ENVIRONMENTAL ASSESSMENT FOR THE PRIVATIZATION OF HOUSING PATRICK AIR FORCE BASE, FLORIDA

Prepared for:

United States Department of the Air Force
45 Civil Engineering Squadron (CES)
Environmental Flight (CEV)
Patrick Air Force Base, Florida

Prepared by:

Vista Technologies Inc.
42 North Brevard Avenue
Cocoa Beach, Florida 32931
February 2001
Patrick Air Force Base (PAFB) is the home of Headquarters, 45th Space Wing, a unit of the Air Force Space Command. From 1950 to the present, PAFB has been responsible for launch, test, and support operations associated with the cruise missile program; ballistic missiles; the Apollo and Space Shuttle programs; and the Delta, Atlas, and Titan programs. PAFB currently manages 1542 military family housing units.

This environmental assessment (EA) is an analysis of the potential consequences of implementing a Proposed Action in which the U.S. Air Force (Air Force) and PAFB would improve/enhance family housing management and condition at PAFB’s South Housing area, as well as provide new senior officer housing in the North Housing area on PAFB. To implement this Proposed Action, the Air Force and PAFB considered three alternatives – these are Privatization (Alternative 1, also referred to as the Preferred Alternative); Air Force Maintenance and Renovation of Existing Housing (Alternative 2); and No-Action (Alternative 3).

**Alternative 1 (Preferred Alternative):** The Air Force’s goal is to determine the most cost effective and timely means to construct and/or renovate and manage 545 housing units within the South Housing area of PAFB, as well as constructing seven, senior officer-grade housing units on approximately 2.4 acres of property in the North Housing area.

To support this goal, the Air Force proposes to enter into a limited liability business entity with a private developer, convey and/or transfer interest in approximately 274 acres of land in the South Housing area to the developer, and require the developer to:

1. demolish 756 units and plan, design, develop, construct, renovate, replace, own, operate, maintain, and manage a 552-unit rental development for Air Force personnel for a period of 50 years in the South Housing area; and
2. develop portions of the PAFB South Housing area site which are not required for Air Force use in a manner that is compatible with the residential use of the Air Force units, which supports, facilitates, and expedites provision of the Air Force units, and which provides an appropriate financial return to the Air Force in exchange for its contribution of equity and land to the enterprise; and
3. construct seven, senior officer housing units in the North Housing area.

This alternative is known as “Housing Privatization” and is the Preferred Alternative for the Proposed Action.
Alternative 2: The Air Force would retain ownership of the property and associated housing. The Air Force would renovate the units to eliminate deficiencies and bring the structures up to current Florida building code. A fifteen year phased program is envisioned at an approximate cost of $130 million.

Alternative 3: No-Action. Family housing management and condition at PAFB would remain unchanged.

Published information was reviewed to determine the nature of related issues and concerns. The analyses contained in Chapter 4 of this EA demonstrated that there are no significant impacts expected as a result of the Proposed Action. The following resources are shown to have no impacts: cultural resources and land use. Impacts to the remaining resources: air quality, biological resources, geology and soils, hazardous materials and waste, health and safety, infrastructure and transportation, noise, socioeconomics, visual and aesthetics, and water resources are considered to be not significant. These impacts and procedures that should be used to ameliorate them include:

- **Air Quality** – fugitive dust (particulate matter (PM$_{10}$) and construction equipment emissions. It is expected that fugitive dust from ground-disturbing activities could be reduced by 50 percent by application of Best Available Control Technologies.

- **Biological Resources** – temporary vegetative community impacts. Disturbed shrubs and sod would be replaced with native vegetation. Trees would be saved if they do not interfere with planned construction. Established policies for exterior lighting and building construction would be followed to limit the potential for impact to the sea turtle, least tern, and black skimmer.

- **Geology and Soils** – temporary local soil impacts from construction activities. Implementation of best management practices during construction would ameliorate potential negative impacts on the geology and soils (e.g., sheet flow and gully erosion.

- **Hazardous Materials and Waste** - demolition/renovation of existing housing units on PAFB would be anticipated to generate asbestos-containing material and lead based paint wastes. Any hazardous waste would be identified, removed and disposed in accordance with current regulations. No hazardous waste would be disposed of on-site.

- **Health and Safety** - health and safety impacts could occur due to construction activities at the sites. Implementation of Site Specific Health and Safety Plans and compliance with OSHA safety regulations would minimize potential impacts.

- **Infrastructure and Transportation** – minor, positive impacts with some short-term interruptions. Slight increased requirements for drinking water,
wastewater, and power are anticipated. Enhanced telecommunications, as well as stormwater drainage and transportation improvements are proposed.

- **Noise** – temporary, short-term, construction-related impacts anticipated. Proposed recreation facilities would be sited to minimize noise disturbance to nearby occupants.

- **Socioeconomics** – minor positive impacts to employment and housing are anticipated. It is anticipated that a small number of full-time positions would be created to manage and provide maintenance for the developed property. The Proposed Action would revitalize PAFB’s family housing by providing new or renovated units, which would additionally reduce waiting time for suitable housing.

- **Visual and Aesthetics** – positive impacts would be anticipated from the Proposed Action. Site designs would provide an interesting, attractive, livable, residential environment. Landscaping of common areas and building unit perimeters would be designed to enhance the aesthetic quality of each unit and surrounding neighborhood.

- **Water Resources** – minor, temporary impacts to ephemeral surface water (i.e., drainage ditches). Erosion control during construction/renovation activities would be undertaken with the use of hay bales and silt fencing. Run-off from parking lot(s) and roofs could be mitigated by a variety of methods (e.g. retention ponds, constructed wetlands, pervious parking surfaces, rain gardens).

Existing stormwater permits include:

- 42-009-0197NG - Athletic Complex/South Housing
- 40-009-0439G – South Housing Ballfield Parking
- 40-009-0463G – Youth Center
- 42-009-0132N – Security Fencing and Checkhouse/South Housing
- 42-009-0246NG – South Housing Stormwater Drainage

These permits would require review to determine if revisions/modifications/ or transference would be necessary. Review would be in coordination with the St. John’s River Water Management District (SJRWMD). Additionally, the developer would also contact the SJRWMD to coordinate Consumptive Use Permit (CUP) requirements. The existing CUP may need to be reissued or transferred to the developer. Depending upon the CUP specifications, this could require plugging a number of existing groundwater wells. Additionally, any filling or other construction that may be necessary in the ditches or ponds and/or alteration of the stormwater or surface water management system, would require an Environmental Resource Permit (ERP) from SJRWMD. Finally, the PAFB National Pollutant Discharge Elimination System permit may require modification.
Based on the finding of impacts incorporated in the EA, a Finding of No Significant Impact (FONSI) is issued contingent on accomplishment of any site or project specific permits, consultations, or mitigations before the start of any action.

This project has been deemed consistent with the Florida Coastal Management Program.

The EA prepared for this Proposed Action is provided as an attachment to this FONSI. An environmental impact statement is not necessary and will not be prepared. Comments or questions regarding this matter may be forwarded to:

Patrick Air Force Base
45 CES/CEV
Patrick Air Force Base, FL 32925

Brig. Gen. Donald P. Pettit
45th Space Wing Commander
Environmental Protection Committee Chairman

______________________________________   ____________________________________
Approved Signature                        Date
COMMANDER’S SUMMARY

In accordance with Air Force Policy Directive 32-60, 20 July 1994, Civil Engineering Housing, the Air Force is committed to adequately housing its people and responsibly managing its housing resources because productivity and retention of Air Force members greatly depend on such actions. To comply with this directive, Patrick Air Force Base (PAFB) requires a minimum of 545 housing units in the South Patrick Housing area and an additional seven senior officer housing units in the North Housing area at the extreme north end of PAFB.

This environmental assessment (EA) is an analysis of the potential consequences of implementing a Proposed Action in which the U.S. Air Force (Air Force) and PAFB would improve/enhance family housing management and condition at PAFB’s South Housing area. To implement this Proposed Action, the Air Force and PAFB considered three alternatives – these are Privatization (Alternative 1 and the Preferred Alternative); Air Force Maintenance and Renovation of Existing Housing (Alternative 2); and No-Action (Alternative 3).

Alternative 1 (Preferred Alternative): The Air Force’s goal is to determine the most cost effective and timely means to construct and/or renovate and manage 545 housing units within the South Housing area of PAFB, as well as constructing seven, senior officer-grade housing unit on 2.38 acres of property in the North Housing area.

To support this goal, the Air Force proposes to enter into a limited liability business entity with a private developer, convey and/or transfer interest in approximately 274 acres of land in the South Housing area to the developer, and require the developer to:

1. demolish 756 units and plan, design, develop, construct, renovate, replace, own, operate, maintain, and manage a 552-unit rental development for Air Force personnel for a period of 50 years in the South Housing area; and

2. develop portions of the PAFB South Housing area site which are not required for Air Force use in a manner that is compatible with the residential use of the Air Force units, which supports, facilitates, and expedites provision of the Air Force units, and which provides an appropriate financial return to the U.S. Air Force in exchange for its contribution of equity and land to the enterprise; and

3. construct seven, senior officer housing units in the North Housing area.

This alternative is known as “Housing Privatization” and, as mentioned, is the Preferred Alternative for the Proposed Action.

Alternative 2: The Air Force would retain ownership of the property and associated housing. The Air Force would renovate the units to eliminate deficiencies and bring the
structures up to current Florida building code. A fifteen year phased program is envisioned at an approximate cost of $130 million.

**Alternative 3:** No-Action. Family housing management and condition at PAFB would remain unchanged.


Published information was reviewed to determine the nature of related issues and concerns. The analyses contained in Chapter 4 of this EA demonstrated that there are no significant impacts expected as a result of the Proposed Action. The following resources are shown to have no impacts: cultural resources and land use. Impacts to the remaining resources: air quality, biological resources, geology and soils, hazardous materials and waste, health and safety, infrastructure and transportation, noise, socioeconomics, visual and aesthetics, and water resources are considered to be not significant. A summary of these findings is presented in the table below.
<table>
<thead>
<tr>
<th>Environmental Components</th>
<th>Alternative 1 Preferred Alternative Proposed Housing Privatization</th>
<th>Alternative-2 Renovation of Existing Housing</th>
<th>Alternative 3 No-Action</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Air Quality</strong></td>
<td>No Significant Impact (short-term construction related impacts)</td>
<td>No Significant Impact (short-term construction related impacts)</td>
<td>No Impact</td>
</tr>
<tr>
<td><strong>Biological Resources</strong></td>
<td>No Significant Impact (short-term construction related impacts)</td>
<td>No Significant Impact (short-term construction related impacts)</td>
<td>No Impact</td>
</tr>
<tr>
<td><strong>Cultural Resources</strong></td>
<td>No Impact</td>
<td>No Impact</td>
<td>No Impact</td>
</tr>
<tr>
<td><strong>Geology and Soils</strong></td>
<td>No Significant Impact (short-term construction related impacts)</td>
<td>No Significant Impact (short-term construction related impacts)</td>
<td>No Impact</td>
</tr>
<tr>
<td><strong>Hazardous Materials and Waste</strong></td>
<td>No Significant Impact</td>
<td>No Significant Impact (asbestos and lead based paint mitigation)</td>
<td>Slight Negative Impact (continuing ACM and LBP issues)</td>
</tr>
<tr>
<td><strong>Health and Safety</strong></td>
<td>No Significant Impact (short-term construction related impacts)</td>
<td>No Significant Impact (short-term construction related impacts)</td>
<td>No Impact</td>
</tr>
<tr>
<td><strong>Infrastructure and Transportation</strong></td>
<td>No Significant Impact (short-term construction related impacts)</td>
<td>No Significant Impact (short-term construction related impacts)</td>
<td>Slight Negative Impact (deterioration of roads and utilities)</td>
</tr>
<tr>
<td><strong>Land Use</strong></td>
<td>No Impact</td>
<td>No Impact</td>
<td>No Impact</td>
</tr>
<tr>
<td><strong>Noise</strong></td>
<td>No Significant Impact (short-term construction related impacts)</td>
<td>No Significant Impact (short-term construction related impacts)</td>
<td>No Impact</td>
</tr>
<tr>
<td><strong>Socioeconomics</strong></td>
<td>Positive Impact (additional new/renovated housing, employment)</td>
<td>Positive Impact (renovated housing, employment)</td>
<td>No Impact</td>
</tr>
<tr>
<td><strong>Visual and Aesthetics</strong></td>
<td>Positive Impact (improved landscaping, streetscaping and residential design enhancements)</td>
<td>Positive Impact (residential design enhancement)</td>
<td>No Impact</td>
</tr>
<tr>
<td><strong>Water Resources</strong></td>
<td>No Significant Impact (short-term construction related impacts and NPDES permits)</td>
<td>No Significant Impact (short-term construction related impacts and NPDES permits)</td>
<td>No Impact</td>
</tr>
</tbody>
</table>
### LIST OF ACRONYMS AND ABBREVIATIONS

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AAQS</td>
<td>Ambient Air Quality Standards</td>
</tr>
<tr>
<td>ACM</td>
<td>Asbestos-containing Materials</td>
</tr>
<tr>
<td>AFB</td>
<td>Air Force Base</td>
</tr>
<tr>
<td>AFI</td>
<td>Air Force Instruction</td>
</tr>
<tr>
<td>bls</td>
<td>Below Land Surface</td>
</tr>
<tr>
<td>CAA</td>
<td>Clean Air Act</td>
</tr>
<tr>
<td>CBWRF</td>
<td>Cocoa Beach Water Reclamation Facility</td>
</tr>
<tr>
<td>CCAF S</td>
<td>Cape Canaveral Air Force Station</td>
</tr>
<tr>
<td>CEQ</td>
<td>Council on Environmental Quality</td>
</tr>
<tr>
<td>CES</td>
<td>Civil Engineering Squadron</td>
</tr>
<tr>
<td>CEV</td>
<td>Environmental Flight</td>
</tr>
<tr>
<td>CFR</td>
<td>Code of Federal Regulations</td>
</tr>
<tr>
<td>CO</td>
<td>Carbon Monoxide</td>
</tr>
<tr>
<td>CZMA</td>
<td>Coastal Zone Management Act</td>
</tr>
<tr>
<td>DOD</td>
<td>Department of Defense</td>
</tr>
<tr>
<td>DOT</td>
<td>Department of Transportation</td>
</tr>
<tr>
<td>EA</td>
<td>Environmental Assessment</td>
</tr>
<tr>
<td>EBS</td>
<td>Environmental Baseline Survey</td>
</tr>
<tr>
<td>EIAP</td>
<td>Environmental Impact Analysis Process</td>
</tr>
<tr>
<td>EIS</td>
<td>Environmental Impact Statement</td>
</tr>
<tr>
<td>EPA</td>
<td>Environmental Protection Agency</td>
</tr>
<tr>
<td>FAC</td>
<td>Florida Administrative Code</td>
</tr>
<tr>
<td>FDCA</td>
<td>Florida Department of Community Affairs</td>
</tr>
<tr>
<td>FDEP</td>
<td>Florida Department of Environmental Protection</td>
</tr>
<tr>
<td>FONSI</td>
<td>Finding of No Significant Impact</td>
</tr>
<tr>
<td>IRP</td>
<td>Installation Restoration Program</td>
</tr>
<tr>
<td>LBP</td>
<td>Lead-based Paint</td>
</tr>
<tr>
<td>Ldn</td>
<td>Day-Night Average Sound Level</td>
</tr>
<tr>
<td>LLC</td>
<td>Limited Liability Company</td>
</tr>
<tr>
<td>LP</td>
<td>Limited Partnership</td>
</tr>
<tr>
<td>NAAQS</td>
<td>National Ambient Air Quality Standards</td>
</tr>
<tr>
<td>NEPA</td>
<td>National Environmental Policy Act</td>
</tr>
<tr>
<td>NHPA</td>
<td>National Historic Preservation Act</td>
</tr>
<tr>
<td>NO₂</td>
<td>Nitrogen Dioxide</td>
</tr>
<tr>
<td>NPDES</td>
<td>National Pollutant Discharge Elimination System</td>
</tr>
<tr>
<td>O₃</td>
<td>Ozone</td>
</tr>
<tr>
<td>OSHA</td>
<td>Occupational Safety &amp; Health Administration</td>
</tr>
<tr>
<td>PAFB</td>
<td>Patrick Air Force Base</td>
</tr>
<tr>
<td>Pb</td>
<td>Lead</td>
</tr>
<tr>
<td>pH</td>
<td>Measure of Acidity or Alkalinity</td>
</tr>
<tr>
<td>PM₁₀</td>
<td>Particulates Under 10 Microns in Diameter</td>
</tr>
<tr>
<td>ROI</td>
<td>Region Of Influence</td>
</tr>
<tr>
<td>SJRWMD</td>
<td>Saint John’s River Water Management District</td>
</tr>
<tr>
<td>SO</td>
<td>Successful Offeror</td>
</tr>
</tbody>
</table>
SO₂  Sulfur Dioxide
spp  Species
SW  Space Wing
USAF  United States Air Force

