

DRAFT FINDING OF NO SIGNIFICANT IMPACT

PROPERTY LEASE AND SPORTS COMPLEX SEYMOUR JOHNSON AIR FORCE BASE, NORTH CAROLINA

Pursuant to provisions of the National Environmental Policy Act (NEPA), 42 United States Code (USC) 4321 to 4370h, implementing Council on Environmental Quality (CEQ) Regulations, 40 Code of Federal Regulations (CFR) 1500-1508, and 32 CFR Part 989, Environmental Impact Analysis Process, the U.S. Air Force (Air Force) assessed the potential environmental consequences associated with leasing property to the City of Goldsboro (City), North Carolina, for the construction of a sports complex at Seymour Johnson AFB, Wayne County, North Carolina.

The purpose of the proposed lease and sports complex is to provide safe, illuminated athletic fields for the City, SJAFB, and Wayne County residents. This proposal would be a Public-Public Public-Private (P4) Community Partnership initiative under the authority of 10 USC 2336, *Intergovernmental support agreements with State and local governments*. The City, as consideration for the lease of the Air Force property to construct the sports complex, proposes to construct an addition to the SJAFB Fitness Center. The addition would be 2,500 to 3,000 square feet and would provide needed space for group fitness and exercise equipment.

Currently, youth sports throughout the City are hosted on mostly practice quality fields on a combination of leased and borrowed sites that are a challenge to maintain. Games are primarily played at the YMCA and on SJAFB athletic fields, but demand for these sites and the impact of overplay continue to compound. Many local players travel to surrounding counties due to lack of capacity in both public and private sports organizations. Additionally, the level of competition is suppressed by the quality of the facilities and the lack of illuminated facilities. Also, due to funding shortfalls, an addition to the SJAFB Fitness Center has not been realized. The current Fitness Center is undersized and lacks adequate space to meet the needs of military members. Partnering with the City provides a means for SJAFB to accomplish the addition and provide the needed amenities.

The Environmental Assessment (EA), incorporated by reference into this finding, analyzes the potential environmental consequences of activities associated with leasing approximately 62 acres of Air Force property to the City for the construction, operation, and maintenance of a sports complex, and provides environmental protection measures to avoid or reduce adverse environmental impacts. Concerning the proposed addition to the SJAFB Fitness Center, the *Final Environmental Assessment for the Wing Infrastructure Development Outlook (WINDO) Plan*, dated May 2005, covered a 16,750 square foot addition to the SJAFB Fitness Center, which has not been constructed. The decision document for the EA was a Finding of No Significant Impact, signed 20 Oct 2005. Changes in the physical environment of the installation since 2005 have been minimal; therefore, no additional environmental analysis concerning an addition to the SJAFB Fitness Center is necessary. The WINDO EA is available by contacting the SJAFB Environmental Office at 919-722-5168.

The EA considers all potential impacts of Alternative A (Proposed Action) and the No-Action Alternative. The EA also considers cumulative environmental impacts with other projects at SJAFB.

ALTERNATIVE A (PROPOSED ACTION)

The Proposed Action includes the construction of a sports complex comprised of eight multi-sport athletic fields with supporting amenities such as parking, restrooms, concessions, picnic shelters, a

walking trail, and a playground. The athletic fields would be constructed with artificial turf, which would minimize water consumption and allow for year-round use. No amplified sound is proposed; however, the City is proposing to illuminate all playing fields and parking areas. Each field would have four to six light poles, with each pole up to 80 feet tall. An additional 10 to 15 light poles, up to 37 feet tall, would be estimated for the three paved parking areas. The parking areas would accommodate roughly 466 vehicles and would be accessed via one entry/exit point off South Oak Forest Road. All facilities would be required to comply with the Americans with Disabilities Act of 1990.

NO-ACTION ALTERNATIVE

Under the No-Action Alternative, the Proposed Action would not occur on Air Force property and the proposed project area would remain in its current condition as open space. Opportunities for local residents to engage in organized outdoor sporting events would remain limited. The demonstrated public need for a sports complex would not be fulfilled on the subject property.

SUMMARY OF FINDINGS

The analyses of the affected environment and environmental consequences of implementing the Proposed Action presented in the EA concluded that the City's implementation of the measures required by the Goldsboro Unified Development Ordinance would constitute compliance with all terms and conditions stipulated by the *Stormwater Management for New Development; Landscaping, Screening, and Buffering Standards*; and *Commercial Lighting Design Standards*. The City's obligation to comply with these standards will be included in any subsequent Mitigation Plan for the Proposed Action.

Wayne County is located in an air quality attainment area; therefore, a formal air quality conformity analysis is not required.

The Air Force has concluded that no significant adverse effects would result to the following resources as a result of the Proposed Action: greenhouse gases, safety and occupational health, and cultural resources. No significant adverse cumulative impacts would result from activities associated with Alternative A (Proposed Action) when considered with past, present, or reasonably foreseeable future projects at SJAFB. In addition, the EA concluded that the Proposed Action would not adversely affect environmental justice or socioeconomics.

The Air Force determined that implementing Alternative A (Proposed Action) would have minor impacts to the following resources:

Land Use

The Proposed Action would change the land use of the property from Open Space to Outdoor Recreation. According to Air Force Pamphlet 32-1010, *Land Use Planning*, Outdoor Recreation is compatible with all existing land uses within a half-mile of the property, both on- and off-base. The property is not located within any of the SJAFB runway Clear Zones or Accident Potential Zones. In order to remain compatible with the height restrictions associated with the SJAFB airfield environs, nothing on the subject property could exceed a height of 145 feet. The tallest foreseeable component of the sports complex would be the 80-foot tall light poles, which is well below the maximum allowable height. No significant impacts to land use would be expected as a result of implementing the Proposed Action.

Noise

The Proposed Action would result in increased noise levels associated with the construction and operation of the facility. The existing ambient noise level was estimated and compared to the estimated

increases in noise associated with construction and operation of the complex. Based on the analyses, noise levels associated with construction would be below the threshold recommended by the U.S. Department of Transportation. Additionally, the *average* increase in noise created by the operation of the sports complex would be less than one decibel, and the *maximum* (short-duration) increase would be about two decibels. No significant impacts to noise would be expected as a result of implementing the Proposed Action.

Air Quality

The Proposed Action would result in impacts to air quality resulting from construction and use of the sports complex. Impacts to air quality from construction activities would be temporary and minor. Impacts resulting from the use of the sports complex would be ongoing for the reasonably foreseeable future but emissions of criteria pollutants would be negligible. No significant impacts to air quality would be expected as a result of implementing the Proposed Action.

Water Resources

The Proposed Action would disturb approximately 25 acres of land and create roughly 5 acres of impervious surface. The City would be required to comply with its Unified Development Ordinance, Article V, Chapter 6.5, *Stormwater Management for New Development*, which regulates activities that disturb greater than one acre of land, places controls on nitrogen export from each development, and mandates no net increase in peak stormwater runoff flow leaving a new development site. Additionally, the City would be required to comply with the requirements of the state's National Pollutant Discharge Elimination System (NPDES) Program and obtain a state-approved Erosion and Sediment Control Plan. No significant impacts to water resources would be expected as a result of implementing the Proposed Action.

Hazardous Materials and Waste

Due to the likely presence of chlordane (pesticide) in the soils on the subject property, the City would be required to sample soils, prior to starting any construction related to the Proposed Action, to determine if any pesticide (chlordane) contamination exists and whether any corrective action is necessary to assure protection of human health and the environment. Additionally, the City would be required to follow all applicable federal, state, and local rules and regulations regarding environmental requirements on soil management of hazardous waste and substances. Any disposal of contaminated soil would comply with all applicable federal, state, and local laws, rules and ordinances. The City's obligation to comply with these requirements will be included in any subsequent Mitigation Plan for the Proposed Action. No significant impacts related to hazardous materials and waste would be expected as a result of implementing the Proposed Action.

Biological Resources

The subject property contains many ornamental trees that were planted in the former residential area. SJAFB has an abundance of trees and several forested areas. The removal of the ornamental trees on the subject property would not create a significant impact to vegetation on the installation. The City would be responsible for ensuring compliance with the requirements of the Migratory Bird Treaty Act (MBTA) as it pertains to nest disturbance during tree removal on the subject property. The City's obligation to comply with the MBTA will be included in any subsequent Mitigation Plan for the Proposed Action. No significant impacts to biological resources would be expected as a result of implementing the Proposed Action.

Geology and Soils

The subject property may have chlordane in the soils. Prior to starting any construction related to the Proposed Action, the City would be required to sample soils to determine if any pesticide contamination exists and whether any corrective action is necessary to assure protection of human health and the environment. The City's obligation to comply with this requirement will be included in any subsequent Mitigation Plan for the Proposed Action. If soil contamination exists above action levels, the soils would have to be removed and clean fill would be brought in to replace the removed soils. This would be a positive impact to soils on the subject property. No significant impacts to soils would be expected as a result of implementing the Proposed Action.

Transportation

The Proposed Action would likely result in increased traffic associated with the construction and operation of the facility. The main roadway in the proposed project area is South Oak Forest Road. Construction activities would likely have some minor impacts on South Oak Forest Road traffic patterns. The arrival of construction equipment and delivery of materials to the site would slightly increase traffic volumes; however, construction activities are unlikely to generate significant traffic issues. The majority of traffic on South Oak Forest Road is associated with the installation's Oak Forest Gate, which operates Monday through Friday from 6:00 am to 8:00 pm. Peak hours of use for the proposed sports complex would be evenings and weekends, which would not compound or conflict with peak traffic volumes associated with the Oak Forest Gate. No significant impacts to transportation would be expected as a result of implementing the Proposed Action.

Visual Resources

The Proposed Action would change the existing view from neighboring properties. Overall, the visual change that would be associated with the sports complex is compatible with nearby residential neighborhoods, as the majority of the acreage would be open turf areas with landscaping throughout. Lighting of the playing fields and parking areas would introduce a new source of light to adjacent properties during evening hours up to 10:00 pm; however, based on the requirements of the City's *Commercial Lighting Design Standards* and, to a lesser degree, the *Landscaping, Screening and Buffering Standards*, no significant light trespass or glare to neighboring homes would be expected. The City's obligation to comply with these standards will be included in any subsequent Mitigation Plan for the Proposed Action.

PREFERRED ALTERNATIVE

Alternative A has been identified as the Preferred Alternative. Alternative A would include a lease for approximately 62 acres of Air Force property to the City and the subsequent construction of a sports complex comprised of eight multi-sport athletic fields with supporting amenities such as parking, restrooms, concessions, picnic shelters, a walking trail, and a playground.

FINDING OF NO SIGNIFICANT IMPACT

Based on my review of the facts and analyses contained in the attached EA, conducted under the provisions of NEPA, CEQ Regulations, and 32 CFR Part 989, I conclude that the Preferred Alternative, *Property Lease and Sports Complex*, cumulatively with other projects at SJAFB, would not have a significant impact on the natural or human environment. Accordingly, an Environmental Impact Statement is not required. The signing of this Finding of No Significant Impact completes the environmental impact analysis process.

FINDING OF NO SIGNIFICANT IMPACT

CONCURRENCE PAGE

In conjunction with the Final Environmental Assessment for the Property Lease and Sports Complex at Seymour Johnson Air Force Base, North Carolina.

MARK H. SLOCUM, Colonel, USAF
Commander, 4th Fighter Wing

Date _____

DRAFT

ENVIRONMENTAL ASSESSMENT

FOR

**PROPERTY LEASE
AND
SPORTS COMPLEX**

AT

**SEYMOUR JOHNSON AIR FORCE BASE,
NORTH CAROLINA**



JULY 2014

**PREPARED BY:
4 CES/CEIEA
4th Civil Engineer Squadron
Seymour Johnson AFB, NC**

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1.0 PURPOSE AND NEED FOR ACTION

This environmental assessment (EA) evaluates potential environmental impacts of activities associated with a proposed property lease and subsequent construction of a sports complex at Seymour Johnson Air Force Base (SJAFB), North Carolina. This document has been prepared in accordance with the National Environmental Policy Act (NEPA) of 1969, as amended (Title 42 United States Code [U.S.C.] 4321, et seq.), the Council on Environmental Quality (CEQ) regulations for implementing the procedural provisions of NEPA at Title 40 of the Code of Federal Regulations (CFR) Sections 1500-1508, and Air Force policy and procedures (32 CFR Part 989).

SJAFB encompasses approximately 3,233 acres within the corporate limits of the City of Goldsboro (City), North Carolina (Figure 1-1). SJAFB is located in the southern portion of the City (Figure 1-2).

1.1. PURPOSE

The purpose of the proposed lease and sports complex is to provide safe illuminated athletic fields for the City, SJAFB, and Wayne County residents. This proposal would be a Public-Public Public-Private (P4) Community Partnership initiative under the authority of 10 USC 2336, *Intergovernmental support agreements with State and local governments*. This authority allows SJAFB to enter into an intergovernmental support agreement with the City to provide, receive, or share installation-support services if the agreement would serve the best interests of SJAFB by enhancing mission effectiveness or creating efficiencies or economies of scale, including reducing costs. The City, as consideration for the lease of the property, proposes to construct an addition to the SJAFB Fitness Center. The addition would be 2,500 to 3,000 square feet and would provide needed space for group fitness and exercise equipment. Access to the SJAFB Fitness Center would continue to be for installation personnel only.

The *Final Environmental Assessment for the Wing Infrastructure Development Outlook (WINDO) Plan*, dated May 2005, covered a 16,750 square foot addition to the SJAFB Fitness Center, which has not been constructed. The decision document for the EA was a Finding of No Significant Impact, signed 20 Oct 2005. Changes in the physical environment of the installation since 2005 have been minimal; therefore, no additional environmental analysis concerning an addition to the SJAFB Fitness Center will be provided in this document.

1.2. NEED

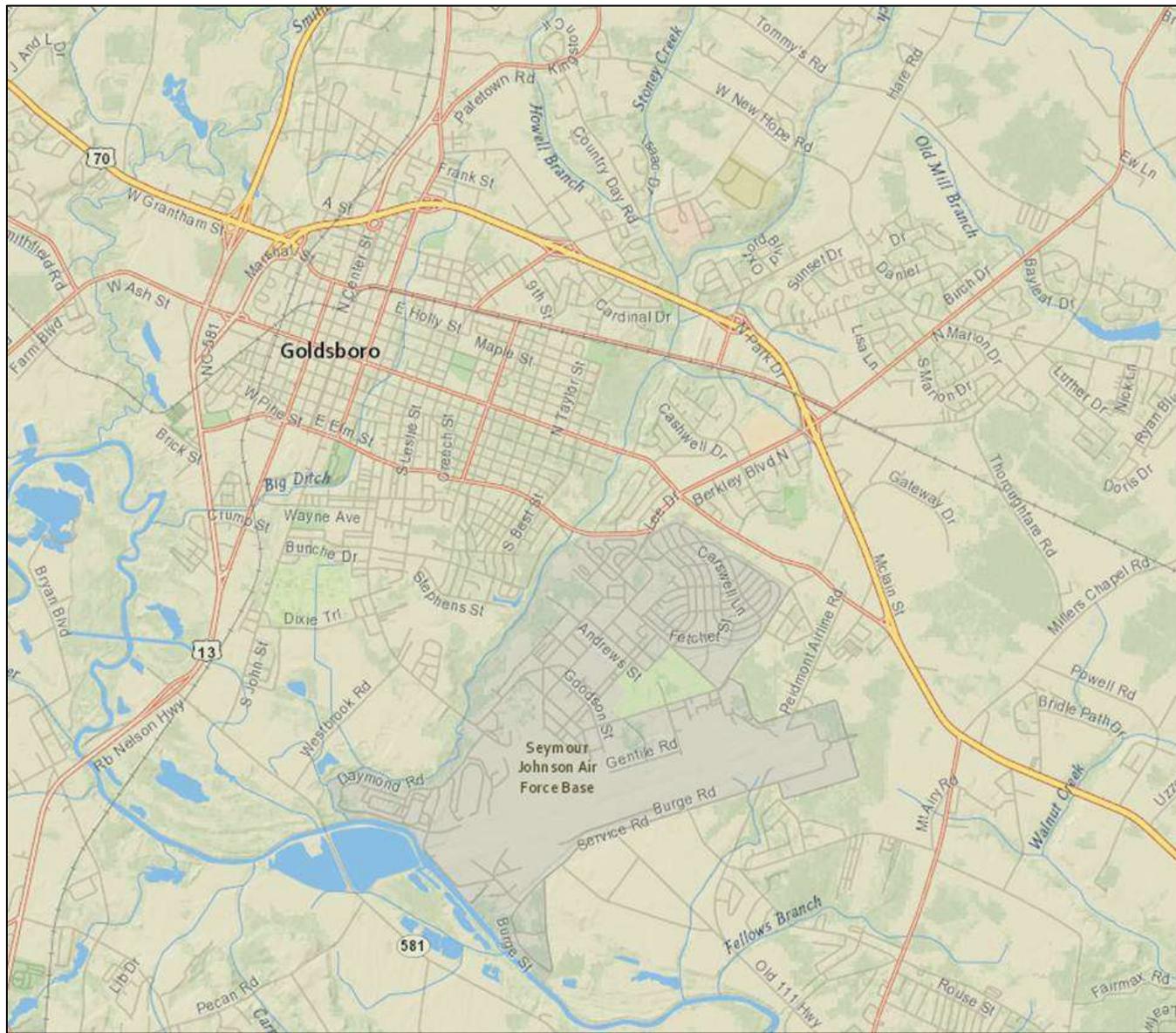
Currently, youth sports throughout the City are hosted on mostly practice quality fields on a combination of leased and borrowed sites that are a challenge to maintain. Games are primarily played at the YMCA and on SJAFB athletic fields, but demand for the site and the impact of overplay continue to compound. Many local players travel to surrounding counties due to lack of capacity in both public and private sports organizations. Additionally, the level of competition is suppressed by the quality of the facilities and the lack of illuminated facilities.

The construction of the Multi-Sports Complex would allow the community access to higher quality game and practice fields that offer a safer all weather playing surface that is available year round. The access to these facilities would assist with an active living lifestyle that would help prevent childhood obesity, diabetes and other ailments associated with not being active.

1 Additionally, according to the 2012 update of the Goldsboro Parks and Recreation
2 Comprehensive Plan, an analysis of service areas and resulting public input indicated a need
3 for additional recreation facilities, to include a sports complex comprised of at least 50 acres of
4 land with athletic fields, playground equipment, picnic shelters, a walking trail, concessions,
5 restrooms, and parking (Recreation Resources Service, 2012).
6

7 Due to funding shortfalls, an addition to the SJAFB Fitness Center has not been realized. The
8 current Fitness Center is undersized and lacks adequate space for military group fitness
9 activities and exercise equipment. Partnering with the City provides a means for SJAFB to
10 accomplish the addition and provide the needed fitness amenities.
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1 **Figure 1-1. Map of the City of Goldsboro and Seymour Johnson AFB**



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2 **1.3. ENVIRONMENTAL REVIEW PROCESS**
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4 The National Environmental Policy Act (NEPA) of 1969 requires the consideration of potential
5 environmental consequences of federal actions. Regulations for federal agency implementation
6 of the Act were established by the President’s Council on Environmental Quality (CEQ). Under
7 NEPA, federal agencies must prepare an Environmental Assessment (EA) or an Environmental
8 Impact Statement (EIS) for any major federal action, except those actions that are determined to
9 be “categorically excluded” from further analysis.

10
11 An EA is a concise public document that provides sufficient analysis for determining whether the
12 potential environmental impacts of a proposed action are significant, resulting in the preparation
13 of an EIS, or not significant, resulting in the preparation of a Finding of No Significant Impact
14 (FONSI). An EIS is prepared for those federal actions that may significantly affect the quality of
15 the human environment. Thus, if the Air Force were to determine that the proposed action would
16 have a significant impact on the quality of the human environment, an EIS would be prepared.
17 An EA is prepared for those federal actions that do not significantly affect the human
18 environment and should include: brief discussions of the purpose and need for the proposal,
19 the alternatives, the affected environment, the environmental impacts of the proposed action
20 and alternatives, a discussion of the cumulative impacts associated with the alternatives, and a
21 listing of agencies and persons consulted.

22
23 The Air Force has prepared this EA in accordance with applicable federal and state regulations
24 and instructions, as well as with other applicable laws, ordinances, rules, and policies. These
25 include, but are not limited to the following:

- 26 • NEPA as amended by Public Law 94-52, July 3, 1975 (42 U.S.C. 4321 *et seq.*)
 - 27 • Council on Environmental Quality (CEQ) regulations (40 CFR Parts 1500 to 1508)
 - 28 • Air Force Environmental Impacts Analysis Process (32 CFR 989)
- 29

30 **1.4. PUBLIC AND AGENCY INVOLVEMENT**

31 The Eastern Band of Cherokee Indians (EBCI) is the only federally-recognized tribe in North
32 Carolina. In April 2014, the EBCI provided SJAFB a list of counties (nationwide) where the tribe
33 has claims and/or interests (Appendix A). Wayne County is not listed for North Carolina;
34 therefore, the EBCI has no claims and/or interests in Wayne County and consultation with the
35 EBCI was not necessary.

36
37 To facilitate public involvement in this proposal, the Air Force will prepare and issue a Notice of
38 Availability for the draft version of the EA (Appendix F). The public notice will be published in
39 the Goldsboro News-Argus to disclose the completion of the Draft EA. The notice will serve to
40 invite public comments during a 30-day public review period. The Draft EA will be made
41 available for public review at the Wayne County Public Library in Goldsboro and on the SJAFB
42 public website. Comments received from the public will be included in Appendix G and will be
43 addressed in the Final EA.

44
45 Furthermore, the Draft EA will be sent to the following federal, state, and local government
46 entities for review and comment. All comments received from federal, state, and local
47 government entities will be included in Appendix G and will be addressed in the Final EA.

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- 1 • **North Carolina State Environmental Review Clearinghouse**
- 2 • **U.S. Fish and Wildlife Service**
- 3 • **Wayne County Manager**
- 4 • **City of Goldsboro, City Manager**
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2.0 DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

2.1. ALTERNATIVE SELECTION STANDARDS

The following selection standards were determined necessary for the proposed joint-use sports complex to be feasible:

- Located on perimeter of installation; severable from SJAFB
- Vacant land not in use by SJAFB, and not required for current or foreseeable future mission
- Accessible from existing public roadways
- Adjacent to compatible land uses, both on- and off-base
- Outside of SJAFB airfield Clear Zones and Accident Potential Zones

2.2. NO ACTION ALTERNATIVE

Council on Environmental Quality (CEQ) regulations require inclusion of the No Action Alternative. The No Action Alternative serves as a baseline against which the impacts of the Proposed Action and Alternatives can be evaluated.

Under the No Action Alternative, the Air Force would not lease property to the City and there would be no development of a joint-use sports complex on the property. The No Action Alternative assumes the property would remain in its current condition as open space.

2.3. ALTERNATIVE A (PROPOSED ACTION)

Part 1: Proposed Property Lease

SJAFB is proposing to lease approximately 62 acres of vacant land to the City. The subject property formerly contained over 130 Military Housing units from 1958 until 2010. All of the structures, foundations, driveways, sidewalks, and streets have been removed and the site is now open space (Figure 2-1). The property is located on the perimeter of the installation, making it severable from the remainder of the base. The property is also accessible from existing public roadways. The property is compatible with surrounding land uses and is located outside the SJAFB airfield Clear Zone or Accident Potential Zones.

Part 2: Proposed Sports Complex

The City is proposing to construct, operate, and maintain a joint-use sports complex on the property that would serve Goldsboro, SJAFB, and Wayne County communities. Preliminary conceptual plans for the sports complex include eight multi-sport athletic fields with supporting amenities such as playground equipment, picnic shelters, a walking trail, concessions, restrooms, and paved parking. The hours of operation for the sports complex would be 8:00 am to 10:00 pm, seven days per week.

The City is proposing to use artificial turf on all fields, which would minimize water consumption and allow for year-round use. Each multi-sport field would measure 228 feet by 365 feet, or 1.91 acres, and would accommodate soccer, football, lacrosse, field hockey, rugby, and potentially any other sport played on a rectangular field. There would be seven 'regular' fields and one 'championship' field for tournament games. The 'championship' field would include bleacher seating for roughly 200 spectators, with a maximum bleacher height of about eight feet. The City anticipates hosting roughly 20 tournaments per year, which would likely be played

1 on Friday and Saturday evenings. No amplified sound is proposed; however, the City is
2 proposing to illuminate all playing fields and parking areas. Each field would have four to six
3 light poles, with each pole up to 80 feet tall. An additional 10 to 15 light poles, up to 37 feet tall,
4 would be estimated for the three paved parking areas. The paved parking areas would
5 accommodate roughly 466 vehicles and would be accessed via one entry/exit point off South
6 Oak Forest Road. The entry/exit point would be gated and locked when the complex is not in
7 use. Additionally, the complex would be patrolled by Goldsboro's dedicated park police
8 personnel, and SJAFB security personnel would continue to routinely patrol the interior
9 perimeter of the installation. The installation's perimeter fence on South Oak Forest Road would
10 be moved by the City to the new property boundary, and screening trees would be planted in
11 accordance with the City's *Landscaping, Screening, and Buffering Standards*. The City would be
12 responsible for maintaining all aspects of the sports complex including the playing fields, parking
13 areas, facilities, lighting, and landscaping. The City anticipated beginning construction in March
14 2015. Figure 2-2 depicts the conceptual end-state of the proposed sports complex.

15
16 All facilities would be required to comply with the Americans with Disabilities Act of 1990. The
17 proposed sports complex would comply with the Goldsboro Unified Development Ordinance, to
18 include *Stormwater Management for New Development, Landscaping, Screening, and Buffering*
19 *Standards*; and *Commercial Lighting Design Standards*. The City would be responsible for all
20 anticipated routine maintenance at the sports complex, which would include grooming the
21 artificial turf (estimated once per month for one hour each field) and mowing (estimated once
22 per week for eight hours).

23 24 **2.4. ALTERNATIVES CONSIDERED BUT ELIMINATED FROM FURTHER** 25 **ANALYSIS**

26
27 Only one other parcel of open space on the installation would satisfy most of the selection
28 standards outlined in Section 2.1. The parcel is located north of the existing SJAFB Clinic and is
29 comprised of approximately 30 acres. However, this parcel was conveyed to a private
30 developer as part of the Military Family Housing Privatization Initiative and is unavailable for
31 development; therefore, this alternative was eliminated from further analysis.

Figure 2-1. Proposed Sports Complex Property



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Figure 2-2. Conceptual End-State of Sports Complex



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3.0 AFFECTED ENVIRONMENT

This chapter describes the existing environmental conditions for resources that could potentially be affected by the alternatives described in Chapter 2.

Some resource areas have been eliminated from further discussion based on conclusions that these resources would not be adversely impacted by the alternatives described in Chapter 2.

- **Safety and Occupational Health** – As shown in Figure 2-2, the security fence along the installation’s perimeter would be relocated by the City to the north and west of the proposed sports complex. The entry/exit point to the proposed sports complex would be locked when the facility is not in use. The Goldsboro Police Department has an officer designated and assigned to patrol the City’s parks. This officer usually attends events scheduled in the City’s parks and recreational centers (City of Goldsboro, 2013). Additionally, SJAFB security personnel would continue to routinely patrol the interior perimeter of the installation. There would be no anticipated adverse impacts to safety or occupational health from the construction, operation, and maintenance of a sports complex.
- **Cultural Resources and Native American Interests** – The Eastern Band of Cherokee Indians (EBCI) is the only federally-recognized tribe in North Carolina. In April 2014, the EBCI provided SJAFB a list of counties (nationwide) where the tribe has claims and/or interests (Appendix A). Wayne County is not listed for North Carolina; therefore, the EBCI has no claims and/or interests in the county. An initial archaeological survey was performed at SJAFB in the 1970s and revealed that there were no intact archaeological sites of importance. The State Historic Preservation Office (SHPO) concurred in 1978. Additionally, several historic facility surveys have been performed and the SHPO has concurred that only Buildings 2130 and 5015, two Cold War-era properties, are eligible for listing on the National Register of Historic Places (NCDENR, 2006). Building 2130 is approximately 2.25 miles west of the subject property and Building 5015 is approximately 0.60 miles to the south. There would be no anticipated adverse impacts to cultural resources from the construction, operation, and maintenance of a sports complex.
- **Socioeconomics** – During the short-term, limited temporary construction jobs may be created. Workers would likely reside in the local area. There would be no large-scale migration of workers from outside the local area, with no corresponding increase in demand for schools, infrastructure, housing, or other services. The long-term impacts of the Proposed Action would likely include job creation, business development, and tax revenue for the City. According to Scott Barnard, the Director of the Goldsboro Parks and Recreation Department, the proposed sports complex could generate \$1.65 million annually in direct economic benefit if the desired 20 tournaments per year occurred (personal communication, S. Barnard, 26 March 2014). This figure is based on the following assumptions:

Direct economic impact per night of stay is \$165 (food, lodging, fuel, etc.)
250 hotel rooms occupied for 2 nights per tournament (Fridays and Saturdays)
20 tournaments per year

\$165 per night x 250 rooms x 2 nights x 20 tournaments per year = \$1,650,000

This would represent a positive impact to the local economy.

- 1 • **Environmental Justice** – As of 2010, the minority population in the residential areas
2 surrounding the subject property was 37.54%, which is lower than Goldsboro (60.77%) and
3 Wayne County (41.17%). The 2012 poverty level in the residential areas surrounding the
4 subject property was 7.82%, which is much lower than Goldsboro (19.84%) and Wayne
5 County (16.36%) (USA.com, 2014). Additional details concerning the demographics of the
6 neighborhoods surrounding the subject property are provided in Appendix B. Due to the
7 lack of minority and low-income populations in the vicinity of the subject property, there
8 would be no anticipated adverse impacts to minority or low-income populations as a result of
9 the Proposed Action.

10 11 **3.1. LAND USE AND NOISE**

12 13 OFF-BASE LAND USES

14
15 Meadow Lane Elementary School abuts the subject property to the north and the Atkinson
16 Chapel Church is located across South Oak Forest Road to the south. A residential
17 neighborhood is located on the eastern edge of the subject property across South Oak Forest
18 Road. This neighborhood is comprised of roughly 116 single-family homes. There are 19
19 homes on South Oak Forest Road directly across from the subject property.

20
21 Off-base land uses within one-half mile of the subject property include Greenwood Middle
22 School, two additional churches, two apartment complexes, several small residential areas,
23 and multiple commercial establishments. Much of the land within one-half mile of the subject
24 property is currently undeveloped (Figure 3-2). Figure 3-3 shows the City-designated zoning
25 in the vicinity of the subject property.

26
27 The Base was annexed to the City of Goldsboro on February 7, 1977, although zoning
28 authority for the Base proper was retained by SJAFB.

29 30 ON-BASE LAND USES

31
32 On the installation, land uses that abut the subject property include Military Housing and
33 pockets of open space to the west and northwest, as well as outdoor recreation (a portion of
34 the golf course and a softball field) to the south and southwest. One administrative facility is
35 located within one-half mile of the subject property (Figure 3-2).

36
37 The proposed lease agreement and subsequent sports complex would permanently change
38 the existing land use and preclude the project area from being converted to other possible
39 uses.

40 41 AIR INSTALLATION COMPATIBLE USE ZONE (AICUZ) PROGRAM

42
43 The Air Installation Compatible Use Zone (AICUZ) Program is a Department of Defense
44 planning program which was developed in response to growing incompatible urban
45 development (encroachment) around military airfields. The overall goal of the Air Force AICUZ
46 program is to reduce people's exposure to high levels of aircraft noise and accident potential
47 through compatible land use controls adopted by the local communities (USAF, 1999). The
48 AICUZ Program addresses three issues: 1) accident potential zones, 2) airfield obstructions
49 (i.e., height restrictions), and 3) aircraft noise). Each issue is addressed below.

