force stood by to answer questions and encouraged citizens to provide verbal or written comments or to mail written comments on or before September 22, 2008, the close of the formal public comment period. Additionally, the Air Force presented information regarding the proposal and the public involvement process.

At the close of the public comment period, the public and other agencies had submitted 13 comment forms or written letters and two verbal testimonies. Table 10-5 presents an overview of the number of comments received.

Table 10-5. Comment Letters, Forms, or Testimony Received – 3rd DEIS

Comment Format	Number of Commenters
Public hearing verbal commenters	2
Mailed or emailed comment forms or letters	13
Total	**15**

10.3.4 4th Draft EIS (2010)

This document constitutes the 4th Draft of the EIS. This 4th Draft of the EIS reflects a significant change from the previous three Drafts. Several new locations not previously

identified or addressed in the previous iterations have been included in this Draft. The Air Force held a public comment period to allow the public to comment on the 4th iteration of the DEIS. This Final EIS contains a detailed schedule of the dates and recipients of the PSAs and press releases, as well as the outcome of the public comment process associated with the 4th DEIS.

The public hearing and public comment process for the 4th DEIS took place from December 23, 2010, to February 7, 2011. The process began with the publication of the NOA of the DEIS in the *Federal Register* on December 23, 2010. Public distribution of the 4th DEIS began on December 17, 2010, coinciding with Congressional drops on the same day, and continued until December 23, 2010. The Air Force mailed hard copies to individuals who requested a copy and to agencies and library repositories that were required to have a copy. Appendix A contains a list of persons and libraries that received the DEIS before the public hearings. The Air Force also posted the DEIS on the Internet at the Eglin website (http://www.eglin.af.mil/eglindocuments.asp) and provided additional information regarding the housing privatization process at (http://www.jllpress.com/Continental_Group/continental_group.html).

In late December 2010 and early January 2011, the Air Force published newspaper advertisements and issued PSAs and press releases to local news media advertising the availability of the DEIS and the public hearings. On Tuesday and Wednesday, January 11 and 12, 2011, the Air Force held two public hearings. The first public hearing was held at the Northwest Florida State College Niceville Campus Mattie Kelly Arts Center. The second public hearing was held at the Fort Walton Beach Municipal Auditorium. During the public hearings, the Air Force stood by to answer questions and encouraged citizens to provide verbal or written comments or to mail written comments on or before February 7, 2011, the close of the formal public comment period. Additionally, the Air Force presented information regarding the proposal and the public involvement process.

As of March 2, 2011, the Air Force had received 41 comment forms or written letters via mail, email, and the public hearings. Fourteen (14) public hearing attendees provided oral comments at the public hearings. Members of the public presented 16 oral testimonials during the public hearings (two public hearing attendees spoke more than once). Similarly, several individuals submitted more than one written comment form or written letters via email, mail, and the public hearings. Table 10-6 presents an overview of the number of commenters and the number of comments received.

Table 10-6. Comment Letters, Forms, or Testimony Received – 4th DEIS

Comment Format	Number of Commenters	Number of Comments
Public hearing testimonials	14	16
Public hearing written comment forms or letters	4	7
Mailed or emailed comment forms or letters	33	34
Total	**51**	**57**

10.4 AGENCY CONSULTATION

The Air Force initiated contact with potentially interested and affected agencies during the scoping process. The Air Force mailed a copy of the various iterations of the DEIS to each of these agencies and invited the agencies to the public hearings. The following is a list of local and regional agencies that commented on the EIS thus far:

- U.S. Department of Agriculture, Forest Service, National Forests in Florida
- City of Valparaiso
- U.S. Environmental Protection Agency, Region 4
- Florida State Clearinghouse, Florida Department of Environmental Protection
- Florida Department of State, Division of Historical Resources, SHPO
- Northwest Florida Water Management District
- U.S. Fish and Wildlife Service
- Advisory Council on Historic Preservation
- Florida Department of Transportation
- U.S. Department of Interior
- National Trust for Historic Preservation

11. LIST OF PREPARERS

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Baxter, Rachel Economist B.A. Economics	Author	Socioeconomics	6 years, economics
Robydek, Amanda Environmental Scientist B.S. Environmental Science	Author	Water Resources	3 years, environmental science
Deacon, Mike B.S. Environmental Studies B.S. Environmental Health	Author	Land Use	19 years, environmental science
Diaz, Luis Environmental Engineer M.S. Environmental Engineering B.S. Aerospace Engineering	Author	Hazardous Materials, Safety	18 years, environmental engineering, safety, pollution prevention
Hiers, Stephanie Environmental Scientist M.S. Conservation Ecology B.S. Biology	Author	Biological Resources	13 years, environmental sciences
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Moorman, John (Scott) Public Affairs Specialist	Public Involvement		5 years, public affairs; 20 years, Air Force service
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EIS RESOURCE APPENDICES

The Appendices for this Military Housing Privatization Initiative Environmental Impact Statement (EIS) are provided as electronic files on the compact disc affixed inside the back cover of this EIS.

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