**UNITS OF MEASURE**

dB  decibel(s)
mgd  million gallons per day
μg/m³  microgram(s) per cubic meter
mg/m³  milligram(s) per cubic meter
ppm  part(s) per million
TABLE OF CONTENTS

COMMANDERS SUMMARY ................................................................. i

LIST OF ACRONYMS AND ABBREVIATIONS ........................................ iv

TABLE OF CONTENTS ............................................................................. vi

CHAPTER 1.0 DESCRIPTION OF PROPOSED ACTION.......................... 1-1
  1.1 Proposed Action ........................................................................... 1-1
  1.2 Purpose of and Need for the Action .......................................... 1-2
  1.3 Background ................................................................................ 1-2
  1.4 Location ..................................................................................... 1-3
  1.5 Structure of the Environmental Assessment ........................... 1-4
  1.6 Related Environmental Documentation .................................... 1-5
  1.7 Agencies Involved in Environmental Analysis ....................... 1-5
  1.8 Public Involvement .................................................................... 1-5

CHAPTER 2.0 ALTERNATIVES CONSIDERED ................................. 2-1
  2.1 Alternative 1 (Preferred Alternative) – Housing Privatization ...... 2-1
  2.2 Alternative 2 – Air Force Maintenance and Renovation of Existing Housing. 2-5
  2.3 Alternative 3 – No-Action ....................................................... 2-5

CHAPTER 3.0 EXISTING ENVIRONMENT ............................................. 3-1
  3.1 Air Quality ................................................................................ 3-1
  3.2 Biological Resources ............................................................... 3-5
  3.3 Cultural Resources .................................................................... 3-8
  3.4 Geology and Soils ..................................................................... 3-9
  3.5 Hazardous Materials and Waste ............................................. 3-10
  3.6 Health and Safety ................................................................. 3-12
  3.7 Infrastructure and Transportation ........................................... 3-12
  3.8 Land Use ................................................................................. 3-15
  3.9 Noise ..................................................................................... 3-16
  3.10 Socioeconomics .................................................................... 3-16
  3.11 Visual and Aesthetics ............................................................ 3-18
  3.12 Water Resources ............................................................... 3-19

CHAPTER 4.0 ENVIRONMENTAL CONSEQUENCES ............................ 4-1
  4.1 Air Quality .............................................................................. 4-2
      4.1.1 Alternatives 1 and 2 ........................................................ 4-2
      4.1.2 No-Action Alternative .................................................... 4-2
      4.1.3 Mitigative Measures ...................................................... 4-2
  4.2 Biological Resources .............................................................. 4-3
      4.2.1 Alternatives 1 and 2 ......................................................... 4-3
<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.2.2</td>
<td>No-Action Alternative</td>
<td>4-5</td>
</tr>
<tr>
<td>4.2.3</td>
<td>Mitigative Measures</td>
<td>4-5</td>
</tr>
<tr>
<td>4.3</td>
<td>Cultural Resources</td>
<td>4-5</td>
</tr>
<tr>
<td>4.3.1</td>
<td>Alternatives 1 and 2</td>
<td>4-5</td>
</tr>
<tr>
<td>4.3.2</td>
<td>No-Action Alternative</td>
<td>4-6</td>
</tr>
<tr>
<td>4.3.3</td>
<td>Mitigative Measures</td>
<td>4-6</td>
</tr>
<tr>
<td>4.4</td>
<td>Geology and Soils</td>
<td>4-6</td>
</tr>
<tr>
<td>4.4.1</td>
<td>Alternatives 1 and 2</td>
<td>4-6</td>
</tr>
<tr>
<td>4.4.2</td>
<td>No-Action Alternative</td>
<td>4-7</td>
</tr>
<tr>
<td>4.4.3</td>
<td>Mitigative Measures</td>
<td>4-7</td>
</tr>
<tr>
<td>4.5</td>
<td>Hazardous Materials and Waste</td>
<td>4-7</td>
</tr>
<tr>
<td>4.5.1</td>
<td>Alternatives 1 and 2</td>
<td>4-7</td>
</tr>
<tr>
<td>4.5.2</td>
<td>No-Action Alternative</td>
<td>4-7</td>
</tr>
<tr>
<td>4.5.3</td>
<td>Mitigative Measures</td>
<td>4-7</td>
</tr>
<tr>
<td>4.6</td>
<td>Health and Safety</td>
<td>4-7</td>
</tr>
<tr>
<td>4.6.1</td>
<td>Alternatives 1 and 2</td>
<td>4-7</td>
</tr>
<tr>
<td>4.6.2</td>
<td>No-Action Alternative</td>
<td>4-8</td>
</tr>
<tr>
<td>4.6.3</td>
<td>Mitigative Measures</td>
<td>4-8</td>
</tr>
<tr>
<td>4.7</td>
<td>Infrastructure and Transportation</td>
<td>4-8</td>
</tr>
<tr>
<td>4.7.1</td>
<td>Alternatives 1 and 2</td>
<td>4-8</td>
</tr>
<tr>
<td>4.7.2</td>
<td>No-Action Alternative</td>
<td>4-10</td>
</tr>
<tr>
<td>4.7.3</td>
<td>Mitigative Measures</td>
<td>4-10</td>
</tr>
<tr>
<td>4.8</td>
<td>Land Use</td>
<td>4-11</td>
</tr>
<tr>
<td>4.8.1</td>
<td>Alternatives 1 and 2</td>
<td>4-11</td>
</tr>
<tr>
<td>4.8.2</td>
<td>No-Action Alternative</td>
<td>4-13</td>
</tr>
<tr>
<td>4.8.3</td>
<td>Mitigative Measures</td>
<td>4-13</td>
</tr>
<tr>
<td>4.9</td>
<td>Noise</td>
<td>4-13</td>
</tr>
<tr>
<td>4.9.1</td>
<td>Alternatives 1 and 2</td>
<td>4-13</td>
</tr>
<tr>
<td>4.9.2</td>
<td>No-Action Alternative</td>
<td>4-14</td>
</tr>
<tr>
<td>4.9.3</td>
<td>Mitigative Measures</td>
<td>4-14</td>
</tr>
<tr>
<td>4.10</td>
<td>Socioeconomics</td>
<td>4-15</td>
</tr>
<tr>
<td>4.10.1</td>
<td>Alternatives 1 and 2</td>
<td>4-15</td>
</tr>
<tr>
<td>4.10.2</td>
<td>No-Action Alternative</td>
<td>4-16</td>
</tr>
<tr>
<td>4.10.3</td>
<td>Mitigative Measures</td>
<td>4-16</td>
</tr>
<tr>
<td>4.11</td>
<td>Visual and Aesthetics</td>
<td>4-16</td>
</tr>
<tr>
<td>4.11.1</td>
<td>Alternatives 1 and 2</td>
<td>4-16</td>
</tr>
<tr>
<td>4.11.2</td>
<td>No-Action Alternative</td>
<td>4-18</td>
</tr>
<tr>
<td>4.11.3</td>
<td>Mitigative Measures</td>
<td>4-18</td>
</tr>
<tr>
<td>4.12</td>
<td>Water Resources</td>
<td>4-18</td>
</tr>
<tr>
<td>4.12.1</td>
<td>Alternatives 1 and 2</td>
<td>4-18</td>
</tr>
<tr>
<td>4.12.2</td>
<td>No-Action Alternative</td>
<td>4-19</td>
</tr>
<tr>
<td>4.12.3</td>
<td>Mitigative Measures</td>
<td>4-19</td>
</tr>
<tr>
<td>4.13</td>
<td>Cumulative Impacts</td>
<td>4-20</td>
</tr>
<tr>
<td>4.14</td>
<td>Conflicts with Federal, State, or Local Land Use Plans, Policies, and Controls</td>
<td>4-20</td>
</tr>
<tr>
<td>4.15</td>
<td>Energy Requirements and Conservation Potential</td>
<td>4-20</td>
</tr>
</tbody>
</table>
4.16 Natural or Depletable Resource Requirements and Conservation Potential.... 4-20
4.17 Irreversible or Irretrievable Commitment of Resources................................. 4-20
4.18 Biological Diversity ................................................................................. 4-20
4.19 Adverse Environmental Effects That Cannot Be Avoided ......................... 4-21
4.20 Relationship Between Short-Term Uses of the Human Environment and the
    Maintenance and Enhancement of Long-Term Productivity ........................... 4-21
4.21 Federal Actions to Address Environmental Justice in Minority and
    Low-Income Populations ............................................................................. 4-21

CHAPTER 5.0 SUMMARY OF IMPACTS .................................................................. 5-1
   5.1 Alternative 1 - Preferred Alternative............................................................ 5-1
   5.2 Alternative 2 – Renovation of Existing Housing ............................................ 5-1
   5.3 No-Action Alternative.................................................................................. 5-1

CHAPTER 6.0 LIST OF PREPARERS ........................................................................ 6-1

CHAPTER 7.0 INDIVIDUALS/AGENCIES CONSULTED......................................... 7-1

CHAPTER 8.0 REFERENCES .................................................................................... 8-1

APPENDIX A STATE OF FLORIDA CLEARING HOUSE COMMENTS............... A-1

LIST OF FIGURES

Figure 1-1. Patrick AFB Locator Map................................................................. 1-3
Figure 1-2. Housing Locator Map ................................................................. 1-4
Figure 2-1. Typical South Housing Unit............................................................ 2-4
Figure 2-2. South Housing Duplex Unit............................................................... 2-5
Figure 2-3. Typical North Housing Unit............................................................ 2-6
Figure 2-4. North Housing Duplex Unit............................................................. 2-6
Figure 3-1. Natural Constraints (100-Year Floodplain) Map for PAFB ............ 3-6
Figure 3-2. Retention Pond in South Housing Area ........................................... 3-8
Figure 3-3. North Housing Area Retention Pond .............................................. 3-15
LIST OF TABLES

Table 2-1  USAF Housing Requirements for South Housing............................................. 2-1
Table 2-2  Facilities In South Housing Area To Be Retained For Exclusive 
Use By USAF Personnel................................................................................ 2-2
Table 3-1  National and Florida Ambient Air Quality Standards................................. 3-2
Table 3-2  Ambient Air Concentrations Near Patrick Air Force Base ......................... 3-4
Table 3-3  Well Status in North and South Housing Areas ....................................... 3-20
Table 3-4  Current Well Usage in North and South Housing Area ............................. 3-20
Table 4-1  Typical Noise Levels of Principal Construction Equipment........................ 4-14
Table 5-1  Summary of Environmental Consequences.............................................. 5-2
1.0 DESCRIPTION OF PROPOSED ACTION

On February 11, 1996, the President signed into law the National Defense Authorization Act for FY 96, containing the military housing privatization initiative. This initiative, Public Law 104-106, Section 2801, includes authorities that allow the Department of Defense (DOD) to work with the private sector to build and renovate military housing. The DOD goals are to:

- Obtain private capital to leverage government dollars,
- 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.

The Joint Chiefs of Staff Strategic Management Plan and policy developed by the Office of the Secretary of Defense set a goal to repair all military family housing by the year 2010.

The National Environmental Policy Act (NEPA) of 1969, as amended (42 USC 4321-4347) requires disclosure of potential impacts associated with major federal actions, including leasing property and transfer of property ownership. To substantiate compliance with NEPA, the Air Force prepared this Environmental Assessment (EA). If appropriate, the findings of this EA will lead to issuance of a Finding of No Significant Impact (FONSI) or a determination that an Environmental Impact Statement (EIS) is required.

1.1 Proposed Action

The Air Force and PAFB proposes to implement a project to improve/enhance family housing management and condition at PAFB’s South Housing area (Proposed Action). To implement this Proposed Action, the Air Force and PAFB considered three alternatives – these are Privatization (Alternative 1 and the Preferred Alternative); Air Force Maintenance and Renovation of Existing Housing (Alternative 2); and No-Action (Alternative 3).

**Alternative 1 (Preferred Alternative):** The Air Force’s goal is to determine the most cost effective and timely means to construct and/or renovate and manage 545 housing units within the South Housing area of PAFB, as well as constructing seven, senior officer-grade housing unit on 2.38 acres of property in the North Housing area.

To support this goal, the Air Force proposes to enter into a limited liability business entity with a private developer, convey and/or transfer interest in approximately 274 acres of land in the South Housing area to the developer, and require the developer to:

1. demolish 756 units and plan, design, develop, construct, renovate, replace, own, operate, maintain, and manage a 552-unit rental development for Air Force personnel for a period of 50 years in the South Housing area; and
2. develop portions of the PAFB South Housing area site which are not required for Air Force use in a manner that is compatible with the residential use of the Air Force units, which supports, facilitates, and expedites provision of the Air Force units, and which provides an appropriate financial return to the U.S. Air Force in exchange for its contribution of equity and land to the enterprise; and

3. construct seven, senior officer housing units in the North Housing area.

This alternative is known as “Housing Privatization” and, as mentioned, is the Preferred Alternative for the Proposed Action.

**Alternative 2:** The Air Force would retain ownership of the property and associated housing. The Air Force would renovate the units to eliminate deficiencies and bring the structures up to current Florida building code. A fifteen year phased program is envisioned at an approximate cost of $130 million.

**Alternative 3:** No-Action. Family housing management and condition at PAFB would remain unchanged.

### 1.2 Purpose of and Need for the Action

In accordance with Air Force Policy Directive 32-60, 20 July 1994, *Civil Engineering Housing*, the Air Force is committed to adequately housing its people and responsibly managing its housing resources because productivity and retention of Air Force members greatly depend on such actions. To comply with this directive, PAFB requires a minimum of 545 housing units in the South Patrick Housing area and an additional seven senior officer-housing units in the North Housing area at the extreme north end of PAFB.

### 1.3 Background

PAFB is the home of Headquarters, 45th Space Wing, a unit of the Air Force Space Command. The U.S. Navy established PAFB in 1940 as the Banana River Naval Air Station. It was deactivated in 1947 and transferred to the Air Force in 1948. From 1950 to the present, PAFB has been responsible for launch, test, and support operations associated with the cruise missile program; ballistic missiles; the Apollo and Space Shuttle programs; and the Delta, Atlas, and Titan programs. The mission of PAFB is to enhance national strength through assured access to space.

Due to the large increase in personnel in 1956 and 1957, action was taken to obtain military dependent housing under the Capehart Housing Act. Construction of 550 (999 housing units) Title VIII (Capehart) housing units was completed in February 1959. PAFB currently has 1,510 family housing units located in three areas, North, Central and South housing. The North (250 units) and Central (300 units) areas are situated on the main part of the installation, while the South Housing Area (960 units) is located about two miles south of the main installation along State Highway A1A. North Housing is situated at the extreme north end of PAFB, immediately south of the City of Cocoa.
Beach. The South Housing area is bounded on the north by Clairidge Street, on the east by State Highway A1A, on the south by Scorpion Street, and on the west by South Patrick Drive. Land use in the surrounding vicinity of the South Housing Area is primarily private housing with light commercial/retail use. Two schools are adjacent to the site.

1.4 Location

PAFB is a U.S. Air Force Space Command installation hosting the 45th Space Wing. The installation, located approximately 40 miles east of Orlando, consists of 2,254 acres on a barrier island along the central east coast of Florida, just south of the City of Cocoa Beach in Brevard County. The 1,943-acre main base is located on the eastern coast of Florida, bounded on the east by the Atlantic Ocean, on the west by the Banana River, and on the north and south by portions of urban Brevard County (Figure 1-1).

![Figure 1-1. Patrick AFB Locator Map](image)

A parcel of 2.4 acres (more or less) of unimproved property would be acquired to support the construction of seven senior officer-housing units in the North Housing area (Figure 1-2), at the extreme northern tip of PAFB and immediately south of the City of Cocoa Beach.

A separate parcel of land consisting of approximately 310 acres contains the south housing facilities for PAFB and is located approximately two miles south of the main
base along State Highway A1A (Figure 1-2). The subject property consists of primarily fill material on a barrier island. All of the subject area has been disturbed and is currently completely developed. The South Housing area is bounded on the north by Clairidge Street, on the east by State Highway A1A, on the south by Scorpion Street, and by South Patrick Drive on the west.

1.5 Structure of the Environmental Assessment

Section 1.0 of this EA describes the Proposed Action and introduces the purpose and need for the action, notes the location of the Proposed Action, discusses the history and mission of PAFB, discusses the assessment analysis procedure, notes the agencies involved in environmental analysis, and briefly discusses public involvement. Section 2.0 discusses the alternatives considered for the Proposed Action, including the preferred and no-action alternatives. Section 3.0 describes the existing environment at the location of the Proposed Action. Section 4.0 assesses the potential environmental consequences of the Proposed Action and the no-action alternative and highlights cumulative impacts and mitigation measures for each resource. Section 5.0 highlights the conclusions of the assessment. Section 6.0 contains a list of preparers for this EA. Section 7.0 lists the agencies, organizations, and individuals that were consulted. Section 8.0 contains a list of the references used to prepare this document.