1 Accident Potential Zones
2

3 An analysis of aircraft accidents within 10 nautical miles of an airfield for the period of 1968 -
4 1972 led to defining areas of high accident potential known as the Clear Zone (CZ), Accident
5 Potential Zone I (APZ I), and Accident Potential Zone II (APZ II). The CZ starts at the end of the
6 runway and extends outward 3,000 feet. It has the highest incident of accidents of the three
7 zones. The Air Force adopted a policy of acquiring property rights to areas designated as clear
8 zones due to the high accident potential. APZ I extends from the clear zone an additional 5,000
9 feet and APZ II extends from APZ I an additional 7,000 feet. Each area has a lesser accident
10 potential. The percentages of accidents within the two APZs are such that, while purchase is
11 not necessary, some type of land use control is essential. The Air Force recommendation is to
12 limit the number of people exposed through selective land use planning (USAF, 1999).

13
14 As shown in Figure 3-1, the subject property is not located in any of SJAFB's accident potential
15 zones.

16
17 Height Restrictions
18

19 The Air Force seeks to protect its airfields from encroachment from construction of uses that
20 are incompatible. The Air Force is also concerned about development that has the potential to
21 compromise the utility of the airfield if height or other characteristics (e.g., light emissions,
22 smoke, dust, or steam) are not regulated (SJAFB, 2011). The proposed project site is located
23 within the SJAFB airfield environs and is subject to a height restriction of 145 feet.

24
25 Aircraft Noise
26

27 The noise environment associated with the SJAFB airfield and the surrounding community is
28 discussed in detail below.

29
30 NOISE
31

32 The decibel (abbreviated dB) is the unit used to measure the intensity of a sound. A-weighted
33 decibels are an expression of the relative loudness of sounds as perceived by the human ear.
34 A-weighted measurements are expressed as dBA.

35
36 One of the most common ways to describe ambient noise exposure over an extended period of
37 time is a day-night average sound level (DNL) measured in dBA. DNL refers to the average
38 sound level exposure over a 24-hour period.

39
40 Most people are exposed to sound levels of 50 to 55 dBA or higher on a daily basis. Noise
41 levels in residential areas vary depending on the housing density and location. As shown in
42 Table 3-1, noise in a normal suburban residential area is about 55 dBA, which increases to 70
43 dBA in the downtown section of a large city (USEPA, 1974).

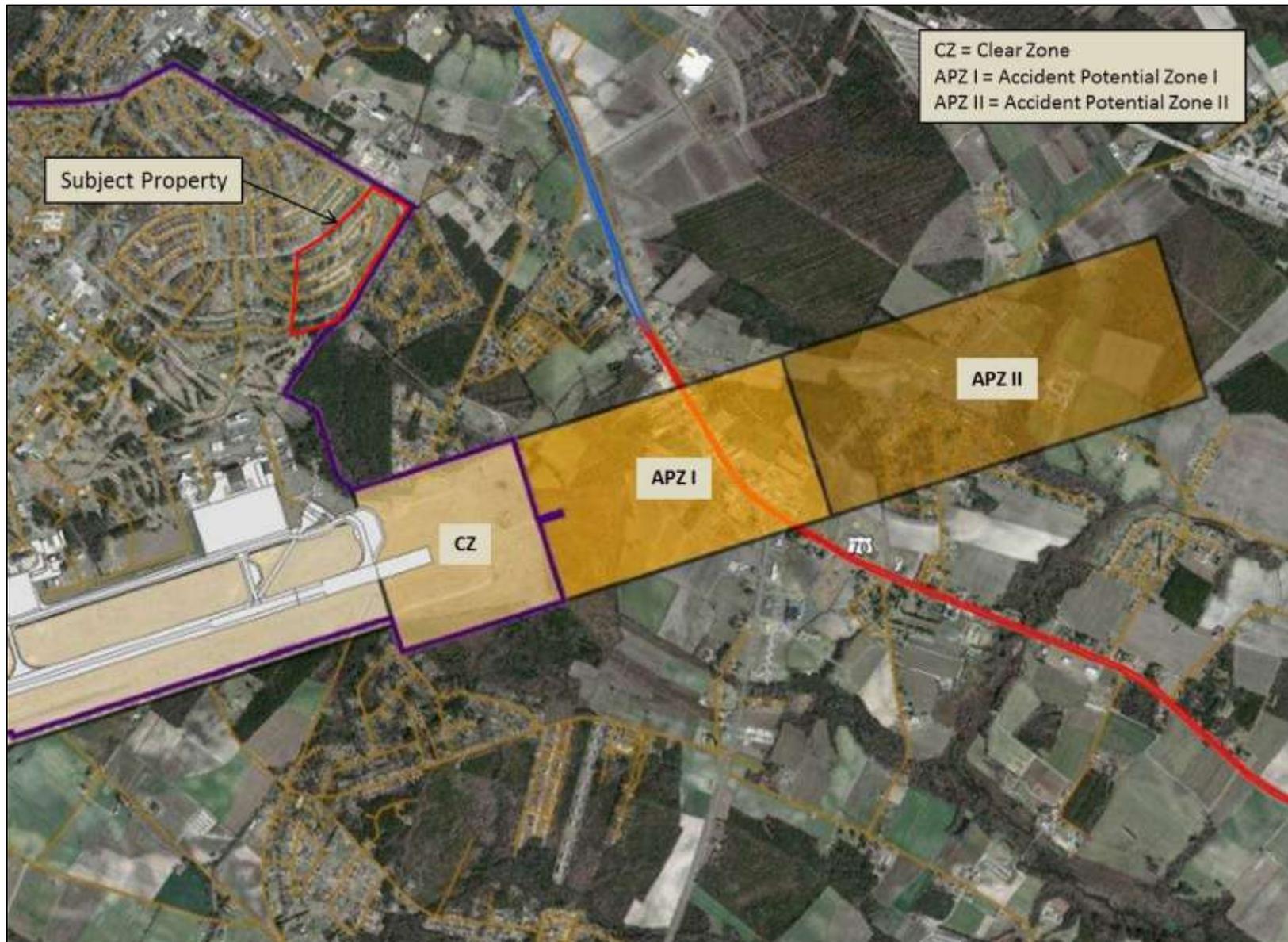
44
45 Interior noise levels are typically lower than exterior due to the attenuation of the sound energy
46 by the structure, with the amount of noise level reduction (NLR) provided by a building being
47 dependent on the type of construction and the number of openings such as doors, windows,
48 chimneys, and plumbing vents. The approximate reduction in interior noise is 15 dBA when
49 windows are open and 25 dBA when windows are closed (USEPA, 1974).

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1 **Figure 3-1. Accident Potential Zones in the Vicinity of Subject Property**



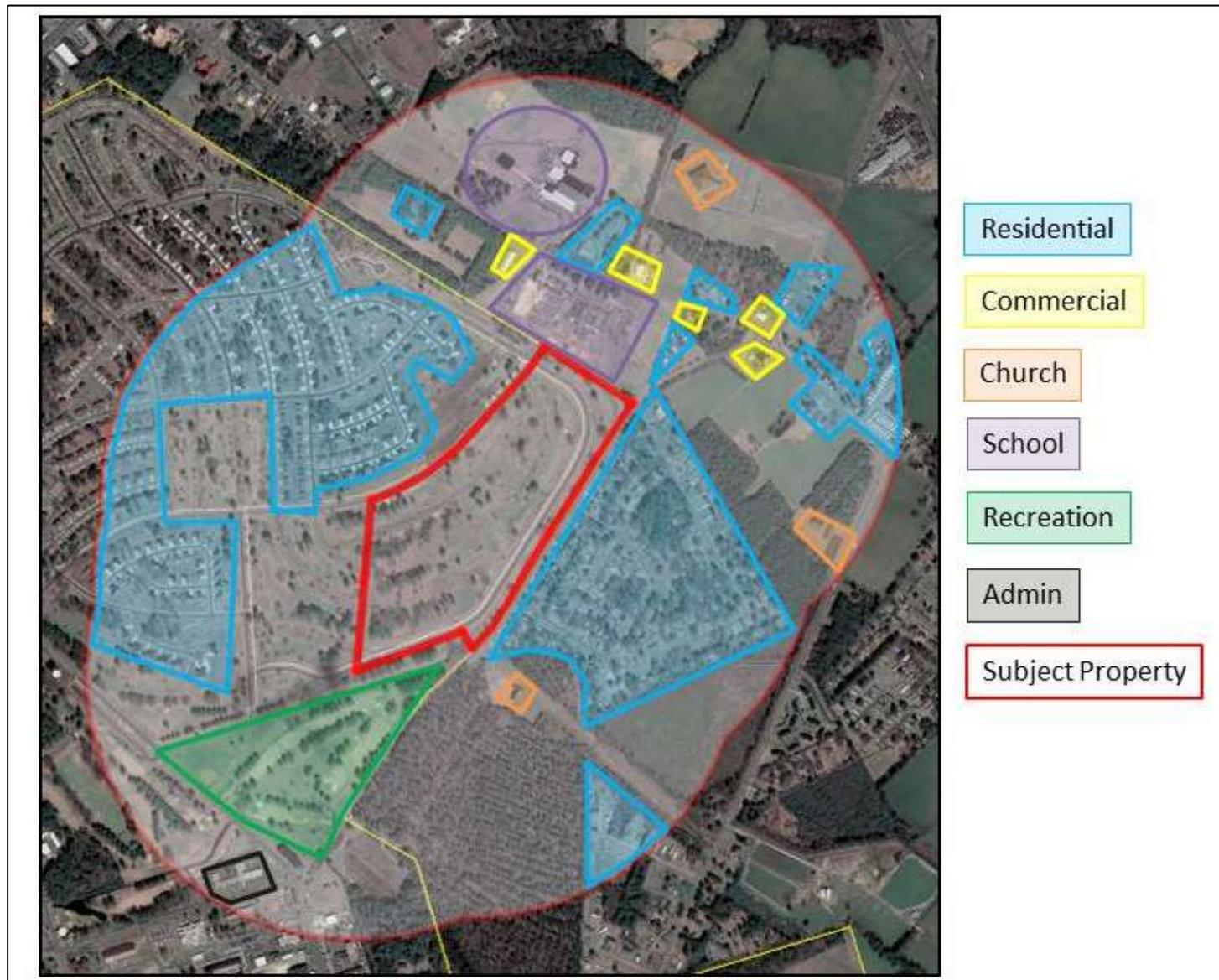
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Figure 3-2. Surrounding Land Uses Within One-Half Mile of Subject Property



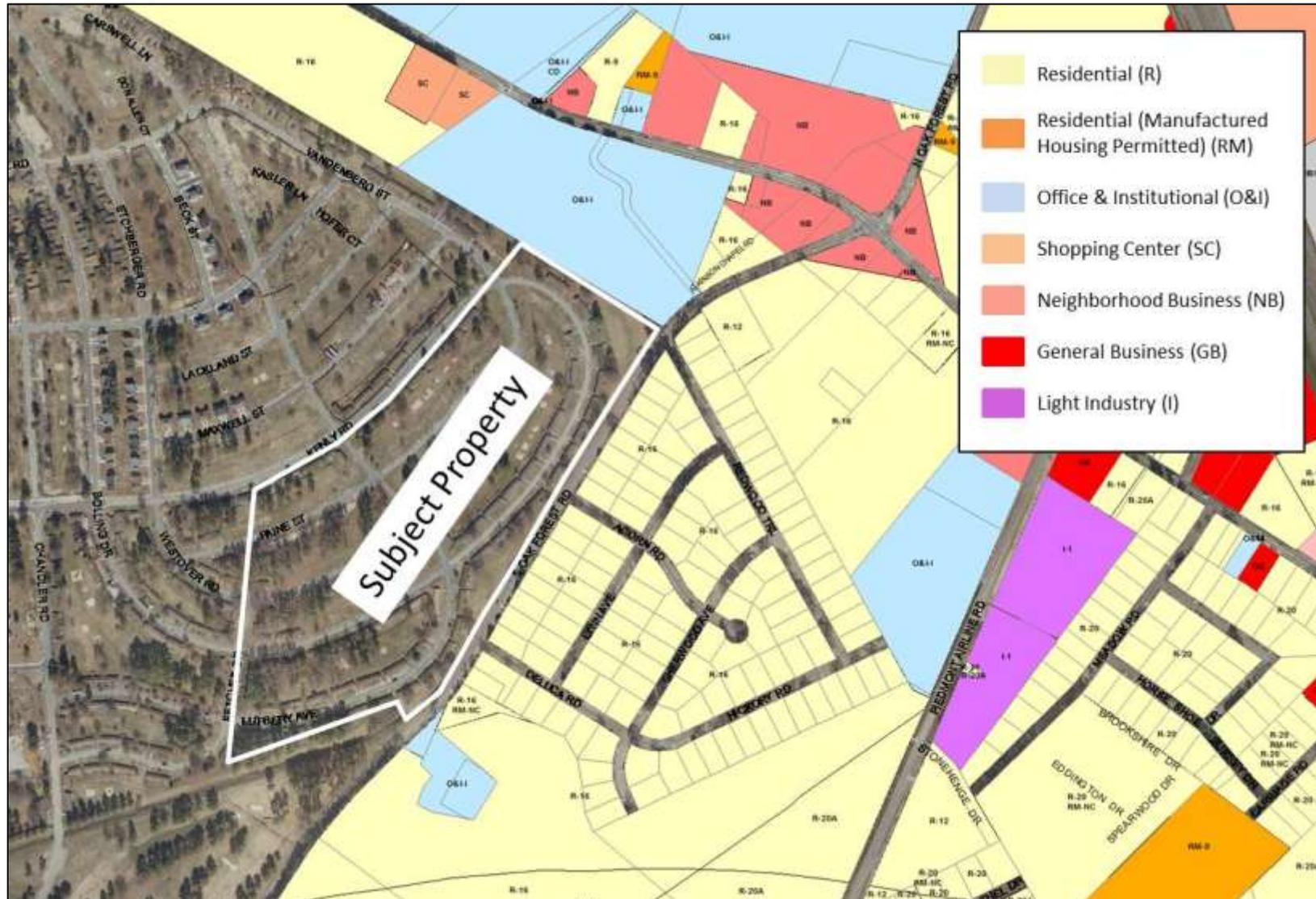
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Figure 3-3. Zoning Adjacent to Subject Property



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Table 3-1. Typical Outdoor Noise Levels

Description	Typical Range in dBA	Average in dBA
Quiet Suburban Residential	48-52	50
Normal Suburban Residential	53-57	55
Urban Residential	58-62	60
Noisy Urban Residential	63-67	65
Very Noisy Urban Residential	68-72	70

Source: USEPA 1974

Existing background noise levels on the proposed project site, and in the vicinity of the proposed project site, are generally dominated by aircraft noise and traffic on local roadways.

Aircraft Noise

The Air Force's Air Installation Compatible Use Zone (AICUZ) program predicts noise exposure by modeling aircraft operations and employing four bands of noise exposure (USAF, 1999):

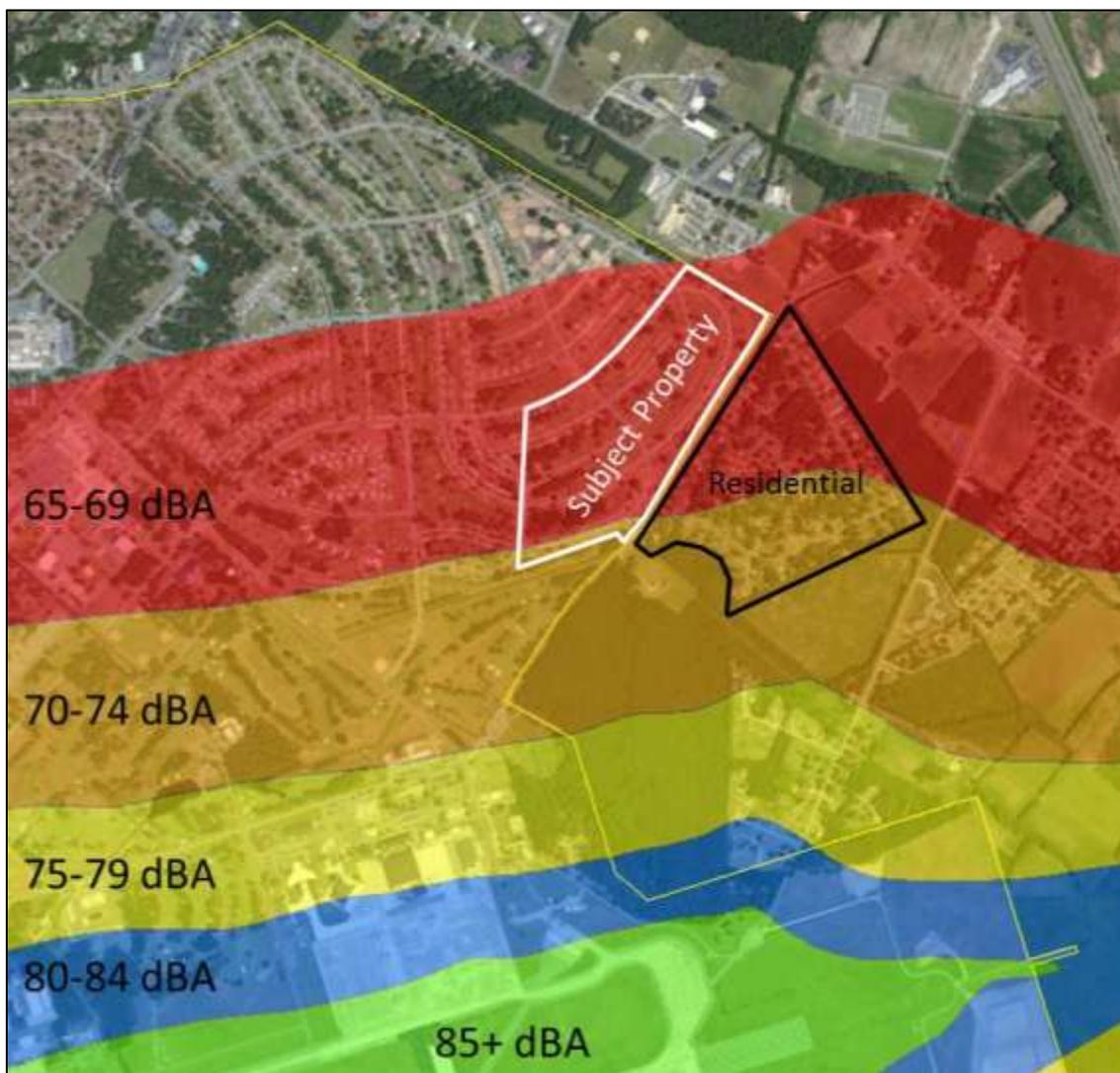
- DNL below 65 dBA – typically acceptable for residential use
- DNL 65 to 69 dBA – generally compatible with residential use and related structures; however, measures to achieve NLR of 25 dBA need to be incorporated into the design and construction of structures
- DNL 70 to 74 dBA – residential use and related structures are generally incompatible; however, measures to achieve NLR of 30 dBA can be incorporated into the design and construction of structures
- DNL 75 to 79 dBA – residential use is not compatible and should be prohibited

The SJAFB AICUZ Study was updated in 2011. Figure 3-4 shows the average noise exposure in the vicinity of the subject property associated with the flying operations at the installation. Approximately 58 acres of the proposed project site are located in the 65-69 dBA zone and about 4 acres are located in the 70-74 dBA zone. About half of the residential area on South Oak Forest Road is located in the 65-69 dBA zone, with the other half in the 70-74 dBA zone.

City of Goldsboro Noise District Overlay. The purpose of the Noise District Overlay is to provide for compatible development of land in areas subject to aircraft noise surrounding Seymour Johnson Air Force Base. The district is designed to limit uses that could increase risks to public health, safety, and quality of life and to mitigate the impacts of aircraft noise on existing and newly permitted uses. In addition, the district is intended to require notification on plats and site plans to all present and future owners that property within this district is exposed to aircraft noise potentially in excess of a sound level of 65 dBA. The Goldsboro Noise Overlay District is established as a district that overlaps and overlays existing zoning districts. The district is further divided into four subdistricts corresponding to the 65-70 dBA, 70-75 dBA, 75-80 dBA, and 80+ dBA noise contours of the Seymour Johnson AFB Air Installation Compatibility Use Zone (AICUZ) Study (City of Goldsboro, 2013).

1

Figure 3-4. Aircraft Noise Exposure in Vicinity of Subject Property



2

3

4 Traffic Noise

5

6 The main roadway in the proposed project area is South Oak Forest Road, which is a two-lane
7 surface street with a speed limit of 35 miles per hour. In addition to providing access to one of
8 three entrance points for SJAFB, it is the only road that provides access to the residential
9 neighborhood to the east of the subject property. The North Carolina Department of
10 Transportation (NCDOT) reports annual traffic volume data for two locations on South Oak
11 Forest Road (Table 3-2). In 2012, the traffic meter between East Ash Street and Redwood Trail
12 reported an Annual Average Daily Traffic (AADT) volume of 4,600 vehicles. Further south at the
13 Oak Forest Gate on SJAFB, the traffic meter reported an AADT of 4,000 vehicles (NCDOT,
14 2014). AADT is the total traffic volume for the year divided by 365 days. To estimate existing
15 traffic noise on South Oak Forest Road, a road noise calculator was used. Appendix C provides
16 a full listing of the data used in the calculator. Using an AADT of 4,600 vehicles, the existing
17 average traffic noise on South Oak Forest Road is estimated to be approximately 55 dBA
18 (NZTA, 2010).

19

1

Figure 3-5. Streets in Vicinity of Subject Property



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3.2. AIR QUALITY

5

6 Air quality is defined as ambient air concentrations of specific pollutants determined by the U.S.
7 Environmental Protection Agency (USEPA) to be of concern because of their impacts on the
8 health and welfare of the general public and the environment. These pollutants are widespread
9 across the United States. The primary pollutants of concern, called "criteria pollutants," include
10 carbon monoxide (CO), sulfur dioxide (SO₂), nitrogen dioxide (NO₂), ozone (O₃), suspended
11 particulate matter less than or equal to 10 microns in diameter (PM₁₀), fine particulate matter
12 less than or equal to 2.5 microns in diameter (PM_{2.5}) and lead (Pb). Under the Clean Air Act
13 (CAA), the USEPA has established National Ambient Air Quality Standards (NAAQS) (40 CFR §
14 50) for these pollutants. Areas that are and have historically been in compliance with the
15 NAAQS are designated as attainment areas. Areas that do not meet a federal air quality
16 standard are designated as nonattainment areas for that pollutant. Areas that have transitioned
17 from nonattainment to attainment are designated as maintenance areas and are required to

1 adhere to maintenance plans to ensure continued attainment. The NAAQS represent the
2 maximum levels of background pollution that are considered safe, with an adequate margin of
3 safety, to protect public health and welfare. Short-term standards (i.e., 1-, 3-, 8-, and 24-hour
4 periods) are established for pollutants contributing to chronic health effects.

5
6 Air quality in a given location is described by the concentration of various pollutants in the
7 atmosphere. A region's air quality is influenced by many factors including the type and amount
8 of pollutants emitted into the atmosphere, the size and topography of the air basin, and the
9 prevailing meteorological conditions. Pollutant emissions typically refer to the amount of
10 pollutants or pollutant precursors introduced into the atmosphere by a source or group of
11 sources. Pollutant emissions contribute to the ambient air concentrations of criteria pollutants,
12 either by directly affecting the pollutant concentrations measured in the ambient air or by
13 interacting in the atmosphere to form criteria pollutants. Primary pollutants, such as CO, SO₂,
14 Pb and some particulates are emitted directly into the atmosphere from emissions sources.
15 Secondary pollutants, such as O₃, NO₂ and some particulates are formed through atmospheric
16 chemical reactions that are influenced by meteorology, ultraviolet light, and other atmospheric
17 processes.

18
19 SJAFB is located in Wayne County, which is an attainment area for the criteria pollutants, and is
20 identified as part of the Southern Coastal Plain Intrastate Air Quality Control Region (defined in
21 40 CFR Part 81.152 and the classification can be found in 40 CFR Part 81.334). Since Wayne
22 County is located in an attainment area, the General Conformity Rule (this rule only applies for
23 federal actions in nonattainment or maintenance areas) does not apply; however, the
24 anticipated impacts to air quality associated with the Proposed Action were estimated using the
25 Air Force's Air Conformity Applicability Model. The results are presented in Chapter 4, Section
26 4.2. The State of North Carolina has been delegated authority to administer the provisions of
27 Title V of the CAA. National and North Carolina ambient air quality standards are provided in
28 Table 3-2. Table 3-3 lists the emissions of criteria pollutants in Wayne County during 2011.

29
30 Wayne County is bordered by six counties: Johnston County, Sampson County, Duplin County,
31 Lenoir County, Greene County, and Wilson County. Johnston County borders Wayne County to
32 the west and is designated Ozone Attainment/Maintenance. All other neighboring counties are
33 designated as attainment areas for all criteria air pollutants. Air quality monitoring devices are
34 installed in Johnston County (ozone), Lenoir County (ozone), and Wayne County (PM_{2.5}).

1

Table 3-2. National and North Carolina Ambient Air Quality Standards

Pollutant	Primary/ Secondary	Averaging Time	Level	Form
Ozone (O ₃)	Primary and Secondary	8-hour	0.075 ppm	Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years
Carbon Monoxide (CO)	Primary	8-hour	9.0 ppm	Not to exceed more than once per year
	Primary	1-hour	35 ppm	
Nitrogen Dioxide (NO ₂)	Primary and Secondary	Annual	53 ppb	Annual Mean
	Primary	1-hour	100 ppb	98th percentile, averaged over 3 years
Sulfur Dioxide (SO ₂)	Primary	1-hour	75 ppb	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years
	Secondary	3-hour	0.5 ppm	Not to be exceeded more than once per year
PM ₁₀	Primary and Secondary	24-hour	150 µg/m ³	Not to be exceeded more than once per year on average over 3 years
PM _{2.5}	Primary	Annual	12 µg/m ³	Annual mean, averaged over 3 years
	Secondary	Annual	15 µg/m ³	Annual mean, averaged over 3 years
	Primary and Secondary	24-hour	35 µg/m ³	98th percentile, averaged over 3 years
Lead (Pb)	Primary and Secondary	Rolling 3 month average	1.5 µg/m ³	Not to be exceeded

Source: USEPA, 2012; NCDENR, 2012
Notes:
ppm = parts per million by volume
ppb = parts per billion by volume
µg/m³ = micrograms per cubic meter

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Table 3-3. Emissions of Criteria Pollutants in Wayne County, 2011

Pollutant	Emissions (tons)
Carbon Monoxide (CO)	22,959.94
Nitrogen Oxides (NO _x)	5,981.07
Volatile Organic Compounds (VOCs)	14,035.96
Particulate Matter (PM _{2.5})	1,774.45
Particulate Matter (PM ₁₀)	5,354.20
Sulfur Dioxide (SO ₂)	8,874.08
Lead (Pb)	0.00

Source: Air Emission Sources (USEPA, 2014)

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3.3. WATER RESOURCES

Surface water resources consist of lakes, rivers, and stream. Storm water is an important component of surface water systems because of its potential to introduce sediments and other contaminants that could degrade lakes, rivers, and streams. Storm water systems, including drainage ditches, culverts, and underground pipes, convey precipitation away from developed sites to receiving surface waters. These systems can be overloaded by increased proportions of impervious surfaces associated with buildings, roads, and parking lots.

SJAFB lies within the Neuse River basin, which is part of the larger Albemarle-Pamlico estuarine system. The Neuse River drainage covers approximately 6,235 square miles of North Carolina's coastal plain and piedmont provinces.

The primary surface water resources on SJAFB include the Neuse River, which borders the installation to the southwest, and Stoney Creek, which borders the installation to the northwest. Stoney Creek flows in a southerly direction and into the Neuse River at the southwest corner of the installation.

Both the Neuse River and Stoney Creek are classified by the NC Division of Water Quality as Class C Nutrient Sensitive Waters (NSW). Class C waters are protected for aquatic life propagation and survival, fishing, wildlife, secondary recreation, and agriculture. Secondary recreation includes wading, boating, and other uses involving human body contact with water where such activities take place in an infrequent, unorganized, or incidental manner. There are no restrictions on watershed development activities. The supplemental NSW classification refers to nutrient sensitive waters that require limitations on nutrient inputs.

The area proposed for the sports complex was formerly used as a base residential area. The residential area was demolished in 2010. No wetlands were known to exist in the housing area prior to demolition and no wetlands are currently indicated in the area. Furthermore, the proposed project site is not located in the 100- or 500-year floodplain (NCFMP, 2014).

The NC Division of Water Quality administers the state's National Pollutant Discharge Elimination System (NPDES). North Carolina General Permit NCG010000 is applicable to point source discharges from construction sites disturbing one or more acres of land.

The NCDENR Division of Land Resources Erosion and Sediment Control Program, via the state General Construction Permit NCG010000, effectively meets the requirements of the Phase II Construction Site Runoff Controls Minimum Measure by permitting and controlling development activities disturbing one or more acres of land surface and those activities less than one acre that are part of a larger common plan of development. The NCDENR Division of Land Resources Erosion and Sediment Control Program includes procedures for public input, sanctions to ensure compliance, requirements for construction site operators to implement appropriate erosion and sediment control practices, review of site plans which incorporates consideration of potential water quality impacts, and procedures for site inspection and enforcement of control measures.

3.4. HAZARDOUS MATERIALS AND WASTE

There are no Environmental Restoration Program sites on or near the subject property. No hazardous materials would be stored on the property. Solid waste generated by construction, operation, and maintenance of the proposed sports complex would be less than significant.

1
2 The subject property contained Military Family Housing from 1958 until 2010. It is possible that
3 chlordane is present in the soils on the subject property. Chlordane was used as a pesticide in
4 the United States from 1948 to 1988. In 1988, all approved uses of chlordane in the United
5 States were canceled. From 1983 to 1988, chlordane's only approved use was to control
6 termites in homes. The pesticide was applied underground around the foundation of homes.
7 Currently, exposure to chlordane appears to be highest for those persons living in homes that
8 were treated for termites with chlordane. Chlordane may be found in the air in these homes for
9 many years after treatment. Additional exposure to chlordane may occur from digging in soil
10 around the foundation of homes where chlordane was applied. (USEPA, 2000). An
11 Environmental Baseline Survey has been completed for the subject property that discusses the
12 likely presence of chlordane (Appendix E).

13
14 Most health effects in humans that may be linked to chlordane exposure are on the nervous
15 system, the digestive system, and the liver. Swallowing small amounts or breathing air
16 containing high concentrations of chlordane vapors can cause a variety of nervous system
17 effects, including headaches, irritation, confusion, weakness, and vision problems, as well as
18 upset stomach, vomiting, stomach cramps, diarrhea, and jaundice (Agency for Toxic
19 Substances and Disease Registry, 1994).

