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Environmental Assessment and Finding of No Significant Impact for the Implementation of an Integrated Pest Management Plan at Fort Rucker, Alabama

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Acronyms and Abbreviations

AAF	Army Airfield
ADEM	Alabama Department of Environmental Management
ADNL	A-weighted day-night level
AOC	Area of Concern
AR	Army Regulation
Army	U.S. Army
BMP	Best Management Practice
CAA	Clean Air Act
CBMPP	Construction Best Management Practices Plan
CDNL	C-weighted day-night level
CEQ	Council on Environmental Quality
CFR	*Code of Federal Regulations*
CFC	Chlorofluorocarbons
CH4	Methane
CO2	Carbon Dioxide
CWA	Clean Water Act
dB	Decibel
dBA	Decibel A-weighted
dBC	Decibel C-weighted
DoD	Department of Defense
DLADS	Defense Logistics Agency Disposition Services
EA	Environmental Assessment
ECS	Equipment Concentration Site
EIS	Environmental Impact Statement
EO	Executive Order
EP	Effective Population
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
FNSI	Finding of No Significant Impact
Fort Rucker	U.S. Army Garrison Fort Rucker
FPPA	Farmland Protection Policy Act of 1990
GHG	Greenhouse Gas
GOV	Government-Owned Vehicle
HCFCs	Hydrochloroflourocarbons
HFCs	Hydroflourocarbons
HMCC	Hazardous Materials Control Center
HTWM	Hazardous and Toxic Waste Management
HWMP	Hazardous Waste Management Plan
IAW	In Accordance With
IPMP	Integrated Pest Management Plan
INRMP	Integrated Natural Resources Management Plan
ISCP	Installation Spill Contingency Plan
IONMP	Installation Operational Noise Management Plan
NHPA	National Historic Preservation Act
NAGPRA	Native American Graves Protection and Repatriation Act
NEPA	National Environmental Policy Act

NRCS	Natural Resource Conservation Service
NPDES	National Pollution Discharge Elimination System
NAAQS	National Ambient Air Quality Standards
N2O	Nitrogen Dioxide
OSHA	Occupational Safety Health Administration
PFC	Perfluorocarbons
POL	Petroleum Oil Lubricants
QCP	Qualified Credentialed Professional
RCRA	Resource Conservation
RPMP	Real Property Master Plan
SAR	Species at Risk
SHPO	State Historical Preservation Office
SOP	Standard Operating Procedure
SPCC	Spill Prevention, Control, and Countermeasure Plan
LUPZ	Land Use Planning Zone
SWMU	Solid Waste Management Units
USAR	United States Army Reserve
µg/m3	Micrograms per cubic meter
WWTP	Waste Water Treatment Plant
USGS	U.S. Geological Survey
USFWS	United States Fish & Wildlife Service

Executive Summary

This environmental assessment (EA) has been prepared for the U.S. Army Aviation Center for Excellence, Fort Rucker Garrison, Directorate of Public Works to evaluate the effects of implementing an Integrated Pest Management Plan (IPMP) for U.S. Army (Army) Garrison Fort Rucker in Alabama. This EA has been prepared in accordance with the National Environmental Policy Act of 1969 (NEPA) and implementing regulations specified in 40 *Code of Federal Regulations* (CFR) Parts 1500 through 1508 and 32 CFR Part 651.

Purpose and Need

Integrated pest management is a sustainable approach to managing pests by combining biological, cultural, physical, and chemical tools in a way that minimizes economic, health, and environmental risks. The proposed IPMP is a guide designed specifically for the Fort Rucker installation and its managed areas to reduce reliance on pesticides and to enhance environmental protection; it reflects current DoD/Army policies, procedures and standards and incorporates the requirements of the Environmental Protection Agency (EPA) and the State of Alabama. Federal Agencies are mandated to use integrated pest management by Public Law (Section 136r-1 of title 7, United States Code). Army Regulation (AR) 200-5 requires all installations under ownership or control of the Department of the Army to prepare and implement an IPMP

Proposed Action

The Fort Rucker Garrison proposes to adopt and implement an IPMP that provides an integrated and comprehensive method for managing pests on lands within the boundaries of, or under the control of Fort Rucker, Alabama. The proposed action defines roles and responsibilities for pest management at all levels within Fort Rucker and provides a uniform basis for addressing all applicable legal requirements and best management practices consistent with achievement of the needs, goals, and objectives of Fort Rucker's military mission. Implementation of the IPMP would establish a formal mechanism to manage pests (plant, animal, or insect) at the Fort Rucker installation.

No Action Alternative

The No Action Alternative is the only alternative to the proposed action considered in this EA and consists of continuing the existing procedures. The No Action Alternative also serves as a benchmark against which the proposed action can be evaluated. The DoD and Army's pest management program objective is to use an integrated pest management approach for the judicious use of both non-chemical and chemical control techniques to achieve effective pest control with minimal environmental impacts. There are no other alternatives considered in this EA that would meet this objective.

As required by NEPA, this EA presents a comprehensive evaluation of the existing conditions and environmental consequences of implementing the Preferred Alternative and No Action Alternative. The EA evaluated three categories of potential environmental impacts: direct, indirect, and cumulative. Table 1 below summarizes the assessment of the alternatives and their impact on environmental resources.

Table 1 Comparison of the Potential Effects on the Evaluated Alternatives

Resource	Preferred Alternative Environmental Consequences	No Action Alternative Environmental Consequences
Land Use	No Impact	No Impact
Air Quality	Potential for negligible short-term from release of pesticides to the air.	No Impact
Noise	Potential for minor, short-term noise impacts site-specific increases in noise levels if powered equipment or bird control noise devises are used for outside pest management practices.	No Impact
Geologic and Topographic Conditions	No Impact	No Impact
Soils	Potential for Short-term, Minor adverse effects from mechanical weed removal and chemical contamination of soils. Mechanical removal of vegetation would be controlled by reseeding. Chemical contamination would be minimized by using least-toxic pesticides.	Long Term, Moderate impacts due to repeated uses of non-managed pesticides.
Floodplains	Minor impacts to floodplains, such as erosion and soil and water contamination, could occur if chemical and non-chemical pest control techniques are improperly applied. To minimize potential impacts, buffer zones around floodplains would be implemented and no activities, such as the mechanical removal of pests or the application of aquatic herbicides, would occur in floodplains unless specifically approved by the agency with legal jurisdiction.	This alternative will have a negative impact on water resources because it is not an integrated method and would be anticipated to use more pesticides. Repeated outdoor applications of pesticides can cause residues to build up, leading to potential water contamination.
Wetlands	The IPMP could have minor, positive site-specific impacts on wetlands. Buffer zones around wetlands would be established and no activities would occur in wetlands or unless specifically in accordance with manufacturer's label and EPA guidance.	A negative impact on water resources a nonintegrated method and would be anticipated to use more pesticides. Repeated outdoor applications of pesticides can cause residues to build up, leading to potential water contamination.