1.6 Related Environmental Documentation

The U.S. Department of the Air Force is required to comply with NEPA. In partial fulfillment of NEPA requirements and as directed by Executive Order 11514, actions taken at PAFB are to be evaluated to identify potential impacts to the environment. Applicable federal, state, and local laws and regulations that pertain to the action would be identified in the environmental review process.

Air Force Policy Directive 32-70, Environmental Quality, outlines Air Force commitments toward environmental quality. These commitments include cleaning up environmental damage resulting from the past activities of the Air Force, meeting all environmental standards applicable to present operations, planning future activities to minimize environmental impacts, managing responsibly the irreplaceable natural and cultural resources it holds in public trust, and eliminating pollution from its activities wherever possible.

32 CFR Chapter VII, Part 989, Environmental Impact Analysis Process, identifies responsibilities, general compliance requirements, and procedures to protect and preserve the quality of the environment. It implements the Air Force EIAP and provides procedures for environmental impact analysis within the United States.

1.7 Agencies Involved in Environmental Analysis

The Florida State Clearinghouse reviews EAs for projects planned at PAFB pursuant to Gubernatorial Executive Order 95-359; the Coastal Zone Management Act; 16 U.S.C. SS 1451-1464, as amended; and the National Environmental Policy Act, 42 U.S.C. SS 4321, 4331-4335, and 4341-4347. The Florida State Clearinghouse sends copies of the draft EAs to applicable regulatory agencies for review and passes the review comments to PAFB so that they can be addressed in the final EA.

1.8 Public Involvement

For Air Force actions of limited interest to persons or organizations outside the Air Force, the Installation Environmental Planning Function may limit local notification to the State Single Point of Contact (Florida State Clearinghouse Intergovernmental Affairs Policy
Unit), local government representatives, and local news media. After public notice of the FONSI in local news media, the document will be available for 30 days to the public for review before a decision or any action is permissible.
2.0 ALTERNATIVES CONSIDERED

Title 40 CFR Parts 1500-1508, Council of Environmental Quality, contains regulations for implementing the procedural provisions of NEPA. Section 1502.14 states agencies must address the following in the alternatives section of the EA:

a. "Rigorously explore and objectively evaluate all reasonable alternatives, and for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated"; and

b. "Devote substantial treatment to each alternative considered in detail including the proposed action so that reviewers may evaluate their comparative merits."

Alternatives analyzed in the EA will include: Alternative 1 (Preferred Alternative) – Housing Privatization; Alternative 2 - Air Force Maintenance and Renovation of Existing Housing; and Alternative 3 – No Action.

2.1 Alternative 1 (Preferred Alternative) – Housing Privatization

Under this alternative the Air Force would convey and/or transfer interest in all or portions of the current South Housing area to a private developer. The SO (Private Developer) would renovate/construct, own, and operate rental housing units for Air Force use. The Air Force would anticipate transferring ownership to the SO of excess land not required for Air Force housing for redevelopment.

Table 2-1 shows the Air Force requirements for housing at PAFB (South Housing area and new housing units in the North Housing area), and Table 2-2 lists the buildings that would be retained for exclusive use by Air Force personnel.

<table>
<thead>
<tr>
<th>Pay Grade</th>
<th>Number of Bedrooms</th>
<th>Total Units</th>
<th>Type Units</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Two</td>
<td>Three</td>
<td>Four+</td>
</tr>
<tr>
<td>O-7+</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>O-6</td>
<td>14</td>
<td></td>
<td>7</td>
</tr>
<tr>
<td>O-5</td>
<td>31</td>
<td>8</td>
<td>39</td>
</tr>
<tr>
<td>O-4</td>
<td>53</td>
<td>10</td>
<td>63</td>
</tr>
<tr>
<td>O-3</td>
<td>16+95R</td>
<td>13</td>
<td>29</td>
</tr>
<tr>
<td>O-2</td>
<td>17R</td>
<td></td>
<td>17R</td>
</tr>
<tr>
<td>O-1</td>
<td>10R</td>
<td></td>
<td>10R</td>
</tr>
<tr>
<td>E-9</td>
<td>7R</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>E-8</td>
<td>14R</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>E-7</td>
<td>61R</td>
<td>16</td>
<td>16</td>
</tr>
<tr>
<td>E-6</td>
<td>71</td>
<td>1</td>
<td>72</td>
</tr>
<tr>
<td>E-5</td>
<td>108</td>
<td></td>
<td>108</td>
</tr>
<tr>
<td>Total</td>
<td>179</td>
<td>100+204R*</td>
<td>69</td>
</tr>
</tbody>
</table>

*R = Renovated
It should be noted that the data presented in Table 2-1 are Air Force requirements for total final housing units. The SO has the option to demolish all existing structures in the PAFB South Housing area and replace with new units if deemed economically feasible in order to meet Air Force housing requirements. However, the SO must construct seven new senior officer-housing units in the PAFB North Housing area.

**Table 2-2 Facilities in South Housing Area to Be Retained for Exclusive Use by USAF Personnel**

<table>
<thead>
<tr>
<th>FACILITY NUMBER</th>
<th>FACILITY DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>3655</td>
<td>Base Exchange Branch (AAFES Shoppette)</td>
</tr>
<tr>
<td>3656</td>
<td>Youth Center</td>
</tr>
<tr>
<td>3658</td>
<td>Racquetball Courts</td>
</tr>
<tr>
<td>3659</td>
<td>Chapel</td>
</tr>
<tr>
<td>3660</td>
<td>Housing Storage</td>
</tr>
<tr>
<td>3663</td>
<td>Bus Shelter</td>
</tr>
<tr>
<td>3664</td>
<td>Billboard</td>
</tr>
<tr>
<td>3670</td>
<td>Adams Field</td>
</tr>
<tr>
<td>3671</td>
<td>Adams Field press Box and Restrooms</td>
</tr>
<tr>
<td>3681</td>
<td>Adult Sports Complex</td>
</tr>
<tr>
<td></td>
<td>2-Softball fields</td>
</tr>
<tr>
<td></td>
<td>2-Soccer fields</td>
</tr>
<tr>
<td></td>
<td>1-Football field</td>
</tr>
<tr>
<td></td>
<td>Press box</td>
</tr>
<tr>
<td></td>
<td>Concession Stand</td>
</tr>
<tr>
<td></td>
<td>Restroom facility</td>
</tr>
<tr>
<td>4081</td>
<td>Recreation facility</td>
</tr>
<tr>
<td>4082</td>
<td>Little League Field Concession Stand</td>
</tr>
<tr>
<td>4083</td>
<td>Outdoor Tennis Courts (2)</td>
</tr>
<tr>
<td>4084</td>
<td>Outdoor Basketball Court</td>
</tr>
<tr>
<td>4085</td>
<td>Schobel Baseball Field</td>
</tr>
<tr>
<td>4086</td>
<td>Major baseball Field</td>
</tr>
<tr>
<td>4087</td>
<td>Misc Outdoor Recreation Facility</td>
</tr>
<tr>
<td>4088</td>
<td>Misc Outdoor Recreation Facility</td>
</tr>
<tr>
<td>4089</td>
<td>Misc Outdoor Recreation Facility</td>
</tr>
<tr>
<td>4090</td>
<td>Tee-Ball Field</td>
</tr>
<tr>
<td>4093</td>
<td>Misc Outdoor Recreation Facility</td>
</tr>
<tr>
<td>4095</td>
<td>Misc Outdoor Recreation Facility</td>
</tr>
<tr>
<td>4573</td>
<td>Storage</td>
</tr>
</tbody>
</table>
Under the Preferred Alternative, the Air Force would enter into a limited liability business entity LP or LLC with the SO with three objectives:

1. To plan, design, develop, construct, renovate, replace, own, operate, maintain, and manage a 545-unit rental development for Air Force personnel in the South Housing area for a period of 50 years and,

2. To develop portions of the South Housing area site which are not required for Air Force use in a manner which is compatible with the residential use of the Air Force units, which supports, facilitates and expedites provision of the Air Force units, and which provides an appropriate financial return to the Air Force in exchange for its contribution of equity and land to the enterprise.

3. To construct seven new senior officer housing units in the PAFB North Housing area.

These actions would accelerate housing renovations, alleviate housing shortages, and reduce waiting times for more suitable housing, ultimately improving morale of Air Force personnel.

The Air Force would expect to execute various documents with the SO implementing the details of the transaction. These documents may include but are not limited to the following:

- LP/LLC Agreement
- Purchase and Sale Agreement
- Declaration of Land Use Restrictive Covenants (Deed Restrictions)
- Quitclaim Deed
- Operating Agreement for Air Force Units
- Ground Lease

Execution of these various implementing documents is covered within the scope of this EA.

The development for Air Force personnel would consist of a mixture of two, three and four-bedroom single-family and multiplex units, as shown in Table 1. The development will receive priority referrals from the PAFB Housing Office for military members and their families in the grades of E-5 through O-7, who will have right of first refusal. The Air Force will not guarantee occupancy of the units. Under Alternative 1, the LP/LLC would be paid rent directly from the military members by allotment. Rent plus an allowance for tenant-paid utilities must not exceed member’s Basic Allowance for Housing.

In consideration for providing safe, convenient and affordable housing for use by Air Force military personnel and dependents, the Air Force is conveying and/or transferring interest in land, facilities and infrastructure to the proposed transaction under Alternative 1. The Air Force’s total contribution, including the value of land and improvements, shall not exceed 45% of the value of the total development cost including land and
improvements and the Air Force's cash contribution shall not exceed 33 1/3% of the total capital cost. The Air Force would make its contribution in stages as contemplated in the SO’s proposal, which would provide assurance that, at all times, sources of funding will be sufficient to complete construction/renovation of the Air Force Units (“loan-in-balance” test), and that risks to the Air Force of non-completion will be minimized or eliminated.

In addition to the land, a total of 960 units constructed in 1958 and 1959, together with miscellaneous buildings and facilities located on the site, would be conveyed and/or interest in transferred under Alternative 1. The basic construction is concrete slab on spread footings with load bearing concrete masonry unit walls. The existing housing inventory consists of single-level two, three and four bedroom single-family and duplex units in 12 different floor plan types. Although unit exteriors have been renovated with new siding and roofing, some interiors have received only minimal upgrades and include inadequate kitchens, bathrooms and living spaces (Figures 2-1 – 2-2).

![Figure 2-1. Typical South Housing Unit](image)

The Air Force would retain for its exclusive use within the South Housing area three out-parcels (“A”, “B” and “C”), totaling approximately 36.3 acres, more or less. Certain utilities and infrastructure exist on the three out-parcels which will be conveyed and/or interest in transferred to the LP/LLC, if required for the selected proposal, and appropriate easements will be provided. Facilities to be retained by the Air Force on the out-parcels will be metered for utilities by the private developer.
Figures 2-3 and 2-4 depict current typical housing units as found in the PAFB North Housing area.

![Image of South Housing Duplex Unit]

**Figure 2-2. South Housing Duplex Unit**

### 2.2 Alternative 2 – Air Force Maintenance and Renovation of Existing Housing

Under Alternative 2, the Air Force would retain ownership of the property and associated housing. The Air Force would renovate the units to eliminate deficiencies and bring the structures up to current Florida building code. A fifteen year phased program is envisioned at an approximate cost of $130 million.

### 2.3 Alternative 3 – No-Action

Under the No Action Alternative, the Air Force would retain ownership of the property and associated housing. It is assumed that the housing units would continue to receive regular maintenance and that no major renovations to the units would occur.
Figure 2-3. Typical North Housing Unit

Figure 2-4. North Housing Duplex Unit
3.0 EXISTING ENVIRONMENT

This section describes the environmental characteristics that may be affected by the Proposed Action. The affected environment is described in order to provide a context for understanding the potential impacts. Those components of the affected environment that are of greater concern relevant to the potential impacts are described in greater detail.

Available literature (such as existing PAFB EAs and installation general plans) was acquired, and data gaps (questions that could not be answered from the literature) were identified. Cited literature and referenced material are presented in Section 8.

Twelve broad environmental components were considered to provide a context for understanding the potential effects of the Proposed Action and to provide a basis for assessing the significance of potential impacts. Federal and/or state environmental statutes, many of which set specific guidelines, regulations, and standards, regulate several of these environmental components. These standards provide a benchmark to assist in determining the significance of environmental impacts under the NEPA evaluation process. The areas of environmental consideration are: air quality, biological resources, cultural resources, geology and soils, hazardous materials and waste, health and safety, infrastructure and transportation, land use, noise, socioeconomics, visual and aesthetics, and water resources.

3.1 Air Quality

Region of Influence (ROI) - The ROI for Air Quality is PAFB and Brevard County.

Affected Environment

Air quality for PAFB is regulated by the federal government under Title 40 CFR 50 (National Ambient Air Quality Standards); Title 40 CFR 51 (Implementation Plans); Title 40 CFR 61 and 63 (National Emission Standards for Hazardous Air Pollutants); Title 40 CFR 40 (Operating Permits); and Title 40 CFR 82 (Protection of Stratospheric Ozone).

Air Quality Standards

National Ambient Air Quality Standards (NAAQS) have been established for six principle pollutants by the U.S. Environmental Protection Agency (EPA). There are two types of NAAQS—primary standards and secondary standards. Primary standards establish limits to protect public health and secondary standards establish limits to protect public welfare. These standards establish maximum concentrations for six principle pollutants, often referred to as “criteria” pollutants, and include ozone ($O_3$), carbon monoxide (CO), nitrogen dioxide ($NO_2$), sulfur dioxide ($SO_2$), particulate matter with an aerodynamic diameter less than 10 microns ($PM_{10}$), and lead (Pb).

The Florida Department of Environmental Protection (FDEP) has adopted the federal NAAQS to regulate pollutant levels. In addition, the FDEP had promulgated state
Ambient Air Quality Standards (AAQS) (Florida Department of Environmental Protection, Chapter 62-272) that are almost identical to the NAAQS. The NAAQS and the Florida AAQS for these criteria pollutants are presented in Table 3-1 and represent the maximum allowable atmospheric concentrations that may occur and still protect the public health and welfare.

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>National Standards(^a)</th>
<th>Florida Standards(^e)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Primary(^b,c)</td>
<td>Secondary(^b,d)</td>
</tr>
<tr>
<td>Carbon Monoxide (CO)</td>
<td>8-hour Average 10 mg/m(^3) (9 ppm)</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>1-hour Average 40 mg/m(^3) (35 ppm)</td>
<td>None</td>
</tr>
<tr>
<td>Nitrogen Dioxide (NO(_2))</td>
<td>Annual Arithmetic Mean 100 µg/m(^3) (0.053 ppm)</td>
<td>Same as primary standard</td>
</tr>
<tr>
<td>Ozone (O(_3))</td>
<td>8-hour Average(^f) 0.08 ppm (157 µg/m(^3))</td>
<td>Same as primary standard</td>
</tr>
<tr>
<td></td>
<td>1-hour Average 0.12 ppm (235 µg/m(^3))</td>
<td>Same as primary standard</td>
</tr>
<tr>
<td>Lead (Pb)</td>
<td>Quarterly Average 1.5 µg/m(^3)</td>
<td>Same as primary standard</td>
</tr>
<tr>
<td>Particulate (PM(_{10}))</td>
<td>Annual Arithmetic Mean 50 µg/m(^3)</td>
<td>Same as primary standard</td>
</tr>
<tr>
<td></td>
<td>24-hour Average 150 µg/m(^3)</td>
<td>Same as primary standard</td>
</tr>
<tr>
<td>Particulate (PM(_{2.5}))</td>
<td>Annual Arithmetic Mean 15 µg/m(^3)</td>
<td>Same as primary standard</td>
</tr>
<tr>
<td></td>
<td>24-hour Average 65 µg/m(^3)</td>
<td>Same as primary standard</td>
</tr>
<tr>
<td>Sulfur Dioxide (SO(_2))</td>
<td>Annual Arithmetic Mean 80 µg/m(^3) (0.03 ppm)</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>24-hour Average 365 µg/m(^3) (0.14 ppm)</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>3-hour Average None</td>
<td>1300 µg/m(^3) (0.50 ppm)</td>
</tr>
</tbody>
</table>

Notes:
\(^a\) National standards other than ozone and those based on annual arithmetic means are not to be exceeded more than once a year. The ozone standard is attained when the expected number of days per calendar year, with maximum hourly average concentrations above the standards, is equal to or less than one.
\(^b\) Concentration expressed first in units in which it was promulgated and equivalent units are given in parentheses. The equivalent units are based on a reference temperature of 25°C and a reference pressure of 760 mmHg.
TABLE 3-1
National and Florida Ambient Air Quality Standards

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>National Standards&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Florida Standards&lt;sup&gt;e&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Primary&lt;sup&gt;b,c&lt;/sup&gt;</td>
<td>Secondary&lt;sup&gt;b,d&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

millimeters (mm) of mercury. All measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 mm of mercury (1,013.2 millibars).

<sup>a</sup>National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.

<sup>b</sup>National Secondary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public welfare from any known or anticipated adverse effects of pollutant.