20 21 **3.5. BIOLOGICAL RESOURCES**

22
23 The subject property is not located in the 100- or 500-year floodplain (NCFMP, 2014). The
24 subject property was formerly used as a base residential area. The residential area was
25 demolished in 2010. No wetlands were known to exist in the housing area prior to demolition
26 and no wetlands are currently indicated in the area. SJAFB sits in an urban setting with some
27 rural attributes. Wildlife species present thrive in more urban settings because they have been
28 better able to adapt to those conditions. One species found in Wayne County is protected under
29 the Endangered Species Act; the red-cockaded woodpecker (RCW; *Picoides borealis*) is listed
30 by the U.S. Fish and Wildlife Service (USFWS) as endangered. In 2002, the USFWS concurred
31 with systematic survey findings that reported no detection of any RCW activity on the installation
32 and also concurred that it is unlikely that RCWs use habitats within the installation (Hammond,
33 2002). There are seven other species in Wayne County that are listed as Federal Species of
34 Concern; however, according to the North Carolina Department of Environment and Natural
35 Resources (NCDENR), none are expected to inhabit the proposed project site (NCDENR
36 2012a, 2012b).

37
38 The subject property contained over 130 Military Family Housing units from 1958 until 2010. All
39 of the structures, foundations, driveways, sidewalks, and streets have been removed and the
40 site is now open space; however, many trees remain on the property that may provide habitat
41 for migratory birds. Historical aerial photographs indicate the trees were planted as landscaping
42 after the Military Family Housing area was constructed. Trees that are common throughout the
43 property include southern red oak (*Quercus falcata*), loblolly pine (*Pinus taeda*), American
44 sweetgum (*Liquidambar styraciflua*), crepe myrtle (*Lagerstroemia* sp.), and Bradford pear
45 (*Pyrus calleryana*).

46
47 According to the Birds of North Carolina website, there are 296 species of birds in Wayne
48 County (Carolina Bird Club, 2014). The European Starling (*Sturnus vulgaris*), American Crow
49 (*Corvus brachyrhynchos*) and American Robin (*Turdus migratorius*) are common birds found at
50 SJAFB (USAF, 2005).

1 The Migratory Bird Treaty Act makes it “unlawful at any time, by any means or in any manner, to
 2 pursue, hunt, take, capture, kill, attempt to take, capture, or kill, possess, offer for sale, sell, offer
 3 to barter, barter, offer to purchase, purchase, deliver for shipment, ship, export, import, cause to
 4 be shipped, exported, or imported, deliver for transportation, transport or cause to be
 5 transported, carry or cause to be carried, or receive for shipment, transportation, carriage, or
 6 export, any migratory bird, any part, nest, or egg of any such bird” protected by the Act.
 7

8 **3.6. GEOLOGY AND SOILS**
 9

10 All of the soils at the proposed project site have been disturbed and modified by prior housing
 11 construction and demolition. See the discussion in Section 3.4 concerning the likely presence of
 12 chlordane (pesticide) in the soils on the subject property.
 13

14 **3.7. TRANSPORTATION**
 15

16 Goldsboro is served by a network of arterial, collector, and local streets. South Oak Forest Road
 17 is designated as a collector. Collectors generally operate at a lower rate of speed (typically 35
 18 miles per hour [mph] or less) and provide critical connections in the roadway network by
 19 bridging the gap between arterial roads and local streets. The primary purpose of collector
 20 streets is to collect traffic from neighborhoods and distribute to the established system of major
 21 and minor arterials (City of Goldsboro, 2013).
 22

23 SJAFB is connected to the surrounding community via three entrances. The majority of traffic
 24 enters and exits the installation via the Berkeley Gate at the north end of the base along South
 25 Berkeley Boulevard. Two additional gates operate Monday through Friday from 6:00 am to 8:00
 26 pm: the Oak Forest Gate on the east side of the base and the Slocumb Gate on the west side of
 27 the base. Depending on the day and time, base residents would access the subject property via
 28 the Oak Forest Gate and Oak Forest Road, or via the Berkeley Gate, East Ash Street, and Oak
 29 Forest Road.
 30

31 As discussed previously, the main roadway in the proposed project area is South Oak Forest
 32 Road, which begins at East Ash Street on its north end and ends at the Oak Forest Gate to
 33 SJAFB on its south end. In addition to being one of three entrance points for SJAFB, it is the
 34 only road that provides access to the residential neighborhood to the east of the subject
 35 property.
 36

37 Traffic volume data for the two locations near the proposed project area are shown in Table 3-2.
 38
 39

Table 3-4. Traffic Volume Data

ANNUAL AVERAGE DAILY TRAFFIC SOUTH OAK FOREST ROAD		
	Between Ash Street and Redwood Trail	SJAFB Oak Forest Gate
2012	4,600	4,000
2010	5,100	4,000
2008	4,400	3,300
2006	4,200	3,200
2004	4,300	3,100

Source: NCDOT Traffic Volume Maps

40

1 **3.8. VISUAL RESOURCES**
2

3 Visual resources are the various elements of the landscape that contribute to the visual
4 character of the place. These elements can be either natural or human-made and include
5 objects, vistas, and viewsheds (MID, 2004).
6

7 The existing view of the proposed project area from the homes on South Oak Forest Road is
8 comprised of the installation's semi-solid perimeter fence and the streetlights along Scriven
9 Drive. On the installation, the view of the proposed project area from the adjacent Military
10 Housing is unobstructed. Figures 3-6 through 3-10 depict the current views from various
11 locations around the subject property. As part of the Proposed Action, the semi-solid perimeter
12 fence would be relocated by the City to the northwest and west to delineate the installation's
13 new secured boundary.
14

15 The existing viewshed currently includes nighttime lighting. Lighting in the area includes typical
16 residential street lighting in the adjacent neighborhoods as well as lighting associated with
17 individual homes, such as porch lights or motion lights. In addition, street lighting occurs on the
18 proposed project site along the entire length of Scriven Drive. The surrounding lighting
19 environment is typical of a suburban residential area.
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25 **Figure 3-6. View of Perimeter Fence from South Oak Forest Road (Off-Base)**
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Figure 3-7. View of Perimeter Fence from Scriven Drive (On-Base)



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Figure 3-8. View of Military Housing from Northwest Side of Property (On-Base)



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Figure 3-9. View of Military Housing from Scriven Drive (On-Base)



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Figure 3-10. View of Perimeter Fence from Northwest Side of Property (On-Base)



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4.0 ENVIRONMENTAL CONSEQUENCES

Chapter 4 presents an analysis of the potential impacts upon various components of the environment that could result from the proposed action and alternatives. This chapter is arranged in the same manner as Chapter 3. Alternative A has been identified as the Preferred Alternative. A discussion of Cumulative Impacts is presented in Chapter 5.

4.1. LAND USE AND NOISE

LAND USE

NO ACTION ALTERNATIVE

Under the No Action Alternative, the subject property would remain in its current state as open space. Existing land uses would not change. There would be no impacts to land use as a result of the No Action Alternative.

ALTERNATIVE A, PREFERRED ALTERNATIVE

Surrounding Land Uses

Implementing the Proposed Action would change the existing land use from open space to outdoor recreation. According to Air Force guidelines contained in Air Force Pamphlet 32-1010, *Land Use Planning* (USAF, 1998), all of the land uses within one-half mile of the subject property are compatible with outdoor recreation. Figure 4-1 provides a breakdown of the functional relationships between different land use categories.

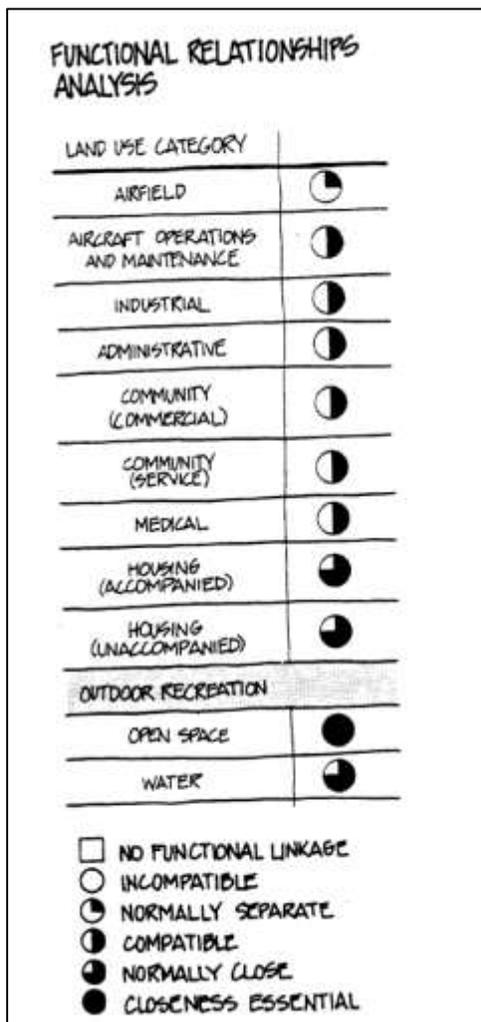
Based on the discussion above, impacts to land use would not be significant.

Air Installation Compatible Use Zone

In order to remain compatible with the height restrictions associated with the SJAFB airfield environs, nothing on the subject property could exceed a height of 145 feet. The tallest foreseeable component of the sports complex would be the 80-foot tall light poles, which is well below the maximum allowable height. As discussed in Section 3.1, the subject property is not located within the SJAFB airfield Clear Zones or Accident Potential Zones; therefore, there are no land use restrictions that would limit population densities on the subject property.

1
2

Figure 4-1. Outdoor Recreation Functional Relationships Analysis



Source: AFPAM 32-1010, Land Use Planning

3
4
5
6

NOISE

7
8
9

No ACTION ALTERNATIVE

10

Under the No Action Alternative, the subject property would remain in its current state as open space. No new noise sources would be introduced. There would be no noise impacts as a result of the No Action Alternative.

11
12
13
14

ALTERNATIVE A, PREFERRED ALTERNATIVE

15
16

As discussed in Chapter 3, existing background noise levels in the vicinity of the proposed project site are generally dominated by aircraft noise and traffic on local roadways.

17
18
19

With regard to existing aircraft noise on the subject property, there are no structures proposed for the portion of the property located within the 70-74 dBA noise zone, which would trigger the

20
21

1 requirement to incorporate noise level reduction measures. All proposed development within
 2 the 65-69 dBA noise zone (i.e., athletic fields, restrooms, picnic shelters, etc.) is considered
 3 compatible (SJAFB, 2011).
 4

5 For the following discussions concerning noise levels, there are two key concepts that should be
 6 mentioned:

- 7 1. Decibels are based on a logarithmic scale and cannot be added or subtracted in the usual
 8 mathematical way. If one noise source emits a sound level of 50 dBA and a second emits
 9 the same sound level, the resulting sound level is 53 dBA, not 100 dBA (i.e., adding two
 10 identical sources will increase the total sound level by 3 dBA).
- 11 2. For every doubling of distance, a minimum attenuation level (i.e., reduction) of six decibels
 12 would be expected.

13
 14 Noise impacts associated with implementing the Proposed Action would primarily be
 15 construction equipment, grounds maintenance activities, increased vehicle traffic, and crowd
 16 noise.
 17

18 Construction Equipment

19
 20 Construction noise would differ among the various phases of development, depending on the
 21 particular construction activities, working hours, and the numbers and operating lengths of the
 22 equipment used. Table 4-1 shows the typical noise levels of different types of construction
 23 equipment at varying distances from the source. Construction noise would be temporary in
 24 nature and would cease upon completion of construction activities.
 25

26 **Table 4-1. Typical Noise Levels of Construction Equipment**

27

Construction Equipment	Typical Noise Level (dBA)			
	50 feet from Source	300 feet from Source	600 feet from Source	900 feet from Source
Backhoe	80	64	58	55
Concrete Mixer	85	69	63	60
Dozer	85	69	63	60
Grader	85	69	63	60
Loader	85	69	63	60
Truck	88	72	66	63

28 Sources: U.S. Department of Transportation, Federal Transit Administration, Transit Noise and Vibration
 29 Impact Assessment, May 2006; and Carl Nave, University of Georgia, 2010
 30

31 In areas with ambient noise levels greater than 65 dB, noise from construction operations
 32 should not exceed existing ambient noise levels plus 10 dB (US DOT, 2006). The U.S.
 33 Department of Transportation recommends estimating the combined noise level from the two
 34 noisiest pieces of equipment (assuming they both operate at the same time) and then identifying
 35 if there are any locations where the level would exceed existing ambient noise levels plus 10 dB
 36 (US DOT, 2006). Based on the dominant noise sources of aircraft noise and traffic on local
 37 roadways, existing ambient noise levels in the vicinity of the proposed project area are
 38 estimated to range from about 66 dBA to about 69 dBA. The shortest distance between
 39 construction activities and housing is about 300 feet. Based on the data in Table 4-1, the two
 40 noisiest pieces of construction equipment would produce approximately 72 dBA and 69 dBA at

1 300 feet. Using the mathematical formula below (or an online calculator designed for adding
2 decibels), the combined noise level of the two noisiest pieces of equipment would be:

$$L = 10 \text{ Log}_{10} (10^{7.2} + 10^{6.9}) = 74 \text{ dBA}$$

5
6 The low end of the ambient noise level plus 10 dB would allow for construction operations to
7 produce up to 76 dBA, which is greater than the projected noise level of 74 dBA.

8 9 Grounds Maintenance Activities

10
11 Anticipated routine maintenance at the sports complex would include grooming the artificial turf
12 (estimated once per month for one hour each field) and mowing (estimated once per week for
13 eight hours). Mowing and grooming noise would consist of operations in certain areas with noise
14 levels increasing or decreasing based upon the distance from the receiver. The likely hours for
15 maintenance activities would be on weekdays during daylight hours so as not to conflict with
16 scheduled events during evening hours and weekends. Additionally, the noise levels associated
17 with these operations are generally similar to the same types of activities that occur at the
18 residences adjacent to the project site. These types of operations and resulting noise levels are
19 not expected to be unique to the area and would not adversely affect nearby residences.

20 21 Increased Vehicle Traffic

22
23 A road noise calculator was used to estimate existing traffic noise on South Oak Forest Road.
24 Appendix C provides a full listing of the data used in the calculator. The existing average traffic
25 noise is estimated to be about 55 dBA. According to the Federal Highway Administration, it
26 generally takes one doubling of the traffic volume to increase the ambient noise environment by
27 approximately 3.0 decibels, which is barely detectable to the human ear. A 1.0 decibel increase
28 in the noise level is the minimum perceptible change the human ear can detect (FHWA, 2011).
29 Based on the existing average daily traffic of 4,600 vehicles per day on South Oak Forest Road,
30 filling all 466 parking spaces each day (i.e., worst-case scenario) would add 932 vehicles to the
31 existing traffic volume (466 arriving and 466 departing the complex). This would increase the
32 average daily traffic to 5,532 vehicles, which would produce an estimated average noise level of
33 about 56 dBA (NZTA, 2010).

34 35 Crowd Noise

36
37 The proposed sports complex would generate noises such as cheering, whistles, yelling, etc.
38 Noise levels measured at various softball and soccer venues indicate that noise levels
39 generated during games are approximately 60 dBA (average hourly) and 75 dBA (maximum) at
40 a distance of 100 feet from the focal point or effective noise center of the playing fields (City of
41 Citrus Heights, 2005). A minimum attenuation level (i.e., reduction) of six decibels would be
42 expected for every doubling of distance. Table 4-2 shows the relationship between increased
43 distance and the associated reduction in decibels.

Table 4-2. Noise Attenuation Based on Distance from Athletic Fields

Distance (feet)	Hourly Average Decibels (dBA)	Maximum Decibels (dBA)
100	60	75
200	54	69
300	50	65
400	48	63
500	46	61
600	44	59
700	43	58
800	42	57
900	41	56
1,000	40	55
1,100	39	54
1,200	38	53

Source: Carl Nave, University of Georgia

The proposed sports complex would not include amplified sound systems. Based on the conceptual layout of the proposed sports complex, the shortest distance between an athletic field and a residence on South Oak Forest Road would be about 300 feet. On the installation, the closest Military Housing unit would also be roughly 300 feet from the nearest playing field. The average hourly noise level produced by one athletic field at a distance of 300 feet would be roughly 50 dBA, and the maximum noise level would be about 65 dBA, without factoring in any noise attenuation that may be provided by structural interference, landscaping, or fencing.

Determining the combined noise level from multiple playing fields is slightly more complex. As stated previously, decibels are based on a logarithmic scale and cannot be added or subtracted in the usual mathematical way. If one noise source emits a sound level of 50 dBA and a second emits the same sound level, the resulting sound level is 53 dBA, not 100 dBA (i.e., adding two identical sources will increase the total sound level by 3 dBA). While the athletic fields would not be *identical* sources of noise, a reasonable estimate of the average noise level produced by all eight fields can be calculated.

Based on the conceptual layout for the sports complex, the location of the nearest off-base residence in relation to the approximate geographical center of the playing fields was determined. In theory, this location would experience the most noise if all eight playing fields were being used at one time. The approximate distance between that residence and each proposed playing field was determined. Using the information in Table 4-2, the estimated hourly *average* and *maximum* noise levels, as would be experienced at the residence, were determined. This information is summarized in Table 4-3.

Table 4-3. Estimated Distances and Noise Levels at Most Central Residence

Playing Fields	Approximate Distance to most Central Residence (feet)	Estimated Hourly Average Decibels at Residence (dBA)	Estimated Maximum Decibels (dBA)
Field 1	800	42	57
Field 2	1,100	39	54
Field 3	800	42	57
Field 4	500	46	61
Field 5	700	43	58
Field 6	600	44	59
Field 7	1,000	40	55
Field 8	1,000	40	55

Next, the decibels produced from each field (at the specified distance) were added together to determine the combined total increase in noise level that would be experienced at the most central residence. Using the following mathematical equation (or an online calculator designed for adding decibels), the hourly average crowd noise produced by using all eight fields at once was calculated:

$$L = 10 \text{ Log}_{10} (10^{4.2} + 10^{3.9} + 10^{4.2} + 10^{4.6} + 10^{4.3} + 10^{4.4} + 10^{4.0} + 10^{4.0}) = 52 \text{ dB}$$

The maximum noise level, which would require all eight fields to produce the maximum noise level simultaneously, was calculated as follows:

$$L = 10 \text{ Log}_{10} (10^{5.7} + 10^{5.4} + 10^{5.7} + 10^{6.1} + 10^{5.8} + 10^{5.9} + 10^{5.5} + 10^{5.5}) = 67 \text{ dB}$$

Combined Noise Impacts

A reasonable estimate of the baseline noise environment for a typical residence on South Oak Forest Road was calculated by adding the *existing* traffic noise level (estimated to be 55.4 dBA) and the *existing* aircraft noise (65 dBA to 69 dBA). The combined total of these two dominant noise sources ranges from 65.5 dBA to 69.2 dBA.

$$\text{Using aircraft noise of 65 dBA: } L = 10 \text{ Log}_{10} (10^{6.5} + 10^{5.54}) = 66 \text{ dBA}$$

$$\text{Using aircraft noise of 69 dBA: } L = 10 \text{ Log}_{10} (10^{6.9} + 10^{5.54}) = 69 \text{ dBA}$$

When the estimated *average* crowd noise (52 dBA) is combined with the estimated *increased* traffic noise (56 dBA) and the *existing* aircraft noise (65 dBA to 69 dBA), the resulting *average* noise level would range from 66 dBA to 69 dBA, an increase of less than one decibel on average. When the estimated *maximum* crowd noise (67 dBA) is combined with the estimated *increased* traffic noise (56 dBA) and the *existing* aircraft noise (65 dBA to 69 dBA), the resulting *maximum* noise level would range from 69 dBA to 71 dBA. Other sounds that are about 70 decibels include a vacuum cleaner at 10 feet, a running shower, and a washing machine. The probability that all eight playing fields would produce the maximum noise level simultaneously is low; however, if this scenario were to occur, the duration would likely be very short.

As previously mentioned in Section 3.1, interior noise levels are typically lower than exterior due to the attenuation of the sound energy by the structure, with the amount of noise level reduction (NLR) provided by a building being dependent on the type of construction and the number of

1 openings such as doors, windows, chimneys, and plumbing vents. The approximate reduction in
2 interior noise is 15 dBA when windows are open and 25 dBA when windows are closed
3 (USEPA, 1974). If the *maximum* noise level were produced by all eight fields simultaneously,
4 the resulting interior noise level at the most central residence would be about 56 dBA with
5 windows open and about 46 dBA with windows closed. Normal speech at a distance of three
6 feet ranges from 60 dBA to 70 dBA.

7
8 The City has established *Landscaping, Screening and Buffering Standards* as part of its Unified
9 Development Ordinance. These standards are intended to maintain the visual character of the
10 community, control noise and provide acoustical modification into and from a site, and screen
11 objectionable uses within and between uses (City of Goldsboro, 2007). At a minimum, the
12 Proposed Action would incorporate the Street Yard Design Standards. Specific landscaping
13 requirements are discussed in Section 4.4.

14
15 Based on the discussion above, activities associated with the proposed sports complex would
16 not be expected to have a significant impact on the existing noise environment.

17
18 **4.2. AIR QUALITY**

19
20 **No ACTION ALTERNATIVE**

21
22 Under the No Action Alternative, the subject property would remain in its current state as open
23 space. Existing conditions and baseline air quality would remain unchanged. There would be no
24 impacts to air quality as a result of the No Action Alternative.

25
26 **ALTERNATIVE A, PREFERRED ALTERNATIVE**

27
28 Tables 4-4 and 4-5 depict the total emissions that would be anticipated as a result of proposed
29 activities (construction and use) as compared to the total emission for Wayne County in 2011.
30 The emissions associated with construction would only occur during the construction period. Air
31 emissions associated with construction would be anticipated to be minor and temporary. Air
32 emissions associated with the use of the proposed sports complex would be minor and are
33 expected for the reasonably foreseeable future since this would be an ongoing activity. Detailed
34 emissions calculations are included in Appendix D of this EA. Impacts to air quality resulting
35 from the Proposed Action are expected to be insignificant.

36
37 **Table 4-4. Estimated Emissions for Construction of the Sports Complex**

Pollutant	Construction Total Emissions (tons/year)	Percent of Wayne County 2011 Emissions
NO _x	17.094	0.29
CO	35.048	0.59
VOC	4.132	0.03
PM ₁₀	46.937	0.88
PM _{2.5}	0.674	0.04
SO _x	0.066	0.0007
Pb	0.000	0

38 **Source:** Air Force Air Conformity Applicability Model, Version 5.0.0b;
39 Air Emission Sources (USEPA, 2014)

40

1 **Table 4-5. Estimated Annual Emissions for Operation of the Sports Complex**

Pollutant	Total Emissions (tons/year)	Percent of Wayne County 2011 Emissions
NO _x	4.583	0.08
CO	81.034	0.35
VOC	6.083	0.04
PM ₁₀	0.226	0.004
PM _{2.5}	0.104	0.006
SO _x	0.075	0.0008
Pb	0.000	0

2 **Source:** Air Force Air Conformity Applicability Model, Version 5.0.0b;
 3 Air Emission Sources (USEPA, 2014)

4
 5 Greenhouse Gases

6
 7 The Council on Environmental Quality (CEQ) recommends that if a proposed action would be
 8 reasonably anticipated to cause direct emissions of 25,000 metric tons or more of CO₂-
 9 equivalent greenhouse gas emissions on an annual basis, agencies should consider this an
 10 indicator that a quantitative and qualitative assessment may be meaningful to decision makers
 11 and the public.

12
 13 Greenhouse gases would be expected to be emitted during construction activities. Greenhouse
 14 emissions from construction activities would occur as a result of the burning of fossil fuels to
 15 power construction equipment. Greenhouse gas emissions would be minimal (492 metric
 16 tons/year for construction), temporary in nature, and the amounts of greenhouse gases emitted
 17 would not have a significant impact on global climate change.

18
 19 It is expected that the majority people using the sports complex would be residents of SJAFB
 20 and Wayne County that are already using other sports venues in Wayne County; therefore,
 21 greenhouse gas emissions from these users would remain relatively stable. The City projects
 22 roughly 250 out-of-town vehicles during each of the 20 tournaments per year. According to EPA,
 23 the CO₂-equivalent produced by 250 vehicles over the course of an entire year of driving is
 24 1,188 metric tons, far below EPA's 25,000 metric ton threshold. Therefore, it is not anticipated
 25 that operation of the sports complex would contribute significantly to greenhouse gas emissions.

26
 27 **4.3. WATER RESOURCES**

28
 29 No ACTION ALTERNATIVE

30
 31 Under the No Action Alternative, the subject property would remain in its current state as open
 32 space. Water resources would remain the same. There would be no impacts to water resources
 33 as a result of the No Action Alternative.

1 **ALTERNATIVE A, PREFERRED ALTERNATIVE**
2

3 Implementing the Proposed Action would create impervious surfaces associated with the paved
4 parking areas, walking trail, and buildings. The amount of impervious surface that would be
5 added is estimated to be approximately 5 acres, or about 8 percent of the subject property. The
6 City would be required to comply with its Unified Development Ordinance, Article V, Chapter
7 6.5, *Stormwater Management for New Development*, which regulates activities that disturb
8 greater than one acre of land, places controls on nitrogen export from each development, and
9 mandates no net increase in peak stormwater runoff flow leaving a new development site (City
10 of Goldsboro, 2007). The Proposed Action would be expected to disturb approximately 25 acres
11 of land, which would require the City to comply with the requirements of the state's National
12 Pollutant Discharge Elimination System (NPDES) Program. Additionally, due to the size of the
13 proposed project site, the City would need a state-approved Erosion and Sediment Control Plan
14 prior to beginning any construction activities.
15

16 Based on the discussion above, there would be no anticipated adverse impacts to water
17 resources from the construction, operation, and maintenance of a sports complex.
18

19 **4.4. HAZARDOUS MATERIALS AND WASTE**
20

21 **NO ACTION ALTERNATIVE**
22

23 Under the No Action Alternative, the subject property would remain in its current state as open
24 space. There would be no impacts to hazardous materials or waste as a result of the No Action
25 Alternative.
26

27 **ALTERNATIVE A, PREFERRED ALTERNATIVE**
28

29 Due to the likely presence of chlordane in the soils on the subject property, the City would be
30 required to sample soils on the subject property, prior to starting any construction related to the
31 Proposed Action, to determine if any pesticide (chlordane) contamination exists and whether
32 any corrective action is necessary to assure protection of human health and the environment.
33 Additionally, the City would be required to follow all applicable federal, state, and local rules and
34 regulations regarding environmental requirements on soil management of hazardous waste and
35 substances. Any disposal of contaminated soil would comply with all rules and regulations;
36 therefore, impacts resulting from hazardous materials and waste would be insignificant.
37

38 **4.5. BIOLOGICAL RESOURCES**
39

40 **NO ACTION ALTERNATIVE**
41

42 Under the No Action Alternative, the subject property would remain in its current state as open
43 space. Biological resources on the subject property would remain the relatively unchanged over
44 time. There would be no impacts to biological resources as a result of the No Action Alternative.
45

46 **ALTERNATIVE A, PREFERRED ALTERNATIVE**
47

48 The subject property contains many ornamental trees that were planted in the former residential
49 area. SJAFB has an abundance of trees and several forested areas. The removal of the
50 ornamental trees on the subject property would not create a significant impact to vegetation on
51 the installation.

1 According to the Birds of North Carolina website, there are 296 species of birds in Wayne
2 County (Carolina Bird Club, 2014). The bird breeding season typically runs from February
3 through July. Because the Migratory Bird Treaty Act makes it illegal to disturb the nest of any
4 native bird without a permit, tree removal associated with the construction of the proposed
5 sports complex should be accomplished prior to February; however, if the City can determine
6 that nests are not present, tree removal may proceed at a later time. The City would be
7 responsible for ensuring compliance with the requirements of the Migratory Bird Treaty Act.

8
9 Based on the discussion above, there would be no anticipated adverse impacts to biological
10 resources from the construction, operation, and maintenance of a sports complex.

11 **4.6. GEOLOGY AND SOILS**

12 **NO ACTION ALTERNATIVE**

13
14 Under the No Action Alternative, the subject property would remain in its current state as open
15 space. Existing geology and soils would not change. There would be no impacts to geology or
16 soils as a result of the No Action Alternative.

17 **ALTERNATIVE A, PREFERRED ALTERNATIVE**

18
19 The Proposed Action would only entail ground disturbance at the surface and would not be
20 expected to have any impacts to geology.

21
22 As discussed in Section 4.4, the existing soils may contain chlordane. Prior to starting any
23 construction related to the Proposed Action, the City would be required to sample soils on the
24 subject property to determine if any pesticide contamination exists and whether any corrective
25 action is necessary to assure protection of human health and the environment. Additionally, the
26 City would be required to follow all applicable federal, state, and local rules and regulations
27 regarding environmental requirements on soil management of hazardous waste and
28 substances. If soil contamination exists above action levels, the soils would have to be
29 removed and clean fill would be brought in to replace the removed soils. This would be a
30 positive impact to soils on the subject property.

31 **4.7. TRANSPORTATION**

32 **NO ACTION ALTERNATIVE**

33
34 Under the No Action Alternative, the subject property would remain in its current state as open
35 space. Transportation networks would remain the same. There would be no impacts to
36 transportation as a result of the No Action Alternative.

37 **ALTERNATIVE A, PREFERRED ALTERNATIVE**

38
39 Construction activities would likely have some minor impacts on South Oak Forest Road traffic
40 patterns. The arrival of construction equipment and delivery of materials to the site would
41 slightly increase traffic volumes; however, construction activities are unlikely to generate
42 significant traffic issues.

43
44 Implementing the Proposed Action would increase traffic volumes in the vicinity of the subject
45 property when events are scheduled. The majority of traffic on South Oak Forest Road is

1 associated with the installation's Oak Forest Gate, which operates Monday through Friday from
2 6:00 am to 8:00 pm. Peak traffic hours at the gate occur on weekdays from roughly 6:30 am to
3 8:00 am (beginning of the work day), 11:00 am to 1:00 pm (lunchtime), and 3:30 pm to 5:00 pm
4 (end of the work day). The conceptual parking plan for the proposed sports complex includes a
5 total of 466 parking spaces, or about 58 spaces for each playing field. If every parking space
6 was filled every day, the volume of traffic on South Oak Forest Road would increase by about
7 20 percent (466 vehicles arriving and 466 vehicles departing the complex). Peak hours of use
8 for the proposed sports complex would be evenings and weekends, which would not compound
9 or conflict with peak traffic volumes associated with the Oak Forest Gate.

10
11 Based on the discussion above, impacts to transportation would not be significant.

12 13 **4.8. VISUAL RESOURCES**

14 15 **NO ACTION ALTERNATIVE**

16
17 Under the No Action Alternative, the subject property would remain in its current state as open
18 space. Existing visual resources would not change. There would be no impacts to visual
19 resources as a result of the No Action Alternative.

20 21 **ALTERNATIVE A, PREFERRED ALTERNATIVE**

22
23 As discussed in Section 3.4, the existing view of the proposed project area from the homes on
24 South Oak Forest Road is comprised of the installation's semi-solid perimeter fence and, during
25 nighttime hours, the streetlights along Scriven Drive and South Oak Forest Road. On the
26 installation, the view of the proposed project area from adjacent Military Housing is unobstructed
27 and is comprised of the open space of the subject property, along with the streetlights on
28 Scriven Drive and the semi-solid perimeter fence beyond. As part of the Proposed Action, the
29 semi-solid perimeter fence would be relocated to the northwest and west to delineate the
30 installation's new secured boundary. This would open up the viewshed for the residents along
31 South Oak Forest Road and restrict the view for on-base residents adjacent to the property. The
32 conceptual plan for the sports complex indicates a large portion of Scriven Drive along the
33 southeast side of the property would be incorporated into the design of the facility.
34 Approximately 8 or 9 of the existing on-base street lights would likely be retained.

35
36 The City is proposing to illuminate all playing fields and parking areas. Each field would have 4
37 to 6 light poles, totaling 32 to 48 light poles up to 80 feet tall. A preliminary estimate for the
38 number of light poles in the parking areas would be 10 to 15, with an approximate height of 37
39 feet per pole.