Resource	Preferred Alternative Environmental Consequences	No Action Alternative Environmental Consequences
Surface Water	Potential for Negligible short-term Minor impacts to surface water, such as erosion and soil and water contamination, could occur if chemical and non-chemical pest control techniques are improperly applied. To minimize potential impacts, buffer zones around floodplains would be implemented and no activities, such as the mechanical removal of pests or the application of aquatic herbicides, would occur in floodplains unless specifically approved by the agency with legal jurisdiction.	This alternative will have a negative impact on water resources because it is not an integrated method and would be anticipated to use more pesticides. Repeated outdoor applications of pesticides can cause residues to build up, leading to potential water contamination.
Groundwater	No Impact	No Impact
Stormwater	Potential for Negligible short-term Minor impacts to stormwater, such as erosion and soil and water contamination, could occur if chemical and non-chemical pest control techniques are improperly applied. To minimize potential impacts, no activities, such as the mechanical removal of pests or the application of aquatic herbicides, would occur in unless specifically approved by the agency with legal jurisdiction.	This alternative will have a negative impact on water resources because it is not an integrated method and would be anticipated to use more pesticides. Repeated outdoor applications of pesticides can cause residues to build up, leading to potential water contamination.
Vegetation	The IPMP would have a minor positive effect upon biological resources. It contains procedures whereby all pest management activities clearly define the target species and designate the specific actions to control those species. Pesticide types, amounts and application would be controlled in order to only treat a specific type of pest. No pest management operations would be conducted that have the potential to negatively affect endangered or protected species or their habitats without prior coordination with the USFWS.	A long-term minor negative cumulative impact on future pest management because it may be necessary to apply more pesticides in the future to obtain the same level of control.

Resource	Preferred Alternative Environmental Consequences	No Action Alternative Environmental Consequences
Wildlife	The IPMP would have a minor positive effect upon biological resources. It contains procedures whereby all pest management activities clearly define the target species and designate the specific actions to control those species. Pesticide types, amounts and application would be controlled in order to only treat a specific type of pest. No pest management operations would be conducted that have the potential to negatively affect endangered or protected species or their habitats without prior coordination with the USFWS.	A long-term minor negative cumulative impact on future pest management because it may be necessary to apply more pesticides in the future to obtain the same level of control. In addition, pesticides can bioaccumulate in animals eating the pests and plants that have been treated with pesticides and any increase in pesticide use could potentially result in an increase in the amount of pesticides bioaccumulated in those animals.
Special-Status Species	The IPMP would have a minor positive effect upon biological resources. It contains procedures whereby all pest management activities clearly define the target species and designate the specific actions to control those species. Pesticide types, amounts and application would be controlled in order to only treat a specific type of pest. No pest management operations would be conducted that have the potential to negatively affect endangered or protected species or their habitats without prior coordination with the USFWS.	A long-term minor negative cumulative impact on future pest management because it may be necessary to apply more pesticides in the future to obtain the same level of control. In addition, pesticides can bioaccumulate in animals eating the pests and plants that have been treated with pesticides and any increase in pesticide use could potentially result in an increase in the amount of pesticides bioaccumulated in those animals.
Cultural Resources	No Impact	No Impact
Environmental Justice	A minor positive effect on the local residents because there would be less health problems and lower health care costs.	No Impact
Protection of Children	A minor positive effect on the children because there would be less health problems and lower health care costs.	No Impact

Resource	Preferred Alternative Environmental Consequences	No Action Alternative Environmental Consequences
Hazardous and Toxic Substances	A minor positive impact by reducing the quantity of hazardous and toxic waste/materials purchased and stored. Implementing an integrated approach to pest management will limit the amount of pesticide purchased and mixed for a specific application, thus reducing the amount of residual waste generated. The IPMP only allows pesticides that are least-toxic to the environment to be used.	A minor negative impact since the quantity of pesticides purchased and stored would not be reduced.
Cumulative Impacts	No Impact	No Impact

Conclusions

In consideration of the integrated long-term planning approach of the Fort Rucker IPMP, it is anticipated that significant negative impacts to the above mentioned resources would be avoided. The prescribed management and compliance actions presented in the Fort Rucker IPMP stress the complete integration of all categories of pest management with ongoing Fort Rucker plans and operations. Such comprehensive planning would help to prevent any significant environmental impacts that might have resulted from pest management actions on Fort Rucker property. Implementation of the proposed action by Fort Rucker would result in an overall positive impact relative to the no action alternative. Accordingly, a Finding of No Significant Impact (FNSI) is appropriate under the National Environmental Policy Act (NEPA) and its implementing regulations (40 Code of Federal Regulations 1500-1508).

ENVIRONMENTAL ASSESSMENT AND FINDING OF NO SIGNIFICANT IMPACT

1 Purpose, Need, and Scope

1.1 Introduction

The U.S. Army Garrison Fort Rucker (Fort Rucker) is located approximately 25 miles northwest of Dothan, Alabama situated between the cities of Daleville, Enterprise, and Ozark. The Fort Rucker installation occupies land in both southeastern Coffee County and southwestern Dale County (Fort Rucker, 2017a). The Fort Rucker garrison encompasses 62,857 acres or approximately 98 square miles. The Fort Rucker Main property boundary and the location of two nearby airfields (Hanchey Army Airfield and Knox Army Field) are depicted on Figure 1. Fort Rucker serves as the headquarters of the U.S. Army (Army) Aviation Branch and is home to the Army Aviation Center of Excellence. The airspace used to accomplish aviation training missions for new pilots and modified aircraft. The airspace spans over 29,590 square miles in southeast Alabama, northwest Florida, and southwest Georgia (Fort Rucker, 2017b). An approximately 5,000-acre cantonment area is in the southern portion of Fort Rucker and provides temporary and permanent living quarters for Soldiers and their families. The cantonment area includes residential areas, support facilities, retail centers, 14 restaurants, health care facilities, and recreational facilities. The garrison supports a population of approximately 13,700, which includes approximately 3,500 full-time Soldiers, approximately 1,700 part-time or transient military, and approximately 8,500 Department of Defense (DoD) and non-DoD civilians (including families of full-time soldiers) (Fort Rucker, 2017b).