<sup>c</sup>Florida standards for carbon monoxide, nitrogen dioxide, ozone, particulate matter equal to or less than 10 microns in diameter, and sulfur dioxide are values that are not to be exceeded. The lead value is not to be equaled or exceeded.

<sup>d</sup>Changes in NAAQS issued in 1997 were overturned in May 1999 by the U.S. Court of Appeals for the D.C. Circuit.

ppm: parts per million.
µg/m³: micrograms per cubic meter.
mg/m³: milligrams per cubic meter.

PM<sub>10</sub>: particulate matter equal to or less than 10 microns in diameter.
PM<sub>2.5</sub>: particulate matter equal to or less than 2.5 microns in diameter.


There are other organizations including the American Conference of Governmental Industrial Hygienists, American Industrial Hygiene Association, Head Quarters Air Force Space Command/Surgeon General, National Institute for Occupational Safety and Health, National Research Council, and OSHA that recommend standards (exposure levels) for various pollutants. It should be noted that some of these organizations establish standards to protect people in the workforce and other organizations establish standards to protect the general public.

**Regional Air Quality**

Existing air quality is defined as either “in attainment” or “nonattainment” with respect to ambient air quality standards. An area with air quality better than the NAAQS is designated as being in attainment, whereas an area where pollutant concentrations exceed the NAAQS with a frequency specified by the regulation is classified as nonattainment.

In Florida, regional air quality is assessed at the county level. PAFB is located within Brevard County. Brevard County has been designated by both EPA and FDEP to be in attainment for all criteria pollutants. Ambient air monitoring records from monitoring stations maintained by the appropriate state or local agency for the affected environment were obtained to characterize the existing air quality. Information about pollutant concentrations measured for short-term (24 hours or less) and long-term (annual) averaging periods was extracted from the monitoring station data. Table 3-2 shows recent monitored air concentrations near PAFB.
<table>
<thead>
<tr>
<th>Pollutant (µg/m³)</th>
<th>Station</th>
<th>1997</th>
<th>1998</th>
<th>1999</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Carbon Monoxide (CO)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8-hour highest</td>
<td>Winter Park, Orange County</td>
<td>3500</td>
<td>2900</td>
<td>3000</td>
</tr>
<tr>
<td>8-hour 2nd highest</td>
<td>Winter Park, Orange County</td>
<td>3200</td>
<td>2700</td>
<td>2500</td>
</tr>
<tr>
<td>1-hour highest</td>
<td>Winter Park, Orange County</td>
<td>4700</td>
<td>4500</td>
<td>3900</td>
</tr>
<tr>
<td>1-hour 2nd highest</td>
<td>Winter Park, Orange County</td>
<td>4500</td>
<td>4100</td>
<td>3900</td>
</tr>
<tr>
<td><strong>Nitrogen Dioxide (NO₂)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Annual Arithmetic Mean</td>
<td>Winter Park, Orange County</td>
<td>24</td>
<td>21</td>
<td>23</td>
</tr>
<tr>
<td><strong>Ozone (O₃)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-hour highest</td>
<td>Cocoa Beach, Brevard County</td>
<td>190</td>
<td>218</td>
<td>208</td>
</tr>
<tr>
<td>Palm Bay, Brevard County</td>
<td></td>
<td>177</td>
<td>173</td>
<td>190</td>
</tr>
<tr>
<td>Winter Park, Orange County</td>
<td></td>
<td>212</td>
<td>214</td>
<td>210</td>
</tr>
<tr>
<td>1-hour 2nd highest</td>
<td>Cocoa Beach, Brevard County</td>
<td>169</td>
<td>192</td>
<td>171</td>
</tr>
<tr>
<td>Palm Bay, Brevard County</td>
<td></td>
<td>169</td>
<td>169</td>
<td>169</td>
</tr>
<tr>
<td>Winter Park, Orange County</td>
<td></td>
<td>188</td>
<td>196</td>
<td>196</td>
</tr>
<tr>
<td><strong>Particulate (PM₁₀)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Annual Arithmetic Mean</td>
<td>Merritt Island, Brevard County</td>
<td>18</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Titusville Airport, Brevard County</td>
<td></td>
<td>17</td>
<td>17</td>
<td>16</td>
</tr>
<tr>
<td>Titusville Singleton, Brevard County</td>
<td></td>
<td>19</td>
<td>19</td>
<td>20</td>
</tr>
<tr>
<td>Winter Park, Orange County</td>
<td></td>
<td>20</td>
<td>21</td>
<td>21</td>
</tr>
<tr>
<td>24-hour highest</td>
<td>Merritt Island, Brevard County</td>
<td>33</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Titusville Airport, Brevard County</td>
<td></td>
<td>32</td>
<td>47</td>
<td>56</td>
</tr>
<tr>
<td>Titusville Singleton, Brevard County</td>
<td></td>
<td>42</td>
<td>49</td>
<td>75</td>
</tr>
<tr>
<td>Winter Park, Orange County</td>
<td></td>
<td>40</td>
<td>51</td>
<td>56</td>
</tr>
<tr>
<td>24-hour 2nd highest</td>
<td>Merritt Island, Brevard County</td>
<td>33</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Titusville Airport, Brevard County</td>
<td></td>
<td>31</td>
<td>41</td>
<td>28</td>
</tr>
<tr>
<td>Titusville Singleton, Brevard County</td>
<td></td>
<td>38</td>
<td>44</td>
<td>52</td>
</tr>
<tr>
<td>Winter Park, Orange County</td>
<td></td>
<td>38</td>
<td>46</td>
<td>35</td>
</tr>
<tr>
<td><strong>Sulfur Dioxide (SO₂)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Annual Arithmetic Mean</td>
<td>Winter Park, Orange County</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>
TABLE 3-2
Ambient Air Concentrations Near Patrick Air Force Base

<table>
<thead>
<tr>
<th>Pollutant (µg/m³)</th>
<th>Station</th>
<th>1997ᵃ</th>
<th>1998ᵇ</th>
<th>1999ᶜ</th>
</tr>
</thead>
<tbody>
<tr>
<td>24-hour highest</td>
<td>Winter Park, Orange County</td>
<td>18</td>
<td>21</td>
<td>21</td>
</tr>
<tr>
<td>24-hour 2nd highest</td>
<td>Winter Park, Orange County</td>
<td>16</td>
<td>18</td>
<td>18</td>
</tr>
<tr>
<td>3-hour highest</td>
<td>Winter Park, Orange County</td>
<td>60</td>
<td>76</td>
<td>110</td>
</tr>
<tr>
<td>3-hour 2nd highest</td>
<td>Winter Park, Orange County</td>
<td>52</td>
<td>71</td>
<td>76</td>
</tr>
</tbody>
</table>

ᵃ1997 AIRSData Monitor Report, Florida Department of Environmental Protection.
bᵇ1998 AIRSData Monitor Report, Florida Department of Environmental Protection.
cᶜ1999 AIRSData Monitor Report, Florida Department of Environmental Protection.
NA: Not Available.
µg/m³: micrograms per cubic meter.

3.2 Biological Resources

Region of Influence - The ROI for Biological Resources is the North and South Housing areas of PAFB.

Affected Environment

Vegetation and Wetlands

There is little elevation on the PAFB housing areas and vegetation is limited to plants that can tolerate relatively saline soil and air. The major factor that affects the ecological character of the site is the high degree of land development. The South Housing area is almost entirely developed with structures and related features, including base housing, recreational grounds and facilities (Youth Center), Base Exchange Branch (Army Air Force Exchange Service Shoppette), and Chapel. The North Housing area is also extensively developed primarily with family housing units. Soils encountered in both areas are sandy with little organic material. The sandy soils drain water quickly after a rain; therefore, drought resistant vegetation is best suited for this environment. Typical shrubs and trees found near the buildings include privet (Lingustrum spp.), Asiatic jasmine (Trachelospermum asiaticum), hibiscus (Hibiscus spp.), oleander (Nerium oleander), yucca (Yucca spp.), Norfolk Island pine (Araucaria heterophylla), Australian pine (Casuarina glauca), and palms (Sable and Royal). Sod is typically Raleigh St. Augustine.

Wetland vegetation in the housing areas is restricted to the banks of water bodies, drainage ditches, and small depressions. Common wetland plants include water pennywort (Hydrocotyle umbellata), cattails (Typha spp.), rushes (Juncus spp.), and sedges (Carex spp.). With the exceptions of a strip of land along the western boundary of the South Housing area and the eastern boundary of the North Housing area, both sites lie above the 100-year floodplain (Figure 3-1). Other than the potential wetlands associated with ditches and retention areas, there are no known wetlands on either site.
Figure 3-1. Natural Constraints (100-Year Floodplain) Map for PAFB
Fish and Wildlife

Numerous species of birds and mammals have been sighted on PAFB. Bird species common to the housing areas of the Base include the cattle egret (*Bubulcus ibis*), mourning dove (*Zenaida macroura*), fish crow (*Corvus ossifragus*), European starling (*Sturnus vulgaris*), yellow-rumped warbler (*Dendroica coronata*), sparrows, and pigeon (*Columba livia*). These birds, in addition to least terns (*Sterna antillarum*), sandpipers (*Actitis macularia*), plovers and osprey (*Pandion haliaetus*), are also common along the Banana River. Several species of wading birds use the drainage ditches for feeding. Resources for wading birds are limited to feeding and roost areas. Suitable nesting sites, for these species, are not present. Resident bird species in non-wetland areas of PAFB include mockingbird (*Mimus polyglottos*), starling, boat-tailed grackle (*Quiscalus major*), and least terns.

Reptiles and amphibians common to the Base include green anole (*Anolis carolinensis*), brown anole (*Anolis sagrei*), eastern garter snake (*Thamnophis sirtalis sirtalis*), eastern indigo snake (*Drymarchon corais couperi*), southern toad (*Bufo terrestris*), southern leopard frog (*Rana utricularia*), and a variety of skinks, and geckos. Common mammal species include shorttail shrew (*Blanina brevicauda*), eastern mole (*Scalopus aquaticus*), raccoon (*Procyon lotor*), eastern cottontail rabbit (*Sylvilagus floridanus*), eastern fox squirrel (*Sciurus niger*), rice rat (*Oryzomys palustris*), hispid cotton rat (*Sigmodon hispidus*), house mouse (*Mus musculus*), armadillo (*Dasypus novemcinctus*), opossum (*Didelphis marsupialis*), and Norway rat (*Rattus norvegicus*).

No suitable habitat for fish species exists in the North or South Housing areas.

Threatened and Endangered Species

A number of species use PAFB for specific reasons such as foraging or nesting. These include two endangered (leatherback, Atlantic green) and one threatened (Atlantic loggerhead) species of sea turtles that nest on the beaches. The least tern, listed as threatened by the State of Florida, and the Federally endangered wood stork (*Mycteria americana*) also forage on the Base. Species that are transient include the roseate spoonbill (*Ajaia ajaia*), the American oystercatcher (*Haematopus palliatus*), the piping plover (*Charadrius melodus*), the Artic peregrine falcon (*Falco peregrinus tundrius*), and the Southeastern American kestral (*Falco sparverious paulus*).

There is some potential habitat for threatened and endangered state- and federally-listed species in the South Housing area. Potential wetland areas have developed along the banks of ponds and ditches, where vegetation including water pennywort, duckweed (*Lemna* spp.), cattail, needlerush, and sedges (*Cyperus* spp.) have become established. Ditches that lie adjacent to most of the roadways as well as the retention ponds (Figure 3-2) have the potential to support various waterbirds. Flat gravel roofs, such as the one on the Harbor City Volunteer Ambulance Station, provide potential nesting areas for the least tern and black skimmer (*Rynchops niger*). None of the housing units have flat roofs. Disturbance of the least terns during the nesting period, 1 April through 31 August, is prohibited.
More extensive discussions and listing of floral and faunal species at PAFB is contained in other environmental documentation such as the *Programmatic Environmental Assessment for Operation and Maintenance of Patrick Air Force Base, Florida*, January 1998 and the *Environmental Baseline Survey for the Proposed Privatization of the South Military Family Housing Area Patrick Air Force Base, Florida*, December 1998. These documents may be obtained from the 45th Space Wing CES/CEV.

### 3.3 Cultural Resources

Region of Influence - The ROI for cultural resources is limited to the North and South Housing areas of PAFB.

Historical and archaeological resources are protected under the National Historic Preservation Act (NHPA), as amended (16 U.S.C. § 470 et seq.), the Archaeological Resource Protection Act (16 U.S.C. §470 et seq.), and the Archaeological and Historic Preservation Act of 1974 (16 U.S.C. §469 et seq.). Section 106 of the NHPA requires that the sponsoring agency official take into account the effect of an undertaking upon historic properties and to afford the Advisory Council on Historic Preservation the opportunity to comment. This process is implemented by 36 CFR 800. Additionally, Section 110 of the NHPA sets forth a series of requirements embedded in the federal comprehensive planning process.
Affected Environment

A National Park Service archaeologist has made a detailed inspection of PAFB, noting the nature, location, and extent of base construction disturbances. Although the archaeologist did not conduct an intensive survey of the area and no fieldwork was involved, his inspection was sufficient to conclude that it is highly unlikely that PAFB contains any significant cultural resources that could be affected by future construction. A letter dated August 25, 1981 from the State Historic Preservation Officer to the Commander of PAFB concurred with this finding, and the Base was cleared for construction.

A Historical American Building Survey identified numerous structures and three districts on PAFB as potentially eligible for listing in the National Register of Historic Places. A list of historic buildings located on PAFB is contained in the Programmatic Environmental Assessment for Operation and Maintenance of Patrick Air Force Base, Florida (45th CEV, 1998). This listing does not indicate any historical structures on either North or South Housing areas.

3.4 Geology and Soils

Region of Influence - The ROI for geology and soils is the PAFB North and South Housing areas.

Affected Environment

PAFB, including the housing areas, is situated on a barrier island off the central east coastline of Florida. The barrier islands are a system of beach ridges that separate the Atlantic Ocean from brackish lagoons such as the Banana River, which forms the western boundary of PAFB. The island attains a maximum width of some 4.5 miles and is approximately 90 miles long. Land surface elevations across PAFB range from 0 to 15 feet above mean sea level, with the highest elevations corresponding to the sand dunes that parallel the Atlantic beachfront. From the dunes, the land slopes gently west toward the shorelines along the Banana River.

Geology

The unconsolidated surficial materials that underlie PAFB are the undifferentiated Pleistocene/Holocene deposits known as the Pamlico sands. The bedrock underlying the Base is considered to be all those units that underlie the Pleistocene/Holocene deposits. The first such unit that is encountered is the Anastasia Formation of Pleistocene age. This Formation lies 10 feet below land surface (lbs) and has a thickness of 20 feet. Beneath the Anastasia is the Caloosahatchee Marl Formation. It is encountered at a depth of approximately 30 feet lbs and is 50 feet thick. Underlying the Caloosahatchee Marl Formation is the Miocene age Tamiami Formation. However, the Caloosahatchee Marl Formation may locally overlie either the Tamiami or the deeper Hawthorn Group. The approximate thickness of the Tamiami Formation is 20 feet, and it is located 80 feet lbs.
**Soils**

Soils in Brevard County have been surveyed and mapped by the Soil Conservation Service (now called the Natural Resource Conservation Service) in cooperation with the University of Florida. The soil is sandy type to depths of 60 inches or more. The soil permeability is greater than 20 inches per hour; available water capacity is 0.02 to 0.05 inches per inch of soil. Original vegetative cover consisted of saw-palmetto, scrub live oak, and salt tolerant shrubs such as sea grape and Spanish bayonet. Soil tests made are representative of soil type mapped. These tests indicate the soil has a high pH (7.5 - 8.0). Three soil associations are identified in the PAFB area: (1) Canaveral-Palm Beach-Welaka association; (2) Myakka-Eau Gallie-Immokalee association; and (3) Tidal Marsh-Tidal Swamp association.

A more detailed discussion of the geology and soils of the area may be obtained in the *Programmatic Environmental Assessment for Operation and Maintenance of Patrick Air Force Base, Florida* (45 CEV, 1998).

### 3.5 Hazardous Materials and Waste

Region of Influence - The ROI for hazardous materials and waste is the PAFB North and South Housing areas.

**Affected Environment**

A variety of regulatory agencies (e.g., EPA, Department of Transportation (DOT)) have promulgated differing definitions of a hazardous material as applied to a specific situation. Of these definitions, the broadest and most applicable is the definition specified by the DOT for regulation of the transportation of these materials. As defined by the DOT, a hazardous material is a substance or material that is capable of posing an unreasonable risk to health, safety, or property when transported in commerce and has been so designated (49 CFR 171.8).

Several federal agencies oversee various aspects of hazardous material usage. The DOT regulates the safe packaging and transporting of hazardous materials, as specified in 49 CFR parts 171 through 180 and Part 397. OSHA regulates the safe use of hazardous materials in the workplace in 29 CFR, primarily Part 1910. Environmental safety and public health issues associated with hazardous materials are regulated by the EPA through specific criteria applied to areas such as air emissions and water discharge.