40
41 The shortest distance between a residence on South Oak Forest Road and an east-facing 80-
42 foot light pole would be about 590 feet. The shortest distance between a Military Housing unit
43 and a west-facing 80-foot light pole would be about 400 feet. It is assumed that lighting would
44 only be activated for the playing fields that are in use.

45 46 **LIGHTING REQUIREMENTS**

47
48 The City has established *Commercial Lighting Design Standards* as part of its Unified
49 Development Ordinance. These standards are "*intended to protect neighbors and the night sky*
50 *from nuisance glare and stray light coming from poorly aimed, placed, shielded, or applied light*

1 sources" (City of Goldsboro, 2007). Relevant excerpts from these standards are provided below
2 to illustrate the protective measures required for the Proposed Action.

3
4 Outdoor Sports Fields:

- 5 • The mounting height of outdoor sports field and outdoor performance area lighting fixtures
6 shall not exceed eighty (80) feet from finished grade unless approved by the Goldsboro City
7 Council as having no adverse effect or approved by the County Commissioners as part of a
8 Special Use Permit.
- 9 • All outdoor sports field and outdoor performance area lighting fixtures shall be equipped with
10 a glare control package (louvers, shields, or similar devices).
- 11 • The fixtures must be aimed so that their beams are directed and fall within the primary
12 playing or performance area.
- 13 • The hours of operation for the lighting system for any game or event shall not exceed one
14 hour after the end of the event.

15 Control of Nuisance and Disabling Glare:

- 16 • All outdoor lighting, whether or not required by this Ordinance, shall be aimed, located,
17 designed, fitted, and maintained so as not to present a hazard to drivers or pedestrians by
18 impairing their ability to safely traverse (disabling glare) and so as not to create a nuisance
19 by projecting or reflecting objectionable light onto a neighboring use or property (nuisance
20 glare).
- 21 • Vegetative screens shall not be employed as the primary means of controlling glare.
22 Rather, glare control shall be achieved with cutoff fixtures, shields, baffles, and appropriate
23 application of mounting height, wattage, aiming angle, and fixture placement, etc.

24 Pole mounted lighting:

- 25 • All lighting fixtures and poles shall be decorative in design and shall primarily complement
26 the architecture and design themes of the site.
- 27 • Luminaire heights shall not exceed 18 feet for decorative post-top fixtures and 37 feet for
28 pole-top fixtures from the average surrounding grade.

29
30 LANDSCAPING REQUIREMENTS

31
32 As mentioned previously, the City has established *Landscaping, Screening and Buffering*
33 *Standards* as part of its Unified Development Ordinance. These standards are intended to
34 maintain the visual character of the community, control noise and provide acoustical
35 modification into and from a site, and screen objectionable uses within and between uses (City
36 of Goldsboro, 2007). At a minimum, the Proposed Action would incorporate the Street Yard
37 Design Standards. Relevant excerpts from these standards are provided below. This
38 landscaping requirement would provide some screening between nearby homes and the sports
39 complex.

40
41 Street Yard Design Standards

- 42 • Protected street yards – A protected street yard is required along each property frontage
43 that abuts a public or private street. The yard shall be a minimum eight feet in depth and
44 extend the length of the linear frontage of the property line.
- 45 • Street tree landscaping required – Street trees shall be required along each property
46 frontage that abuts a private or public street. It is not the intent of this Section to form a
47 continual landscaped planting area; however, at a minimum, trees shall be planted and
48 mulched according to acceptable City standards.

- 1 • Street tree location – Required street trees shall be planted in an area from the property line
2 to a maximum distance of 25 feet from the property line. No planted or existing tree located
3 more than 25 feet from the property line shall count toward the street tree requirement.
- 4 • Required street trees – Street trees shall be planted according to one of the following:
 - 5 ○ Large trees, where feasible, shall be planted at a rate of one tree for every 40 feet of
6 linear street frontage, with a minimum of one tree on any street frontage less than 40
7 feet.
 - 8 ○ In the case of conflict with utility lines, overhead or underground, or other prohibiting
9 factors, two small trees shall be planted for every required large tree or a combination of
10 large and small trees where at least one half of the large tree requirement is installed
11 and one small tree is installed for every remaining large tree required.
- 12 • Street tree distribution – Trees shall be equally distributed along the street frontage, but they
13 are not required to be at absolute equal intervals. This allows for flexibility in design and for
14 building identification while discouraging long intervals without trees.
- 15 • Street tree pruning – For security, accessibility and visual identification, tree limbs shall be
16 pruned up to seven feet in the street yard in the second year after installation.
- 17 • Shrubbery is encouraged to supplement required street trees and is recommended to be
18 incorporated into all submitted landscape plans.

19
20 Overall, the visual change that would be associated with the sports complex is compatible with
21 nearby residential neighborhoods, as the majority of the acreage would be open turf areas with
22 landscaping throughout. Street trees would provide some visual separation between the sports
23 complex and adjacent land uses. Lighting of the playing fields and parking areas would
24 introduce a new source of light to adjacent properties during evening hours up to 10:00 pm;
25 however, based on the requirements of the City's *Commercial Lighting Design Standards* and,
26 to a lesser degree, the *Landscaping, Screening and Buffering Standards*, no significant light
27 trespass or glare to neighboring homes would be expected.

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29 Based on the discussion above, impacts to visual resources would not be significant.

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5.0 CUMULATIVE IMPACTS

5.1. APPROACH

CEQ regulations stipulate that the cumulative impacts analysis within an EA should consider the potential environmental impacts resulting from “the incremental impacts of the action when added to past, present and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions” (40 CFR § 1508.7). CEQ guidance (*Considering Cumulative Effects Under the National Environmental Policy Act*) in considering cumulative impacts involves defining the scope of the other actions and their interrelationship with a proposed action. The scope must consider overlaps in the location and timing of a proposed action and other actions. It must also evaluate the nature of interactions among these actions.

Cumulative impacts are most likely to arise when a relationship or synergy exists between a proposed action and other actions expected to occur in a similar location or during a similar time period. Actions overlapping with, or in proximity to, a proposed action would be expected to have more potential for cumulative impacts than those more geographically separated.

As discussed in the CEQ’s *Considering Cumulative Effects Under the National Environmental Policy Act*, to identify cumulative impacts the following fundamental questions need to be addressed:

- Does a relationship exist such that affected resource areas of a proposed action might interact with the affected resource areas of past, present, or reasonably foreseeable future actions?
- If one or more of the affected resource areas of a proposed action and another action could be expected to interact, would the proposed action affect or be affected by impacts of the other action?
- If such a relationship exists, then does an assessment reveal any potentially significant impacts not identified when a proposed action is considered alone?

The scope of the cumulative impacts analysis involves both the geographic extent of the impacts and the timeframe in which the impacts could be expected to occur. It is possible that analysis of cumulative impacts might go beyond the scope of the project-specific direct and indirect impacts to include expanded geographic and time boundaries and a focus on broad resource sustainability. This approach is becoming increasingly important as growing evidence suggests that the most significant impacts result from the combination of individual, often minor, impacts of multiple actions over time. The underlying issue is whether or not a resource can adequately recover from the impact of an action before the environment is exposed to other action(s).

5.2. PAST, PRESENT AND REASONABLY FORESEEABLE ACTIONS

Various types of past and present actions have the potential to affect the resources identified in Chapter 3. An overview of present and future actions is provided in the following sections with a description of the activities that are relevant to the impact analysis in Chapter 4. Geographic distribution, intensity, duration and the historical effects of activities are considered when determining whether a particular activity may contribute cumulatively and significantly to the impacts on resource areas identified in Chapter 4.

1 For this EA, a search was conducted to identify any past, present and future actions having the
2 potential for additive and/or interactive effects. Those past, present and future actions that have
3 a potential for additive or interactive effects are summarized below. The cumulative impacts of
4 the past, present and future actions, in combination with the impacts assessed for the proposed
5 alternatives (Chapter 4) were then assessed.

- 6 • Wing Infrastructure Development Outlook (WINDO) Plan (October 2005): An EA was
7 completed to evaluate the infrastructure improvements needed to support the Air Force and
8 SJAFB's mission for 10 years (2005-2015). The WINDO detailed 56 infrastructure
9 improvements, which included new construction, demolitions, and additions and upgrades to
10 various facilities and services. Several of the projects included in the WINDO have already
11 been completed.
- 12 • Military Family Housing Privatization (May 2012): An Environmental Assessment was
13 completed for the Air Force and a private developer to enter into a 50-year land-lease, real-
14 estate agreement where the Government conveys all existing housing and associated
15 improvements to the private developer, and the private developer plans, designs, develops,
16 renovates, demolishes, constructs, owns, operates, maintains, and manages all related
17 assets. In return, the private developer would be entitled to collect rental income based on
18 the military member's Basic Allowance for Housing (BAH).
- 19 • Heavy Equipment Training Area (November 2013): An EA was completed for the
20 establishment of a 5.5-acre Heavy Equipment Training Area in the southwest corner of the
21 installation to be used by the 567th RED HORSE Squadron. The site will provide a
22 dedicated area for training military and civilian personnel on heavy equipment used in the
23 accomplishment of day-to-day work. The site will be used approximately 2 to 5 days per
24 month throughout the year.

26 **5.3. DISCUSSION OF CUMULATIVE IMPACTS RELATIVE TO THE PROPOSED** 27 **ACTION**

29 **5.3.1. LAND USE AND NOISE**

31 Implementing the Proposed Action would change the existing land use from open space to
32 outdoor recreation. Outdoor recreation is compatible with all surrounding land uses, both on
33 and off the installation. A detailed analysis of noise impacts (Section 4.1) associated with the
34 proposed sports complex concluded that activities would not be expected to have a significant
35 impact on the existing noise environment. All projects associated with the WINDO EA are
36 located within the boundaries of the installation and would not be anticipated to have any
37 impact on land uses in Goldsboro or Wayne County. The assessment of noise impacts
38 associated with construction-related activities concluded the noise would be contained within
39 the boundaries of the installation and would be insignificant. The assessment of noise related
40 to facility operations was also determined to be insignificant. Military Family Housing
41 Privatization conveyed several parcels of Government land to a private developer; however, all
42 of the parcels were already designated for residential use, so no impacts to land use were
43 realized. Furthermore, since the area would continue to be used for residential purposes, no
44 impacts to noise resulted from the project. The Heavy Equipment Training Area is located south
45 of the runway in a relatively remote portion of the installation in an area designated for industrial
46 uses. Due to the close proximity to the runway, impacts to noise resulting from the training area
47 will be negligible. These projects, when considered together, would not be anticipated to affect
48 land use or noise in the surrounding community. Thus, no cumulative impacts to land use or
49 noise are anticipated.

1 **5.3.2. AIR QUALITY**
2

3 The emissions associated with the Proposed Action are extremely small in comparison to the
4 total emissions produced in Wayne County. Emissions would primarily be from the operation of
5 construction equipment and vehicles travelling to and from the subject property. The
6 movements of these vehicles on public roads would combine with other vehicular traffic but due
7 to the small level of emissions produced from the Proposed Action there would not be a
8 significant cumulative impact to air quality. Projects associated with the WINDO EA would
9 include grading, paving, and demolition and construction of facilities over a 10-year period.
10 These activities would produce short-term emissions primarily from internal combustion
11 engines, asphalt concrete paving, fugitive dust, and architectural surface coatings, which would
12 cease once the construction is completed. According to the air emissions calculations
13 contained in the WINDO EA, it was concluded that air quality impacts from construction
14 operations was negligible both in the immediate vicinity of the installation and in the surrounding
15 areas. Military Family Housing Privatization will generate air emissions during construction of
16 desired community features, such as a community center. Emissions from these small
17 construction projects would be temporary and minor. The Heavy Equipment Training Area will
18 operate heavy equipment for up to 5 days per month, producing negligible impacts to air quality.
19 These projects, when considered together, would not be anticipated to affect the attainment
20 status of Wayne County under the Clean Air Act or prevent the county from remaining in
21 attainment. Thus, no cumulative impacts to air quality are anticipated.
22

23 **5.3.3. WATER RESOURCES**
24

25 Implementing the Proposed Action would create impervious surfaces associated with the paved
26 parking areas, walking trail, and buildings. The amount of impervious surface that would be
27 added is estimated to be approximately 5 acres, or about 8 percent of the subject property. The
28 City would be required to comply with its Unified Development Ordinance, Article V, Chapter
29 6.5, *Stormwater Management for New Development*, which regulates activities that disturb
30 greater than one acre of land, places controls on nitrogen export from each development, and
31 mandates no net increase in peak stormwater runoff flow leaving a new development site (City
32 of Goldsboro, 2007). Impacts to water resources resulting from the Proposed Action would be
33 expected to be insignificant. Projects associated with the WINDO EA would result in impacts
34 from clearing, grading, and demolition. These impacts would be temporary and minor. An
35 analysis of permanent impacts caused by construction determined the net increase of
36 impervious surface would total 7.5 acres if all WINDO projects were implemented, which
37 comprises 0.23 percent of the installation. The EA concludes the impacts to water resources
38 would be insignificant. Military Family Housing Privatization would employ best management
39 practices, such as silt fencing and hay bales, during any construction activities, resulting in
40 negligible impacts to water resources. The Heavy Equipment Training Area is located adjacent
41 to a wetland but the Army Corps of Engineers concurred that the wetland would not be
42 impacted the training area. A portion of the site is also located within the 100-year floodplain;
43 however, use of the site will not impact the base flood elevation and no structures will be built
44 on the site. The project requires the construction and maintenance of diversion ditches and
45 sediment traps to ensure no impacts to water resources. These projects, when considered
46 together, would not be anticipated to significantly affect water resources. Thus, no cumulative
47 impacts to water resources are anticipated.
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1 **5.3.4. BIOLOGICAL RESOURCES**
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3 Tree removal associated with the Proposed Action would not significantly impact vegetation on
4 the installation; however, tree removal would have to be accomplished outside the nesting
5 season unless the City can determine that no nests are present. The City would be required to
6 comply with the requirements of the Migratory Bird Treaty Act; therefore, no significant impacts
7 to biological resources would be expected. Many of the projects associated with the WINDO
8 EA would result in the loss of a limited number of mature trees and shrubs located in developed
9 portions of the installation. Impacts resulting from the loss of these trees were determined to be
10 insignificant. All of the property associated with Military Family Housing Privatization either
11 currently contains housing units or previously contained housing units. Any new construction
12 would occur on previously developed land within the housing areas, resulting in negligible
13 impacts to biological resources. The Heavy Equipment Training Area is located on a site that
14 was regularly mowed for military training exercises and had little value as wildlife habitat. The
15 project will not remove any trees. The project's impact on biological resources is negligible.
16 These projects, when considered together, would not be anticipated to significantly affect
17 biological resources. Thus, no cumulative impacts biological resources are anticipated.
18

19 **5.3.5. TRANSPORTATION**
20

21 Implementing the Proposed Action would increase traffic volumes in the vicinity of the subject
22 property when events are scheduled. The majority of traffic on South Oak Forest Road is
23 associated with the installation's Oak Forest Gate, which operates Monday through Friday from
24 6:00 am to 8:00 pm. Peak hours of use for the proposed sports complex would not compound
25 or conflict with peak traffic volumes associated with the Oak Forest Gate. All projects
26 associated with the WINDO EA, the Military Family Housing Privatization project, and the
27 Heavy Equipment Training Area are located within the boundaries of the installation and all
28 construction-related traffic would use the Slocumb Street Gate on the west side of the
29 installation. Traffic in the vicinity of the proposed sports complex would not be impacted by
30 other projects occurring on the installation. Small amounts of additional traffic associated with
31 construction-related activities would occur on the installation as a result of these projects but
32 impacts to traffic would be negligible. These projects, when considered together, would not be
33 anticipated to significantly affect transportation on the installation or in the surrounding
34 community. Thus, no cumulative impacts to transportation are anticipated.
35

36 **5.3.6. VISUAL RESOURCES**
37

38 Overall, the visual change that would be associated with the Proposed Action is compatible with
39 nearby residential neighborhoods, as the majority of the acreage would be open turf areas with
40 landscaping throughout. Street trees would provide some visual separation between the sports
41 complex and adjacent land uses. Lighting of the playing fields and parking areas would
42 introduce a new source of light to adjacent properties during evening hours; however, based on
43 the requirements of the City's *Commercial Lighting Design*, no significant light impacts would be
44 expected. All projects associated with the WINDO EA are located within the boundaries of the
45 installation and would have no impact on visual resources in the surrounding community. The
46 Military Family Housing Privatization project will construct community features, such as a
47 community center, but the features would have no impact on visual resources in the surrounding
48 community. The Heavy Equipment Training Area is located south of the runway in a relatively
49 isolated portion of the installation. Use of the site does not impact visual resources for any
50 adjoining land use. These projects, when considered together, would not be anticipated to
51 affect the visual resources on the installation or in the surrounding community. Thus, no
52 cumulative impacts to visual resources are anticipated.

6.0 LIST OF PREPARERS AND PERSONS CONSULTED

PREPARER

Name and Title	Organization	Years of Experience
Cathryn Pesenti, BS <i>Environmental Planner</i>	4 CES/CEIEA	13

PERSONS CONSULTED

Name	Organization	Title
Scott Barnard	City of Goldsboro	Director, Parks and Recreation Dept
Ronnie Wilson	4 CES/CEIEC	SJAFB Water Quality Program Manager
Dean Chastain	4 CES/CEIE	SJAFB Environmental Element Chief
Dan Mayette	4 CES/CEIEC	SJAFB Hazardous Waste Manager

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6.0 CIRCULATION OF THE ASSESSMENT

This document has been provided to the recipients listed below for review and comment:

North Carolina State Environmental Review Clearinghouse
1301 Mail Service Center
Raleigh, NC 27699-1301

U.S. Fish and Wildlife Service
Raleigh Ecological Services Field Office
551F Pylon Drive
Raleigh, NC 27606

Wayne County Manager
P.O. Box 227
Goldsboro, NC 27533

Mr. Scott Stevens
City of Goldsboro, City Manager
200 North Center Street
Goldsboro, NC 27530-3623

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APPENDIX A

CULTURAL RESOURCES AND NATIVE AMERICAN CONSULTATION

**AUGUST 6, 1996 LETTER OF CONCURRENCE WITH THE
U.S. AIR FORCE CULTURAL RESOURCES
SERVICEWIDE OVERVIEW PROJECT ASSESSMENT,
SEYMOUR JOHNSON AIR FORCE BASE, NORTH CAROLINA**

AND

**APRIL 10, 2014 CORRESPONDENCE FROM
THE EASTERN BAND OF CHEROKEE INDIANS
CONFIRMING NO INTERESTS IN WAYNE COUNTY, NC**

ATTACHMENT E



North Carolina Department of Cultural Resources

James B. Hunt Jr., Governor
Betty Ray McCain, Secretary

Division of Archives and History
Jeffrey J. Crow, Director

August 6, 1998

Dr. Mike Russo
Air Force Project Coordinator
National Park Service
Southeast Regional Office
75 Spring Street
Atlanta, Georgia 30303

Re: Draft Report, US Air Force Cultural Resources
Servicewide Overview Project, Seymour Johnson AFB,
Goldsboro, Wayne County, North Carolina, ER 97-7088

Dear Dr. Russo:

Thank you for your letter of July 8, 1998, concerning the above project.

We have reviewed the draft report concerning Seymour Johnson Air Force Base. For the most part, Seymour Johnson has done an excellent job under Sections 108 and 110 of the National Historic Preservation Act and is to be congratulated for their efforts.

In terms of archaeological resources, the following is the current status of investigations at the various facilities included in the report.

1. **Seymour Johnson Main Base.** Archaeological site 31WY9, the only recorded site on the base proper, was revisited by a member of our staff in 1978. The site had been destroyed by erosion and is not eligible for the National Register of Historic Places. We do not recommend any archaeological investigations on the main base due to the high level of ground disturbing activities that have taken place in the past.
2. **Dare County Ordnance Range.** A member of our staff conducted an aerial reconnaissance of this facility in 1978 to assess the potential for archaeological resources. Given the swampy nature of the terrain and the continued use of the facility as an ordnance range, it is our opinion that no National Register eligible archaeological resources are likely to be present. The recent survey of 21,330 acres of the facility supports this opinion since no archaeological resources were located. We were not consulted prior to the survey nor were we given a copy of the letter by David Anderson of the National Park Service concerning his opinion that the survey by Panamerican Consultants was inadequate. We request that a copy of his letter be forwarded to us as soon as possible so that we may respond to Dr. Anderson's concerns. We do not believe that any



Dr. Mike Russo
August 6, 1996, Page 2

additional archaeological survey is necessary at the Dare County Ordnance Range.

3. **Fort Fisher Recreation Area.** We have received the archaeological survey report by Panamerican Consultants concerning the 101-acre tract controlled by the U.S. Air Force at the Fort Fisher Recreation Area. Three archaeological sites were either revisited or located during the investigation. As stated in our letter of July 10, 1996, to Paul Wetz of the Savannah Corps, we concur that site 31NH697** is eligible for listing in the National Register of Historic Places. No recommendations or evaluations were included in the report for sites 31NH642** or 31NH660, and in the same letter we requested clarification of their eligibility status, which we have yet to receive.
4. **Minor Tracts.** The minor tracts include the Jasper and Oatland Communication Sites and the Summerall, Saulston and Neuse Middle Markers Annexes. We need locations for these facilities as well as pertinent information concerning the extant buildings and land use before we can evaluate their potential for containing significant archaeological resources.

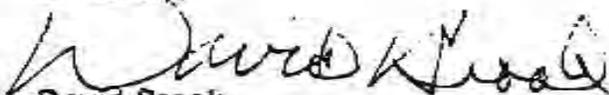
We trust that the above information clarifies the status of Section 106 and Section 110 compliance for archaeological resources at Seymour Johnson Air Force Base.

By our July 22, 1996, letter we responded to the draft historic structures survey report by Panamerican Consultants for Seymour Johnson Air Force Base. A copy of our letter is enclosed. We have raised the issue of whether the eight World War II buildings constitute a historic district, and are awaiting a response.

The above comments are made pursuant to Section 106 of the National Historic Preservation Act and the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106 codified at 36 CFR Part 800.

Thank you for your cooperation and consideration. If you have questions concerning the above comment, please contact Renee Gladhill-Earley, environmental review coordinator, at 919/733-4763.

Sincerely,



David Brook
Deputy State Historic Preservation Officer

DB:slw

Enclosure

cc: David Anderson
National Park Service
Southeastern Archaeological Center
P.O. Box 2416
Tallahassee, Florida 32312

bc: File
Brown/Davin Tuttle
Clegg/Hall
County
RF

From: [CHASTAIN, WILLIAM D.GS-12 USAF ACC 4 CES/CEIE](mailto:CHASTAIN.WILLIAM.D.GS-12.USAF.ACC.4.CES/CEIE)
To: [PESENTI, CATHRYN M.GS-11 USAF ACC 4 CES/CEIEA](mailto:PESENTI.CATHRYN.M.GS-11.USAF.ACC.4.CES/CEIEA)
Subject: FW: EBCI North Carolina counties of interest
Date: Thursday, April 17, 2014 10:25:57 AM
Attachments: [THPO Counties.docx](#)

FYI

W. Dean Chastain, P.E.
Environmental Element Chief
4 CES/CEIE
DSN 722- 5168/COMM (919) 722-5168

-----Original Message-----

From: Yolanda Saunooke [<mailto:yolasaun@nc-choke.com>]
Sent: Thursday, April 10, 2014 8:14 AM
To: CHASTAIN, WILLIAM D GS-12 USAF ACC 4 CES/CEIE
Subject: RE: EBCI North Carolina counties of interest

Here you go. Have a good day.

-----Original Message-----

From: CHASTAIN, WILLIAM D GS-12 USAF ACC 4 CES/CEIE [<mailto:william.chastain@us.af.mil>]
Sent: Wednesday, April 09, 2014 11:39 AM
To: Yolanda Saunooke
Subject: EBCI North Carolina counties of interest

Ms. Saunooke,

Thank you for returning my call, and confirming that EBCI does not have interests in Dare County, NC. If you could provide a list of other North Carolina counties or areas that the EBCI does or does not have interests in, it would be greatly appreciated.

Again, thank you
W. Dean Chastain, P.E.
Environmental Element Leader
4 CES/CEIE
DSN 722- 5168/COMM (919) 722-5168

**State and County Summary
Of the Cherokee Indians Traditional Aboriginal Territory**

Based on the Map of the Former Territorial Limits of the Cherokee Nation of Indians Exhibiting the Boundaries of the Various Cessions of Land Made by Them to the Colonies and the United States by Treaty Stipulations, From the Beginning of Their Relations with the White to the Date of Their Removal West of the Mississippi River (Royce 1884)

ALABAMA	GEORGIA	NORTH CAROLINA	SOUTH CAROLINA	VIRGINIA	WEST VIRGINIA
Blount	Banks	Alleghany	Abbeville	Bland	Boone
Cherokee	Barrow	Ashe	Aiken	Buchanan	Cabell
Colbert	Bartow	Avery	Anderson	Carroll	Fayette
Cullman	Catoosa	Buncombe	Calhoun	Dickenson	Kanawha
De Kalb	Chattooga	Burke	Cherokee	Floyd	Lincoln
Etowah	Cherokee	Caldwell	Chester	Giles	Logan
Franklin	Clarke	Catawba	Edgefield	Grayson	Mason
Jackson	Cobb	Cherokee	Fairfield	Lee	McDowell
Lauderdale	Dade	Clay	Greenwood	Montgomery	Mercer
Lawrence	Dawson	Cleveland	Greenville	Pulaski	Mingo
Limestone	Elbert	Gaston	Kershaw	Russell	Monroe
Madison	Fannin	Graham	Lancaster	Scott	Putnam
Marion	Floyd	Haywood	Laurens	Smyth	Raleigh
Marshall	Forsyth	Henderson	Lexington	Tazewell	Summers
Morgan	Franklin	Jackson	McCormick	Washington	Wayne
St. Clair	Gilmer	Lincoln	Newberry	Wise	Wyoming
Winston	Gordon	Macon	Oconee	Wythe	
	Gwinnett	Madison	Orangeburg		
	Habersham	McDowell	Pickens		
	Hall	Mitchell	Richland		
	Hart	Polk	Saluda		
	Jackson	Rutherford	Spartanburg		
	Lumpkin	Swain	Union		
	Madison	Transylvania	York		
	Murray	Watauga			
	Oconee	Wilkes			
	Oglethorpe	Yancey			
	Paulding				
	Pickens				
	Polk				
	Rabun				
	Stephens				
	Towns				
	Union				
	Walker				
	White				
	Whitfield				

**State and County Summary
Of the Cherokee Indians Traditional Aboriginal Territory**

Based on the Map of the Former Territorial Limits of the Cherokee Nation of Indians Exhibiting the Boundaries of the Various Cessions of Land Made by Them to the Colonies and the United States by Treaty Stipulations, From the Beginning of Their Relations with the White to the Date of Their Removal West of the Mississippi River (Royce 1884)

Kentucky	Kentucky cont'd	Kentucky cont'd	Tennessee	Tennessee cont'd
Adair	Grayson	Mercer	Anderson	Lewis
Allen	Green	Metcalfe	Bedford	Loudon
Anderson	Greenup	Monroe	Bledsoe	Macon
Barren	Hancock	Montgomery	Blount	Marion
Bath	Hardin	Morgan	Bradley	Marshall
Bell	Harlan	Muhlenburg	Campbell	Maury
Boone	Harrison	Nelson	Cannon	McMinn
Bourbon	Hart	Nicholas	Carter	Meigs
Boyd	Henderson	Ohio	Cheatham	Monroe
Boyle	Henry	Oldham	Claiborne	Moore
Bracken	Hopkins	Owen	Clay	Morgan
Breathitt	Jackson	Owsley	Cocke	Montgomery
Breckinridge	Jefferson	Pendleton	Coffee	Overton
Bullitt	Jessamine	Perry	Cumberland	Perry
Butler	Johnson	Pike	Davidson	Pickett
Caldwell	Kenton	Powell	DeKalb	Polk
Campbell	Knott	Pulaski	Dickson	Putnam
Carroll	Knox	Robertson	Fentress	Rhea
Carter	Larue	Rockcastle	Franklin	Roane
Casey	Laurel	Rowan	Giles	Robertson
Christian	Lawrence	Russell	Grainger	Rutherford
Clark	Lee	Scott	Greene	Scott
Clay	Leslie	Shelby	Grundy	Sequatchie
Clinton	Letcher	Simpson	Hamblen	Sevier
Crittenden	Lewis	Spencer	Hamilton	Smith
Cumberland	Lincoln	Taylor	Hancock	Stewart
Daviess	Livingston	Todd	Hardin	Sullivan
Edmonson	Logan	Trigg	Hawkins	Sumner
Elliot	Lyon	Trimble	Hickman	Trousdale
Estill	McCreary	Union	Houston	Unicoi
Fayette	McLean	Warren	Humphreys	Union
Fleming	Madison	Washington	Jackson	Van Buren
Floyd	Magoffin	Wayne	Jefferson	Warren
Franklin	Marion	Webster	Johnson	Washington
Gallatin	Martin	Whitley	Knox	Wayne
Garrard	Mason	Wolfe	Lawrence	White
Grant	Meade	Woodford	Lincoln	Williamson
	Menifee			Wilson

APPENDIX B

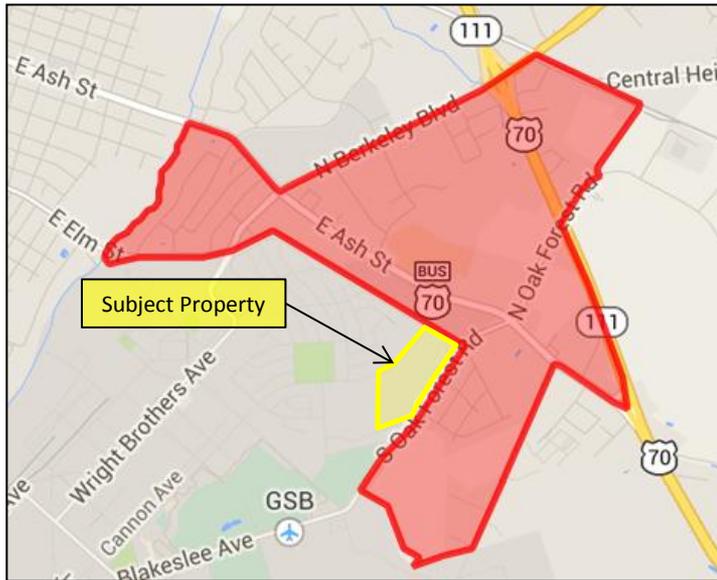
DEMOGRAPHICS OF SURROUNDING NEIGHBORHOODS

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, requires federal agencies to identify and address, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations.

Council on Environmental Quality (CEQ) guidelines for evaluating potential adverse environmental justice effects indicate minority populations should be identified when either: 1) a minority population exceeds 50 percent of the population of the affected area, or 2) a minority population represents a “meaningfully greater increment” of the affected area population than the population of some appropriate larger geographic unit, as a whole (Council on Environmental Quality, 1997).

Low-income populations are those communities or sets of individuals whose median income is below the current poverty level of the general population. According to the guidance, low-income populations in an affected area should be identified using the “annual statistical poverty thresholds from the Bureau of the Census’ Current Population Reports, Series P-60 on Income and Poverty.” In identifying low-income populations, (federal) agencies may consider as a community either a group of individuals living in geographic proximity to one another or a set of individuals (such as migrant workers or Native Americans) where either type of group experiences common conditions of environmental exposure or effect” (Council on Environmental Quality, 1997).