This environmental assessment (EA) has been prepared for the U.S. Army Garrison Fort Rucker (Fort Rucker) Department of Public Works, Environmental & Natural Resources Division to evaluate the effects of the proposed project's potential impacts on humans and the natural environment that would result from the Army's Proposed Action of implementing an IPMP. Details of this Proposed Action are provided in Section 2.

1.2 Purpose and Need

This EA assesses the environmental impacts of implementing an IPMP for Fort Rucker and its facilities. The Army Pest Management Program is an extension of DoD Pest Management Program policies and procedures. As stated in the AR 200-5, the Objective of the DoD program and Army's pest management plan is to promote effective Integrated Pest Management (IPM) techniques at all Army installations and facilities. Therefore, it is necessary for Fort Rucker to implement an IPMP. The Army pest management policy is committed to integrated pest management at its facilities and installations because IPM techniques would ultimately result in the protection of health, property, and natural resources from damage by pests. The IPM also promotes training and readiness, minimizes risks to the environment and meets mandates for federal agencies to reduce environmental risks from hazardous chemicals. The purpose of the proposed action is to implement an IPMP for pest management at Fort Rucker that ensures compliance with all applicable pest management legal requirements including federal statutes, regulations, Executive Orders (EO), Presidential Memoranda, and Department of Defense (DoD), United

States Army guidelines. The IPMP establishes procedures to integrate legal compliance requirements into the day-today operational procedures of the Fort Rucker headquarters and its subordinate facilities. The integrated pest management outlines of the IPMP identify both internal and external coordination procedures to handle pest management issues and the appropriate roles and responsibilities of the Fort Rucker personnel in the management of pests and pesticides.

1.3 Scope

This EA was prepared in accordance with the National Environmental Policy Act of 1969 (NEPA) and implementing regulations specified in 40 *Code of Federal Regulations* (CFR) Parts 1500 through 1508 and 32 CFR Part 651. The purpose of this EA is to clearly describe the current environmental resources on Fort Rucker and inform decision-makers, stakeholders and the public of the potential environmental consequences of the proposed IPMP. This EA presents the rationale used for evaluating and determining the impacts and any mitigation measures identified and described where warranted.

This EA includes a thorough evaluation of the direct, indirect, and cumulative impacts, both temporary and permanent, that could occur as a result of implementation of the Proposed Action. Any additional requirements stemming from other, unrelated military actions would undergo a separate NEPA analysis and evaluation.

This EA also considers the potential impacts of the No Action Alternative, as required by NEPA. The No Action Alternative provides a benchmark against which the potential impacts of the Proposed Action and any alternatives can be compared.

1.4 PUBLIC AND AGENCY INVOLVEMENT

Fort Rucker invites public participation in their Federal decision-making through the NEPA process. Consideration of the views and information of all interested persons promotes open communication and enables better decision-making. Agencies, federally recognized Native American Tribes, organizations, and members of the public having a potential interest in the Proposed Action are urged to participate in the Federal decision-making process.

1.4.1 Public Review of the Final EA and Draft Finding of No Significant Impacts

This EA and a Draft Finding of No significant Impacts (FONSI) will be available to the public for a 30-day public comment period. The Notice of Availability (NOA) for the Final EA and Draft FNSI will be published in Fort Rucker *Army Flier* and *Dothan Eagle* in accordance with the Army NEPA Regulation (32 CFR Part 651.36). The Final EA and Draft FNSI will also be available at the following local libraries:

1. Fort Rucker Center Library
2. Daleville Library

In addition, the documents will be posted on the Sustainable Fort Rucker Website's NEPA Program Page at https://www.fortrucker-env.com/programs.aspx?cur=33&program=p.The NOA has also been mailed to all agencies/individuals/organizations on the Fort Rucker NEPA distribution (mailing) list for the Proposed Action (see **Appendix A**). Public participation opportunities, with respect to this EA and decision-making on the Proposed Action, are guided by 32 CFR Part 651. Upon completion of the environmental analysis, the EA and draft Finding of No Significant Impact (FNSI) would be made available to the public for a comment period of 30 days. Comments received would be included in Appendix A. At the end of the 30-day period, the Army will give consideration to the comments received prior to deciding whether to execute the FNSI and implement the Proposed Action. If implementing the Proposed Action was determined to result in significant effects, then the Army would publish a Notice of Intent (NOI) in the *Federal Register* to prepare an environmental impact statement or would not take the action.

At the end of this 30-day public comment period, any substantive comments submitted will be considered in the Garrison Commander's decision making. As appropriate, the Garrison Commander may then execute the FNSI and proceed with implementation of the selected Alternative. If it is determined that implementation of the selected Alternative would result in significant impacts that cannot be mitigated to less-than-significant levels, a NOI to prepare an Environmental Impact Statement (EIS) will be published in the *Federal Register*, or the Proposed Action will not be implemented.

1.4.2 Native American Consultation/Coordination

For proposed Army actions, consultation with federally recognized Native American Tribes is required under Department of Defense Instruction 4710.02 (*Interactions with Federally Recognized Tribes*), which implements the Annotated DoD American Indian and Alaska Native Policy (dated 27 October 1999); Army Regulation (AR) 200-1; the NEPA; the National Historic Preservation Act (NHPA); and the Native American Graves Protection and Repatriation Act (NAGPRA). Fort Rucker consults with federally recognized Native American Tribes affiliated with Fort Rucker in accordance with Section 106 of the NHPA, and the consultation procedures prescribed within Section 5 of the Integrated Cultural Resources Management Plan (ICRMP) for Fort Rucker (Fort Rucker 2015). Under these procedures, Fort Rucker provides the Tribes with copies of relevant documentation with existing and proposed actions (e.g. this EA), and solicits Tribal input. As part of this on-going process and dialogue, Fort Rucker requests consultation with these Tribes as Sovereign Nations per Executive Order (EO) 13175, *Consultation and Coordination with Indian Tribal Governments*, 6 November 2000. Any concerns expressed by the Tribes will be incorporated into the Federal decision-making process regarding this Proposed Action.