**Hazardous Materials**

A wide variety of hazardous materials ranging from hazardous building materials, and household paints, solvents, cleaners, and fuels are used on PAFB and both subject housing areas. A detailed listing is contained in the *Environmental Baseline Survey, South Military Family Housing, Patrick AFB, Florida* December 1998 (45 CEV, 1998a).

Construction of South Housing occurred in 1958-1959 and North Housing occurred in 1994-1995. A detailed review and analysis of hazardous materials/wastes associated with
the South Housing area was completed in 1998 during the development of the Environmental Baseline Survey (45CEV, 1998a). The housing units and other facilities in the South Housing area contain various amounts of asbestos-containing materials (ACM) and lead-based paint (LBP) (45 CEV, 1998a). Due to the recent date of construction of North Housing, the use of ACM or LBP in these units is not suspected.

Currently, storage of petroleum products exists in two aboveground storage tanks and two underground storage tanks in South Housing. No petroleum storage occurs in the North Housing area.

Review of available 45CES/CEV spill incident reports indicates that no hazardous material or petroleum product releases to the environment have been reported in either area. Undocumented spills may have occurred.

**Hazardous Wastes**

Hazardous waste is defined in 40 CFR 261.3 as any solid waste not specifically excluded which meets specific concentrations or has certain toxicity, ignitability, corrosivity, or reactivity characteristics. Oversight of hazardous waste issues is provided primarily by the EPA (as mandated by the Resource Conservation and Recovery Act, and the Comprehensive Environmental Response, Compensation, and Liability Act and its extension, the Superfund Amendments and Reauthorization Act). EPA regulations regarding hazardous wastes are found in 40 CFR. Additional requirements are promulgated by the DOT, which regulates all transportation issues pertaining to hazardous waste. DOT requirements are found in 49 CFR.

Engineering Science, Inc. completed the Air Force Installation Restoration Program (IRP) Preliminary Assessment Report for PAFB Facilities in 1992. This report documented no evidence of contamination and therefore no need for further investigation in the South or North Housing areas.

**Solid Wastes**

Waste materials (less commonly referred to as solid waste) are defined in 40 CFR 261.2 as “any discarded material (i.e., abandoned, recycled, or ‘inherently waste-like’)” that is not specifically excluded. This can include materials that are both solid and liquid (but contained).

PAFB manages ACM generated by Base activities through an Asbestos Management Plan and Asbestos Operations Plan. Asbestos has been used in construction and insulation and, when damaged, may release fibers that pose a health hazard. Asbestos waste is removed in accordance with regulatory requirements and is disposed of in the Cape Canaveral Air Station landfill designated to receive this material (45 SW, 1996a).

LBP was commonly used in and on buildings and other structures until 1978. LBP in good condition does not pose a health hazard. When LBP is in a deteriorated (cracking, peeling, chipping) condition, or damaged by renovation or maintenance activities, it can release lead-containing particles that pose a threat of lead contamination to the
environment and a health hazard to workers and building occupants. The 45th Space Wing's LBP program places emphasis on managing it "in-place" whenever possible and systematically eliminating it from facilities as renovations are complete.

PAFB contracts commercially for industrial waste removal from its properties. Residential waste is taken to the Brevard County landfill.

3.6 Health and Safety

Region of Influence - The ROI for health and safety is the PAFB North and South Housing areas. Health and Safety aspects address are only those associated with construction activities.

Affected Environment

Health and safety includes consideration of any activities, occurrences, or operations that have the potential to affect one or more of the following.

- The well-being, safety, or health of workers - Workers are considered to be persons directly involved with the operation producing the effect or who are physically present at the operational site.

- The well-being, safety, or health of members of the public - Members of the public are considered to be persons not physically present at the location of the operation, including workers or residents at nearby locations who are not involved in the operation and the off-installation population.

The standards applicable to the evaluation of health and safety effects differ for workers and the public; thus, it is useful to consider each separately.

OSHA is responsible for protecting worker health and safety in non-military workplaces. OSHA regulations are found in 29 CFR. For Air Force operations, AFI 91-301 and AFI 91-302, contain the Air Force’s Safety program, and provide the basis for worker safety programs. Specific PAFB programs which affect construction and demolition operations include the Asbestos and LBP programs.

3.7 Infrastructure and Transportation

Region of Influence - The ROI for infrastructure and transportation is the PAFB North and South Housing areas.

Affected Environment

Infrastructure addresses those facilities and systems that provide drinking water, wastewater treatment, power, and telecommunications. Transportation addresses the modes of transportation (road, air, and marine) that provide circulation within and access to the Installation.
Drinking Water

Existing potable water distribution to the North and South Housing areas is supplied from the City of Cocoa. The supply is metered at Facility 209 (a pumping station on the north side of PAFB main base). Houses in the North Housing area are tied into a looped distribution system running along the front of the houses.

Water is transported from Facility 209 through a 12" cast iron distribution line along State Highway A1A to the South Housing area. It is pumped into storage tanks (one elevated and one above-ground) near the center of the South Housing area. One side of the loop enters the area from along A1A and returns north into the Base from South Patrick Drive. These distribution lines are currently operated and maintained by PAFB. Additionally, water is chlorinated by PAFB at Facility 209 and again at the South Housing area Pump Station (Facility No. 3653). Potable water line connections with both the City of Melbourne and Cocoa water supplies are intact and operational. The area immediately south of PAFB main base is serviced by the City of Melbourne water utility; however, the South Housing area is currently supplied with water from the City of Cocoa. Melbourne water is available to the South Housing area for emergency back up, but is not used under normal conditions. Melbourne owns an elevated water storage tank on the south side of the South Housing area, but the tank is not normally connected to the housing water distribution system.

Wastewater Treatment

The area immediately south of PAFB is serviced for wastewater collection and treatment by Brevard County's South Beaches Water Reclamation Facility in the City of Melbourne Beach. However, wastewater from the South Housing area is pumped from a central lift station (Facility 3657) along the South Patrick Drive corridor into the main base where it is pumped to the City of Cocoa Beach for treatment and disposal. All collection and transmission lines from the South Housing area to the main base are currently maintained by PAFB. The existing sewer collection system is over 40 years old and consists primarily of vitrified clay pipe. Houses in the North Housing area utilize new 6" or 8" wastewater lines and tie-ins for new housing may be connected to existing service lines. Currently, wastewater from the North and South Housing areas is combined with PAFB wastewater at the South Patrick pumping station and pumped north to the Cocoa Beach Water Reclamation Facility (CBWRF). Wastewater from PAFB and Cocoa Beach is reclaimed and distributed as re-use water for irrigation. PAFB contracts with CBWRF for usage of re-use water based on availability and the water is used to irrigate the PAFB golf course and the North and Central Housing areas.

Power

In the North Housing area, electrical distribution is owned and operated by PAFB and fed from the Installation’s north sub-station. The existing housing units are not individually metered. Primary (13.2 KV) and secondary distribution throughout the North Housing area is new and underground. Florida Power and Light Company owns the main sub-station located at the extreme south end of the North Housing area. The distribution lines are owned by the Air Force.
In the South Housing area, existing electrical distribution is also owned and operated by PAFB and fed from the Installation’s south sub-station through the South Patrick Drive corridor. Primary (13.2 KV) and secondary distribution throughout the housing area is overhead and approximately 7 years old. Power is provided to the Patrick South Switching Station from a Florida Power and Light Company sub-station. Power to South Housing is provided from the Patrick Station.

**Natural Gas**

In the North Housing area, natural gas distribution exists along State Highway A1A and loops behind the existing housing. The gas system is owned and operated by City Gas Company of Florida. No natural gas distribution exists within the South Housing area.

**Telecommunications**

**Telephone:** Primary telephone system for both North and South Housing areas is owned by Bell South.

**Cable TV:** Cable TV for both North and South Housing areas is owned by Time-Warner Communications, Inc. Wireless Broadcast System provides an alternative wireless antenna service.

**Storm Drainage**

Currently, a stormwater retention pond exists in the PAFB North Housing area (Figure 3-3). This retention pond would require modification to accommodate the proposed new housing construction. No sub-surface storm drainage system exists in South Housing area. Storm run-off is currently contained within the boundaries of the housing area. Although a limited stormwater retention pond exists on the west side of the site (Figure 3-2), south of the South Patrick Drive entrance, the Military Family Housing Community Plan recommends the need for additional stormwater mitigation.

**Transportation**

PAFB is located on State Highway A1A, which is a north-south route along the east coast barrier islands of Florida. US Highway 1 lies on the mainland of Florida, west of PAFB. Interstate 95, also located on the mainland west of the Base, provides interstate access. The major access to the barrier island on which PAFB is located is via the Pineda Causeway (Highway 404).

The roadway network available to PAFB is modern, well maintained, and fully adequate to support the Base's transportation needs.

PAFB has no direct rail service. It is serviced by air via the 9,000-foot runway on the Base. The nearest commercial air facility is the Melbourne Regional Airport located approximately 12 miles south of PAFB.
3.8 Land Use

Region of Influence - The ROI for land use is the PAFB North and South Housing areas.

Affected Environment

PAFB is located in Brevard County, comprised of approximately 1,310 square miles in three distinct landforms: the St. Johns River Valley, which parallels the western border of the county; the Atlantic coastal ridge, which forms the eastern boundary of the mainland; and the barrier islands, which lie offshore and parallel to the mainland at PAFB. PAFB consists of approximately 2,254 acres. The main base contains 1,943 acres and is bounded on the east by the Atlantic Ocean and on the west by the Banana River, a brackish lagoon. The main base has three major areas of land use: the northern end of the Base contains the North Housing area for military personnel; the central portion contains airfields, administrative buildings, and other support facilities; and the southern portion contains housing for military personnel, the hospital, and industrial area. State Highway A1A, the major north-south highway on the Florida east coast, traverses the Base. PAFB also includes an area of 311 acres of housing south of the main base. This area is known as the South Housing area.
The predominant land use on PAFB is associated with the airfield, which uses 683 acres for runways, taxiways and aprons, and 33 acres for aircraft operations and maintenance. The other main land uses on PAFB include 420 acres for family housing and 271 acres for outdoor recreation (mainly the golf course and marina). Industrial land use encompasses 193 acres, while 63 acres are administrative land use (General Plan 1996).

A more detailed description on land uses on PAFB can be found in the Programmatic Environmental Assessment for Operation and Maintenance of Patrick Air Force Base, Florida, January 1998.

3.9 Noise

Region of Influence - The ROI for noise is the PAFB North and South Housing areas.

Affected Environment

Noise is unwanted sound that interferes with normal activities or otherwise diminishes the quality of the environment; it may be intermittent or continuous, steady or impulsive. Noise may also involve a broad range of sound sources and frequencies and be generally nondescript, or it can have a specific, readily identifiable sound source. The decibel (dB) is the accepted standard unit for measuring the level of noise and is generally adjusted to the “A-weighted” logarithmic scale (dBA) to better correspond to the normal human response to different frequencies. Several metrics have been developed for multiple-noise event analysis. The one most commonly used is the (Ldn) metric. This is the dBA level averaged over a 24-hour period, with an additional ten dBA penalty added for noise events occurring between 10 p.m. and 7 a.m. (because noise at night is judged to be more annoying than noise during the day). The threshold noise level for compatible land uses is Ldn 65 dBA. Areas outside (less than) of the 65 dBA Ldn contour are compatible with residential and other noise-sensitive land uses.

Historical, existing, and projected aircraft noise levels and impacts have been characterized for PAFB using Ldn contours. These contours are displayed in the PAFB General Plan. After review of this plan, it was determined that all South Housing area units and the proposed new construction in the North Housing area are outside the 65 dBA Ldn contour and are therefore compatible with residential uses.

A more detailed discussion of noise sources and constraints is contained in the PAFB General Plan and the Programmatic Environmental Assessment for Operation and Maintenance of Patrick Air Force Base.

3.10 Socioeconomics

Region of Influence - The ROI for socioeconomics is PAFB and the Brevard County area. Socioeconomics within this EA is concerned with population, employment, and recreation for the area.
**Affected Environment**

The Space Coast has emerged as a center for military and space technology. This has occurred through the continued success of the NASA space shuttle program and commercial launches. The space industry continues to contribute to the region's economy. The presence of Cape Canaveral Air Force Station (CCAFS), Kennedy Space Center and PAFB have led to the convergence of a large number of defense contractors in the Brevard County area. The presence of the DOD and several high tech and aerospace employers represent a predominant economic force in the area, with a combined potential employment population of some 50,000 people and an economic value that exceeds one billion dollars (Patrick AFB General Plan, 1996).

Brevard County and the City of Cape Canaveral are the local planning authorities for incorporated and unincorporated areas near PAFB. Neither the county nor the City of Cape Canaveral has land use authority over PAFB land because it is federally owned. PAFB designates its own land use and zoning regulations. The general plans of the county and City of Cape Canaveral designates compatible land uses around PAFB.

PAFB, as a major employer in Brevard County, impacts the local economy through direct employment of civilian and military personnel as well as through the local procurement of goods and services. Direct employment by the Base as well as employment directly generated from the Base's procurement expenditures have led to an increase in the level of economic activity and the creation of additional employment opportunities. The presence of the 45th Space Wing (PAFB and Cape Canaveral Air Force Station) activities provide employment for more than 13,000 people, with annual collective salaries totaling more than $240 million (Patrick AFB General Plan, 1996).

The State of Florida, Brevard County, and the Cocoa Beach area offer an extensive selection of recreational activities. PAFB also offers an extensive recreational program with numerous facilities and a diversity of activities. There are various outdoor recreational activities offered that utilize Base lands including golf, fishing, swimming pools, playing fields and the marina convenient to family housing areas. A youth center recreation area is located in the South Housing area.

**Population**

Most of the population growth in Brevard County can be attributed to migration rather than natural increases. The County ranks ninth in population and eleventh in population density for the 67 counties of the State of Florida. The total population of Brevard County increased from 398,978 in 1990 to 460,977 in 1997. The U.S. Census Bureau estimated the July 1, 1999 population of Brevard County to be 470,365. This represents a 1.2% increase in population from 1998 – 1999 (Population Estimates Program). Almost half of the population growth between 1990 and 1997 occurred in the unincorporated portion of Brevard County. In 1997, the population of unincorporated Brevard County was 178,457.
**Employment**

The 45th SW and other CCAFS and PAFB organizations, including host and tenant activities, contractors, and the military retiree community, make up an employment population of more than 13,000 with a collective income exceeding $240 million. The median income for Brevard County residents in 1993 was $33,284.

**Housing**

PAFB contains 1,500 military family housing units that support 3,500 military personnel and their dependents. Currently there are 250 occupied housing units in the North Housing area. There are 960 units in the South Housing area of which 521 are currently occupied.

3.11 **Visual and Aesthetics**

Region of Influence - The ROI for visual and aesthetics is the PAFB North and South Housing areas.

**Affected Environment**

The barrier island on which it is located characterizes the visual environment in the vicinity of PAFB. The Indian and Banana Rivers separate the barrier island from the mainland. Topography of the island is generally flat, with elevations ranging from sea level to approximately 20 feet above sea level. Florida coastal strand, coastal scrub, and coastal dune vegetation dominate the landscape. The most visually significant aspect of the natural environment is the gentle coastline and flat island terrain.

The entire State of Florida is defined as being located within the coastal zone. However, for planning purposes, a no-development zone, delineated by the Coastal Construction Setback Line, has been established. In Brevard County, this zone extends from the mean high water inland 75 feet, to include the natural coastal dunes. The Coastal Zone Management Act (CZMA) authorizes a State-Federal partnership to ensure protection of coastal resources. PAFB has doubled the county no-development zone by enforcing a 150-foot zone of no construction. The Florida Department of Community Affairs (FDCA) is the State’s lead coastal management agency. The Air Force is responsible for making the final coastal zone consistency determinations for its activities within the state, and the FDCA will review the coastal zone consistency determination.

Land on PAFB is fairly developed. These developed areas are surrounded by disturbed grasses, oak hammocks, and scrub vegetation. Most of PAFB outside of the developed areas is covered with native vegetation.

PAFB has established a Mediterranean architecture theme for the Base. The Mediterranean-style consists of red Spanish tiles on pitched roofs with large overhangs and stucco as an exterior wall material. The Mediterranean-style does not lend itself to tall multi-story structures over five stories tall. This scheme is demonstrated in several buildings around the Base, namely the Airman's Dining Hall and the Dental Clinic.

The local subtropical climate, prevailing winds, and marine environment have a major impact on the man-made and natural environments and, therefore, the visual and aesthetic
features of the base. The oceanfront setting of the Base also contributes to the rapid visual and physical decline of its infrastructure and facilities due to corrosion.

3.12 Water Resources

Region of Influence - The ROI for visual and aesthetics is the PAFB North and South Housing areas. Water resources include groundwater and surface water and their physical, and chemical qualities. This section discusses the surface hydrology characteristics, groundwater, and their quality.