Block Group 001302-1



Housing Occupancy

	Block Group 001302-1	%
Total Housing Units	952, see rank	100%
Occupied Housing Units	871 91.49%, see rank	
Owner Occupied	367 38.55%, see rank	
Renter Occupied	504 52.94%, see rank	
Vacant Housing Units	81 8.51%, see rank	
For Rent	45 4.73%, see rank	
For Sale Only	6 0.63%, see rank	
Rented or Sold, Not Occupied	4 0.42%, see rank	
For Seasonal, Recreational, or Occasional Use	3 0.32%, see rank	
For Migrant Workers	0 0.00%, see rank	
Other Vacant	23 2.42%, see rank	

*Based on 2010 data.

Poverty Level

	Block Group 001302-1	% North Carolina	U.S.
Family in Poverty	32 7.82% see rank	12.41%	10.92%

*Based on 2008-2012 data.

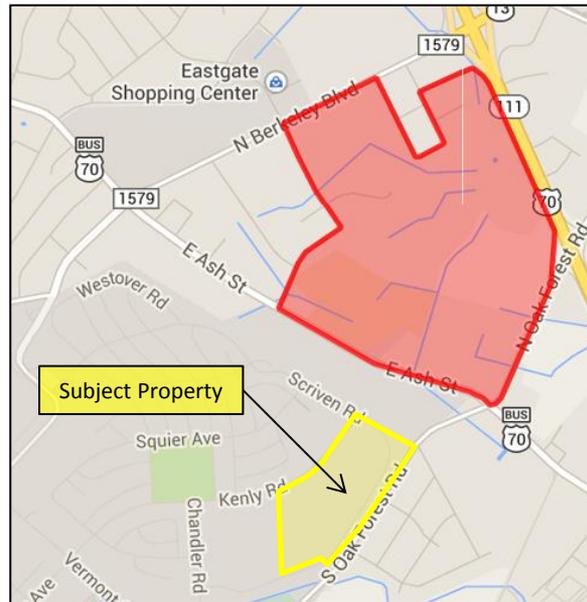
Population by Races

White:	1,040 (62.46%, see rank)
Black:	469 (28.17%, see rank)
Hispanic:	100 (6.01%, see rank)
Asian:	67 (4.02%, see rank)
Native (American Indian, Alaska Native, Hawaiian Native, etc.):	5 (0.30%, see rank)
One Race, Other:	43 (2.58%, see rank)
Two or More Races:	41 (2.46%, see rank)

*Based on 2010 data.

A census block group is a geographic area defined by the United States Census Bureau and used for the census. On average, a census block group has around 1,500 residents. Census block groups, as well as census tracts, are more uniformly distributed in terms of the number of residents than cities or zip codes. Also, the census block group and the census tract demographic data are nearly 100% complete vs. less than 70% coverage of demographic data for cities and zip codes. Therefore census block groups and the census tracts are an excellent way to understand locations in a smaller scale, for example understanding the different areas of a large city. Census block groups are smaller than census tracts and can be further divided into census blocks for understanding locations at the block and community level.

Census Block 001302-1-010



Housing Occupancy

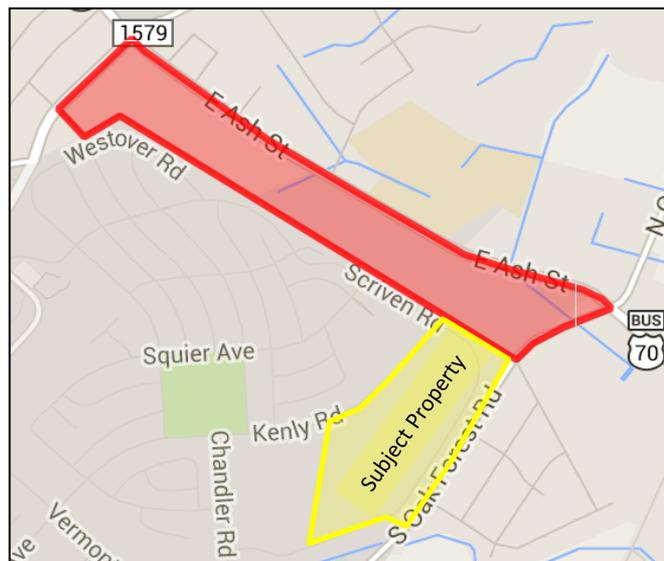
	Census Block 001302-1-010	%
Total Housing Units	343	100%
Occupied Housing Units	305	88.92%, see rank
Owner Occupied	37	10.79%, see rank
Owner Occupied with Mortgage	27	7.87%
Owner Occupied without Mortgage	10	2.92%
Renter Occupied	268	78.13%, see rank
Vacant Housing Units	38	11.08%, see rank
For Rent	29	8.45%, see rank
For Sale Only	2	0.58%, see rank
Rented or Sold, Not Occupied	0	0.00%, see rank
For Seasonal, Recreational, or Occasional Use	1	0.29%, see rank
For Migrant Workers	0	0.00%, see rank
Other Vacant	6	1.75%, see rank

Population by Races

White:	326 (64.55%, see rank)
Black:	136 (26.93%, see rank)
Hispanic:	34 (6.73%, see rank)
Asian:	17 (3.37%, see rank)
Native (American Indian, Alaska Native, Hawaiian Native, etc.):	1 (0.20%, see rank)
One Race, Other:	16 (3.17%, see rank)
Two or More Races:	9 (1.78%, see rank)

Income and poverty information is not available at the Census Block level.

Census Block 001302-1-026



Housing Occupancy

	Census Block 001302-1-026	%
Total Housing Units	28	100%
Occupied Housing Units	24 85.71%, see rank	
Owner Occupied	5 17.86%, see rank	
Owner Occupied with Mortgage	2 7.14%	
Owner Occupied without Mortgage	3 10.71%	
Renter Occupied	19 67.86%, see rank	
Vacant Housing Units	4 14.29%, see rank	
For Rent	1 3.57%, see rank	
For Sale Only	0 0.00%, see rank	
Rented or Sold, Not Occupied	0 0.00%, see rank	
For Seasonal, Recreational, or Occasional Use	0 0.00%, see rank	
For Migrant Workers	0 0.00%, see rank	
Other Vacant	3 10.71%, see rank	

Population by Races

White:	19 (45.24%, see rank)
Black:	13 (30.95%, see rank)
Hispanic:	2 (4.76%, see rank)
Asian:	8 (19.05%, see rank)
Native (American Indian, Alaska Native, Hawaiian Native, etc.):	0 (0.00%, see rank)
One Race, Other:	1 (2.38%, see rank)
Two or More Races:	1 (2.38%, see rank)

Income and poverty information is not available at the Census Block level.

Census Block 001302-1-039



Housing Occupancy

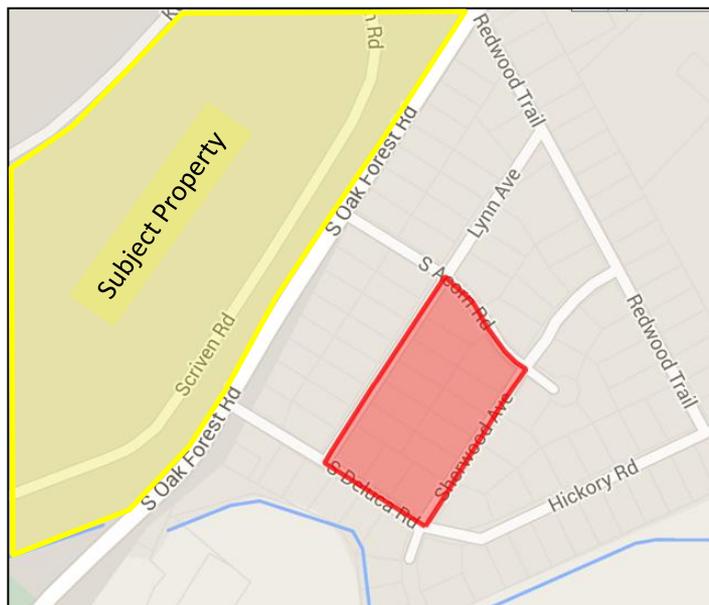
	Census Block 001302-1-039	
		%
Total Housing Units	52	100%
Occupied Housing Units	50	96.15%, see rank
Owner Occupied	38	73.08%, see rank
Owner Occupied with Mortgage	25	48.08%
Owner Occupied without Mortgage	13	25.00%
Renter Occupied	12	23.08%, see rank
Vacant Housing Units	2	3.85%, see rank
For Rent	2	3.85%, see rank
For Sale Only	0	0.00%, see rank
Rented or Sold, Not Occupied	0	0.00%, see rank
For Seasonal, Recreational, or Occasional Use	0	0.00%, see rank
For Migrant Workers	0	0.00%, see rank
Other Vacant	0	0.00%, see rank

Population by Races

White:	82 (62.12%, see rank)
Black:	42 (31.82%, see rank)
Hispanic:	10 (7.58%, see rank)
Asian:	2 (1.52%, see rank)
Native (American Indian, Alaska Native, Hawaiian Native, etc.):	0 (0.00%, see rank)
One Race, Other:	1 (0.76%, see rank)
Two or More Races:	5 (3.79%, see rank)

Income and poverty information is not available at the Census Block level.

Census Block 001302-1-040



Housing Occupancy

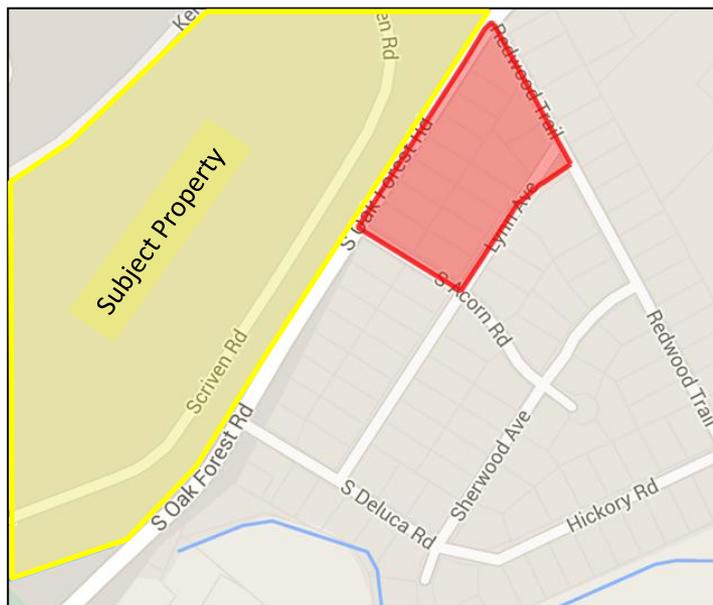
	Census Block 001302-1-040		%
Total Housing Units	13		100%
Occupied Housing Units	13	100.00%	see rank
Owner Occupied	13	100.00%	see rank
Owner Occupied with Mortgage	9		69.23%
Owner Occupied without Mortgage	4		30.77%
Renter Occupied	0	0.00%	see rank
Vacant Housing Units	0	0.00%	see rank
For Rent	0	0.00%	see rank
For Sale Only	0	0.00%	see rank
Rented or Sold, Not Occupied	0	0.00%	see rank
For Seasonal, Recreational, or Occasional Use	0	0.00%	see rank
For Migrant Workers	0	0.00%	see rank
Other Vacant	0	0.00%	see rank

Population by Races

White:	26 (81.25%, see rank)
Black:	5 (15.63%, see rank)
Hispanic:	0 (0.00%, see rank)
Asian:	1 (3.13%, see rank)
Native (American Indian, Alaska Native, Hawaiian Native, etc.):	0 (0.00%, see rank)
One Race, Other:	0 (0.00%, see rank)
Two or More Races:	0 (0.00%, see rank)

Income and poverty information is not available at the Census Block level.

Census Block 001302-1-041



Housing Occupancy

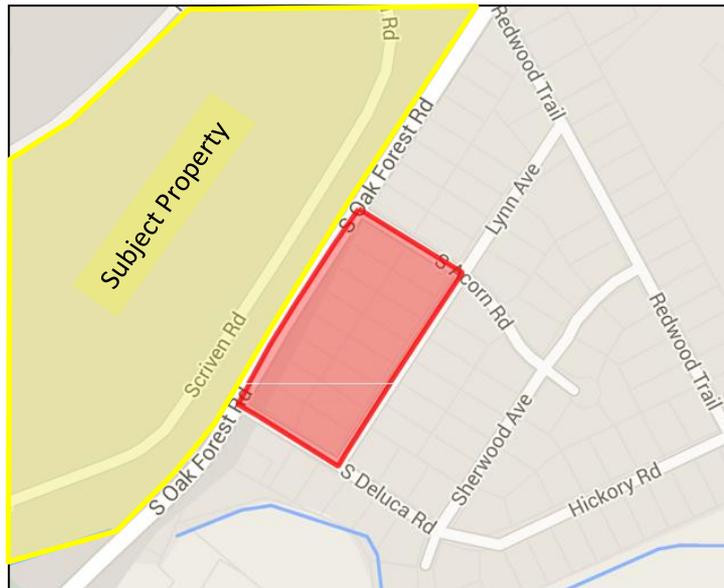
	Census Block 001302-1-041	%
Total Housing Units	15	100%
Occupied Housing Units	14	93.33%, see rank
Owner Occupied	13	86.67%, see rank
Owner Occupied with Mortgage	8	53.33%
Owner Occupied without Mortgage	5	33.33%
Renter Occupied	1	6.67%, see rank
Vacant Housing Units	1	6.67%, see rank
For Rent	0	0.00%, see rank
For Sale Only	1	6.67%, see rank
Rented or Sold, Not Occupied	0	0.00%, see rank
For Seasonal, Recreational, or Occasional Use	0	0.00%, see rank
For Migrant Workers	0	0.00%, see rank
Other Vacant	0	0.00%, see rank

Population by Races

White:	23 (58.97%, see rank)
Black:	10 (25.64%, see rank)
Hispanic:	0 (0.00%, see rank)
Asian:	0 (0.00%, see rank)
Native (American Indian, Alaska Native, Hawaiian Native, etc.):	0 (0.00%, see rank)
One Race, Other:	0 (0.00%, see rank)
Two or More Races:	6 (15.38%, see rank)

Income and poverty information is not available at the Census Block level.

Census Block 001302-1-042



Housing Occupancy

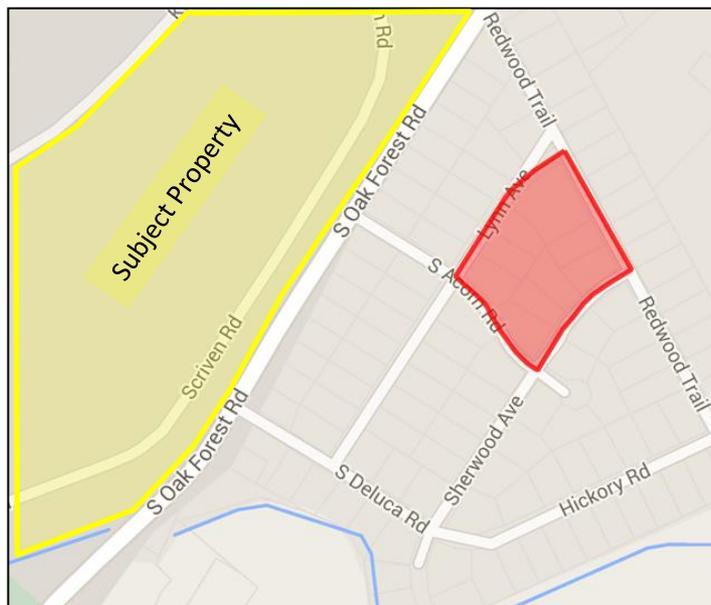
	Census Block 001302-1-042	%
Total Housing Units	16	100%
Occupied Housing Units	16	100.00%, see rank
Owner Occupied	16	100.00%, see rank
Owner Occupied with Mortgage	9	56.25%
Owner Occupied without Mortgage	7	43.75%
Renter Occupied	0	0.00%, see rank
Vacant Housing Units	0	0.00%, see rank
For Rent	0	0.00%, see rank
For Sale Only	0	0.00%, see rank
Rented or Sold, Not Occupied	0	0.00%, see rank
For Seasonal, Recreational, or Occasional Use	0	0.00%, see rank
For Migrant Workers	0	0.00%, see rank
Other Vacant	0	0.00%, see rank

Population by Races

White:	29 (74.36%, see rank)
Black:	10 (25.64%, see rank)
Hispanic:	3 (7.69%, see rank)
Asian:	0 (0.00%, see rank)
Native (American Indian, Alaska Native, Hawaiian Native, etc.):	0 (0.00%, see rank)
One Race, Other:	0 (0.00%, see rank)
Two or More Races:	0 (0.00%, see rank)

Income and poverty information is not available at the Census Block level.

Census Block 001302-1-043



Housing Occupancy

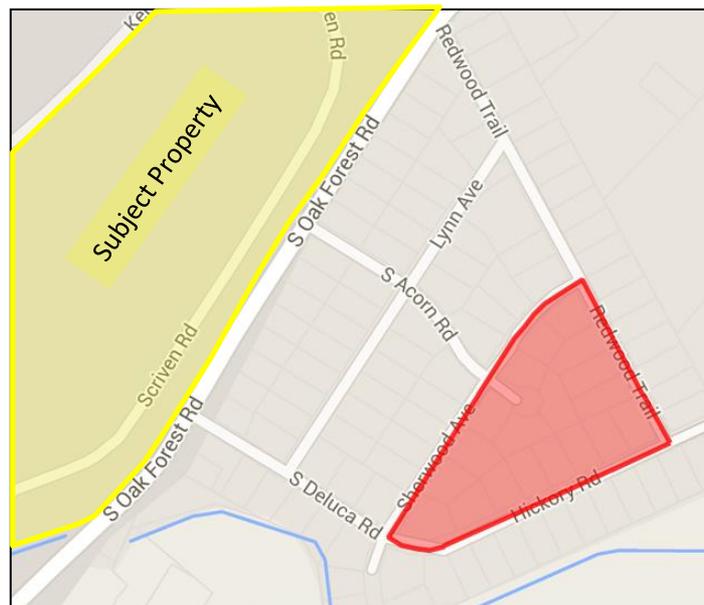
	Census Block 001302-1-043	%
Total Housing Units	8	100%
Occupied Housing Units	8	100.00%, see rank
Owner Occupied	5	62.50%, see rank
Owner Occupied with Mortgage	3	37.50%
Owner Occupied without Mortgage	2	25.00%
Renter Occupied	3	37.50%, see rank
Vacant Housing Units	0	0.00%, see rank
For Rent	0	0.00%, see rank
For Sale Only	0	0.00%, see rank
Rented or Sold, Not Occupied	0	0.00%, see rank
For Seasonal, Recreational, or Occasional Use	0	0.00%, see rank
For Migrant Workers	0	0.00%, see rank
Other Vacant	0	0.00%, see rank

Population by Races

White:	11 (55.00%, see rank)
Black:	6 (30.00%, see rank)
Hispanic:	0 (0.00%, see rank)
Asian:	0 (0.00%, see rank)
Native (American Indian, Alaska Native, Hawaiian Native, etc.):	0 (0.00%, see rank)
One Race, Other:	0 (0.00%, see rank)
Two or More Races:	3 (15.00%, see rank)

Income and poverty information is not available at the Census Block level.

Census Block 001302-1-044



Housing Occupancy

	Census Block 001302-1-044	%
Total Housing Units	19	100%
Occupied Housing Units	18	94.74%, see rank
Owner Occupied	14	73.68%, see rank
Owner Occupied with Mortgage	9	47.37%
Owner Occupied without Mortgage	5	26.32%
Renter Occupied	4	21.05%, see rank
Vacant Housing Units	1	5.26%, see rank
For Rent	0	0.00%, see rank
For Sale Only	0	0.00%, see rank
Rented or Sold, Not Occupied	0	0.00%, see rank
For Seasonal, Recreational, or Occasional Use	0	0.00%, see rank
For Migrant Workers	0	0.00%, see rank
Other Vacant	1	5.26%, see rank

Population by Races

White:	29 (67.44%, see rank)
Black:	9 (20.93%, see rank)
Hispanic:	0 (0.00%, see rank)
Asian:	5 (11.63%, see rank)
Native (American Indian, Alaska Native, Hawaiian Native, etc.):	0 (0.00%, see rank)
One Race, Other:	0 (0.00%, see rank)
Two or More Races:	0 (0.00%, see rank)

Income and poverty information is not available at the Census Block level.

APPENDIX C

EXISTING AND FUTURE ROAD NOISE CALCULATIONS

CALCULATION OF EXISTING TRAFFIC NOISE ON SOUTH OAK FOREST ROAD

Road noise calculator

The Transport Agency has prepared the following calculator to predict road-traffic noise in situations without complex topography.

ENVIRONMENTAL TOOLBOX

Transport noise website Transport and air quality website



Traffic data

AADT: *
4600 vehicles/24h **As measured on South Oak Forest Road by NCDOT**

Heavy vehicles: *
0 % **No trucks allowed at Oak Forest Gate**

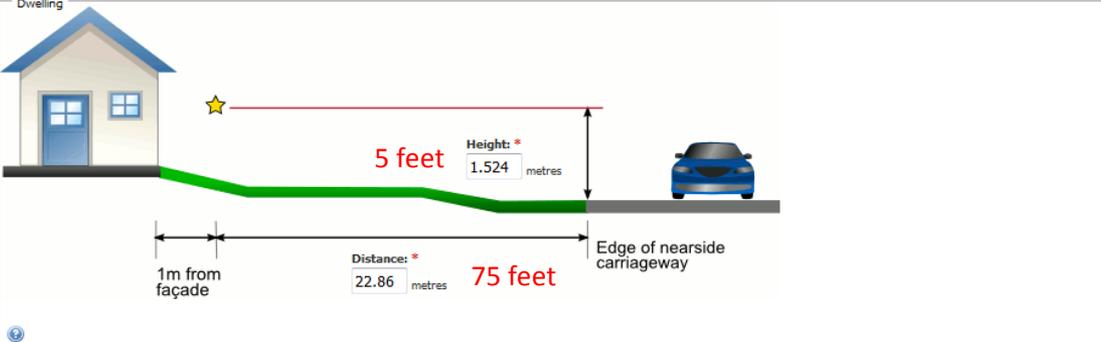
Speed: *
56.327 km/h **35 mph**

Road data

Gradient: *
0 %

Road surface: *
Asphaltic concrete

Dwelling



1m from façade **Distance: *** 22.86 metres **75 feet** **Height: *** 1.524 metres **5 feet** Edge of nearside carriageway

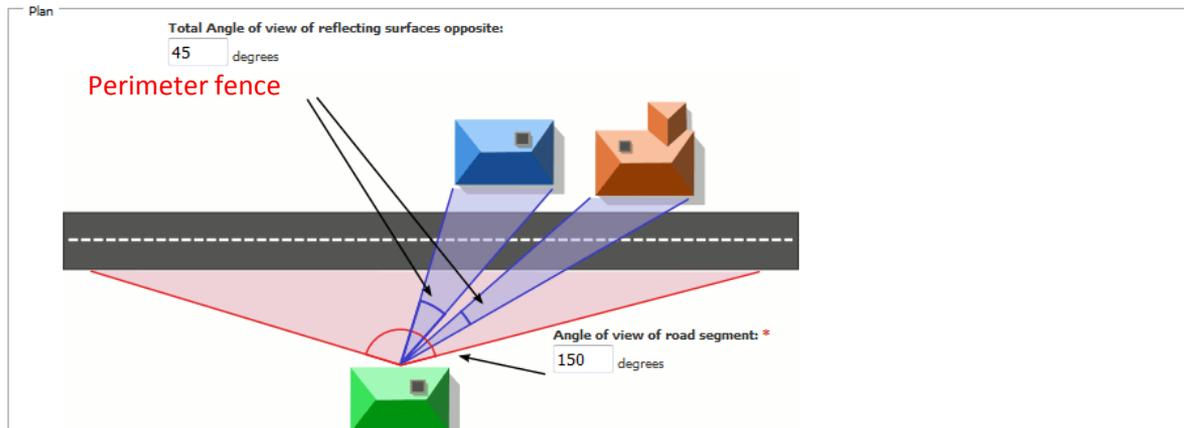
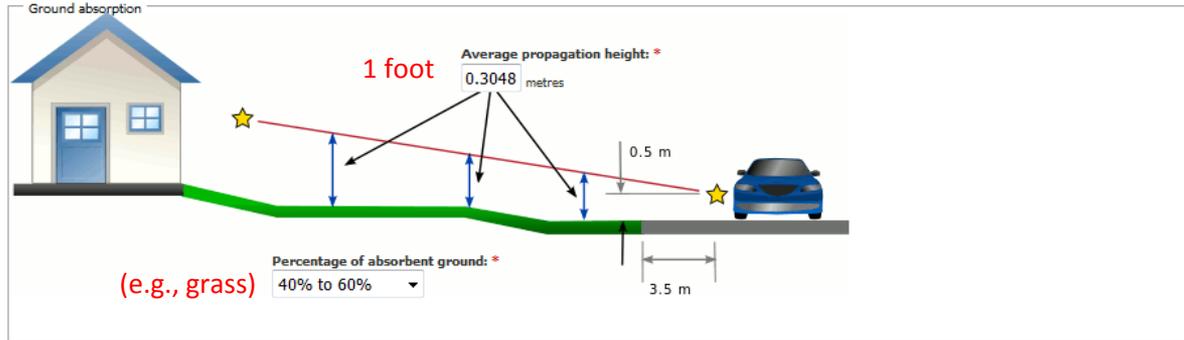
NZ Transport Agency
<http://acoustics.nzta.govt.nz/road-noise-calculator>

CALCULATION OF EXISTING TRAFFIC NOISE ON SOUTH OAK FOREST ROAD

Is the road completely obscured by a barrier?: *

Yes

No



Results

Free-field Level: 52.9 dB LAeq(24h)

Facade Level: 55.4 dB LAeq(24h)

NZ Transport Agency

<http://acoustics.nzta.govt.nz/road-noise-calculator>

CALCULATION OF FUTURE TRAFFIC NOISE ON SOUTH OAK FOREST ROAD

Road noise calculator

The Transport Agency has prepared the following calculator to predict road-traffic noise in situations without complex topography.

ENVIRONMENTAL TOOLBOX

Transport noise website Transport and air quality website



Traffic data

AADT: *
5532 vehicles/24h **4600 + 932 (466 arriving & 466 departing the complex)**

Heavy vehicles: *
0 % **No trucks allowed at Oak Forest Gate**

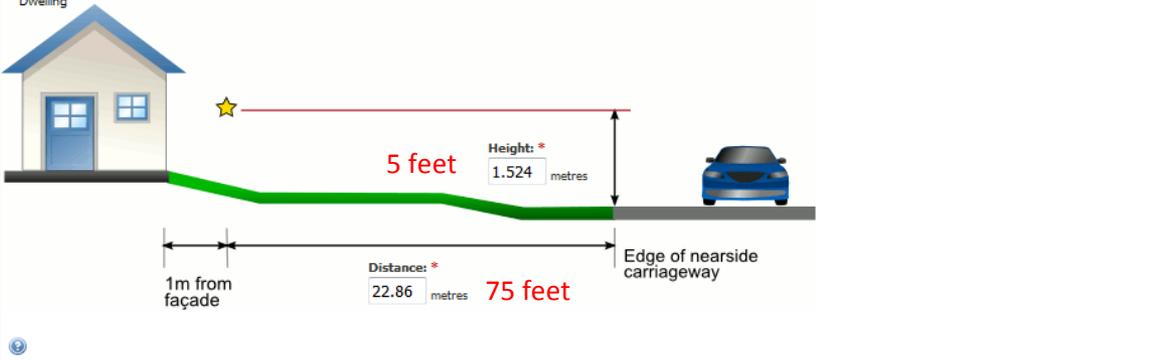
Speed: *
56.327 km/h **35 mph**

Road data

Gradient: *
0 %

Road surface: *
Asphaltic concrete

Dwelling



1m from façade

Distance: * 22.86 metres **75 feet**

Edge of nearside carriageway

Height: * 1.524 metres

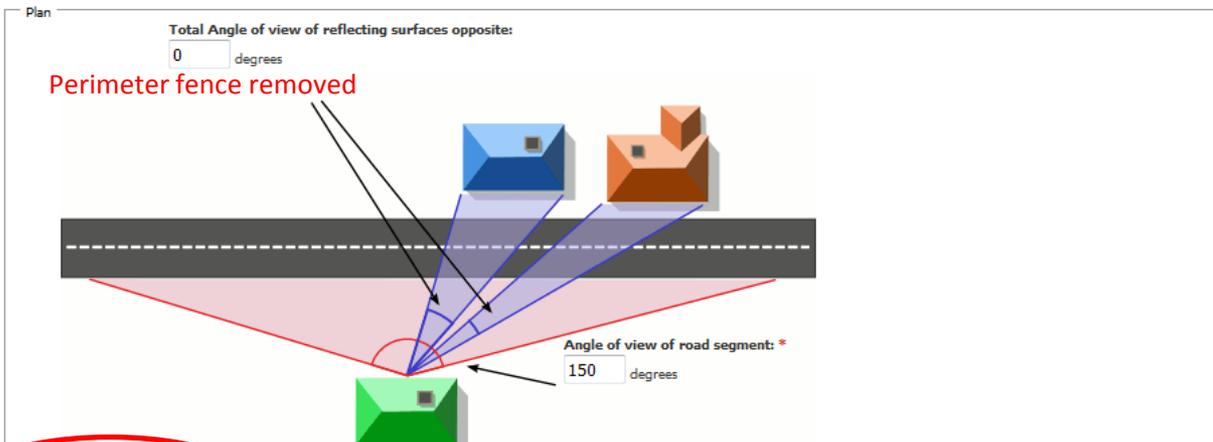
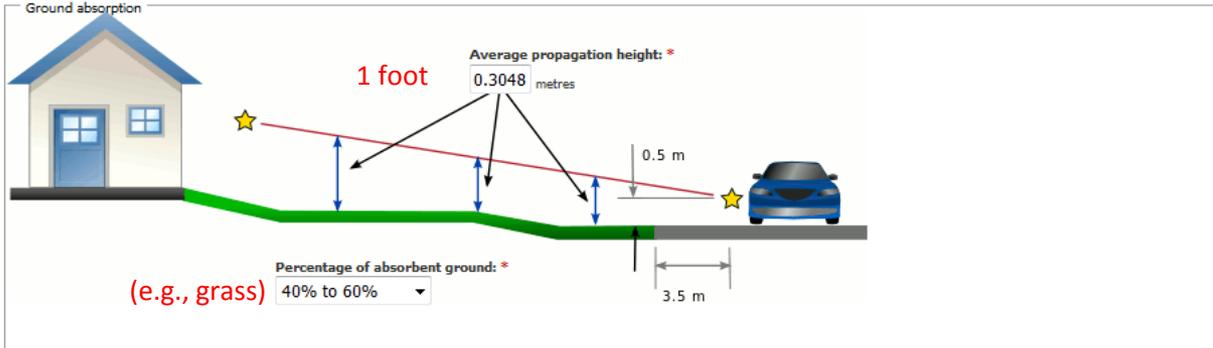
5 feet

NZ Transport Agency
<http://acoustics.nzta.govt.nz/road-noise-calculator>

CALCULATION OF FUTURE TRAFFIC NOISE ON SOUTH OAK FOREST ROAD

Is the road completely obscured by a barrier?: *

- Yes
- No
-



Results

Free-field Level: 53.3 dB $L_{Aeq}(24h)$

Facade Level: 55.8 dB $L_{Aeq}(24h)$

Calculate

APPENDIX D

AIR EMISSIONS CALCULATIONS

AIR CONFORMITY APPLICABILITY MODEL REPORT RECORD OF AIR ANALYSIS (ROAA)

1. General Information: The Air Force's Air Conformity Applicability Model (ACAM) was used to perform an analysis to assess the potential air quality impact/s associated with the action in accordance with the Air Force Instruction 32-7040, Air Quality Compliance And Resource Management; the Environmental Impact Analysis Process (EIAP, 32 CFR 989); and the General Conformity Rule (GCR, 40 CFR 93 Subpart B). This report provides a summary of the ACAM analysis.

a. Action Location:

Base: SEYMOUR JOHNSON AFB
County(s): Wayne
Regulatory Area(s): NOT IN A REGULATORY AREA

b. Action Title: PROPOSED PROPERTY LEASE AND SPORTS COMPLEX

c. Project Number/s (if applicable): N/A

d. Projected Action Start Date: 3 / 2015

e. Action Description:

SJAFB is proposing to lease approximately 62 acres of vacant land to the City. The City is proposing to construct, operate, and maintain a joint-use sports complex on the property that would serve Goldsboro, SJAFB, and Wayne County communities. Preliminary conceptual plans for the sports complex include eight multi-sport athletic fields with supporting amenities such as playground equipment, picnic shelters, a walking trail, concessions, restrooms, and paved parking.

f. Point of Contact:

Name: Cathryn Pesenti
Title: GS-11 / Environmental Planner
Organization: 4 CES/CEIEA
Email: cathryn.pesenti@us.af.mil
Phone Number: 919-722-7455

2. Air Impact Analysis: Based on the attainment status at the action location, the requirements of the General Conformity Rule are:

_____ applicable
 not applicable

Total combined direct and indirect emissions associated with the action were estimated through ACAM on a calendar-year basis for the "worst-case" and "steady state" (net gain/loss upon action fully implemented) emissions.