Throughout this process, the public can obtain information on the status and progress of the Proposed Action and the EA through Ms. Leigh Jahnke, Fort Rucker Directorate of Public Works, Environmental and Natural Resources Division, at 334-255-2080, or by email at leigh.b.jahnke.civ@mail.mil.

1.5 REGULATORY FRAMEWORK

This EA has been developed in accordance with the NEPA, CEQ's NEPA implementing regulations, and the Army's NEPA Regulation. Federal, State, and local laws and regulations specifically applicable to this Proposed Action are identified, where appropriate, within this EA, and include, but are not limited to:

- Endangered Species Act (ESA) of 1973, as amended (Public Law 93-205, 87 Stat. 884,16 USC 1531 - 1534).

- Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), of 1976, as amended (Section 136 et seq. of Title 7, United States Code)

- Water Pollution Control Act, or Federal Clean Water Act (CWA), of 1972, as amended.

- Migratory Bird Treaty Act (MBTA; 16 USC 703-712, 3 July 1918; as amended 1936,
- 1960, 1968, 1969, 1974, 1978, 1986, and 1998).

- Clean Air Act of 1990 (CAA) (42 USC 7401 *et seq*., as amended).

- Resource Conservation and Recovery Act (RCRA) (42 U.S.C. § 6901 *et seq.*, October 21, 1976; as amended December 31, 2002).

2. Description of Proposed Action and Alternatives

This section describes the Proposed Action and alternatives implement a project IPMP as described in Section 1.2. Two alternatives (the Preferred Alternative and the No Action Alternative) were selected for detailed analysis.

2.1 Proposed Action

Fort Rucker as a major installation for the Department of the Army, has taken general guidelines from the Department of Defense (DoD) pest management policy and is continuing to develop the Pest Management Program. The Army's pest management program objective is to use an integrated pest management approach for the judicious use of both non-chemical and chemical control techniques to achieve effective pest control with minimal environmental impacts. Integrated pest management, as used by the Army, is a decision making process designed to (1) identify the conditions causing a particular pest problem to occur; (2) devise ways to change those conditions to discourage recurrence of the problem; and (3) select the least-toxic mix of strategies and tactics to directly suppress the pest populations. The Army proposes to use the integrated pest management approach by developing IPMPs to reduce the use of chemical treatment techniques by 50% over historic usage levels while also

achieving effective pest control. These plans cover certification, reporting, and all other pest management activities. The reduction of chemical control techniques will, in some cases, be accompanied by an increase in the use of mechanical, cultural, and biological approaches. The goals of the Pest Management Plans are to (1) promote health, safety, and welfare of unit personnel through an effective pest management program; (2) promote installation protection; (3) ensure a professionally trained pest management force while supporting the mission of the Army to provide combat ready units for the national defense; and (4) minimize impacts on the natural and human environment. The affected environment of the proposed action is facilities administered by Fort Rucker. The resources evaluated as part of this EA include land use, air quality, noise, geology and soils, water, biological resources, cultural resources, socioeconomics, environmental justice, protection of children and hazardous and toxic materials/wastes.

2.2 No Action Alternative

The proposed action presented above is the Preferred Alternative. The CEQ regulation (40 CFR 1502.14) requires the inclusion of the No Action Alternative. The No Action Alternative reflects the status quo and serves as a benchmark against which federal actions can be evaluated. The No Action Alternative is the only alternative to the proposed action considered in this EA. For this analysis, the status quo involves the management of pesticides at Fort Rucker facilities under existing procedures (i.e. the IPMP would not be implemented).

No other alternatives were considered for evaluation in this EA because they would fail to meet the objectives of the DoD and Army Pest Management Program to prepare and implement an IPMP.

3 Affected Environment and Consequences

This section describes existing environmental conditions of the preferred alternative that could be affected by implementation of the Proposed Action. These include air quality, noise, geology and soils, water resources (surface water, groundwater, stormwater), biological resources, socioeconomics (economic development), transportation, utilities, and hazardous and toxic substances.

Context and intensity are taken into consideration in determining a potential impact's significance, as defined in 40 CFR Part 1508.27. Context means that the significance of an action must be analyzed in several contexts such as society as a whole (human, national), the affected region, the affected interests, and the locality. Both short- and long-term effects are evaluated. The intensity of a potential impact refers to the impact's severity and includes consideration of beneficial and adverse impacts, the level of controversy associated with a project's impacts on human health, whether the action establishes a precedent for future actions with significant effects, the level of uncertainty about project impacts, or whether the action threatens to violate Federal, State, or local law requirements imposed for the protection of the environment. The severity of environmental impacts is characterized as negligible, minor, moderate, or significant.

Quantitative and qualitative analyses have been used, as appropriate, in determining whether, and the extent to which, a threshold would be exceeded. Based on the results of these analysis, this EA identifies whether a particular potential impact would be adverse or beneficial, and to what extent. Impacts can further be categorized as direct, indirect, or cumulative.

Negligible –The term used to indicate an environmental impact that could occur, but would be less than minor and might not be perceptible.

Minor – The term used to indicate an environmental impact that clearly would not be significant or is not readily apparent.

Moderate – The term used to indicate an environmental impact that is not significant, but is readily apparent. Examples include cases where the predicted consequences of implementing an action suggest the need for additional care in following standard procedures, or applying precautionary measures to minimize adverse impacts.

Significant – An adverse environmental impact, which, given the context and intensity, violates or exceeds regulatory or policy standards or otherwise exceeds the identified threshold. The significant impact, however, may be mitigated to less than significant.

Direct – Caused by the action, occurring at the same time and place.

Indirect – Caused by the action and foreseeable, but occur at a later time or different place.