Affected Environment

Surface Water

The major surface waters in the area are the Atlantic Ocean (which bounds PAFB on the east) and the Banana River (which bounds the base on the west). The water resources on the Base include five man-made ponds totaling 31.3 acres. The Base also contains 4.1 miles of drainage ditches and 40.2 acres of canals. Most of the drainage ditches contain water throughout the year because they intersect the shallow water table aquifer. The canals are interconnected with the Banana River and are thus tidally influenced and brackish. Other than drainage ditches and stormwater retention ponds, there are no surface water resources located on the North or South Housing areas.

Groundwater

PAFB is underlain by both confined and unconfined aquifers. The hydrologic units (aquifers) underlying the Base include the surficial water table aquifer; semiartesian and artesian aquifers within the Caloosahatchee Marl, Tamiami Limestone, and Hawthorn Group; and the artesian Floridan aquifer. The surficial water table aquifer underlying the Base is the major hydrostratigraphic system that can be influenced by Base operations. This system, consisting primarily of marine sands, shell fragments, and coquina limestone, extends approximately 50 feet below the ground surface. The water table is generally within 5 feet of the ground surface. The surficial groundwater flows primarily toward the Banana River. Low-levels of contaminants (e.g., volatile organic compounds, petroleum hydrocarbons, and heavy metals) originating from Base IRP sites have been detected in surficial groundwaters at the Base.

Groundwater at PAFB occurs under unconfined (water table), semi-confined, and confined (artesian) conditions. The unconfined aquifer, composed of Holocene and Pleistocene age surficial deposits of marine sand, shell fragments, and sand conglomerate of the Anastasia Formation, is recharged by direct infiltration or rainfall. The generalized direction of groundwater flow in the surficial aquifer is westward, toward the Banana River. Localized flow in the surficial aquifer is from topographic highs (mounds, swells, dune ridges) toward surface water bodies (creeks, ponds, drainage canals).

The North Housing area contains 1 active and 15 inactive wells. The active well (12N) currently provides irrigation and air conditioning water for Buildings 204, 205, and 206 on the beach side of State Highway A1A. Well 12N is a 4-inch in diameter well that is...
pumped continuously by a 2 horsepower pump. The inactive wells were properly abandoned according to 40 C-2 Florida Administrative Code (FAC) with cement grout in December, 1993.

The South Housing area contains 148 wells, many of which are old and collapsing or are no longer usable. These wells are, or have been, used for water irrigation, supply, and return purposes. The well sizes range from 3 to 4 inches in diameter for irrigation wells, 4 to 8 inches in diameter for supply wells and return wells. The wells range between 300 to 500 feet deep. The Saint John’s River Water Management District (SJRWMD) under the PAFB Consumptive Use Permit (CUP) (# 2-009-0062ANF3M) permits all wells in the South Housing area. Continued operation of these wells would require a permit by the new owner. In addition, the new landowner would be required to abandon inactive wells in accordance with FAC 40c-2.

The status of the existing wells in the North and South Housing areas as reported to SJRWMD is provided in Table 3-3. Currently, 0.236 million gallons per day (mgd) total usage is reported in EN-50 to the SJRWMD. The current water usage is tabulated in Table 3-4.

**TABLE 3-3 Well Status in North and South Housing Areas**

<table>
<thead>
<tr>
<th>TYPE</th>
<th>ACTIVE</th>
<th>INACTIVE</th>
<th>PLUGGED</th>
<th>CAPPED</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>NORTH HOUSING</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IRRIGATION</td>
<td>1</td>
<td>15</td>
<td>16</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SOUTH HOUSING</td>
<td>16*</td>
<td>12</td>
<td>20</td>
<td>--</td>
<td>48</td>
</tr>
<tr>
<td>SUPPLY</td>
<td>1**</td>
<td>31</td>
<td>13</td>
<td>1</td>
<td>45</td>
</tr>
<tr>
<td>RETURN</td>
<td>1</td>
<td>36</td>
<td>11</td>
<td>--</td>
<td>48</td>
</tr>
<tr>
<td>MISCELLANEOUS</td>
<td>4</td>
<td>--</td>
<td>2</td>
<td>--</td>
<td>6</td>
</tr>
</tbody>
</table>

* These wells are currently not being used and are reported as inactive on EN-50 reports to the St. Johns River Water Management District
** Currently used to irrigate tennis courts and General’s House lawn

**TABLE 3-4 Current Well Usage in North and South Housing Area**

<table>
<thead>
<tr>
<th>WELL #</th>
<th>LOCATION</th>
<th>FLOW million gallons per day (mgd)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NORTH HOUSING</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12N</td>
<td>Beach side of A1A</td>
<td>0.065</td>
</tr>
<tr>
<td>SOUTH HOUSING</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10A</td>
<td>Tennis Courts and Senior Officer Housing</td>
<td>0.015</td>
</tr>
<tr>
<td>4084</td>
<td>Ball fields</td>
<td>0.041</td>
</tr>
<tr>
<td>4104</td>
<td>Chapel</td>
<td>0.018</td>
</tr>
<tr>
<td>3686</td>
<td>Ball fields</td>
<td>0.069</td>
</tr>
<tr>
<td>3653</td>
<td>Ball fields</td>
<td>0.028</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td>0.236*</td>
</tr>
</tbody>
</table>

Note: Well usage data as reported in EN-50 to St. Johns River Water Management District every 6 months
4.0 ENVIRONMENTAL CONSEQUENCES

This section of the EA describes the potential environmental consequences of the proposed activities by comparing proposed project activities with the potentially affected environmental components. Sections 4.1 through 4.12 provide discussions of potential environmental consequences from the proposed activity. Sections 4.13 through 4.22 provide discussions of the following with regard to proposed project actions: cumulative impacts; conflicts with federal, regional, state, local or Indian tribe land use plans, policies and controls; natural or depletable resource requirements and conservation potential; irreversible or irretrievable commitment of resources; adverse environmental effects that cannot be avoided; and federal actions to address environmental justice.

Federal environmental laws and regulations were reviewed to assist in determining established thresholds for assessing environmental impacts (if any) in fulfillment of NEPA requirements. Proposed activities were evaluated to determine their potential to result in significant environmental consequences using an approach based on the interpretation of significance outlined in the CEQ regulations for implementing the procedural provisions of the NEPA (40 CFR 1500-1508).

Guidelines established by the CEQ (40 CFR 1508.27) specify that significance should be determined in relationship to both context and intensity (severity). The assessment of potential impacts and the determination of their significance are based on the criteria in 40 CFR 1508.27.

Based on these criteria, three levels of impact can be identified:

1. No Impact - No impact is predicted.
2. No Significant Impact - An impact is predicted, but the impact does not meet the intensity/context significance criteria for the specific resource.
3. Significant Impact - An impact is predicted that meets the intensity/context significance criteria for the specific resource.

Note:

Since impacts would be anticipated to be similar, and to reduce redundancy and enhance clarity, discussions associated with Alternative 1 (Preferred Alternative) and Alternative 2 for the Proposed Action will be combined in all of the following sections with the exception of Socioeconomics.
4.1 Air Quality

4.1.1 Alternatives 1 and 2

Air quality impacts could occur during construction/renovation/demolition (hereinafter referred to as construction) operations associated with the Proposed Action at PAFB. Construction-related impacts could result from fugitive dust (particulate matter) and construction equipment emissions intermittently over a period of approximately 3-4 years.

Section 176(c)(1) of the Clean Air Act (CAA), known as the General Conformity provision, as implemented by EPA’s general conformity regulations, is a mandate for federal agencies intended to aid states in achieving and maintaining the NAAQS. In an air quality region that has been designated as a nonattainment area for any of the six NAAQS, or a former nonattainment area that has now achieved the NAAQS and was redesignated as a maintenance area, a federal agency action must not cause or contribute to any new violation, or delay the timely attainment of any air quality standard or milestone in the state implementation plan. Because Brevard County is neither a nonattainment area nor a maintenance area, the general conformity provisions do not apply to the Proposed Action.

Emissions generated by facility construction activities would be in the form of either gaseous or particulate pollutant emissions. Gaseous emissions would occur from heavy-duty construction equipment and vehicle travel to and from the site by construction workers. Emissions would consist primarily of combustion products. Particulate matter in the form of dust emissions also would be generated during the construction phase from excavation, earth moving, construction of buildings, and traffic on unpaved surface area.

As shown in Chapter 3, Brevard County currently meets both the Florida AAQS and NAAQS for ozone, sulfur dioxide, nitrogen dioxide, carbon monoxide, and PM$_{10}$. Because the area is in attainment for all criteria pollutants, the FDEP has not been required to establish specific emission reduction measures. Construction emissions of criteria pollutants would not be anticipated to jeopardize the attainment status for these pollutants. Baseline emissions in Brevard County are well below the levels that would cause nonattainment. Therefore, no significant impacts to air quality from construction activities would be anticipated.

Construction-related emissions of fugitive dust and exhaust products would depend on the amount of construction and earthwork performed and the construction mobilization schedule. It is expected that fugitive dust from ground-disturbing activities can be reduced by 50 percent by application of Best Available Control Technologies such as application of dust suppressants, use of coverings or enclosures, paving, enshrouding, planting, and reduction of vehicle speeds.

4.1.2 No-Action Alternative

Under the No Action Alternative, the Proposed Action would not occur. There would be no impacts to air quality since no change in activities would occur.
4.1.3 Mitigative Measures

No mitigative measures have been identified for air quality.

4.2 Biological Resources

4.2.1 Alternatives 1 and 2

Vegetation and Wetlands

The immediate construction area where the Proposed Action would occur consists of landscaped lawns with some maintained grass common areas that have been in place around the existing housing for many years. Grass type is primarily Raleigh St. Augustine. The remainder of the vegetative community consists of a variety of palms (Royal and Sable), shrubs (Silverthorn, Sea Grape, Hibiscus, Palmetto, Ligustrum, and Juniper), and trees (Live Oak and Southern Yellow Pine). It is anticipated that disturbances to this vegetative community would be temporary and not significant. It is typical for construction design specifications to require the relocation of existing shrubs and replacement of sod where disturbance may occur. Trees would be saved if they do not interfere with planned construction. The PAFB Comprehensive Plan would be used as a guide to blend new and existing landscaping. No significant impacts are anticipated as a result of implementing the Proposed Action.

Wetlands

The 2.38-acre tract in the North Housing area is located in the retention basin for a portion of the North Housing area stormwater system. The contractor will be required to redesign and reconstruct the affected North Housing Stormwater System to accommodate the site development for the seven units of housing in this area. The redesign shall be modified in accordance with the applicable codes and regulations of the SJRWMD.

With the exception of a strip of land along the western boundary of the South Housing area, the entire site lies above the 100-year floodplain (Figure 3-1). Other than the potential wetlands associated with ditches and retention areas, there are no known wetlands on this site. No impacts are anticipated to these small wetland areas. Normally, floodplains are not suitable for the construction of new facilities. Should construction become necessary on the small section of property within the 100-year floodplain, care must be taken to ensure that project design and construction incorporates flood-proofing measures and that the finished floor elevation is above the flood level. Coordination must be conducted with SJRWMD in this event.

The North and South Housing areas do not lie within the no-development zone, so construction and modification of facilities is consistent with the Coastal Zone Management Act (CZMA). Additionally, the contractor would coordinate with 45 SW CE prior to design of the facilities to ensure adherence to all other siting standards. However, both housing areas do lie within the coastal zone and are subject to a federal coastal zone consistency determination as outlined in the CZMA, which is administered by the FDCA. Based upon review of the project, the Florida Coastal Zone Management
Program Acting Director has determined that this project is consistent with the Florida Coastal Zone Management Program (Appendix A).

**Fish and Wildlife**

Potential impacts to fish and wildlife resources for the Proposed Action were reviewed and assessed on the basis of existing habitat types on the sites, site conditions, proximity to developed areas and the size of the proposed project. Impacts to fish and wildlife resources were considered to be negligible if the project sites were located within or immediately adjacent to developed areas, the project was small in size (less than 1 acre), or the site was disturbed or maintained through periodic mowing (improved grounds). A potentially significant impact was considered possible if the site was currently undisturbed, contained valuable wildlife habitat, was located upslope from a stream or water body, and was large in extent (greater than 5 acres).

The proposed sites provide foraging habitat for bird species that are common on the Base including mourning doves, fish crow, and killdeer. Because the vegetative community is regularly maintained through mowing it is not likely to provide adequate breeding habitat for the killdeer or other ground nesting birds that utilize open ground. The disturbance of this habitat under the Proposed Action will have a negligible effect on wildlife because the area has been previously developed. Landscaping of the sites following construction will add some diversity to the vegetative community and benefit some urban species. Extensive aquatic areas are not present on or adjacent to these sites, therefore, no fish or aquatic invertebrates will be affected by this Proposed Action. Therefore, no significant adverse impacts to fish and wildlife are expected as a result of implementing the Proposed Action and no mitigation measures would be necessary.

**Threatened and Endangered Species**

Potential impacts to threatened and endangered species on the sites were assessed for the project on the basis of the following: presence of required habitats for the species of concern on the sites; site conditions; proximity to developed areas; and, the size of the proposed project. Impacts to threatened and endangered species are not anticipated if the appropriate habitat for the species of concern is absent, the project sites are located within developed areas, the project is small in size (less than 1 acre), or the site is disturbed. A potentially significant impact was considered if appropriate habitat is present, the site is currently undisturbed, and is large in size (greater than 5 acres).

The vegetative community on the sites do not provide habitat that is critical to support any federally-threatened or -endangered species and/or State Species of Special Concern. However, flat, gravel topped roofs of some facilities provide potential nesting habitat for the State-threatened least tern and the black skimmer, a State-list Species of Special Concern. Nesting season for the least tern is from April through August. Construction activities could potentially disturb nesting activities. Consideration should be given to minimize construction activities on flat-topped roofs during this period if nesting activities are observed. Additionally, consideration should be given to erecting netting, to discourage nesting, over roof areas if construction must occur during this period.
Based upon consultation with a 45th SW Environmental Support Contractor fish and wildlife biologist, least tern or black skimmer nesting has not been documented in the South Housing area (Chambers, 2001).

The proposed project site in South Housing is included in the area involved in the Biological Opinion (BO) issued to the 45th Space Wing by the U.S. Fish and Wildlife Service on 2 May 2000. The BO (though not binding on the private developer) addresses exterior lighting effects on threatened and endangered sea turtles utilizing the adjacent Atlantic coastal beaches. To comply with the intent of this BO, the Air Force has instructed, through the Request for Proposal Housing Privatization Project, Patrick Air Force Base, that the developer provide low-pressure sodium street lighting to protect indigenous sea-turtle populations. The developer must additionally comply with the requirements contained in Section 46-94 (New Development) of Brevard Code of Ordinances, Part II, Chapter 46, Article III (Marine Turtle Protection).

4.2.2 No-Action Alternative

Under the No Action Alternative, the Proposed Action would not occur. There would be no impacts to biological resources since no change in activities would occur.

4.2.3 Mitigative Measures

No mitigative measures were determined necessary, however the following paragraphs list some recommendations or procedures, if followed, would reduce the likelihood of impacts.

The inclusion of existing policies for exterior lighting and building construction in construction contracts would limit potential for impact to the sea turtle, least tern, and black skimmer for the North Housing area construction and are recommendations as avoidance measures to be implemented in the South Housing area after the property is transferred to commercial entities.

If included in contractual clauses, the proposed facilities and construction in the South Housing area would be designed and constructed to conform to the exterior lighting standards and requirements as outlined in 45SW Instruction 32-7001, "Exterior Lighting Management," dated 26 July 2000. PAFB has adopted these design standards, in consultation with the U.S. Fish and Wildlife Service, to minimize potential impacts to nesting sea turtles. The developer must also comply with the Brevard County Marine Turtle Protection ordinances.

With the inclusion of these design standards and the use of netting or restricting roof construction activities during the April - August time frame, implementing the Proposed Action is not anticipated to result in adverse impacts to protected species. Additionally, salt resistant native vegetation should be used for landscaping.
4.3 Cultural Resources

4.3.1 Alternatives 1 and 2

There are no known archaeological sites or historical structures on either North or South Housing areas. South Housing has been evaluated utilizing the National Register Criteria for Evaluation and has been determined not to have achieved significance within the last 50 years for its exceptional importance or for its contribution as a National Register of Historic Places (NRHP) eligible district in the Cold War period. Therefore, there would be no anticipated impacts to cultural resources from the implementation of the Proposed Action. Upon review of the project, the Florida Division/Bureau of Historical Resources/Historic Preservation concurred with the findings that no historic properties/resources were known in the area (Appendix A).

The construction contract would include an “unanticipated discovery” clause which would specify that if, during construction activities, the selected contractor observes items that might have historical or archaeological value, such observations shall be reported immediately to the appropriate authorities in compliance with applicable laws so that a determination can be made as to their significance and what, if any, special disposition of the finds should be made. The construction contractor shall cease all activities that may result in the destruction of these resources and shall prevent employees from trespassing on, removing, or otherwise damaging such resources.

4.3.2 No-Action Alternative

Under the No Action Alternative, the Proposed Action would not occur. There would be no impacts to cultural resources since no change in activities would occur.