"Air Quality Indicators" were used to provide an indication of the significance of potential impacts to air quality. These air quality indicators are EPA General Conformity Rule (GCR) thresholds (de minimis levels) that are applied out of context to their intended use. Therefore, these indicators do not trigger a regulatory requirement; however, they provide a warning that the action is potentially significant. It is important to note that these indicators only provide a clue to the potential impacts to air quality.

Given the GCR de minimis threshold values are the maximum net change an action can acceptably emit in non-attainment and maintenance areas, these threshold values would also conservatively indicate an actions emissions within an attainment would also be acceptable. An air quality indicator value of 100 tons/yr is used based on the GCR de minimis threshold for the least severe non-attainment classification for all criteria pollutants (see 40 CFR 93.153). Therefore, the worst-case year emissions were compared against the GCR Indicator and are summarized below.

AIR CONFORMITY APPLICABILITY MODEL REPORT RECORD OF AIR ANALYSIS (ROAA)

Analysis Summary:

2015

Pollutant	Action Emissions (ton/yr)	AIR QUALITY INDICATOR	
		Threshold (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	4.132	100	
NO _x	17.094	100	
CO	35.048	100	
SO _x	0.066	100	
PM 10	46.937	100	
PM 2.5	0.674	100	
Pb	0.000	100	
NH ₃	0.368	100	

2016 - (Steady State)

Pollutant	Action Emissions (ton/yr)	AIR QUALITY INDICATOR	
		Threshold (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	6.083	100	
NO _x	4.583	100	
CO	81.034	100	
SO _x	0.075	100	
PM 10	0.226	100	
PM 2.5	0.104	100	
Pb	0.000	100	
NH ₃	0.896	100	

None of estimated emissions associated with this action are above the GCR thresholds, indicating no significant impact to air quality; therefore, no further air assessment is needed.

Cathryn Pesenti, GS-11 / Environmental Planner

DATE

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

1. General Information

- Action Location

Base: SEYMOUR JOHNSON AFB
County(s): Wayne
Regulatory Area(s): NOT IN A REGULATORY AREA

- Action Title: PROPOSED PROPERTY LEASE AND SPORTS COMPLEX

- Project Number/s (if applicable): N/A

- Projected Action Start Date: 3 / 2015

- Action Purpose and Need:

Purpose: The purpose of the proposed lease and sports complex is to provide safe illuminated athletic fields for Goldsboro, SJAFB, and Wayne County residents. The City of Goldsboro, in consideration for the lease of the property, proposes to construct an addition to the SJAFB Fitness Center. The addition would be 2,500 to 3,000 square feet and would provide needed space for group fitness and exercise equipment. An addition to the Fitness Center was covered under a separate EA.

Need: Currently, youth sports throughout the City are hosted on mostly practice quality fields on a combination of leased and borrowed sites that are a challenge to maintain. Games are primarily played at the YMCA and on SJAFB athletic fields, but demand for the site and the impact of overplay continue to compound. Many local players travel to surrounding counties due to lack of capacity in both public and private sports organizations. Additionally, the level of competition is suppressed by the quality of the facilities and the lack of illuminated facilities. Due to funding shortfalls, an addition to the SJAFB Fitness Center has not been realized. The current Fitness Center is undersized and lacks adequate space for military group fitness activities and exercise equipment. Partnering with the City provides a means for SJAFB to accomplish the addition and provide the needed fitness amenities.

- Action Description:

SJAFB is proposing to lease approximately 62 acres of vacant land to the City. The City is proposing to construct, operate, and maintain a joint-use sports complex on the property that would serve Goldsboro, SJAFB, and Wayne County communities. Preliminary conceptual plans for the sports complex include eight multi-sport athletic fields with supporting amenities such as playground equipment, picnic shelters, a walking trail, concessions, restrooms, and paved parking.

- Point of Contact

Name: Cathryn Pesenti
Title: GS-11 / Environmental Planner
Organization: 4 CES/CEIEA
Email: cathryn.pesenti@us.af.mil
Phone Number: 919-722-7455

- Activity List:

	Activity Type	Activity Title
2.	Construction / Demolition	CONSTRUCT ATHLETIC FIELDS
3.	Construction / Demolition	CONSTRUCT SITE AMENITIES
4.	Construction / Demolition	CONSTRUCT PAVED PARKING
5.	Personnel	VISITORS - WEEKDAYS
6.	Personnel	VISITORS - WEEKENDS

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

2. Construction / Demolition

2.1 General Information & Timeline Assumptions

- Activity Location

County: Wayne
Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: CONSTRUCT ATHLETIC FIELDS

- Activity Description:

Construct 8 multi-sport playing fields of approximately 2 acres each, with trenching for electrical to support field lighting. Assume grading of 18 acres (784,080 square feet) and importing 2 feet of topsoil for each of the 8 fields (1,568,160 cubic yards). Assume trenching for lighting along 3 sides of each field plus 1,000 additional linear feet to connect to power source, with trench width at 3 feet (24,600 square feet).

- Activity Start Date

Start Month: 3
Start Month: 2015

- Activity End Date

Indefinite: False
End Month: 7
End Month: 2015

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	1.396154
SO _x	0.029435
NO _x	10.769903
CO	5.204277
PM 10	40.251770

Pollutant	Total Emissions (TONs)
PM 2.5	0.424157
Pb	0.000000
NH ₃	0.050885

2.1 Site Grading Phase

2.1.1 Site Grading Phase Timeline Assumptions

- Phase Start Date

Start Month: 3
Start Quarter: 1
Start Year: 2015

- Phase Duration

Number of Month: 5
Number of Days: 0

2.1.2 Site Grading Phase Assumptions

- General Site Grading Information

Area of Site to be Graded (ft²): 784080
Amount of Material to be Hauled On-Site (yd³): 1568160
Amount of Material to be Hauled Off-Site (yd³): 0

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- Site Grading Default Settings

Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Excavators Composite	1	8
Graders Composite	1	8
Other Construction Equipment Composite	1	8
Rubber Tired Dozers Composite	1	8
Scrapers Composite	3	8
Tractors/Loaders/Backhoes Composite	3	8

- Vehicle Exhaust

Average Hauling Truck Capacity (yd³): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

2.1.3 Site Grading Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Excavators Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO ₂
Emission Factors	0.1063	0.0013	0.7415	0.5247	0.0379	0.0379	0.0095	119.58
Graders Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO ₂
Emission Factors	0.1277	0.0014	0.9794	0.5930	0.0488	0.0488	0.0115	132.74
Other Construction Equipment Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO ₂
Emission Factors	0.0768	0.0012	0.6391	0.3645	0.0263	0.0263	0.0069	122.59
Rubber Tired Dozers Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO ₂
Emission Factors	0.2721	0.0024	2.2344	1.0419	0.0924	0.0924	0.0245	239.09
Scrapers Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO ₂
Emission Factors	0.2513	0.0026	2.0646	0.9443	0.0853	0.0853	0.0226	262.49
Tractors/Loaders/Backhoes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO ₂
Emission Factors	0.0666	0.0007	0.4500	0.3715	0.0297	0.0297	0.0060	66.799

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO ₂
LDGV	00.5090	00.0068	00.3650	08.0400	00.0248	00.0113		00.1017	00368.0
LDGT	00.7320	00.0095	00.5800	09.5000	00.0249	00.0113		00.1017	00516.2
HDGV	00.7440	00.0165	01.0620	08.2200	00.0432	00.0275		00.0451	00904.8
LDDV	00.1110	00.0029	00.1370	00.7480	00.0447	00.0295		00.0068	00314.1
LDDT	00.3450	00.0056	00.3830	00.6140	00.0533	00.0375		00.0068	00598.6
HDDV	00.3090	00.0116	02.4520	00.7240	00.0970	00.0707		00.0270	01243.4
MC	02.3000	00.0033	01.1800	14.1800	00.0372	00.0207		00.0113	00177.4

2.1.4 Site Grading Phase Formula(s)

- Fugitive Dust Emissions per Phase

$$PM10_{FD} = (20 * ACRE * WD) / 2000$$

PM10_{FD}: Fugitive Dust PM 10 Emissions (TONs)

20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)

ACRE: Total acres (acres)

WD: Number of Total Work Days (days)

2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

$$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$$

CEE_{POL}: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

EF_{POL}: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

HA_{OnSite}: Amount of Material to be Hauled On-Site (yd³)

HA_{OffSite}: Amount of Material to be Hauled Off-Site (yd³)

HC: Average Hauling Truck Capacity (yd³)

(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)

HT: Average Hauling Truck Round Trip Commute (mile/trip)

$$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

0.002205: Conversion Factor grams to pounds

EF_{POL}: Emission Factor for Pollutant (grams/mile)

VM: Vehicle Exhaust On Road Vehicle Mixture (%)

2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$$VMT_{WT} = WD * WT * 1.25 * NE$$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)

WD: Number of Total Work Days (days)

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WT: Average Worker Round Trip Commute (mile)
 1.25: Conversion Factor Number of Construction Equipment to Number of Works
 NE: Number of Construction Equipment

$$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL} : Vehicle Emissions (TONs)
 VMT_{WT} : Worker Trips Vehicle Miles Travel (miles)
 0.002205: Conversion Factor grams to pounds
 EF_{POL} : Emission Factor for Pollutant (grams/mile)
 VM: Worker Trips On Road Vehicle Mixture (%)
 2000: Conversion Factor pounds to tons

2.2 Trenching/Excavating Phase

2.2.1 Trenching / Excavating Phase Timeline Assumptions

- Phase Start Date

Start Month: 3
 Start Quarter: 1
 Start Year: 2015

- Phase Duration

Number of Month: 5
 Number of Days: 0

2.2.2 Trenching / Excavating Phase Assumptions

- General Trenching/Excavating Information

Area of Site to be Trenched/Excavated (ft²): 24600
 Amount of Material to be Hauled On-Site (yd³): 0
 Amount of Material to be Hauled Off-Site (yd³): 0

- Trenching Default Settings

Default Settings Used: Yes
 Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Excavators Composite	2	8
Other General Industrial Equipmen Composite	1	8
Tractors/Loaders/Backhoes Composite	1	8

- Vehicle Exhaust

Average Hauling Truck Capacity (yd³): 20 (default)
 Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HdGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

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- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

2.2.3 Trenching / Excavating Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Excavators Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO ₂
Emission Factors	0.1063	0.0013	0.7415	0.5247	0.0379	0.0379	0.0095	119.58
Graders Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO ₂
Emission Factors	0.1277	0.0014	0.9794	0.5930	0.0488	0.0488	0.0115	132.74
Other Construction Equipment Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO ₂
Emission Factors	0.0768	0.0012	0.6391	0.3645	0.0263	0.0263	0.0069	122.59
Rubber Tired Dozers Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO ₂
Emission Factors	0.2721	0.0024	2.2344	1.0419	0.0924	0.0924	0.0245	239.09
Scrapers Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO ₂
Emission Factors	0.2513	0.0026	2.0646	0.9443	0.0853	0.0853	0.0226	262.49
Tractors/Loaders/Backhoes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO ₂
Emission Factors	0.0666	0.0007	0.4500	0.3715	0.0297	0.0297	0.0060	66.799

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO ₂
LDGV	00.5090	00.0068	00.3650	08.0400	00.0248	00.0113		00.1017	00368.0
LDGT	00.7320	00.0095	00.5800	09.5000	00.0249	00.0113		00.1017	00516.2
HDGV	00.7440	00.0165	01.0620	08.2200	00.0432	00.0275		00.0451	00904.8
LDDV	00.1110	00.0029	00.1370	00.7480	00.0447	00.0295		00.0068	00314.1
LDDT	00.3450	00.0056	00.3830	00.6140	00.0533	00.0375		00.0068	00598.6
HDDV	00.3090	00.0116	02.4520	00.7240	00.0970	00.0707		00.0270	01243.4
MC	02.3000	00.0033	01.1800	14.1800	00.0372	00.0207		00.0113	00177.4

2.2.4 Trenching / Excavating Phase Formula(s)

- Fugitive Dust Emissions per Phase

$$PM10_{FD} = (20 * ACRE * WD) / 2000$$

PM10_{FD}: Fugitive Dust PM 10 Emissions (TONs)

20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)

ACRE: Total acres (acres)

WD: Number of Total Work Days (days)

2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

$$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$$

CEE_{POL}: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

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EF_{POL}: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

HA_{OnSite}: Amount of Material to be Hauled On-Site (yd³)

HA_{OffSite}: Amount of Material to be Hauled Off-Site (yd³)

HC: Average Hauling Truck Capacity (yd³)

(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)

HT: Average Hauling Truck Round Trip Commute (mile/trip)

$$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

0.002205: Conversion Factor grams to pounds

EF_{POL}: Emission Factor for Pollutant (grams/mile)

VM: Vehicle Exhaust On Road Vehicle Mixture (%)

2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$$VMT_{WT} = WD * WT * 1.25 * NE$$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)

WD: Number of Total Work Days (days)

WT: Average Worker Round Trip Commute (mile)

1.25: Conversion Factor Number of Construction Equipment to Number of Works

NE: Number of Construction Equipment

$$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)

VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)

0.002205: Conversion Factor grams to pounds

EF_{POL}: Emission Factor for Pollutant (grams/mile)

VM: Worker Trips On Road Vehicle Mixture (%)

2000: Conversion Factor pounds to tons

3. Construction / Demolition

3.1 General Information & Timeline Assumptions

- Activity Location

County: Wayne

Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: CONSTRUCT SITE AMENITIES

- Activity Description:

Construct playground of approximately 1,000 square feet, walking trail of approximately 2 miles, and 4 buildings totaling approximately 4,000 square feet (concessions, restrooms, picnic shelters). Assume grading for playground at 1,500 square feet, and 2 feet of topsoil imported for proper drainage of 1,000 square foot

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playground (2,000 cubic yards). Assume grading for walking trail at 10,560 feet by 5 feet wide (52,800 square feet), with 2 feet of topsoil imported for proper drainage (105,600 cubic yards), and paving of walking trail at 52,800 square feet. Assume grading for buildings at 5,000 square feet with 2 feet of topsoil imported (10,000 cubic yards).

- Activity Start Date

Start Month: 3
Start Month: 2015

- Activity End Date

Indefinite: False
End Month: 8
End Month: 2015

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.407439
SO _x	0.004819
NO _x	2.589510
CO	1.688264
PM 10	3.020076

Pollutant	Total Emissions (TONs)
PM 2.5	0.123707
Pb	0.000000
NH ₃	0.006397

3.1 Site Grading Phase

3.1.1 Site Grading Phase Timeline Assumptions

- Phase Start Date

Start Month: 3
Start Quarter: 1
Start Year: 2015

- Phase Duration

Number of Month: 5
Number of Days: 0

3.1.2 Site Grading Phase Assumptions

- General Site Grading Information

Area of Site to be Graded (ft²): 58800
Amount of Material to be Hauled On-Site (yd³): 117600
Amount of Material to be Hauled Off-Site (yd³): 0

- Site Grading Default Settings

Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Graders Composite	1	6
Other Construction Equipment Composite	1	8
Rubber Tired Dozers Composite	1	6
Tractors/Loaders/Backhoes Composite	1	7

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- Vehicle Exhaust

Average Hauling Truck Capacity (yd³): 20 (default)
 Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

3.1.3 Site Grading Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO ₂
Emission Factors	0.1277	0.0014	0.9794	0.5930	0.0488	0.0488	0.0115	132.74
Other Construction Equipment Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO ₂
Emission Factors	0.0768	0.0012	0.6391	0.3645	0.0263	0.0263	0.0069	122.59
Rubber Tired Dozers Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO ₂
Emission Factors	0.2721	0.0024	2.2344	1.0419	0.0924	0.0924	0.0245	239.09
Tractors/Loaders/Backhoes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO ₂
Emission Factors	0.0666	0.0007	0.4500	0.3715	0.0297	0.0297	0.0060	66.799

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO ₂
LDGV	00.5090	00.0068	00.3650	08.0400	00.0248	00.0113		00.1017	00368.0
LDGT	00.7320	00.0095	00.5800	09.5000	00.0249	00.0113		00.1017	00516.2
HDGV	00.7440	00.0165	01.0620	08.2200	00.0432	00.0275		00.0451	00904.8
LDDV	00.1110	00.0029	00.1370	00.7480	00.0447	00.0295		00.0068	00314.1
LDDT	00.3450	00.0056	00.3830	00.6140	00.0533	00.0375		00.0068	00598.6
HDDV	00.3090	00.0116	02.4520	00.7240	00.0970	00.0707		00.0270	01243.4
MC	02.3000	00.0033	01.1800	14.1800	00.0372	00.0207		00.0113	00177.4

3.1.4 Site Grading Phase Formula(s)

- Fugitive Dust Emissions per Phase

$$PM10_{FD} = (20 * ACRE * WD) / 2000$$

PM10_{FD}: Fugitive Dust PM 10 Emissions (TONs)
 20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
 ACRE: Total acres (acres)
 WD: Number of Total Work Days (days)
 2000: Conversion Factor pounds to tons

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- Construction Exhaust Emissions per Phase

$$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$$

CEE_{POL}: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

EF_{POL}: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

HA_{OnSite}: Amount of Material to be Hauled On-Site (yd³)

HA_{OffSite}: Amount of Material to be Hauled Off-Site (yd³)

HC: Average Hauling Truck Capacity (yd³)

(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)

HT: Average Hauling Truck Round Trip Commute (mile/trip)

$$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

0.002205: Conversion Factor grams to pounds

EF_{POL}: Emission Factor for Pollutant (grams/mile)

VM: Vehicle Exhaust On Road Vehicle Mixture (%)

2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$$VMT_{WT} = WD * WT * 1.25 * NE$$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)

WD: Number of Total Work Days (days)

WT: Average Worker Round Trip Commute (mile)

1.25: Conversion Factor Number of Construction Equipment to Number of Works

NE: Number of Construction Equipment

$$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)

0.002205: Conversion Factor grams to pounds

EF_{POL}: Emission Factor for Pollutant (grams/mile)

VM: Worker Trips On Road Vehicle Mixture (%)

2000: Conversion Factor pounds to tons

3.2 Building Construction Phase

3.2.1 Building Construction Phase Timeline Assumptions

- Phase Start Date

Start Month: 5

Start Quarter: 1

Start Year: 2015

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- Phase Duration

Number of Month: 3

Number of Days: 0

3.2.2 Building Construction Phase Assumptions

- General Building Construction Information

Building Category: Commercial or Retail

Area of Building (ft²): 4000

Height of Building (ft): 15

Number of Units: N/A

- Building Construction Default Settings

Default Settings Used: Yes

Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cranes Composite	1	4
Forklifts Composite	2	6
Tractors/Loaders/Backhoes Composite	1	8

- Vehicle Exhaust

Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

- Vendor Trips

Average Vendor Round Trip Commute (mile): 40 (default)

- Vendor Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

3.2.3 Building Construction Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Cranes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO ₂
Emission Factors	0.1203	0.0013	1.0199	0.4395	0.0425	0.0425	0.0108	128.63
Forklifts Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO ₂
Emission Factors	0.0458	0.0006	0.3163	0.2200	0.0155	0.0155	0.0041	54.395
Tractors/Loaders/Backhoes Composite								

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	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO ₂
Emission Factors	0.0666	0.0007	0.4500	0.3715	0.0297	0.0297	0.0060	66.799

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO ₂
LDGV	00.5090	00.0068	00.3650	08.0400	00.0248	00.0113		00.1017	00368.0
LDGT	00.7320	00.0095	00.5800	09.5000	00.0249	00.0113		00.1017	00516.2
HDGV	00.7440	00.0165	01.0620	08.2200	00.0432	00.0275		00.0451	00904.8
LDDV	00.1110	00.0029	00.1370	00.7480	00.0447	00.0295		00.0068	00314.1
LDDT	00.3450	00.0056	00.3830	00.6140	00.0533	00.0375		00.0068	00598.6
HDDV	00.3090	00.0116	02.4520	00.7240	00.0970	00.0707		00.0270	01243.4
MC	02.3000	00.0033	01.1800	14.1800	00.0372	00.0207		00.0113	00177.4

3.2.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase

$$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$$

CEE_{POL}: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

EF_{POL}: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$$VMT_{VE} = BA * BH * (0.32 / 1000) * HT$$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

BA: Area of Building (ft²)

BH: Height of Building (ft)

(0.32 / 1000): Conversion Factor ft³ to trips (0.32 trip / 1000 ft³)

HT: Average Hauling Truck Round Trip Commute (mile/trip)

$$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

0.002205: Conversion Factor grams to pounds

EF_{POL}: Emission Factor for Pollutant (grams/mile)

VM: Worker Trips On Road Vehicle Mixture (%)

2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$$VMT_{WT} = WD * WT * 1.25 * NE$$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)

WD: Number of Total Work Days (days)

WT: Average Worker Round Trip Commute (mile)

1.25: Conversion Factor Number of Construction Equipment to Number of Works

NE: Number of Construction Equipment

$$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)

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VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
 0.002205: Conversion Factor grams to pounds
 EF_{POL}: Emission Factor for Pollutant (grams/mile)
 VM: Worker Trips On Road Vehicle Mixture (%)
 2000: Conversion Factor pounds to tons

- Vender Trips Emissions per Phase

$$VMT_{VT} = BA * BH * (0.05 / 1000) * HT$$

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
 BA: Area of Building (ft²)
 BH: Height of Building (ft)
 (0.05 / 1000): Conversion Factor ft³ to trips (0.05 trip / 1000 ft³)
 HT: Average Hauling Truck Round Trip Commute (mile/trip)

$$V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)
 VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
 0.002205: Conversion Factor grams to pounds
 EF_{POL}: Emission Factor for Pollutant (grams/mile)
 VM: Worker Trips On Road Vehicle Mixture (%)
 2000: Conversion Factor pounds to tons

3.3 Architectural Coatings Phase

3.3.1 Architectural Coatings Phase Timeline Assumptions

- Phase Start Date

Start Month: 7
 Start Quarter: 1
 Start Year: 2015

- Phase Duration

Number of Month: 2
 Number of Days: 0

3.3.2 Architectural Coatings Phase Assumptions

- General Architectural Coatings Information

Building Category: Non-Residential
 Total Square Footage (ft²): 4000
 Number of Units: N/A

- Architectural Coatings Default Settings

Default Settings Used: Yes
 Average Day(s) worked per week: 5 (default)

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDTV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

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3.3.3 Architectural Coatings Phase Emission Factor(s)

- Worker Trips Emission Factors (grams/mile)

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO ₂
LDGV	00.5090	00.0068	00.3650	08.0400	00.0248	00.0113		00.1017	00368.0
LDGT	00.7320	00.0095	00.5800	09.5000	00.0249	00.0113		00.1017	00516.2
HdGV	00.7440	00.0165	01.0620	08.2200	00.0432	00.0275		00.0451	00904.8
LDDV	00.1110	00.0029	00.1370	00.7480	00.0447	00.0295		00.0068	00314.1
LDDT	00.3450	00.0056	00.3830	00.6140	00.0533	00.0375		00.0068	00598.6
HDDV	00.3090	00.0116	02.4520	00.7240	00.0970	00.0707		00.0270	01243.4
MC	02.3000	00.0033	01.1800	14.1800	00.0372	00.0207		00.0113	00177.4

3.3.4 Architectural Coatings Phase Formula(s)

- Worker Trips Emissions per Phase

$$VMT_{WT} = (1 * WT * PA) / 800$$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)

1: Conversion Factor man days to trips (1 trip / 1 man * day)

WT: Average Worker Round Trip Commute (mile)

PA: Paint Area (ft²)

800: Conversion Factor square feet to man days (1 ft² / 1 man * day)

$$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)

0.002205: Conversion Factor grams to pounds

EF_{POL}: Emission Factor for Pollutant (grams/mile)

VM: Worker Trips On Road Vehicle Mixture (%)

2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase

$$VOC_{AC} = (AB * 2.0 * 0.0116) / 2000.0$$

VOC_{AC}: Architectural Coating VOC Emissions (TONs)

BA: Area of Building (ft²)

2.0: Conversion Factor total area to coated area (2.0 ft² coated area / total area)

0.0116: Emission Factor (lb/ft²)

2000: Conversion Factor pounds to tons

3.4 Paving Phase

3.4.1 Paving Phase Timeline Assumptions

- Phase Start Date

Start Month: 6

Start Quarter: 1

Start Year: 2015

- Phase Duration

Number of Month: 2

Number of Days: 0

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3.4.2 Paving Phase Assumptions

- General Paving Information

Paving Area (ft²): 52800

- Paving Default Settings

Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cement and Mortar Mixers Composite	4	6
Pavers Composite	1	7
Paving Equipment Composite	1	8
Rollers Composite	1	7
Tractors/Loaders/Backhoes Composite	1	7

- Vehicle Exhaust

Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

3.4.3 Paving Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO ₂
Emission Factors	0.1277	0.0014	0.9794	0.5930	0.0488	0.0488	0.0115	132.74
Other Construction Equipment Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO ₂
Emission Factors	0.0768	0.0012	0.6391	0.3645	0.0263	0.0263	0.0069	122.59
Rubber Tired Dozers Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO ₂
Emission Factors	0.2721	0.0024	2.2344	1.0419	0.0924	0.0924	0.0245	239.09
Tractors/Loaders/Backhoes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO ₂
Emission Factors	0.0666	0.0007	0.4500	0.3715	0.0297	0.0297	0.0060	66.799

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO ₂
LDGV	00.5090	00.0068	00.3650	08.0400	00.0248	00.0113		00.1017	00368.0
LDGT	00.7320	00.0095	00.5800	09.5000	00.0249	00.0113		00.1017	00516.2
HDGV	00.7440	00.0165	01.0620	08.2200	00.0432	00.0275		00.0451	00904.8
LDDV	00.1110	00.0029	00.1370	00.7480	00.0447	00.0295		00.0068	00314.1

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LDDT	00.3450	00.0056	00.3830	00.6140	00.0533	00.0375		00.0068	00598.6
HDDV	00.3090	00.0116	02.4520	00.7240	00.0970	00.0707		00.0270	01243.4
MC	02.3000	00.0033	01.1800	14.1800	00.0372	00.0207		00.0113	00177.4

3.4.4 Paving Phase Formula(s)

- Construction Exhaust Emissions per Phase

$$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$$

CEE_{POL}: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

EF_{POL}: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$$VMT_{VE} = PA * 0.25 * (1 / 27) * (1 / HC) * HT$$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

PA: Paving Area (ft²)

0.25: Thickness of Paving Area (ft)

(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd³ / 27 ft³)

HC: Average Hauling Truck Capacity (yd³)

(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)

HT: Average Hauling Truck Round Trip Commute (mile/trip)

$$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

0.002205: Conversion Factor grams to pounds

EF_{POL}: Emission Factor for Pollutant (grams/mile)

VM: Vehicle Exhaust On Road Vehicle Mixture (%)

2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$$VMT_{WT} = WD * WT * 1.25 * NE$$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)

WD: Number of Total Work Days (days)

WT: Average Worker Round Trip Commute (mile)

1.25: Conversion Factor Number of Construction Equipment to Number of Works

NE: Number of Construction Equipment

$$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)

VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)

0.002205: Conversion Factor grams to pounds

EF_{POL}: Emission Factor for Pollutant (grams/mile)

VM: Worker Trips On Road Vehicle Mixture (%)

2000: Conversion Factor pounds to tons

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- Off-Gassing Emissions per Phase

$$VOC_p = (2.62 * PA) / 43560$$

VOC_p: Paving VOC Emissions (TONs)

2.62: Emission Factor (lb/acre)

PA: Paving Area (ft²)

43560: Conversion Factor square feet to acre (43560 ft² / acre)² / acre)

4. Construction / Demolition

4.1 General Information & Timeline Assumptions

- Activity Location

County: Wayne

Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: CONSTRUCT PAVED PARKING

- Activity Description:

Construct 3 paved parking areas with access roads totaling approximately 4 acres. Assume grading for parking at 174,240 square feet with 2 feet of topsoil imported for proper drainage (348,480 cubic yards). Assume trenching for parking lot lighting at 200 linear feet per row and 10 rows (2,000 linear feet), plus an additional 1,000 linear feet to reach power source, with trench width of 3 feet (6,000 square feet). Assume paving of parking areas at 174,240 square feet.