Cumulative – the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

3.1 Land Use

Natural land uses and land uses that reflect human-caused modifications are considered in this section. Natural land use classifications include wildlife areas, forests, and other open or undeveloped areas. Human land uses include residential, commercial, industrial, utilities, agricultural, recreational, and other developed uses.

The Army Real Property Master Plan (RPMP) process is specified in Department of the Army (DA), AR 210-20 (DA 2005), and the Master Planning Technical Manual (DA 2008) provides assistance in developing an RPMP at Army installations. The RPMP determines the types of activities that are allowed or that protect specially designated or environmentally sensitive uses. In compliance with AR 210-20, Fort Rucker maintains an RPMP that assists environmental and planning staff, and Installation

Management Command. This extensive process ensures appropriate land use and development decisions across the Installation as the Army's needs transform.

3.1.2 Affected Environment

The surrounding land use in southeastern Coffee and southwestern Dale Counties is primarily agricultural activities and timber management (Fort Rucker, 2017a). The Fort Rucker reservation encompasses 62,857 acres or approximately 98 square miles, which includes the main reservation (57,772 acres) and multiple satellite properties (totaling 5,479 acres) that are used primarily for aviation training. Land use within the main reservation generally is divided into the main cantonment area and an operations area (military and aviation training facilities and timber management lands). The approximately 5,000-acre cantonment area is in the southern portion of Fort Rucker and consists of residential areas, support facilities, retail centers, restaurants, and health care facilities (Fort Rucker, 2017a, 2017b). The operations area within the main reservation (54,965 acres) is largely undeveloped and includes range and training areas and aviation facilities. Development within the operations area is concentrated on the various airfields, with approximately 51,000 acres of forest that is managed for commercial harvest occupying most of the area (Fort Rucker, 2008, 2017b).

3.1.3 Consequences

Preferred Alternative

The Preferred Alternative will have no measurable impact since there would be no change in existing land use plans and policies or interference to emergency response. Also, since the pest management activities are generally scheduled, other activities can be planned accordingly.

No Action Alternative

There would be no changes to the land use or land use plans as the result of the No Action Alternative.

3.2 Air Quality

Under the authority of the Clean Air Act (CAA), the U.S. Environmental Protection Agency (EPA) has established nationwide air quality standards to protect public health and welfare, with an adequate margin of safety. These federal standards, known as National Ambient Air Quality Standards (NAAQS), represent the maximum allowable atmospheric concentrations for six criteria pollutants: carbon monoxide, lead, nitrogen dioxide, ozone, sulfur dioxide, and particulate matter, which includes respirable particulate matter less than or equal to 10 micrometers in diameter (PM10) and respirable particulate matter less than or equal to 2.5 micrometers in diameter (PM2.5). NAAQS include both primary and secondary standards for each criteria pollutant. Primary standards protect against adverse health effects, while secondary standards protect against welfare effects such as damage to animals, crops, vegetation, and buildings.

The criteria provided under the CAA classify the country into attainment 1 and nonattainment areas, usually designated by county or metropolitan statistical area. Any areas not meeting NAAQS are designated as nonattainment for the specific pollutant or pollutants. In addition, designated nonattainment areas may be expanded per Section 107(d) of the CAA, which defines a nonattainment area as "any area that does not meet (or that contributes to ambient air quality in a nearby area that does not meet) the national primary or secondary ambient air quality standards for the pollutant." Nonattainment status can be further classified as marginal, moderate, serious, severe, or extreme, with having the highest level of NAAQS exceedances. Each state is required to demonstrate how nonattainment areas will be brought into compliance with NAAQS and other components of the CAA through a State Implementation Plan.

"Climate change" refers to any significant change in measures of climate such as temperature, precipitation, or wind that last for an extended period (decades or longer). Climate change may result from any of the following conditions (EPA, 2017b):

• Natural factors, such as changes in the sun's intensity or slow changes in the earth's orbit around the sun
• Natural processes within the climate system, including changes in ocean circulation
• Human activities that change the atmosphere's composition (e.g., through burning fossil fuels) and the land surface (e.g. deforestation, reforestation, urbanization, and desertification) Department of Defense Directive 4715.21, *Climate Change Adaptation and Resilience*, describes the agency's need to adapt current and future operations to account for potential impacts of climate change to maintain an effective military. Greenhouse gases (GHGs) are compounds that may contribute to accelerated climate change by altering the thermodynamic properties of the earth's atmosphere. GHGs include the following pollutants (EPA, 2017b):

• Carbon dioxide (CO2) is a naturally occurring gas produced by natural fires, geothermal events, anaerobic respiration. CO2 also is a by-product of burning fossil fuels biomass, land-use changes, and other industrial processes. It is the principal anthropogenic GHG that affects the earth's radiative balance.
• Methane (CH4) is a naturally occurring gas with a climate change potential approximately 20 times that of CO2 with regard to climatic warming. CH4 is produced through anaerobic (without oxygen) decomposition of waste in landfills, animal digestion, decomposition of animal wastes, production and distribution of natural gas and petroleum, coal production, and incomplete fossil fuel combustion.
• Nitrous oxide (N2O) is a naturally occurring gas with a climate change potential approximately 300 times that of CO2 with regard to climatic warming. Major sources of N2O include soil cultivation practices, especially the use of commercial and organic fertilizers, fossil fuel combustion, nitric acid production, and biomass burning.
• Hydrofluorocarbons (HFCs) are man-made compounds containing only hydrogen, fluorine, and carbon atoms. HFCs, which are commonly used in air conditioning and refrigerants, were introduced as alternatives to ozone depleting substances, such as chlorofluorocarbons (CFCs) and hydrochlorofluorocarbons (HCFCs). The climate change potential of HCFCs ranges from approximately 140 to 11,700 times that of CO2.