4.3.3 Mitigative Measures

No mitigative measures have been identified for cultural resources.

4.4 Geology and Soils

4.4.1 Alternatives 1 and 2

There would be no significant impacts to geology and soils from the implementation of Proposed Action. The Proposed Action is to renovate and/or construct housing units on PAFB North and South Housing areas in support of the privatization initiative. A National Pollutant Discharge Elimination System (NPDES) construction permit and Stormwater Pollution Plan will be necessary to address runoff, erosion and pollution from built-up areas as well as construction activities. By using best management practices during new construction, potential negative impacts on the geology and soils (e.g., sheet flow and gully erosion) would be avoided. By controlling these erosion factors, siltation and turbidity of the canals and waterways would be minimized.
4.4.2 No-Action Alternative

Under the No Action Alternative, the Proposed Action would not occur. There would be no impacts to soils and geology since no change in activities would occur.

4.4.3 Mitigative Measures

No mitigative measures have been identified for geology and soils.

4.5 Hazardous Materials and Waste

4.5.1 Alternatives 1 and 2

There should be no significant impacts anticipated to hazardous materials and waste from the implementation of Proposed Action. The proposed action is to renovate and/or construct housing units on PAFB North and South Housing areas in support of the privatization initiative. Although hazardous materials and waste would be expected to be encountered during demolition/renovation of housing units on PAFB in the forms of ACM and lead based paint, no significant environmental impacts are anticipated. Hazardous materials would be handled in accordance with applicable laws and regulations to ensure they are stored, transported, and disposed of properly. Any hazardous waste would be identified, removed in accordance with current regulations, and disposed of following these regulations. No hazardous waste would be disposed of on-site.

Construction design specifications would continue to provide specific procedures to be followed by the construction or demolition contractor for the management of hazardous materials and waste. Pesticides (herbicides, rodenticides, insecticides, etc.) would be applied in normal lawn care operations, and their use would be in accordance with the Installation Pesticide Management Plan.

4.5.2 No-Action Alternative

Under the No Action Alternative, the Proposed Action would not occur. There would be no impacts to hazardous materials and waste since no change in activities would occur.

4.5.3 Mitigative Measures

No mitigative measures have been identified for hazardous materials and waste.

4.6 Health and Safety

4.6.1 Alternatives 1 and 2

Health and safety impacts could occur due to construction activities at the sites of the Preferred Alternative. Use of established safety procedures and implementation of Site Specific Health and Safety Plans would minimize potential impacts to health and safety from proposed activities. Governing safety regulations and all appropriate OSHA
regulations including 29 CFR Part 1926, Safety and Health Regulations for Construction, would be adhered to during the course of all construction activities. The selected building contractor will comply with all other applicable federal, state, and local laws and regulations when constructing any structures.

There would be potential negative, though not significant, impacts to health and safety due to the renovation and/or construction of these buildings because of asbestos or lead-based paint issues with these buildings that could cause a health and safety hazard during renovation. The selected building contractor must comply with current health and safety regulations regarding LBP and ACM during the course of all renovation activities.

The South Housing units under the Proposed Action were constructed in the late 1950’s. Although the buildings were in compliance with health and safety codes when they were constructed, current codes are more stringent. A goal of the renovation of these buildings would be to bring them up to current building code standards.

The selected building contractor will comply with all applicable federal, state, and local laws and regulations when renovating or constructing any structures.

4.6.2 No-Action Alternative

Under the No Action Alternative, the Proposed Action would not occur. There would be no impacts to hazardous materials and waste since no change in activities would occur. However, ACM and LBP issues in existing South Housing structures would remain.

4.6.3 Mitigative Measures

No mitigative measures have been identified for health and safety.

4.7 Infrastructure and Transportation

4.7.1 Alternatives 1 and 2

Impacts to the following infrastructure and transportation components are described below. See proposed Comprehensive Plan Amendment 1999B for complete review.

Drinking Water

There will be approximately 1,340 families housed in the new and renovated units in the PAFB South Housing area. The City of Cocoa maintains a usage of approximately 135 gpd per capita. Using the Cocoa average and assuming four family members per household would result in an estimated average demand of 723,600 gallons per day, or 0.72 mgd (million gallons per day) for the entire South Housing area. According to a Water System Study conducted in 1998, PAFB uses about 2.1 mgd of water supply on the average (45 SW, 1998). This study also indicates that currently the South Housing area accounts for approximately 37 percent (0.78 mgd) of this water use. Based on the City of Cocoa usage figures, the addition of seven, single family housing units to the
North Housing area would result in an increased water use of approximately 3,780 gallons per day or .0038 mgd from all units. This impact is not considered significant.

It should be noted that according to calculations contained in the 1998 PAFB Water System Study, water usage in the South Housing area is approximately 300 gallons per day per capita. This figure is significantly higher than the City of Cocoa usage estimates of approximately 135 gpd per capita.

A number of recommended upgrades were made in the PAFB Water System Study conducted in 1998 that could significantly improve the Installation drinking water system, particularly in the North and South Housing areas. These recommendations are for improvements to the booster pump station located in Building 209 and to the storage tanks in the South Housing area. These recommendations, if implemented, would improve water pressure issues in the North and South Housing areas. A summarization of recommendations is contained in the Executive Summary of the Patrick Air Force Base Water System Study, July 1998.

Based on these data and discussions with the 45th SW ESC water engineer, minor increases on drinking water demand would occur but also efficiencies would be gained by the system upgrades mentioned above and upgrades that would be anticipated to be utilized by the developer (i.e., low flow showerheads, low volume toilets, etc.). As a result no significant impacts to drinking water resources would be anticipated.

Wastewater Treatment

The area immediately south of PAFB, including the PAFB South Housing area, is serviced by Brevard County’s South Beaches Water Reclamation Facility in Melbourne Beach. However, the wastewater from the South Housing area is pumped to the South PAFB pumping station. All collection and transmission lines from South Housing to the South PAFB pumping station are maintained by PAFB. At the South PAFB pumping station, the wastewater is combined with PAFB wastewater and pumped north to the CBWRF. PAFB currently pays a lump sum negotiated fee for plant capacity not to exceed approximately 1.3 mgd. PAFB is currently discharging approximately 0.5 to 0.6 mgd. Flow from South Housing is not metered into the South PAFB pumping station but it is estimated that as much as 50% of PAFB’s current flow is from South Housing. It is also anticipated that the developer would upgrade existing wastewater infrastructure.

Based on the estimate of water usage as described above, it would be reasonable to conclude that the Proposed Action would result in a proportional reduction in wastewater production and therefore no significant impacts would be anticipated.

Power

Based on the overall number of housing units and the use of energy efficient design and construction, the Proposed Action can be supported with current systems. It would be anticipated that the Proposed Action would result in an overall decrease in power consumption.
Natural Gas

The seven housing units proposed for construction in the PAFB North Housing area would utilize existing natural gas distribution. No requirements for natural gas exist in the PAFB South Housing area. No impact to natural gas is anticipated.

Telecommunications

No impacts are anticipated. It would be anticipated that telecommunication access would be upgraded by the Proposed Action (i.e. new cable television lines, and telephone lines).

Storm Drainage

In the PAFB North Housing area, the 2.38-acre tract is located in the retention basin for a portion of the North Housing area stormwater system. The Proposed Action would require redesign and relocation of the affected North Housing Stormwater System which is currently a curb and gutter system that feeds multiple dry retention ponds, to accommodate the site development for the seven unit housing area. This redesign would be modified in accordance with the applicable codes and regulations of the SJRWMD (Chapter 40C – 4, F.A.C.). The construction contractor would provide all necessary documentation, designs and fees required for application for modification to the existing stormwater permit. The permit application would be filed through the 45th Civil Engineering Squadron Environmental Flight.

Transportation

It is anticipated that the existing commercial transportation (roadway) system would be adequate to serve the proposed development although changes to existing residential streets may occur. The Proposed Action should not result in a permanent increase in vehicular traffic based on the anticipated number of housing units that will be constructed or renovated. Short-term interruptions to service would be likely during construction activities; however, these interruptions in service are not considered significant impacts.

4.7.2 No-Action Alternative

Under the No Action Alternative, the Proposed Action would not occur. There would be no impacts to infrastructure and transportation since no change in activities would occur.

4.7.3 Mitigative Measures

No mitigative measures were identified, however, the following text describes modernizations and construction procedures that will be that will ameliorate impacts.

Alternative 1 would require the design and construction of a sub-surface storm drainage system in the PAFB South Housing area, as none currently exist. The developer would notify the SJRWMD and PAFB Environmental Flight of acceptance and transfer of ownership of the existing stormwater retention pond. Planned use, modification, and/or disposal of the existing retention pond and design of the new stormwater system by the
developer would be in accordance with applicable local, state, and federal regulations and codes.

Prior to and during stormwater system design and relocation activities in the North and South Housing areas, the permittee would implement and maintain all erosion and sediment control measures (best management practices) required to retain sediment on-site and to prevent violations of State water quality standards.

4.8 Land Use

4.8.1 Alternatives 1 and 2

There would be positive impacts to land use from the implementation of Alternative 1 of the Proposed Action. The following paragraphs describe land use enhancements that would occur as a result of the Preferred Alternative. The developer would comply with any State or local land use, zoning and development restrictions.

To facilitate the transition of the South Housing area from federal to private ownership, the Air Force has had numerous discussions with city and state working groups over the previous three years. The Air Force is working with Brevard County and the State of Florida FDCA to establish designated land uses for the South Housing Site. The Air Force has submitted an amendment application to Brevard County’s Comprehensive Plan. The Air Force’s proposed amendment to the land use plan for Brevard County would have 263.77 acres of the site assigned a designation of Urban Fringe Residential and 10 acres of the site designated for Neighborhood Commercial Activities. (These proposed designations include both the Air Force Units and the non-Air Force portion of the site.) The proposed amendment is not specific as to the location of the commercial uses on the site and would not preclude residential uses of the designated acreage. The proposed amendment also contemplates a limit of 999 total residential units at the site, including the 545 Air Force units. This limit does not represent an Air Force determination as to the maximum number of units which is desirable at the site, but rather, is an assessment that the Brevard County Comprehensive Plan Amendment process can move forward most expeditiously at the present time if no overall increase in residential density is proposed. There may be proposals by the selected developer with uses that are not fully consistent with the amendment (e.g., more than 999 total residential units). It will be the responsibility of the selected developer to complete the land use planning process for the entire South Housing area and to obtain required zoning for the uses contemplated in the selected proposal. The approval of the Brevard County Comprehensive Planning Amendment does not prevent the developer from pursuing a further amendment in order to carry out the selected proposal.

The City of Satellite Beach has expressed an interest in annexing the South Housing area, and potential developers may wish to consider whether such annexation might permit different uses or densities at the site. The City of Satellite Beach residents in a November 1999 referendum approved annexation of the South Housing area. The City of Satellite Beach has provided an information package on the services that it can provide for the South Housing land.
Ability to properly manage the proposed project is critical to the long-term viability of the development. The developer would implement inspection programs to evaluate life and safety issues, preventative maintenance, capital repairs and replacements, energy concerns, cost controls, vacancy management, and tenant demographics.

The developer would develop a comprehensive community plan that responds to the military family needs and reinforces the connection between the families and the community. The purpose of the plan would be to:

- Integrate a separate and distinct military housing community with the larger, surrounding community.
- Incorporate green space, landscaping, underground utilities, and recreation areas to enhance the overall environment of the neighborhood and improve quality of life.
- Provide efficient and separate vehicular and pedestrian traffic patterns, and minimize number of housing units on collector streets.
- Use residential building blocks to create neighborhood identity.

NON-AIR FORCE PORTION OF SITE: The potential developer would include a plan for development of the non-Air Force portion of the site. The Air Force’s objectives with regard to the development of the non-Air Force portion of the site are (i) to aid the construction financing to facilitate and expedite delivery of the Air Force Units, (ii) to provide for uses which are consistent with the family residential community which the Air Force Units will constitute and to enhance the appeal of this community, and (iii) to reduce the amount of the Air Force’s equity contribution to the LP/LLC and/or increase the amount of financial return to the Air Force from its investment in the LP/LLC. Examples of compatible uses and incompatible uses of the non-Air Force portion of the site are:

Compatible Uses:
- Home ownership
- Residential rental
- Hotel or Resort
- Athletic or recreational facilities, other than spectator sports
- Light commercial which are consistent with uses on neighboring sites (excluding retail sales and services that could be in direct competition with the Army and Air Force Exchange Service, the Morale, Welfare, and Recreation, activities, and the Defense Commissary Agency)

 incompatible Uses:
- Large scale commercial developments (e.g., malls)
- Industrial or manufacturing facilities
- Rooming houses or other transient residences
- Adult-oriented businesses
- Recreational Vehicle parks and manufactured housing parks

As with the Air Force units, the developer would be responsible for obtaining all required zoning, permits and land use approvals for the non-Air Force portion of the site and for compliance with all applicable laws and regulations.

No changes to current land use in the North Housing area would occur as a result of the Preferred Alternative. A detailed description of land use issues associated with the Proposed Action is contained in the Request for Proposal Housing Privatization Project, Patrick Air Force Base, 20 October 2000.

Under Alternative 2 of the Proposed Action, the Air Force would maintain ownership and management of the PAFB South Housing area. Renovation of existing housing units would not result in changes to land use.

The selected contractor would adhere to the requirements outlined in the Request for Proposal Housing Privatization Project, Patrick Air Force Base, 20 October 2000.

4.8.2 No-Action Alternative

Under the No Action Alternative, the Proposed Action would not occur. Land usage would remain unchanged.

4.8.3 Mitigative Measures

No mitigative measures for land use have been identified.

4.9 Noise

4.9.1 Alternatives 1 and 2

The sites associated with the Proposed Action are located within the acceptable noise contour zones for activities taking place on PAFB. Noise sources that may occur as a result of the Proposed Action include construction activities such as construction vehicle traffic. Table 4-1 lists typical noise levels of primary construction equipment. Projected noise impacts from construction activities would not be expected to be significant, as noise-producing activities are not anticipated to affect noise-sensitive receptors.

In accordance with the Request for Proposal Housing Privatization Project, Patrick Air Force Base, recreation facilities would be sited where easily accessible while causing minimum noise disturbance to nearby occupants.
Table 4-1  Typical Noise Levels of Principal Construction Equipment  
(Noise Levels are in dBA at 50 Feet)

<table>
<thead>
<tr>
<th>Clearing</th>
<th>Grading and Compacting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulldozer</td>
<td>Grader</td>
</tr>
<tr>
<td>Front end loader</td>
<td>Roller</td>
</tr>
<tr>
<td>Dump truck</td>
<td>80-93</td>
</tr>
<tr>
<td>Jack hammer</td>
<td></td>
</tr>
<tr>
<td>Crane with ball</td>
<td>73-95</td>
</tr>
<tr>
<td>Clearing</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Excavation and Earth Moving</th>
<th>Paving</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulldozer</td>
<td>Paver</td>
</tr>
<tr>
<td>Backhoe</td>
<td>Truck</td>
</tr>
<tr>
<td>Front end loader</td>
<td>Tamper</td>
</tr>
<tr>
<td>Dump truck</td>
<td>74-77</td>
</tr>
<tr>
<td>Jack hammer</td>
<td></td>
</tr>
<tr>
<td>Scraper</td>
<td></td>
</tr>
<tr>
<td>Excavation and Earth Moving</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Structure Construction</th>
<th>Landscaping and Cleanup</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crane</td>
<td>Bulldozer</td>
</tr>
<tr>
<td>Welding generator</td>
<td>Backhoe</td>
</tr>
<tr>
<td>Concrete mixer</td>
<td>Truck</td>
</tr>
<tr>
<td>Concrete pump</td>
<td>Front end loader</td>
</tr>
<tr>
<td>Concrete vibrator</td>
<td>Dump truck</td>
</tr>
<tr>
<td>Air compressor</td>
<td>Paver</td>
</tr>
<tr>
<td>Pneumatic tools</td>
<td>86-88</td>
</tr>
<tr>
<td>Bulldozer</td>
<td></td>
</tr>
<tr>
<td>Cement and dump trucks</td>
<td></td>
</tr>
<tr>
<td>Front end loader</td>
<td></td>
</tr>
<tr>
<td>Dump truck</td>
<td></td>
</tr>
<tr>
<td>Paver</td>
<td></td>
</tr>
</tbody>
</table>


Note: dBA = A-weighted decibels

4.9.2  No-Action Alternative

Under the No Action Alternative, the Proposed Action would not occur. Noise levels would remain unchanged. No impacts would be anticipated.

4.9.3  Mitigative Measures

Since no noise-sensitive receptors were identified, no mitigative measures are necessary.
4.10 Socioeconomics

4.10.1 Alternatives 1 and 2

The implementation of Alternative 1 would be anticipated to produce positive, though not significant, impacts to employment and housing. There would be no impacts anticipated to population. Implementation of Alternative 1 could also result in positive financial impact to the local communities through increased property taxes.