- Activity Start Date

Start Month: 5

Start Month: 2015

- Activity End Date

Indefinite: False

End Month: 7

End Month: 2015

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.301129
SO _x	0.006278
NO _x	2.207322
CO	1.143637
PM 10	3.589366

Pollutant	Total Emissions (TONs)
PM 2.5	0.091482
Pb	0.000000
NH ₃	0.011695

4.1 Site Grading Phase

4.1.1 Site Grading Phase Timeline Assumptions

- Phase Start Date

Start Month: 5

Start Quarter: 1

Start Year: 2015

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- Phase Duration

Number of Month: 2
 Number of Days: 0

4.1.2 Site Grading Phase Assumptions

- General Site Grading Information

Area of Site to be Graded (ft²): 174240
 Amount of Material to be Hauled On-Site (yd³): 348480
 Amount of Material to be Hauled Off-Site (yd³): 0

- Site Grading Default Settings

Default Settings Used: Yes
 Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Graders Composite	1	8
Other Construction Equipment Composite	1	8
Rubber Tired Dozers Composite	1	8
Tractors/Loaders/Backhoes Composite	2	7

- Vehicle Exhaust

Average Hauling Truck Capacity (yd³): 20 (default)
 Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDTV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDTV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

4.1.3 Site Grading Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO ₂
Emission Factors	0.1277	0.0014	0.9794	0.5930	0.0488	0.0488	0.0115	132.74
Other Construction Equipment Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO ₂
Emission Factors	0.0768	0.0012	0.6391	0.3645	0.0263	0.0263	0.0069	122.59
Rubber Tired Dozers Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO ₂
Emission Factors	0.2721	0.0024	2.2344	1.0419	0.0924	0.0924	0.0245	239.09
Tractors/Loaders/Backhoes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO ₂
Emission Factors	0.0666	0.0007	0.4500	0.3715	0.0297	0.0297	0.0060	66.799

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- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO ₂
LDGV	00.5090	00.0068	00.3650	08.0400	00.0248	00.0113		00.1017	00368.0
LDGT	00.7320	00.0095	00.5800	09.5000	00.0249	00.0113		00.1017	00516.2
HDGV	00.7440	00.0165	01.0620	08.2200	00.0432	00.0275		00.0451	00904.8
LDDV	00.1110	00.0029	00.1370	00.7480	00.0447	00.0295		00.0068	00314.1
LDDT	00.3450	00.0056	00.3830	00.6140	00.0533	00.0375		00.0068	00598.6
HDDV	00.3090	00.0116	02.4520	00.7240	00.0970	00.0707		00.0270	01243.4
MC	02.3000	00.0033	01.1800	14.1800	00.0372	00.0207		00.0113	00177.4

4.1.4 Site Grading Phase Formula(s)

- Fugitive Dust Emissions per Phase

$$PM10_{FD} = (20 * ACRE * WD) / 2000$$

PM10_{FD}: Fugitive Dust PM 10 Emissions (TONs)

20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)

ACRE: Total acres (acres)

WD: Number of Total Work Days (days)

2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

$$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$$

CEE_{POL}: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

EF_{POL}: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

HA_{OnSite}: Amount of Material to be Hauled On-Site (yd³)

HA_{OffSite}: Amount of Material to be Hauled Off-Site (yd³)

HC: Average Hauling Truck Capacity (yd³)

(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)

HT: Average Hauling Truck Round Trip Commute (mile/trip)

$$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

0.002205: Conversion Factor grams to pounds

EF_{POL}: Emission Factor for Pollutant (grams/mile)

VM: Vehicle Exhaust On Road Vehicle Mixture (%)

2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$$VMT_{WT} = WD * WT * 1.25 * NE$$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)

WD: Number of Total Work Days (days)

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WT: Average Worker Round Trip Commute (mile)
 1.25: Conversion Factor Number of Construction Equipment to Number of Works
 NE: Number of Construction Equipment

$$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL} : Vehicle Emissions (TONs)
 VMT_{WT} : Worker Trips Vehicle Miles Travel (miles)
 0.002205: Conversion Factor grams to pounds
 EF_{POL} : Emission Factor for Pollutant (grams/mile)
 VM: Worker Trips On Road Vehicle Mixture (%)
 2000: Conversion Factor pounds to tons

4.2 Trenching/Excavating Phase

4.2.1 Trenching / Excavating Phase Timeline Assumptions

- Phase Start Date

Start Month: 5
 Start Quarter: 1
 Start Year: 2015

- Phase Duration

Number of Month: 1
 Number of Days: 0

4.2.2 Trenching / Excavating Phase Assumptions

- General Trenching/Excavating Information

Area of Site to be Trenched/Excavated (ft²): 6000
 Amount of Material to be Hauled On-Site (yd³): 0
 Amount of Material to be Hauled Off-Site (yd³): 0

- Trenching Default Settings

Default Settings Used: Yes
 Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Excavators Composite	2	8
Other General Industrial Equipmen Composite	1	8
Tractors/Loaders/Backhoes Composite	1	8

- Vehicle Exhaust

Average Hauling Truck Capacity (yd³): 20 (default)
 Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HdGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

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- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

4.2.3 Trenching / Excavating Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO ₂
Emission Factors	0.1277	0.0014	0.9794	0.5930	0.0488	0.0488	0.0115	132.74
Other Construction Equipment Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO ₂
Emission Factors	0.0768	0.0012	0.6391	0.3645	0.0263	0.0263	0.0069	122.59
Rubber Tired Dozers Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO ₂
Emission Factors	0.2721	0.0024	2.2344	1.0419	0.0924	0.0924	0.0245	239.09
Tractors/Loaders/Backhoes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO ₂
Emission Factors	0.0666	0.0007	0.4500	0.3715	0.0297	0.0297	0.0060	66.799

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO ₂
LDGV	00.5090	00.0068	00.3650	08.0400	00.0248	00.0113		00.1017	00368.0
LDGT	00.7320	00.0095	00.5800	09.5000	00.0249	00.0113		00.1017	00516.2
HDGV	00.7440	00.0165	01.0620	08.2200	00.0432	00.0275		00.0451	00904.8
LDDV	00.1110	00.0029	00.1370	00.7480	00.0447	00.0295		00.0068	00314.1
LDDT	00.3450	00.0056	00.3830	00.6140	00.0533	00.0375		00.0068	00598.6
HDDV	00.3090	00.0116	02.4520	00.7240	00.0970	00.0707		00.0270	01243.4
MC	02.3000	00.0033	01.1800	14.1800	00.0372	00.0207		00.0113	00177.4

4.2.4 Trenching / Excavating Phase Formula(s)

- Fugitive Dust Emissions per Phase

$$PM10_{FD} = (20 * ACRE * WD) / 2000$$

PM10_{FD}: Fugitive Dust PM 10 Emissions (TONs)

20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)

ACRE: Total acres (acres)

WD: Number of Total Work Days (days)

2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

$$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$$

CEE_{POL}: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

EF_{POL}: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$$

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VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd³)
HA_{OffSite}: Amount of Material to be Hauled Off-Site (yd³)
HC: Average Hauling Truck Capacity (yd³)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$$VMT_{WT} = WD * WT * 1.25 * NE$$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

4.3 Paving Phase

4.3.1 Paving Phase Timeline Assumptions

- Phase Start Date

Start Month: 7
Start Quarter: 1
Start Year: 2015

- Phase Duration

Number of Month: 1
Number of Days: 0

4.3.2 Paving Phase Assumptions

- General Paving Information

Paving Area (ft²): 174240

- Paving Default Settings

Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cement and Mortar Mixers Composite	4	6
Pavers Composite	1	7
Paving Equipment Composite	2	6
Rollers Composite	1	7

- Vehicle Exhaust

Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

4.3.3 Paving Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO ₂
Emission Factors	0.1277	0.0014	0.9794	0.5930	0.0488	0.0488	0.0115	132.74
Other Construction Equipment Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO ₂
Emission Factors	0.0768	0.0012	0.6391	0.3645	0.0263	0.0263	0.0069	122.59
Rubber Tired Dozers Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO ₂
Emission Factors	0.2721	0.0024	2.2344	1.0419	0.0924	0.0924	0.0245	239.09
Tractors/Loaders/Backhoes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO ₂
Emission Factors	0.0666	0.0007	0.4500	0.3715	0.0297	0.0297	0.0060	66.799

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO ₂
LDGV	00.5090	00.0068	00.3650	08.0400	00.0248	00.0113		00.1017	00368.0
LDGT	00.7320	00.0095	00.5800	09.5000	00.0249	00.0113		00.1017	00516.2
HDGV	00.7440	00.0165	01.0620	08.2200	00.0432	00.0275		00.0451	00904.8
LDDV	00.1110	00.0029	00.1370	00.7480	00.0447	00.0295		00.0068	00314.1
LDDT	00.3450	00.0056	00.3830	00.6140	00.0533	00.0375		00.0068	00598.6
HDDV	00.3090	00.0116	02.4520	00.7240	00.0970	00.0707		00.0270	01243.4
MC	02.3000	00.0033	01.1800	14.1800	00.0372	00.0207		00.0113	00177.4

4.3.4 Paving Phase Formula(s)

- Construction Exhaust Emissions per Phase

$$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$$

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$$VMT_{VE} = PA * 0.25 * (1 / 27) * (1 / HC) * HT$$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
PA: Paving Area (ft²)
0.25: Thickness of Paving Area (ft)
(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd³ / 27 ft³)
HC: Average Hauling Truck Capacity (yd³)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$$VMT_{WT} = WD * WT * 1.25 * NE$$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase

$$VOC_P = (2.62 * PA) / 43560$$

VOC_P: Paving VOC Emissions (TONs)
2.62: Emission Factor (lb/acre)
PA: Paving Area (ft²)
43560: Conversion Factor square feet to acre (43560 ft² / acre)² / acre)

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

5. Personnel

5.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location

County: Wayne

Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: VISITORS - WEEKDAYS

- Activity Description:

Assuming every parking space is filled 2 times per day - Monday through Thursday (466 spaces x 2 = 932 vehicles)

- Activity Start Date

Start Month: 9

Start Year: 2015

- Activity End Date

Indefinite: Yes

End Month: N/A

End Year: N/A

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	2.862455
SO _x	0.035336
NO _x	2.156646
CO	38.133755
PM 10	0.106361

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.048771
Pb	0.000000
NH ₃	0.421758

5.2 Personnel Assumptions

- Number of Personnel

Active Duty Personnel: 0

Civilian Personnel: 932

Support Contractor Personnel: 0

Air National Guard (ANG) Personnel: 0

Reserve Personnel: 0

- Default Settings Used: No

- Average Personnel Round Trip Commute (mile): 20

- Personnel Work Schedule

Active Duty Personnel: 5 Days Per Week

Civilian Personnel: 4 Days Per Week

Support Contractor Personnel: 5 Days Per Week

Air National Guard (ANG) Personnel: 4 Days Per Month

Reserve Personnel: 4 Days Per Month

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

5.3 Personnel On Road Vehicle Mixture

- On Road Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	37.55	60.32	0	0.03	0.2	0	1.9
GOVs	54.49	37.73	4.67	0	0	3.11	0

5.4 Personnel Emission Factor(s)

- On Road Vehicle Emission Factors (grams/mile)

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO ₂
LDGV	00.5090	00.0068	00.3650	08.0400	00.0248	00.0113		00.1017	00368.0
LDGT	00.7320	00.0095	00.5800	09.5000	00.0249	00.0113		00.1017	00516.2
HDGV	00.7440	00.0165	01.0620	08.2200	00.0432	00.0275		00.0451	00904.8
LDDV	00.1110	00.0029	00.1370	00.7480	00.0447	00.0295		00.0068	00314.1
LDDT	00.3450	00.0056	00.3830	00.6140	00.0533	00.0375		00.0068	00598.6
HDDV	00.3090	00.0116	02.4520	00.7240	00.0970	00.0707		00.0270	01243.4
MC	02.3000	00.0033	01.1800	14.1800	00.0372	00.0207		00.0113	00177.4

5.5 Personnel Formula(s)

- Personnel Vehicle Miles Travel for Work Days per Year

$$VMT_p = NP * WD * AC$$

VMT_p: Personnel Vehicle Miles Travel (miles/year)

NP: Number of Personnel

WD: Work Days per Year

AC: Average Commute (miles)

- Total Vehicle Miles Travel per Year

$$VMT_{Total} = VMT_{AD} + VMT_C + VMT_{SC} + VMT_{ANG} + VMT_{AFRC}$$

VMT_{Total}: Total Vehicle Miles Travel (miles)

VMT_{AD}: Active Duty Personnel Vehicle Miles Travel (miles)

VMT_C: Civilian Personnel Vehicle Miles Travel (miles)

VMT_{SC}: Support Contractor Personnel Vehicle Miles Travel (miles)

VMT_{ANG}: Air National Guard Personnel Vehicle Miles Travel (miles)

VMT_{AFRC}: Reserve Personnel Vehicle Miles Travel (miles)

- Vehicle Emissions per Year

$$V_{POL} = (VMT_{Total} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONS)

VMT_{Total}: Total Vehicle Miles Travel (miles)

0.002205: Conversion Factor grams to pounds

EF_{POL}: Emission Factor for Pollutant (grams/mile)

VM: Personnel On Road Vehicle Mixture (%)

2000: Conversion Factor pounds to tons

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

6. Personnel

6.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location

County: Wayne

Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: VISITORS - WEEKENDS

- Activity Description:

Assuming every parking space is filled 3 times per day - Friday through Sunday (466 spaces x 3 = 1,398 vehicles)

- Activity Start Date

Start Month: 9

Start Year: 2015

- Activity End Date

Indefinite: Yes

End Month: N/A

End Year: N/A

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	3.220262
SO _x	0.039753
NO _x	2.426227
CO	42.900475
PM 10	0.119656

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.054867
Pb	0.000000
NH ₃	0.474478

6.2 Personnel Assumptions

- Number of Personnel

Active Duty Personnel: 0

Civilian Personnel: 1398

Support Contractor Personnel: 0

Air National Guard (ANG) Personnel: 0

Reserve Personnel: 0

- Default Settings Used: No

- Average Personnel Round Trip Commute (mile): 20

- Personnel Work Schedule

Active Duty Personnel: 5 Days Per Week

Civilian Personnel: 3 Days Per Week

Support Contractor Personnel: 5 Days Per Week

Air National Guard (ANG) Personnel: 4 Days Per Month

Reserve Personnel: 4 Days Per Month

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

6.3 Personnel On Road Vehicle Mixture

- On Road Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	37.55	60.32	0	0.03	0.2	0	1.9
GOVs	54.49	37.73	4.67	0	0	3.11	0

6.4 Personnel Emission Factor(s)

- On Road Vehicle Emission Factors (grams/mile)

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO ₂
LDGV	00.5090	00.0068	00.3650	08.0400	00.0248	00.0113		00.1017	00368.0
LDGT	00.7320	00.0095	00.5800	09.5000	00.0249	00.0113		00.1017	00516.2
HDGV	00.7440	00.0165	01.0620	08.2200	00.0432	00.0275		00.0451	00904.8
LDDV	00.1110	00.0029	00.1370	00.7480	00.0447	00.0295		00.0068	00314.1
LDDT	00.3450	00.0056	00.3830	00.6140	00.0533	00.0375		00.0068	00598.6
HDDV	00.3090	00.0116	02.4520	00.7240	00.0970	00.0707		00.0270	01243.4
MC	02.3000	00.0033	01.1800	14.1800	00.0372	00.0207		00.0113	00177.4

6.5 Personnel Formula(s)

- Personnel Vehicle Miles Travel for Work Days per Year

$$VMT_p = NP * WD * AC$$

VMT_p: Personnel Vehicle Miles Travel (miles/year)

NP: Number of Personnel

WD: Work Days per Year

AC: Average Commute (miles)

- Total Vehicle Miles Travel per Year

$$VMT_{Total} = VMT_{AD} + VMT_C + VMT_{SC} + VMT_{ANG} + VMT_{AFRC}$$

VMT_{Total}: Total Vehicle Miles Travel (miles)

VMT_{AD}: Active Duty Personnel Vehicle Miles Travel (miles)

VMT_C: Civilian Personnel Vehicle Miles Travel (miles)

VMT_{SC}: Support Contractor Personnel Vehicle Miles Travel (miles)

VMT_{ANG}: Air National Guard Personnel Vehicle Miles Travel (miles)

VMT_{AFRC}: Reserve Personnel Vehicle Miles Travel (miles)

- Vehicle Emissions per Year

$$V_{POL} = (VMT_{Total} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONS)

VMT_{Total}: Total Vehicle Miles Travel (miles)

0.002205: Conversion Factor grams to pounds

EF_{POL}: Emission Factor for Pollutant (grams/mile)

VM: Personnel On Road Vehicle Mixture (%)

2000: Conversion Factor pounds to tons

APPENDIX E

ENVIRONMENTAL BASELINE SURVEY FOR SUBJECT PROPERTY

FINAL

ENVIRONMENTAL BASELINE SURVEY

FOR A

CITY-OWNED SPORTS COMPLEX

AT

SEYMOUR JOHNSON AFB, NORTH CAROLINA

JULY 2014

PREPARED BY
4 CES/CEIEA
1095 Peterson Avenue
Seymour Johnson AFB, NC 27531-2355
(919) 722-5168
DSN 722-5168

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APPENDIX A: ACRONYMS AND ABBREVIATIONS

APPENDIX B: FIGURES

- Figure 1. Seymour Johnson Air Force Base
- Figure 2. Boundaries of the Subject Property and Survey Area
- Figure 3. Current Use of Subject Property
- Figure 4. Surrounding Land Uses

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APPENDIX F: PERSONNEL INTERVIEWED

1.0 PURPOSE OF THE ENVIRONMENTAL BASELINE SURVEY

The purpose of this Environmental Baseline Survey (EBS) is to document the apparent environmental conditions of the subject property located on Seymour Johnson Air Force Base (SJAFB), Goldsboro, North Carolina (Figure 1, Appendix B). This EBS is intended to support a lease of approximately 62 acres of SJAFB property to the City of Goldsboro. The city intends to construct a sports complex on the subject property.

Preparation of an EBS is required by Department of Defense policy before any property can be sold, leased, transferred, or acquired. United States Air Force (USAF) Policy Directive 32-70, *Environmental Quality*, provides responsibilities and procedures for conducting an EBS and is implemented through Air Force Instruction (AFI) 32-7066, *Environmental Baseline Surveys in Real Estate Transactions*. The purpose and objectives of this EBS are as follows:

- Document the nature, magnitude, and extent of any environmental contamination of property underlying or in the immediate vicinity of the subject property
- Identify potential environmental contamination liabilities
- Establish environmental due diligence
- Develop sufficient information to assess health and safety risks
- Provide information necessary to protect human health and the environment
- Serve as the basis for notice of environmental condition when required under Section 120(h)(1) of the *Comprehensive Environmental Response, Compensation, and Liability Act* (CERCLA) of 1980, as amended (Title 42 United States Code [U.S.C.] 9601[h][1]), or any applicable state or local real property disclosure requirements

1.1. Boundaries of the Property and Survey Area

The subject property, comprised of approximately 62 acres, is located on the north-eastern perimeter of SJAFB. The boundaries of the subject property and survey area are illustrated in Figure 2 in Appendix B.

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2.0 SURVEY METHODOLOGY

2.1. Approach and Rationale

2.1.1. Description of Documents Reviewed

Among the documents reviewed for this EBS were aerial photographs, environmental management plans, correspondence from regulatory agencies, and utility maps. A list of references is provided in Appendix E.

2.1.2. Property Inspections

The Environmental Planner reviewed all appropriate records made available and conducted a visual site inspection of the subject property following an analysis of information during the record search.

A visual inspection of the subject property was conducted on 11 March 2014. The purpose of the visual inspection was to determine if any of the following items could be observed: hazardous substances and petroleum products associated with known uses; above and underground storage tanks; odors; pools of liquid; drums; hazardous substance and petroleum product containers; potential asbestos-containing materials; PCB-containing electrical equipment; stains and corrosion; drains and sumps; pits, ponds, and lagoons; stained soil or pavement; stressed vegetation; solid waste; wastewater; wells; septic systems; and dead or diseased wildlife.

The site appears to be in good condition. Nothing was observed during the visual inspection that could pose significant environmental impact or concern on the subject property. The most common items observed throughout the property were manholes and storm sewer grates from the neighborhood that previously occupied the site. Former locations of roads and housing units are barely detectable.

Site photos are provided in Appendix C.

2.1.3. Personal Interviews

Personal interviews were conducted between 10 and 13 March 2014. A list of the personnel interviewed for this EBS is provided in Appendix F.

2.1.4. Sampling

No sampling was conducted in support of this EBS.

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3.0 FINDINGS FOR SUBJECT PROPERTY

3.1. History and Current Use

The United States (U.S.) War Department activated Seymour Johnson Field in June 1942 to serve as a technical school after the U.S. entered World War II. During the war, the base conducted technical training, prepared soldiers for overseas duty, and provided basic training for P-47 pilots (SJAFB, 2011). Seymour Johnson Field was inactivated after World War II in May 1946 and, in 1949, the property was deeded to the City of Goldsboro.

Between 1950 and the end of 1952, Piedmont Airlines conducted commercial flights to the Seymour Johnson Air Field. During this time, the base facilities were leased to private interests for warehouse storage, temporary residence, light manufacturing, family housing, and special presentations.

In December 1952, the City of Goldsboro transferred the base to the federal government and the U.S. Army Corps of Engineers renovated and repaired the base. Seymour Johnson AFB was reactivated in April 1956 and has operated as a military installation since that time.

Seymour Johnson AFB was annexed to the City of Goldsboro on 7 February 1977; however, zoning authority for the base proper was retained by the base.

Based on analysis of historic aerial photos (Appendix D), the subject property contained a mix of farmland, woodland, and open space from the earliest available photo (1940) until the 1959 photo. The 1959 photo shows the construction of military family housing (roughly 134 units) on the subject property, which were constructed in 1958. The subject property remained substantially the same until the housing units were demolished between 2008 and 2010.

Current Use of Subject Property

The current use of the subject property is open space. One street with a parallel sidewalk has been constructed that roughly follows the eastern and northeastern boundaries of the subject property (Figure 3, Appendix B). The sidewalk is used by SJAFB residents and personnel as a walking and jogging path. The remainder of the site is a large grassy field with clusters of trees and shrubs throughout.

3.2. Environmental Setting

Seymour Johnson AFB is located in east-central North Carolina in central Wayne County, in the City of Goldsboro. Goldsboro lies in the Coastal Plain of North Carolina, near the fall line. The topography on SJAFB is flat to gently rolling with elevations ranging from 45 to 110 feet MSL.

The base is bordered by the Neuse River on its southwest side and by Stoney Creek, a small tributary of the Neuse River, on its northwest side. SJAFB lies within the Neuse

River-Stoney Creek watershed, which is part of the larger Albemarle-Pamlico estuarine system. Urban lands lie adjacent to the north and northeast of the base and nearby to the northwest. The east and southeast sides are bordered by rural agricultural and forestland with some residential areas.

The subject property is located in the northeast corner of the installation and comprises a portion of the installation's boundary. The property is bordered by installation-owned military family housing neighborhoods on its northwest and west sides; by a portion of the installation's golf course on its southwest side; by an off-base residential neighborhood and church on its east and southeast sides; and by Meadow Lane Elementary School on its north side (Figure 4, Appendix B). South Oak Forest Road borders the subject property along most of its eastern side. This road is a main thoroughfare for base personnel and residents accessing the installation via the Oak Forest Gate.

3.3. Hazardous Substances

Routine household hazardous wastes would have been generated in housing units that occupied the subject property, and used oil was likely generated as part of "do-it-yourself" vehicle maintenance activities. Residents were responsible for disposing of their household hazardous waste and used oil.

No reports of hazardous substance spills in the housing areas have been recorded (D. Mayette, personal communication, 12 Mar 14).

3.3.1. Hazardous Materials and Petroleum Products

There are no records or other evidence to indicate the presence of hazardous materials or petroleum products on the subject property.

3.3.2. Hazardous and Petroleum Waste

There are no records or other evidence to indicate the presence of hazardous or petroleum waste on the subject property.

3.4. Environmental Restoration Program (ERP) Contamination

The Environmental Restoration Program (ERP) is used by the USAF to identify, characterize, and remediate past environmental contamination on USAF installations. Past procedures for managing and disposing of wastes, although accepted at the time, resulted in contamination of the environment. The ERP has established a process to evaluate past disposal sites, control the migration of contaminants, identify potential hazards to human health and the environment, and remediate the sites.

There are no ERP sites on the subject property. Three sites, LF-16, FT-19 and ST-14, are fairly close but should not affect the subject property.

LF-16, also known as Landfill No. 3, is located near the northwest boundary, adjacent to Stoney Creek. The site was used for the disposal of general refuse, coal ash, tank

sludge, spent filters, paint residues, and solvents from 1961 to 1970. Currently, the site is capped and the area is used for recreation. No further action is planned except for long-term monitoring. Contaminant migration (if any) would be toward Stoney Creek, which is away from the subject property (SJAFB, 2007).

FT-19, also known as Fire Training Area No. 1, is also located near the northwest boundary, slightly north of LF-16. The unit is an unlined pit that was used for base fire training exercises roughly once or twice per month from 1942 to 1945. Aviation gas and waste oil were ignited and reportedly extinguished with high pressure water; however, no evidence of a release was documented from this area (SJAFB 2007). In July 2007, the NCDENR reviewed site documents submitted by SJAFB and concurred that no further action was needed at the site (Hartzell and O'Neal, 2007).

ST-14 was a leaking underground storage tank (LUST) at the Base Exchange gas station approximately 3,375 feet west of the subject property. Based on a Site Inspection conducted in June 2007, the NCDENR determined that no further action was needed at the site (Hartzell, 2007). Because the general flow of the shallow ground water travels westward to Stoney Creek, any contamination from this site would have migrated away from the subject property.

In August 2007, a Comprehensive Site Evaluation (CSE) Phase I project was completed for SJAFB under the USAF Military Munitions Response Program (MMRP). The MMRP uses the CSE to characterize munitions-related military sites to determine actual or potential releases of related hazardous substances, pollutants, or contaminants to migration or exposure pathways (USACE, 2007).

The CSE Phase I identified six munitions response areas at SJAFB. Based on the CSE Phase II Final Report (USAF, 2012), NCDENR determined that all sites except the former M-60 Machine Gun Range should be No Further Action (Hartzell, 2011). The former M-60 Range was cleaned up in 2011 and the NCDENR subsequently concurred that no further action is required at the site (Matthews, 2013). None of the sites pose a threat to the subject property.

3.5. Storage Tanks

3.5.1. Aboveground Storage Tanks (ASTs)

The base stores diesel, gasoline, biodiesel (B-20), #2 fuel oil, contaminated fuel, and other oils in over 112 ASTs throughout the installation (SJAFB, 2010). The nearest AST is located at Building 4012 on Blakeslee Avenue, approximately 2,000 feet southwest of the subject property. There are no ASTs on the subject property.

3.5.2. Underground Storage Tanks (USTs)

The base stores gasoline and JP-8 in 9 USTs on the installation (SJAFB, 2010). All regulated USTs at SJAFB were upgraded prior to the 22 Dec 98 deadline to meet U.S. Environmental Protection Agency (USEPA) requirements. The nearest UST is

approximately 3,375 feet west of the subject property at the Base Exchange gas station. There are no USTs on the subject property.

In a database search for potential hazardous substance or material release sites, 21 UST-related incidents have been reported on SJAFB since 1988. All sites have been closed out with no further action required except one, located at Facility 4552 on the airfield, which is approximately 6,850 feet (roughly 1.3 miles) southwest of the subject property. The database entry for the incident indicates soil contamination (not ground water) but no additional details are provided (NCDENR, 2014).

3.5.3. Pipelines, Hydrant Fueling, and Transfer Systems

JP-8 is transferred from a contractor-owned pipeline into the bulk fuel tanks where it is then distributed via two base hydrant refueling systems. One system supplies JP-8 to a pump house, the other to a Type III Fuel Hydrant System. Both systems serve various points on the flight line. The nearest pipeline is approximately 0.35 miles south of the subject property. There are no pipelines, hydrant fueling, or transfer systems on the subject property.

3.6. Oil/Water Separators

There are no records or other evidence to indicate the presence of oil/water separators on the subject property.

3.7. Pesticides

According to base personnel, the pesticide chlordane has been used as an insecticide in the housing areas (J. Johnson, personal communication, 13 Mar 14). All uses of chlordane were banned by the USEPA in 1988 because of its persistent and bioaccumulative toxicity. There was no need to remove dirt during demolition of the housing units that occupied the subject property; therefore, no soil testing has been done and concentrations of chlordane in the soil are unknown (B. Hankins, personal communication, 13 Mar 14). The City of Goldsboro will be required to follow all applicable federal, state, and local rules and regulations regarding environmental requirements on soil management of hazardous waste and substances.

No testing for chlordane concentrations in soils was performed as part of this EBS.

3.8. Medical or Biohazardous Waste

There are no records or other evidence to indicate the presence of medical or biohazardous waste within the boundaries of the survey area.

3.9. Ordnance

There are no records or other evidence to indicate the presence of ordnance within the boundaries of the survey area.

3.10. Radioactive Waste

There are no records or other evidence to indicate the presence of radioactive waste within the boundaries of the survey area.

3.11. Solid Waste

SJAFB uses a private contractor to collect all solid waste generated on the base. There are no issues associated with the collection/disposal of solid waste on or near the subject property.

3.12. Ground Water

The ground water resources on SJAFB are influenced by three principal aquifers: the water table aquifer, the Black Creek aquifer, and the Cape Fear aquifer (SJAFB, 1998). Based on the results obtained from on-site monitoring wells, the water table ranges from 1 foot below ground surface in the Neuse River and Stoney Creek floodplains to 15 feet below ground surface in the central portion of SJAFB; however, ground water across the majority of the base generally varies from 6 to 12 feet below the surface (Jacobs, 2008).

SJAFB currently monitors ground water levels in wells across the installation. These wells were installed as required in the SJAFB ERP and other hazardous waste programs. In addition to recording ground water levels, ground water quality is also analyzed periodically as required by the different programs (D. Chastain, personal communication, 13 Mar 14).

3.13. Wastewater Treatment, Collection and Discharge

SJAFB discharges its domestic and industrial wastewater to the city of Goldsboro publicly owned treatment works (POTW). The POTW reserves approximately 1.5 million gallons per day of its capacity to treat the wastewater from the base. There are no issues with wastewater treatment, collection, and disposal.

3.14. Drinking Water Quality

SJAFB buys its water from the City of Goldsboro. The City of Goldsboro's water source is a surface supply from the Neuse River. Water enters the base through three metered connections and the average usage is less than one million gallons per day.

The SJAFB Bioenvironmental Engineering Flight (BEF) is responsible for monitoring drinking water quality on SJAFB. Since the base purchases its drinking water, the city of Goldsboro fulfills most of the EPA mandated monitoring requirements. In addition to the monitoring that is completed by the city of Goldsboro, BEF personnel sample for bacteriological contaminants, disinfectant and disinfectant byproduct contaminants, lead, copper, and asbestos. BEF accomplishes this additional monitoring because each of these contaminants may be affected by the characteristics of the distribution system on the installation. The contaminants monitored only by the city are affected primarily by the quality of the source water and do not change as the water moves from the city's distribution system to the base's distribution system (SJAFB, 2012).

The post-treatment drinking water quality at SJAFB meets the primary drinking water standards but occasionally does not meet the secondary drinking water standards due to water color. Additionally, SJAFB is at the end of the water supply line which occasionally causes low chlorine issues. The base resolves the low chlorine issue by informing the water supplier to increase chlorine levels. Hydrant flushing is necessary to remove the low chlorine water (SJAFB, 2014).

3.15. Asbestos

Asbestos-containing material (ACM) is managed in accordance with the *Asbestos Operating Plan* prepared in 2006. This plan specifies procedures for the removal, encapsulation, enclosure, and repair activities associated with ACM abatement projects. In addition, it is designed to protect personnel who live and work on SJAFB from exposure to airborne asbestos fibers and to ensure the installation remains in compliance with federal, state, and local regulations pertaining to ACM.

Prior to demolition of the housing units, all ACM was identified and removed to protect the health of the construction workers (D. Owen, personal communication, 10 Mar 14). It is likely that Transite (asbestos-cement) sewer and water pipes remain buried 3 to 6 feet below grade throughout the site (C. Dunham, personal communication, 12 Mar 14).

No testing for ACM on the subject property was conducted as part of this EBS.

3.16. Polychlorinated Biphenyls (PCBs)

Polychlorinated biphenyls (PCBs) are a group of chemical mixtures used as insulators in electrical equipment, such as transformers and fluorescent light ballasts. Chemicals classified as PCBs were widely manufactured and used in the U.S. until they were banned in 1979 (USEPA, 2013a).

A survey of all transformers was conducted in the early 1990s; any that might have contained PCBs have been removed, so all transformers are PCB-free. Additionally, in 2006, any fluorescent light ballast that did not specifically state that it was PCB-free was removed (D. Young, personal communication, 13 Mar 14).

There is a high likelihood that PCB was contained in electric transformers previously located on the subject property. The records search and on-site inspection did not reveal any PCB-related contamination on the subject property.

No testing for PCBs on the subject property was conducted as part of this EBS.