• Perfluorocarbons (PFCs) are man-made compounds containing only fluorine and carbon. Similar to HFCs, PFCs have been introduced as a replacement for CFCs. PFCs are also used in manufacturing and are emitted as by-products of industrial processes. PFCs are powerful 1 GHGs, with a climate change potential approximately 7,390 to 12,200 times that of CO2.
• Sulfur hexafluoride (SF6) is a colorless gas that is soluble in alcohol and ether, and slightly soluble in water. This compound is a very powerful GHG, with a climate change potential more than 20,000 times that of CO2, and is used primarily in electrical transmission and distribution systems, as well as a dielectric in electronics. The EPA Mandatory Reporting Rule became effective on December 29, 2009. Suppliers of fossil fuels or industrial GHGs, manufacturers of vehicles and engines, and facilities that emit 25,000 metric tons or more of CO2 equivalent per year in the U.S. must submit annual reports to the EPA. In addition, the Supreme Court decision in Massachusetts et al. v. EPA et al. (Supreme Court Case 05-1120) found that the EPA has the authority to list GHGs as pollutants and to regulate emissions of GHGs under the CAA. On April 17, 2009, the EPA found that CO2, CH4, N2O, HFCs, PFCs, and SF6 may contribute to air pollution and may endanger public health and welfare. The Council on Environmental Quality (CEQ) issued final guidance on considering GHG emissions and the effects of climate change in NEPA reviews (CEQ, 2016). However, pursuant to EO 13783, "Promoting Energy Independence and Economic Growth," the guidance has been withdrawn for further consideration effective April 5, 2017.

3.2.1 Affected Environment

Fort Rucker and the surrounding area are in attainment for all criteria air pollutants (EPA, 2017c). Within the region, particulate matter is the most serious air quality issue, but concentrations are well below the level that would pose health risks or trigger nonattainment status. Primary stationary air pollution sources at Fort Rucker include fossil fuel boilers and water heaters, woodworking shops, paints booths, incinerators, underground and aboveground storage tanks, and any other source that might release pollutants into the atmosphere. Other potential major sources of air pollutants are military equipment and vehicles (Fort Rucker, 2008).

3.2.2 Consequences

Preferred Alternative

Temporary and minor site-specific negative impacts would occur as a result of implementation of pest control techniques such as mechanical removal. Chemical application would result in a limited amount of pesticide released into the air. All hand spraying would be performed in accordance with the manufacturer's label and EPA approved guidance to reduce the airborne drift. Pesticide applications would be made during weather conditions suitable for optimal effectiveness. There is no regular aerial application of chemicals identified in the plan. Any aerial application programs would be coordinated and approved by the Army Environmental Center, Major Command pest management coordinator or Installation Management Agency regional pest management coordinator, and appropriate local officials. No significant impacts would occur to the air quality of the areas surrounding Fort Rucker. Since the impacts are temporary and the air quality will revert back to its original condition prior to the pest control

application, the action cannot be cumulatively added to other past, present, or future actions to create a significant impact.

No Action Alternative

Under the No Action Alternative, Existing pest management practices would remain the same, resulting in a minor negative impact on air resources

3.3 Noise

Noise is considered unwanted sound that interferes with normal activities or otherwise diminishes the quality of the environment. It may be intermittent or continuous, steady or impulsive. It may involve a broad range of sound sources and frequencies, or it can have a specific, readily identifiable source. There is a wide diversity among human responses to noise that vary not only according to the type and characteristics of the noise source, but also to the sensitivity and expectations, the time of day, and the distance between the noise source (i.e., aircraft or equipment) and the receptor (i.e., a person or animal). Behavioral and physiological responses have a potential to cause stress and health problems or injury in humans and wildlife. The effects of noise can be immediate or latent as a result of long-term exposure. There is a strong tendency for species to acclimate or habituate to a repetitive noise disturbance. The Federal Interagency Committee on Urban Noise has developed land use guidelines for areas on or near noise-producing activities, such as highways, airports, and firing ranges.

3.3.1 Affected Environment

Training and operational activities are the primary sources of noise at Fort Rucker and training typically occurs 24 hours per day. The principal sources of operational noise on Fort Rucker are generated through small arms fire, demolition and large caliber weapons, simulators, and rotary-wing (helicopter) aircraft training. Helicopter flight training represents the largest operational source of noise. Helicopter corridors extend from airfields and heliports to target areas. Numerous rotary-wing aircraft are stationed at Fort Rucker and are used extensively throughout the installation and adjacent areas. Helicopter flights are a significant component of military training and operations on-post. Heavy weapons and small arms firing is conducted in the impact area on the northern portion of the installation. Other noise sources include routine construction and demolition activities and military and civilian motor vehicle operations (Fort Rucker, 2011). The Army has developed land use guidelines for areas on and near its installations as an element of its Installation Operational Noise Management Plan (IONMP). The noise impact on the community is translated into four noise zones:

- Zone I is acceptable with all noise-sensitive land uses. It includes all areas in which the peak sound level is less than 87 decibels (dB) (for small arms), the A-weighted day-night level (ADNL) is less than 65 dB (for aircraft), or the C-weighted day-night level (CDNL) is less than 62 dB (for large arms and demolitions).
- Zone II consists of the area where the peak sound level is between 87 and 104 dB, the ADNL is between 65 dB and 75 dB,or the CDNL is between 62 dB and 70 dB. Activities within this zone generally should be limited to manufacturing, warehousing, transportation, and resource protection.

- Zone III is not recommended for siting noise-sensitive land uses. This zone is the area closest to the source of the noise where the peak sound level is greater than 104 dB, the ADNL is greater than 75 dB, or the CDNL is greater than 70 dB.
- Land Use Planning Zone (LUPZ) is a supplemental zone used with certain noise metrics. The LUPZ is part of the Zone I just outside of the Zone II and the LUPZ is generally compatible with most noise sensitive land uses. This zone is at the upper end of the Noise Zone I and is defined by a CDNL between 57 dB and 62 dB or an ADNL between 60 dB and 65 dB (Fort Rucker, 2011).

Fort Rucker implements an IONMP for current and future noise management. The IONMP fosters communication between Fort Rucker and its civilian neighbors and provides a method for responding to civilian issues related to noise generated by Fort Rucker training activities. Other goals of the IONMP include education of both installation personnel and surrounding residents, management of noise complaints, mitigation of noise and vibration, and noise abatement procedures. Noise monitoring systems and data management are also included in the plan.