Population

There would be no anticipated increase in the military population as a result of the Proposed Action other than the potential relocation of military personnel that may be currently utilizing commercial housing resources. Impacts to population resulting from the development of the non-Air Force property in the South Housing area cannot be adequately quantified as the exact nature and extent of the development is unknown.

Employment

The number of direct and indirect jobs associated with Alternative 1 cannot be accurately predicted at this time as the exact scope and extent of the developer’s proposal is unknown. When construction activities are completed, it is anticipated that a small number of full-time positions would be created to manage and provide maintenance for the developed property. This impact to the PAFB area employment industry would be expected to be minimal.

Implementation of Alternative 2, renovation of PAFB South Housing, would result in temporary local and regional employment gains through construction contractors. This impact would be considered insignificant.

Housing

Both Alternatives 1 and 2 would result in positive impacts to housing. Currently, significant portions of the housing units in the PAFB South Housing area are unoccupied. Implementing the Proposed Action would revitalize PAFB’s family housing by providing new or renovated units, which would reduce waiting time for suitable housing. Residential housing designs and construction would comply with all applicable codes, standards, and regulations, meet basic requirements, and be appropriate to the climate and life-style of the area.

Alternative 1 would provide recreation/common areas in addition to those specified in the Request for Proposal Housing Privatization Project, Patrick Air Force Base for the North and South Housing areas. The additional recreation/common areas would provide additional activities to enhance and compliment the quality of life associated with the East-Central Florida coastal climate and with the housing areas located within close proximity to the beach and Banana River.
Housing impacts associated with Alternative 1 which would result from the construction of seven units of senior officer housing in the PAFB North Housing area would be considered insignificant.

Alternative 2 would result in positive, housing impacts from the renovation of existing PAFB South Housing units. These impacts would not be considered significant.

4.10.2 No-Action Alternative

Under the No Action Alternative, the Proposed Action would not occur. Existing housing in the PAFB South Housing area would not be renovated and the housing condition would continue to decline. This would result in continued decrease in adequate housing opportunities for military personnel assigned to PAFB and have negative impacts on morale. No impacts to employment or population would be anticipated.

4.10.3 Mitigative Measures

No mitigation is required for socioeconomics, however, it is the Air Force’s desire that military families residing in existing units be required to move no more than once, unless a family wishes to be returned to a renovated unit that it previously occupied.

4.11 Visual and Aesthetics

4.11.1 Alternatives 1 and 2

The discussion below addresses both Alternatives 1 and 2, however, if Alternative 2 is chosen, only renovation of existing housing in the PAFB South Housing area would occur. It would be anticipated though that positive improvements to visual and aesthetic resources similar, but to a lesser degree, to those described below for Alternative 1 would result from the implementation of Alternative 2.

Positive impacts to visual and aesthetic resources would result from the implementation of Alternative 1. In accordance with the Request for Proposal Housing Privatization Project, Patrick Air Force Base, site designs would provide an interesting, attractive, livable, residential environment. Building arrangements would be informal, with varying setbacks to provide for best view, privacy and variety. Building orientations would provide residents with safe and convenient access to the units, as well as passive energy efficiencies. Variety within groupings, arrangements and siting configurations of buildings is an Air Force objective in the Proposed Action. The site design would conform to varying terrain conditions to provide attractive residential patterns and attractive, pedestrian-friendly streetscapes. Site development would provide an optimum balance of structures, common green spaces with native landscaping and ornamental highlights, recreational areas, appropriate buffer area/screening, street lighting, pedestrian and vehicular circulation (including sidewalks), consistent with good land use planning, practices and economics.

Open areas of the housing site would be designed to encourage creative play and learning for children and a pleasant outdoor experience for adults. The areas would be open for
viewing with no secluded areas. The Proposed Action would provide recreational areas such as tot lots, play equipment, and bench seating areas for young children. Playground components and equipment would be in accordance with the US Consumer Product Safety Commission Publication No. 325, “Handbook for Public Playground Safety.” Two half-size and one full-size basketball courts and a jogging trail/bike path would also be included. Pedestrian access from the Air Force portion of the sites (military housing and retained facilities) to State Highway A1A and the beach would be provided.

Landscaping of common areas and building unit perimeters would be designed to enhance the aesthetic quality of each unit and surrounding neighborhood. Community entrances would be identified with recognizable focal points with landscaping and lighted monuments designating the housing areas. Sufficient landscaping and earth shaping techniques would be provided throughout the community to establish privacy screening and soften the visual environment, including improvement or replacement of the barrier wall bordering the South Housing area. Existing trees would be saved to the maximum extent possible. Front yards would be fully sodded, with sod and/or seeded turf for all other yard areas and community spaces. The PAFB Comprehensive Plans would be used as guides to effectively blend new and existing landscaping. Both general site and unit landscaping would provide year-round focus and interest, and use hardy, predominately native, low maintenance plant materials (xeriscaping practices), and durable mulches and surfacing materials, with provisions at the units for occupant plantings. Landscaping designs would incorporate philosophies and features that conserve water and require minimal maintenance.

To increase public safety and reduce fear of crime, the Community Plan would use site design elements (e.g., environmental, traffic, lighting, and landscaping designs, fencing) to minimize visual obstacles, eliminate places of concealment, offer the most protection against crime, and discourage undesirable traffic.

North Housing development would incorporate the following further special site requirements:

- One-way looped (horseshoe) drive,
- Landscape buffer between State Highway A1A and the northern-most adjoining properties and landscaping features and/or split-face wall to screen the existing Water Pump Station Facility 209,
- Landscaping to screen existing housing,
- Relocate and re-route jogging path south of the limits of the proposed new development,
- Provide separate mail kiosk with drive-up access for proposed new units near site entrance.
4.11.2 No-Action Alternative

Under the No Action Alternative, the Proposed Action would not occur. Existing housing in the PAFB South Housing area would not be renovated, new units in North or South Housing areas would not be constructed, and visual and aesthetic resources would remain unchanged.

4.11.3 Mitigative Measures

Incorporation of the design objectives described in the Request for Proposal Housing Privatization Project, Patrick Air Force Base would eliminate the need for any mitigation.

4.12 Water Resources

4.12.1 Alternatives 1 and 2

Other than drainage ditches and stormwater retention ponds, there are no surface water resources located on the North or South Housing areas. Impacts to the stormwater retention pond in the PAFB North Housing area are addressed in Section 4.7.1.

Existing stormwater permits include:

- 42-009-0197NG - Athletic Complex/South Housing
- 40-009-0439G – South Housing Ballfield Parking
- 40-009-0463G – Youth Center
- 42-009-0132N – Security Fencing and Checkhouse/South Housing
- 42-009-0246NG – South Housing Stormwater Drainage

Existing Consumptive Use Permit:

- 2-009-0062ANF3M

These permits would require review to determine if revisions/modifications/ or transference would be necessary. Review would be in coordination with the SJRWMD.

No impacts are expected to surface or groundwater resources due to the proposed construction/renovation activities for the Proposed Action. Erosion control during construction activities would be undertaken with the use of hay bales and silt fencing to prevent the movement of soils via surface waters and mitigate the potential damage. Run-off from parking lot(s) and roofs could be handled by a variety of methods. These methods could include retention ponds for the bioremediation of materials in the run-off, possibly in conjunction with constructed wetlands; installation of pervious materials for the parking lot(s) surfaces; and/or the installation of rain gardens in and around the parking lot(s). Rain gardens are small-scale stormwater infiltration devices that may replace conventional stormwater detention basins while providing the benefits of groundwater recharge, beauty, and wildlife habitat (Landscape Architecture, 2000). Stormwater NPDES permits would regulate discharges from the construction site to minimize impacts to local water resources.
The developer would also need to contact the SJRWMD to coordinate CUP requirements. The existing CUP may need to be reissued or transferred to the developer. Depending upon the CUP specification, this could require plugging some existing groundwater wells. Additionally, any filling or other construction in the ditches or ponds and/or alteration of the stormwater or surface water management system, would require an Environmental Resource Permit (ERP) from SJRWMD.

4.12.2 No-Action Alternative

Under the No Action Alternative, the Proposed Action would not occur. No additional impacts to water resources would occur. The PAFB North and South Housing area stormwater management systems would remain unchanged.

4.12.3 Mitigative Measures

No mitigative measures were deemed necessary for water resources; however, the following measures should be implemented to offset potential impacts.

The construction contractor must undertake erosion control measures during construction/renovation activities. These can include the use of hay bales and silt fencing to prevent the movement of soils via surface waters. Run-off from parking lot(s) and roofs could be mitigated by a variety of methods including: retention ponds for the bioremediation of materials in the run-off, possibly in conjunction with constructed wetlands; installation of pervious materials for the parking lot(s) surfaces; and/or the installation of rain gardens in and around the parking lot(s).

4.13 Cumulative Impacts

Cumulative impact as shown in 40 CFR 1508.7 is “…the impact on the environment which results from the incremental impact of the action when added to other past, present, or reasonably foreseeable future actions, regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.”

Potential cumulative impacts of the proposed activities are evaluated by determining (1) whether the Proposed Action would have an impact on a given resource and (2) what is the incremental impact of the Proposed Action when added to other past, present, and reasonably foreseeable future actions.

The Proposed Action is not anticipated to result in cumulative impacts in any resource area examined in this document. The activities of the Proposed Action are confined to existing site locations currently used for similar purposes. No encroachment on other properties would be required or anticipated. The Proposed Action would be planned to occur over a three to four year period.
4.14 Conflicts with Federal, State, or Local Land Use Plans, Policies, and Controls

The Proposed Action is consistent with existing land use and would present no conflicts with federal, regional, state, or local land use plans, policies, or controls.

4.15 Energy Requirements and Conservation Potential

Anticipated energy requirements of the Proposed Action could be accommodated within the energy supply of the region. Energy requirements would be subject to any established energy conservation practices.

4.16 Natural or Depletable Resource Requirements and Conservation Potential

Other than the use of necessary building materials and construction vehicle fuels, no significant use of natural or depletable resources is required by the Proposed Action.

4.17 Irreversible or Irretrievable Commitment of Resources

The Proposed Action would result in some irreversible and irretrievable commitment of resources such as wood, concrete, minerals, and labor. This commitment of resources is not significantly different from that necessary for many other similar building programs. It is similar to the building activities that have been carried out on PAFB over recent years.

4.18 Biological Diversity

Biological diversity (biodiversity), or the variety of life and its processes, is a basic property of nature that provides enormous ecological, economic, and aesthetic benefits. The loss of biodiversity is recognized as a major national as well as global concern with potentially profound ecological and economic consequences.

Conservation of biodiversity is a national goal provided for in the framework of NEPA. This goal is to anticipate and evaluate the effects of federal actions on biodiversity and actively manage for the reduction of the impact of these effects as well as the promotion of restoration to previously impacted areas.

The basic goal of biodiversity conservation is to maintain naturally occurring ecosystems, communities, and native species. For the Proposed Action alternatives evaluated in this EA, impacts to the biodiversity of the ROI would not be significant. However, several strategies exist for increasing biodiversity in these areas. These strategies include:

- Incorporate measures to minimize landscape fragmentation.
- Link blocks of originally connected habitat through landscape corridors.
- Utilize only native species in landscape plantings.
- Monitor for biodiversity impacts and for changes in biodiversity.
Implementation of as many of these strategies as feasible during the project planning and design phase would enhance the biodiversity of the proposed project areas and PAFB as a whole.

4.19 Adverse Environmental Effects That Cannot Be Avoided

Adverse environmental effects that cannot be avoided include fugitive dust (particulate matter) and construction equipment emissions; some destruction of existing vegetation; noise from construction activities; and the disturbance of soils. However, through implementation of the mitigations described within this document, these effects can be minimized.

4.20 Relationship Between Short-Term Uses of the Human Environment and the Maintenance and Enhancement of Long-Term Productivity

The Proposed Action would be undertaken in accordance with the PAFB Comprehensive Plan that provides a management tool to aid in making operational support decisions by incorporating the concept of comprehensive planning.

4.21 Federal Actions to Address Environmental Justice in Minority and Low-Income Populations

This Proposed Action was reviewed and found to be compliant with Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, and 32 CFR 989, *Environmental Impact Analysis Process*. Given the physical parameters of the Proposed Action, analysis indicates little or no potential for substantial environmental effects on any human population outside PAFB boundaries.
5.0 SUMMARY OF IMPACTS

The impacts to the environment for the Proposed Action alternatives have been assessed. The previous chapter discussed the environmental consequences of each alternative highlighted within this EA. Table 5-1 provides a comparison matrix of the environmental consequences associated with the implementation of each alternative by individual resource.

5.1 Alternative 1 - Preferred Alternative

The most beneficial alternative, using information supplied by the U.S. Air Force, is Alternative 1 – Housing Privatization (Preferred Alternative). There are no significant impacts to the environmental resources under this alternative, and the potential impacts to the environment that were determined are considered to be not significant. In addition, there are no negative, cumulative impacts under this alternative.

5.2 Alternative 2 – Renovation of Existing Housing

Under Alternative 2, the Air Force would not privatize and retain ownership of the South Housing area. The housing units in this area would be renovated to current building codes and standards and maintained by the Air Force. This alternative would result in no significant negative impacts to the environmental resources addressed in this document. The minor impacts to environmental resources would be easily mitigable.

5.3 No-Action Alternative

Under the No-Action Alternative the Air Force would not privatize housing at PAFB. The South Housing units would remain under Air Force control and would not be renovated. The units would continue to decline and become less suitable to house military families resulting in a continued lack of housing availability. This could potentially result in a decline in morale of Air Force members. ACM and LBP issues currently associated with some of these housing units would continue.
Table 5-1 Summary of Environmental Consequences

<table>
<thead>
<tr>
<th>Environmental Components</th>
<th>Alternative 1 Proposed Housing Privatization</th>
<th>Alternative-2 Renovation of Existing Housing</th>
<th>Alternative 3 No-Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cultural Resources</td>
<td>No Impact</td>
<td>No Impact</td>
<td>No Impact</td>
</tr>
<tr>
<td>Hazardous Materials and Waste</td>
<td>No Significant Impact</td>
<td>No Significant Impact</td>
<td>No Impact</td>
</tr>
<tr>
<td>Health and Safety</td>
<td>No Significant Impact (asbestos and lead based paint mitigation)</td>
<td>No Significant Impact</td>
<td>Slight Negative Impact (continuing ACM and LBP issues)</td>
</tr>
<tr>
<td>Land Use</td>
<td>No Impact</td>
<td>No Impact</td>
<td>No Impact</td>
</tr>
<tr>
<td>Socioeconomics</td>
<td>Positive Impact (additional new/renovated housing, employment)</td>
<td>Positive Impact (renovated housing, employment)</td>
<td>No Impact</td>
</tr>
<tr>
<td>Visual and Aesthetics</td>
<td>Positive Impact (improved landscaping, streetscaping and residential design enhancements)</td>
<td>Positive Impact (residential design enhancement)</td>
<td>No Impact</td>
</tr>
</tbody>
</table>
6.0 LIST OF PREPARERS

Larry W. Blackwell
Director, Environmental Services
M.A., Human Relations, Louisiana Tech University, 1988
BFA, Advertising, Louisiana Tech University, 1971

Danny Brandon
Environmental Specialist
A.S. Bioenvironmental Engineering Technology
Community College of the Air Force, 1997

Brett Frazier
Senior Environmental Engineer
M.S., Environmental Engineering, University of Tennessee, 1988
B.A., Geology, University of Tennessee, 1985

Susan Pearsall
Senior Environmental Scientist
M.S., Biology, University of Alabama in Huntsville, 1999
B.S., Zoology, Auburn University, 1993

Gregg L. Rexroad, CEP
Senior Environmental Scientist
Office Manager
Vista Technologies, Inc.
B.A., Biology, West Virginia University, 1975

Jeffery H. Scott, Ph.D.
Senior Fish and Wildlife Biologist
Ph.D., Aquatic Ecology/Limnology, Auburn University, 1990
M.S., Biology, Jacksonville State University, 1982
B.S., Biology, Jacksonville State University, 1977

John W. Willis, PG
Senior Geologist
Vista Technologies, Inc.
M.S., Marine Science, University of South Florida, 1983
B.S., Geology, University of Georgia, 1970
7.0 INDIVIDUALS/AGENCIES CONSULTED

Angie Chambers
Biologist
Environmental Support Contractor
Cape Canaveral Air Force Station

Richard Davis
Water Engineer
Environmental Support Contractor
Cape Canaveral Air Force Station

John Herrmann
Program Manager
Environmental Support Contractor
Cape Canaveral Air Force Station

Randall Rowland
Planning
45CES/CEV
Patrick Air Force Base

Alexander Stokes
Chief, Environmental Flight
45 CES/CEV
Patrick Air Force Base

Wesley Westphal
Planning
45CES/CEV
Patrick Air Force Base
8.0 REFERENCES

45th Space Wing, Patrick AFB, FL. *Base General Plan (Comprehensive Plan)*. 1996a.


APPENDIX A

STATE OF FLORIDA CLEARINGHOUSE COMMENTS