3.17. Radon

Radon comes from the natural (radioactive) breakdown of uranium in soil, rock and water and gets into the air you breathe (USEPA, 2012a). The USEPA Map of Radon Zones for North Carolina indicates Wayne County falls into Radon Zone 3 (Low Potential, average radon screening levels of less than 2 picocuries per liter (pCi/L)

(USEPA, 2012b). Each zone designation reflects the average short-term radon measurement that can be expected in a building without the implementation of radon control methods. There are no structures on the subject property; therefore, radon is not a concern (D. Owen, personal communication, 10 Mar 14).

No testing for radon on the subject property was conducted as part of this EBS.

3.18. Lead-Based Paint

Lead-based paints (LBP) were commonly used from the 1950s until 1978. Lead from paint, chips and dust can pose serious health hazards if not taken care of properly. In 1996, federal law required that individuals receive information on LBP before renting, buying, or renovating pre-1978 housing (USEPA, 2013b).

LBP is managed at SJAFB in accordance with the *Lead-Based Paint Management Plan* (SJAFB, 1999). This plan establishes responsibilities, procedures for assessing risk, hazard management and risk reduction, medical screening, record keeping, and waste disposal requirements, and provides for capture/removal of LBP scrapings or dust.

Prior to demolition of the housing units, the LBP surfaces were abated using USEPA and Occupational Safety and Health Administration (OSHA) standards (D. Owen, personal communication, 10 Mar 14).

No testing for LBP on the subject property was conducted as part of this EBS.

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4.0 FINDINGS FOR ADJACENT PROPERTIES

Adjacent properties are not only those properties contiguous to the boundaries of the installation or subject property, but also those properties relatively nearby that could pose significant environmental impact or concern on the installation or subject property.

4.1. Land Uses

On-base adjacent land uses to the northwest, west, and southwest consist of military family housing, open space, and a portion of the installation's golf course.

Off-base adjacent land uses consist of Meadow Lane Elementary School to the north, South Oak Forest Road and a residential neighborhood to the east, a church to the southeast and forested property to the south.

Land uses surrounding the subject property are illustrated in Figure 4 in Appendix B.

4.2. Surveyed Properties

Visual site inspections of adjacent properties within one-half mile of the subject property were conducted on 13 March 2014. Nothing was observed that could pose significant environmental impact or concern on the installation or subject property.

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5.0 APPLICABLE REGULATORY COMPLIANCE ISSUES

5.1. List of Compliance Issues

There are no compliance issues currently associated with the subject property being evaluated in this EBS (D. Chastain, personal communication, 13 Mar 14).

5.2. Description of Corrective Actions

There are no corrective actions currently associated with the subject property being evaluated in this EBS (D. Chastain, personal communication, 13 Mar 14).

5.3. Estimates of Various Alternatives

Not applicable.

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6.0 CONCLUSIONS

The Facility Matrix (**Table 6-1**) summarizes observed conditions on the subject property and is used to categorize the degree of contamination associated with the property being evaluated. Property categorization is based on requirements in AFI 32-7066, *Environmental Baseline Surveys in Real Estate Transactions* (USAF 1994b) and in accordance with the updated definitions of Property Categories in a USAF Headquarters/Environmental Division Policy Memo dated 9 February 1999, revised April 2003, and moved January 2004.

Category codes used in the facility matrix are defined below:

- **Category 1**—Areas where no release or disposal of hazardous substances or petroleum substances has occurred (including no migration of these substances from adjacent areas).
- **Category 2**—Areas where only release or disposal of petroleum substances has occurred.
- **Category 3**—Areas where release, disposal, and/or migration of hazardous substances has occurred, but at concentrations that do not require a removal or remedial response.
- **Category 4**—Areas where release, disposal, and/or migration of hazardous substances has occurred, and all removal or remedial actions have been taken.
- **Category 5**—Areas where release, disposal, and/or migration of hazardous substances has occurred, and all removal or remedial actions are underway, but have not yet been completed.
- **Category 6**—Areas where release, disposal, and/or migration of hazardous substances has occurred, but remedial actions have not been implemented.
- **Category 7**—Areas that are not evaluated or require additional evaluation.

There is only one condition discussed in **Section 3** that needs to be considered in determining the property categorization: the likely presence of the persistent pesticide chlordane in the soils on the subject property. The City of Goldsboro will be required to follow all applicable federal, state, and local rules and regulations regarding environmental requirements on soil management of hazardous waste and substances.

6.1. Facility Matrix

Potential Environmental Concerns	Property Category
Soils need to be tested for chlordane prior to ground-disturbing activities	1

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7.0 RECOMMENDATIONS

The conclusions presented in this EBS concerning the environmental condition of the subject property are based on a compilation of all the information presented in this report and any other referenced information. Every reasonable effort was made to collect and review all available information.

- The City of Goldsboro will be required to follow all applicable federal, state, and local rules and regulations regarding environmental requirements on soil management of hazardous waste and substances.
- The developer should be made aware of the likely presence of abandoned Transite (asbestos-cement) water and sewer pipes, approximately 3 to 6 feet below grade.
- The developer should be made aware that Piedmont Natural Gas supplies natural gas to SJAFB and owns and maintains the gas line on main base. The primary service main is located at the eastern-most corner of the subject property adjacent to Oak Forest Road.
- The developer should be made aware of the presence of active and abandoned utilities throughout the site, to include sewer pipes, water pipes, storm sewer systems (still functioning), and electrical lines.
- Prior to any intrusive earthwork or digging, the location of underground utilities must be verified and a work clearance initiated and signed by the appropriate utility representatives.

The following recommendation is based on the findings of this EBS regarding the presence of hazardous substances and/or petroleum products and their derivatives:

Proceed with any planned transaction if the property falls in Categories 1 – 4 (per AFI 32-7066, paragraph 2.1.3.1.).

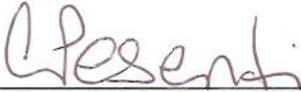
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8.0 CERTIFICATIONS

8.1. Certification of the Environmental Baseline Survey

The Environmental Planner has conducted this Environmental Baseline Survey on behalf of the Air Force for the sole and exclusive use of SJAFB and the USAF. The Environmental Planner has reviewed all appropriate records made available, and conducted visual site inspections of the subject property following an analysis of information during the record search. The information contained within the survey report is based on records made available and, to the best of the Environmental Planner's knowledge, is correct and current as of 16 July 2014.

Certified by:



CATHRYN M. PESENTI
Environmental Planner
Seymour Johnson AFB



Date

Approved by:



W. DEAN CHASTAIN, P.E.
Environmental Element Chief
Seymour Johnson AFB



Date

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8.2. Certification of PCB Clearance

This Real Property is in compliance with 40 CFR 761 as outlined below:

- a. An inventory has been prepared and is being maintained of all PCB Real Property Installed Equipment and Real Property PCB Items per Section 761.45.
- b. All in-service and stored serviceable PCB and PCB contaminated Real Property Installed Equipment and Real Property PCB Items have been inspected, repaired and are being maintained to prevent leakage, and, therefore can be distributed per Section 761.30.
- c. PCB Real Property Installed Equipment and Real Property PCB Items have been stored, decontaminated, and labeled per Sections 761.42, 761.43, and 761.44.
- d. There is no known PCB contaminated soil, wastes, or unserviceable equipment remaining on the existing property.

There is a high likelihood that PCB was contained in electric transformers previously located at the site. According to base personnel, all PCB transformers have been removed, and the base is PCB-free. All PCB-containing fluorescent light fixtures have also been removed from the base. The records search and on-site inspection did not reveal any PCB-related contamination on the subject property.

Certified by:

C. Pesenti
CATHRYN M. PESENTI
Environmental Planner
Seymour Johnson AFB

16 July 14
Date

Approved by:

W. Dean Chastain
W. DEAN CHASTIAN, P.E.
Environmental Element Chief
Seymour Johnson AFB

16 Jul 14
Date

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8.3. Certification of No Contamination

The Real Property evaluated in this EBS contains no known hazardous substances as that term is defined in the CERCLA (42 U.S.C. 9601), as amended, or other contamination as specified by the RCRA of 1976, the implementing USEPA regulations (40 CFR Parts 261, 262, 263, and 761), and the Federal Property Management Regulations (41 CFR Part 101-47). A complete search of agency files revealed that no hazardous substance has been stored for more than one year, known to have been released, or disposed of on the subject property.

Certified by:

C. Pesenti
CATHRYN M. PESENTI
Environmental Planner
Seymour Johnson AFB

16 July 14
Date

Approved by:

W. Dean Chastain
W. DEAN CHASTAIN, P.E.
Environmental Element Chief
Seymour Johnson AFB

16 Jul 14
Date

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APPENDIX A: ACRONYMS AND ABBREVIATIONS

AOC	Area of Concern
ACM	Asbestos-Containing Material
AFB	Air Force Base
AFI	Air Force Instruction
AST	Aboveground Storage Tank
CERCLA	Comprehensive Environmental, Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CSE	Comprehensive Site Evaluation
EBS	Environmental Baseline Survey
EPA	Environmental Protection Agency
ERP	Environmental Restoration Program
LBP	Lead-based paint
LDR	Land Disposal Restriction
LUST	Leaking Underground Storage Tank
MMRP	Military Munitions Response Program
MRA	Munitions Response Area
MSL	Mean Sea Level
NCDENR	North Carolina Department of Environment and Natural Resources
OSHA	Occupational Safety and Health Administration
OWS	Oil/Water Separator
PCB	Polychlorinated Biphenyl
pCi/L	picocuries per liter
POTW	Publicly-Owned Treatment Works
ppm	parts per million
RCRA	Resource Conservation and Recovery Act
SJAFB	Seymour Johnson Air Force Base
U.S.	United States
USACE	United States Army Corps of Engineers
USAF	United States Air Force
U.S.C.	United States Code
USEPA	United States Environmental Protection Agency
UST	Underground Storage Tank

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APPENDIX B: FIGURES

Figure 1. Seymour Johnson Air Force Base

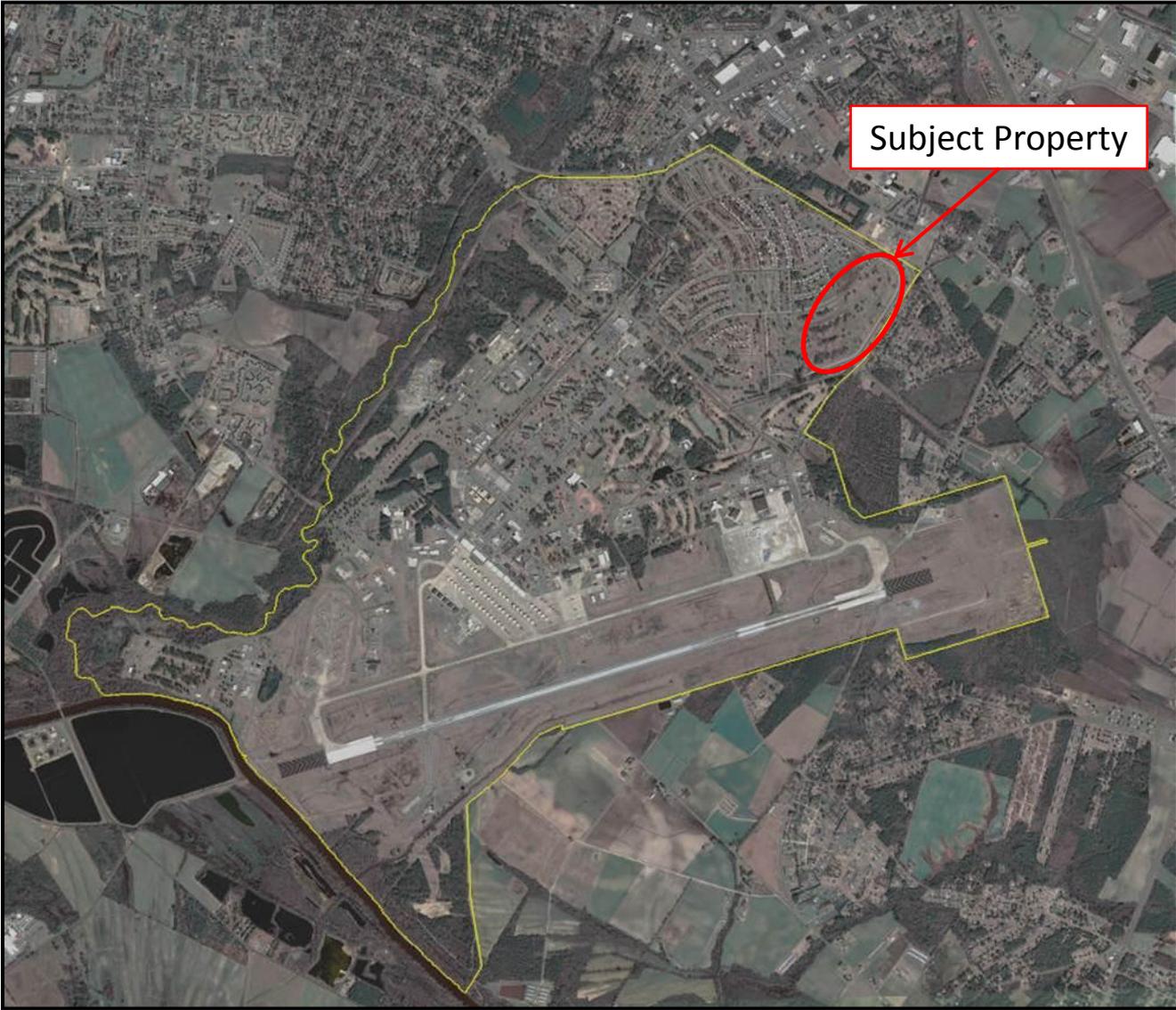


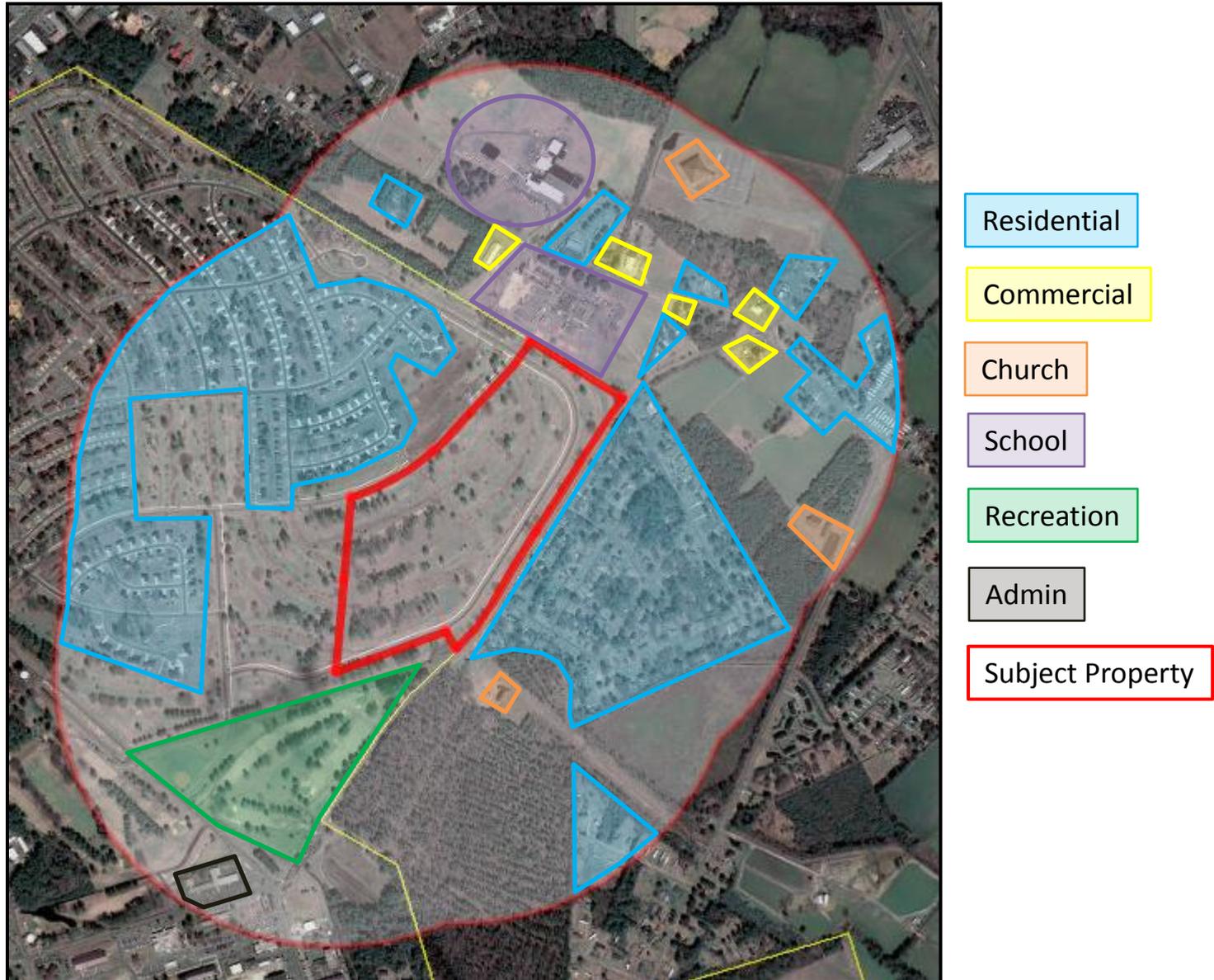
Figure 2. Boundaries of Subject Property and Survey Area



Figure 3. Current Use of Subject Property



Figure 4. Surrounding Land Uses



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APPENDIX C: SITE PHOTOS

Site Photos

Corner of Scriven and Kenly – looking south – north portion of property



North portion looking south



Site Photos

Northeast corner of subject property



Northeast corner – Piedmont Gas Main



Site Photos

Northeast portion – swale and storm drain – typical throughout property



Northeast portion – old basketball court



Site Photos

Manhole – typical throughout property



Scriven Street – looking south



Site Photos

Looking north from interior of property

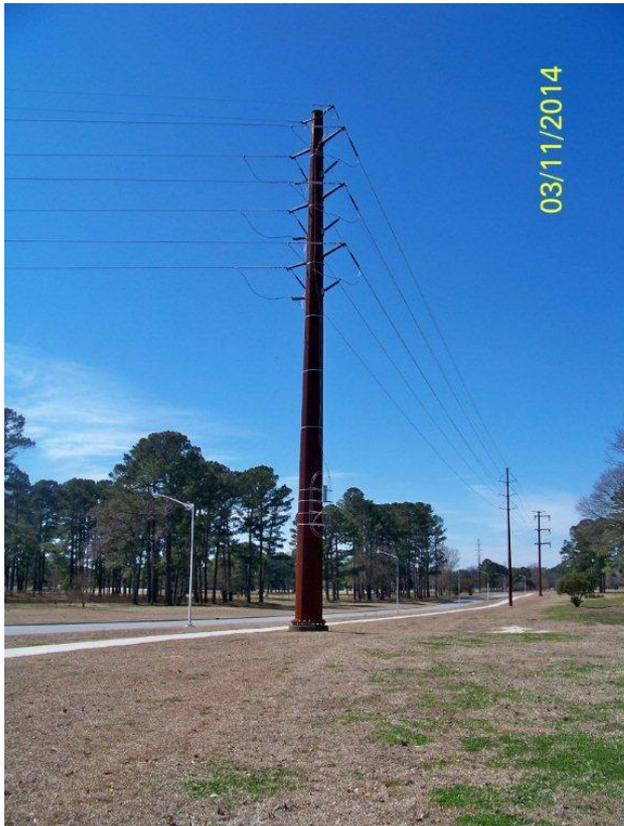


Swale – southern portion of property



Site Photos

Southern portion of Scriven Street –
Progress Energy power lines



Northwest portion of property – old
basketball court



Site Photos

Looking north from southwest corner of property



Storm drain on eastern boundary of property



Site Photos

Looking north along eastern boundary



Scriven Street storm drain – typical



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APPENDIX D: HISTORIC AERIAL PHOTOS

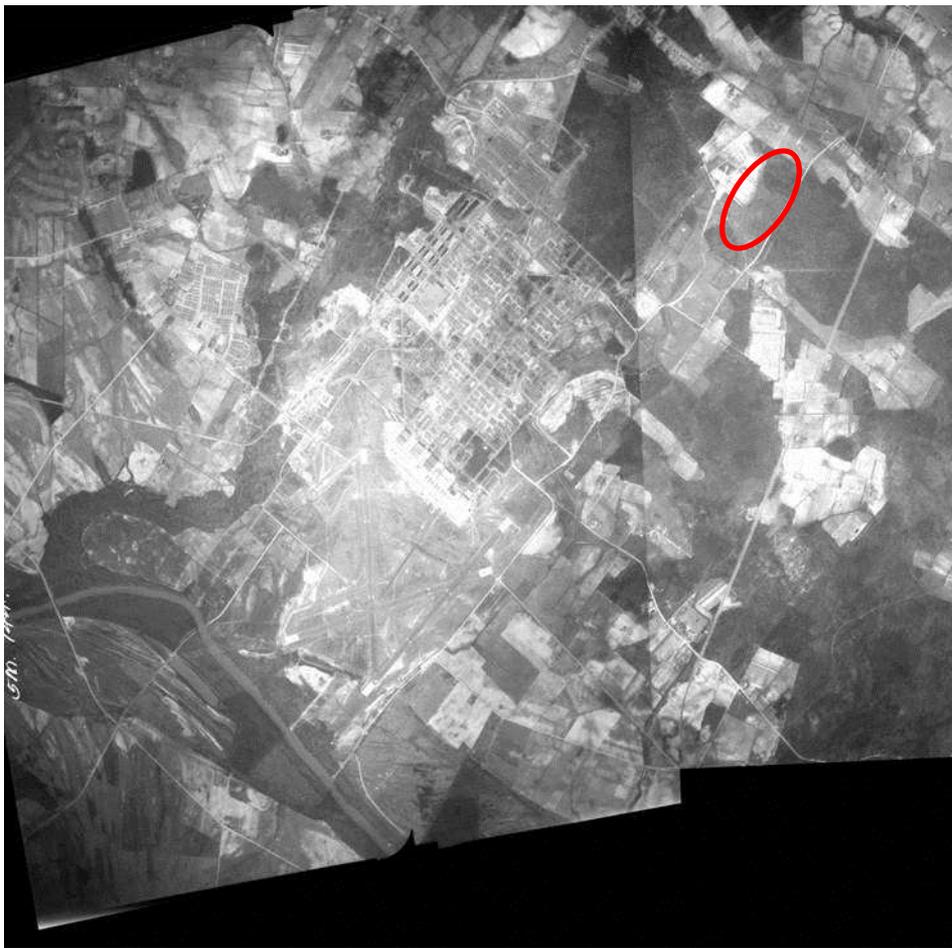
Subject Property – 1940



Subject Property – 1940



Subject Property – 1945



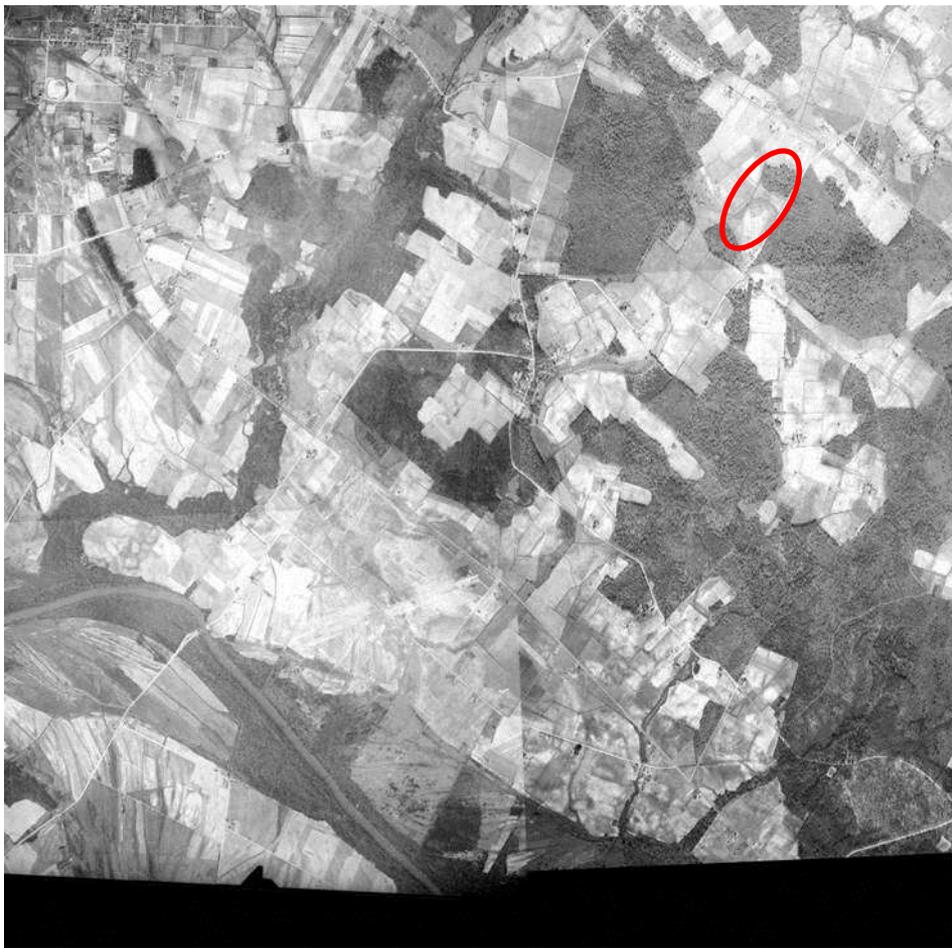
Subject Property – 1945



Subject Property – 1954



Subject Property – 1940



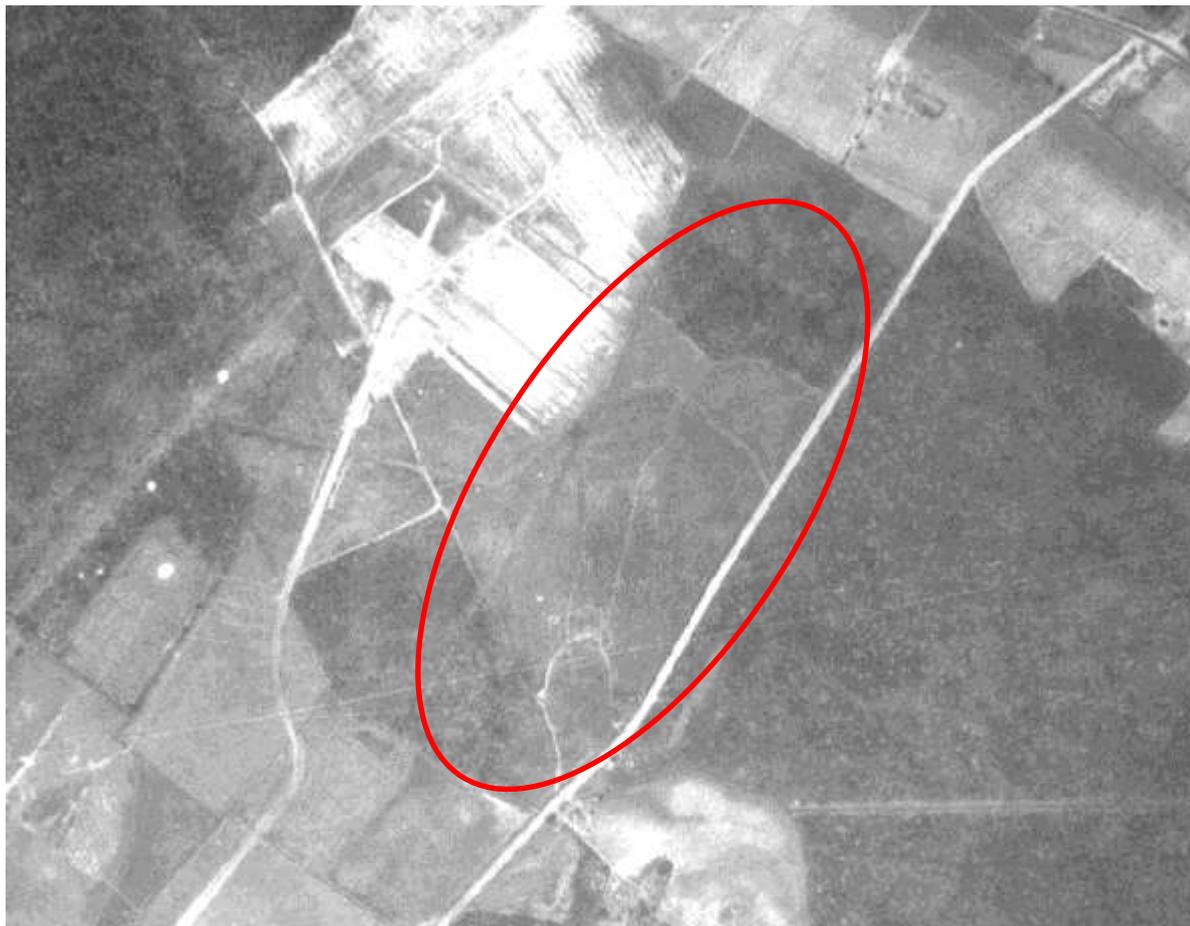
Subject Property – 1940



Subject Property – 1945



Subject Property – 1945



Subject Property – 1954



Subject Property – 1954



Subject Property – 1954



Subject Property – 1959



Subject Property – 1959



Subject Property – 1965



Subject Property – 1965



Subject Property – 1971



Subject Property – 1971



Subject Property – 1978



Subject Property – 1978



Subject Property – 1984



Subject Property – 1984



Subject Property – 1989



Subject Property – 1989



Subject Property – 1994



Subject Property – 1994



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APPENDIX E: REFERENCES

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USEPA, 2012a. A Citizen's Guide to Radon: The Guide to Protecting Yourself and Your Family from Radon. EPA 402/K-12/002. May.

USEPA, 2012b. EPA Map of Radon Zones – North Carolina
<http://www.epa.gov/radon/states/northcarolina.html>

APPENDIX F: PERSONNEL INTERVIEWED

Mr. John Tipton, Real Property Officer (4 CES/CEIAP)

- History and Current Use

Mr. Dan Mayette, Hazardous Waste Manager (4 CES/CEIEC)

- Hazardous Materials and Petroleum Products
- Hazardous and Petroleum Waste
- Medical or Biohazardous Waste
- Radioactive Wastes

Mr. Dean Chastain, Environmental Element Chief (4 CES/CEI)

- IRP Contamination
- Ground Water
- Ordnance

Mr. Barry Brockway, Storage Tank Program Manager (4 CES/CEIEC)

- Aboveground Storage Tanks
- Underground Storage Tanks
- Pipelines, Hydrant Fueling, and Transfer Systems
- Oil/Water Separators

Mr. Jamie Johnson, Pest Management Supervisor (4 CES/CEOIE)

- Pesticides

Mr. Bob Hankins, Construction Project Manager (4 CES/CENMP)

- Chlordane on Subject Property

Mr. Dwight Young, Facility Systems Superintendent (4 CES/CEOF)

- Polychlorinated Biphenyls (PCBs)

Mr. Doug Owen, Abatement Shop Supervisor (4 CES/CEOER)

- Asbestos
- Lead-Based Paint
- Radon

Mr. Chuck Dunham, Construction Management (4 CES/CENMP)

- Utilities / Transite Pipes

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APPENDIX F

NOTICE OF AVAILABILITY

[WILL BE POPULATED WHEN DOCUMENT IS RELEASED FOR PUBLIC COMMENT]

APPENDIX G

PUBLIC AND AGENCY REVIEW AND COMMENT

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