3.3.2 Environmental Consequences

Preferred Alternative

The Preferred Alternative will have minor/temporary site-specific increases in noise levels if powered equipment or bird control noise devises are used for outside pest management practices. This would result is a minor/temporary site-specific negative impact but negligible cumulative impact. This alternative is not likely to generate noise that would conflict with federal, state, or local noise standards or create noise levels incompatible with existing or proposed land use. Since the impacts are temporary and the noise level will revert back to its original level, the action cannot be cumulatively added to other past, present, or future actions to create a significant impact.

No Action Alternative

Continuation of existing pest management practices would not change the current situation on noise generated at Fort Rucker.

3.4 Geology and Soils

The effects of pest management vary throughout the U.S. depending on the geological composition of soils and topographic features in a particular area. Topography is the change in vertical relief (elevation) over the surface of a land area. The topography of an area may be influenced by human activity, underlying geologic material, seismic activity, climatic conditions and erosion. The surface geology of the U.S. is diverse and reflects the erosion and deposition processes that have predominated North America. Soils play a critical role in both the natural and human environments. Soil is the medium in which plants are anchored and from which they draw water and mineral nutrients. Soil is derived from

complex interactions of geologic, biotic, and climatic factors acting over time. Soil structure, elasticity, strength, shrink-swell potential, corrosivity and erodibility all determine the ability for the ground to support man-made structures and facilities. Soils typically are described in terms of their complex type, slope, physical characteristics and relative compatibility or constraining properties with regard to particular construction activities and types of land use. Soils are also categorized by particle size and fertility with regard to agricultural and horticultural characteristics.

3.4.1 Affected Environment

3.4.1.1 Geologic and Topographic Condition

Geologic resources consist of the earth's surface and subsurface materials. Soils are the unconsolidated surface materials that form from underlying bedrock or other parent material. "Topography" refers to an area's surface features, including its shape, height, and depth. Fort Rucker extends northwestward from the floodplain of the Choctawhatchee River, with elevations ranging from 148 feet above mean sea level to elevations above 500 feet. Fort Rucker's cantonment area is located on relatively flat ridge tops at or above 320 feet elevation (Fort Rucker, 2017b).

Fort Rucker is in the Southern Red Hills physiographic district of the East Gulf Coastal Plain. This area is characterized by southward sloping upland of moderate relief. Fort Rucker lies in a rugged area that developed on indurate resistant siliceous claystone and sandstone, creating narrow and winding ridgetops that range from highly dissected in the eastern portion of the post to gently rolling in the western and extreme eastern portions (Fort Rucker, 2008).

The East Gulf Coastal Plain is an elevated former sea bottom. Consistent with this sea bottom origin, geological formations are sedimentary with underlying basement rock that includes metamorphic, igneous crystalline, and sedimentary rock. Fort Rucker soils overlie the Buhrstone Escarpment, a formation held up by shale and sandstone. Geologic formations that outcrop on Fort Rucker include Tuscahoma Sand, Hatchetigbee and Tallahatta Formations, Lisbon Formation, Residuum, Alluvial High Terrace Deposits, and Low Terrace Deposits (Fort Rucker, 2017a).

3.4.1.2 Soils

Predominant soil series on the main installation include the Troup-Orangeburg-Nankin-Lucy series and Troup-Luverne-Conecuh series. Additionally, an area of Troup-Red Bay-Orangeburg series is present in the far eastern portion of the main installation (Fort Rucker, 2017a).

3.4.2 Consequences

Preferred Alternative

The proposed action would have initial minor negative impacts on the geology and soils. Mechanical weed removal may result in an increase in soil erosion, and there is a possible risk of soil contamination

from pesticide applications. Those areas that are impacted by increased soil erosion will be reseeded with native seed stocks. Only pesticides that are the least-toxic will be used under the IPMP. The chemicals used in many of the pesticides will bind to soil particles where they are broken down by aminomethylphosphoric acid and further broken down by microorganisms. The length of time it takes for the chemicals to break down varies depending on the pesticide formulation, soil texture and organic matter content. Because of the limited use, low toxicity, and rapid decomposition of the chemicals, pesticides would only have a minor impact to the soils and no impact to the geology. An integrated approach to pest management would reduce the potential for soil contamination compared to existing practices by reducing the quantities of pesticides used and result in a minor cumulative positive impact.

No Action Alternative

The No Action Alternative is not an integrated method and would be anticipated to use more pesticides. Therefore, it would have a negative impact on the soils as repeated outdoor applications of pesticides can cause an accumulation of residues to build up, leading to potential soil contamination.

3.5 Water Resources

The water resources at Fort Rucker addressed in this EA include surface and groundwater resources. Surface water includes ponds, lakes, streams, rivers, bays, and oceans and is important for economics, ecology, recreation and human health considerations. Runoff from precipitation and human activities flows into surface waters, which usually flows into larger water bodies and eventually into the ocean. A watershed includes the entire region contributing to the supply of a river or lake. Two different avenues from which pollutants can reach these water resources are run off and waste water discharge. Groundwater is the supply of water found beneath the earth's surface, usually in aquifers, which is often used to supply wells and springs. Depth to groundwater, rate of groundwater movement, permeability of overlying soils, and uses of groundwater are all site-specific factors that are used to assess local groundwater vulnerability and susceptibility to contamination. In some regions, the quantity, in addition to the quality of groundwater available is an issue for consideration.

3.5.1 Affected Environment

Floodplains

Many portions of the Fort Rucker reservation are within areas designated as 100-year floodplains, with most floodplain areas located in the northwestern portion of Fort Rucker associated with Bowles Creek and its tributaries (Fort Rucker, 2017a).

Wetlands

Wetlands are dispersed throughout Fort Rucker, mostly associated with numerous streams that traverse the installation (Fort Rucker, 2017a). Wetland resources are well delineated on the post through past surveys.

Surface Water

Fort Rucker's surface water resources include numerous rivers, streams, ponds, and lakes. Fort Rucker is located in the Choctawhatchee River Basin, with the Choctawhatchee River southeast and the Pea River northwest of the installation (Fort Rucker, 2017a). Claybank Creek and its tributaries constitute 82 percent of the approximate 335 miles of streams and rivers within the main reservation. Claybank Creek flows in a southerly direction from a source north of Fort Rucker, bisecting the installation, and into the Choctawhatchee River southwest of Fort Rucker. There are five lakes on Fort Rucker. Four of the lakes (Beaver, Buckhorn, Ech, and Parcours) are small reservoirs (less than 20 acres) built on tributaries of Claybank Creek. Lake Tholocco is an approximately 620-acre impoundment of Claybank Creek that is used for both training and recreation activities (Fort Rucker, 2017a).

Groundwater

Several aquifers and confining units underlie Fort Rucker. These are part of the Southeastern Coasta Plain aquifer system, which forms a thick wedge of sedimentary strata resting upon a base of relatively impervious igneous, metamorphic, and sedimentary rock sloping down from the Piedmont Geologic Region (Fort Rucker, 2017a). The Lisbon aquifer, which is subdivided into the Lisbon Formation and deeper Tallahatta and Hatchetigbee Formations, is the shallow aquifer at Fort Rucker. This aquifer extends to a depth of 10 to 36,140 feet below land surface and outcrops on higher ground in northwestern Fort Rucker and the cantonment area. The Lisbon aquifer is separated from deeper aquifers by the Tuscahoma Sand Confining Unit. The Tuscahoma Formation primarily outcrops north of Fort Rucker, but it is also surficial in valleys of Claybank, Steep Head, and Bowles Creeks. Surface areas of the outcropping Tuscahoma Confining Unit and Lisbon aquifer at Fort Rucker are roughly equivalent. No other aquifer units outcrop on the installation (Fort Rucker, 2017a). Immediately below the Tuscahoma Confining Unit are the Nanafalia and Con Formations, which outcrop north of Fort Rucker, at headwaters of the Choctawhatchee River. The Nanafalia Formation consists of sand beds, hydrologically connected to sand and limestone 1 beds of the Clayton Formation. These formations are 400 to 500 feet thick in the vicinity of Fort Rucker (Fort Rucker, 2017a).The Nanafalia/Clayton Formations are separated from the deeper Providence Sand/Ripley Formation by a narrow confining unit, and in places, they are hydraulically connected. The Providence Sand/Ripley Formation is 600 to 800 feet thick, and groundwater flow is to the south. Deeper formations include the Blufftown Formation and part of the Eutaw Formation. These formations are separated from the basal (deepest) aquifer by a confining unit of clay and chalk. This confining unit, the middle Eutaw Formation, lies 2,000 to 2,500 feet beneath Fort Rucker. The basal aquifer unit includes the Tuscaloosa and Atkinson Formations. (Fort Rucker, 2017a). Most of Fort Rucker's drinking water comes from groundwater wells into the Nanafalia/Clayton Formations. Due to the extensive pumping of groundwater, cones of depression have developed in the Nanafalia aquifer at Fort Rucker and surrounding municipalities. The potentiometric surface at Fort Rucker has lowered approximately 80 feet during the period between 1975 and 2006. The Providence Sand/Ripley Formations also have been tapped for groundwater by deep wells, with no reported instances of cones of depression. These formations provide a substantial potential auxiliary water supply (Fort Rucker, 2017a).

Stormwater

Stormwater runoff occurs as rain washes across parking lots, flight lines, motor pools, and other ground areas. If contaminants are present from leaking vehicles or other sources, they can be transported downstream with the stormwater. The erosive force of the flow can also cause physical damage. The stormwater collection system in developed areas of the installation consists mostly of roadside ditches, culverts, and swales coupled with natural surface features that channel and direct stormwater flow away from use areas to detention or infiltration areas. Storm drains serve portions of the cantonment area. All aircraft and ground vehicle washracks are equipped with oil/water separators to prevent pollution from petroleum, oils, and lubricants from reaching surface waters (Fort Rucker, 2008). Fort Rucker holds a National Pollutant Discharge Elimination System (NPDES) Phase I Permit (No. AL0002178) for all stormwater inlets (Fort Rucker, 2016b).

3.5.2 Environmental Consequences

Preferred Alternative

Minor positive impacts to water resources will occur if chemical and non-chemical pest control techniques are properly applied as well as reseeding is done in weed removal areas. Proper application of the applicable pesticide according to the label, target pests, and environmental features eliminate the chance of material reaching any groundwater or surface water resources. Section 7.2 of the IPMP sets forth verbiage whereby all pest management activities avoid adversely affecting surface water, floodplains, and groundwater. Those actions that have the potential to impact water resources would be coordinated with the Fort Rucker natural resource manager before implementation. Section 7.6 of the IPMP outlines clean-up procedures if any accidental pesticide spills occur so that run-off to any water resource area is avoided or reduced as much as possible. To minimize potential impacts, buffer zones (generally 100 feet) around water resource areas would be implemented and no activities, such as the mechanical removal of pests or the application of aquatic herbicides, would occur in these areas unless specifically approved and/or permitted by the agency with legal jurisdiction. No pesticides would be applied around water resources except when in accordance with manufacturer's label and EPA guidance.

Implementation of the IPMP at Fort Rucker could have minor, positive site-specific impacts on wetlands. Buffer zones (generally 100 feet) around wetlands would be established and no activities would occur in wetlands or unless specifically in accordance with manufacturer's label and EPA guidance.

Minor impacts to floodplains, such as erosion and soil and water contamination, could occur if chemical and non-chemical pest control techniques are improperly applied. To minimize potential impacts, buffer zones (generally 100 feet) around floodplains would be implemented and no activities, such as the mechanical removal of pests or the application of aquatic herbicides, would occur in floodplains unless specifically approved by the agency with legal jurisdiction. No pesticides would be applied in floodplain areas except when in accordance with manufacturer's label and EPA guidance.

No Action Alternative

The No Action Alternative would maintain existing practices with respect to pest management and its impacts on surface water and groundwater. This alternative will have a negative impact on water resources because it is not an integrated method and would be anticipated to use more pesticides. Repeated outdoor applications of pesticides can cause residues to build up, leading to potential water contamination.

3.6 Biological Resources

The biological resources at Fort Rucker consist of all plant and animal species and their habitats in relation to the installation. Recognition and preservation of the biological resources at Fort Rucker provides environmental value, as well as recreational and aesthetic value. The biological resources discussed in this EA include ecological regions, threatened or endangered species.

3.6.1 Affected Environment

3.6.1.1 Vegetation

The East Gulf Coastal Plain region is a former longleaf pine region that is among the most disturbed landscapes in the eastern United States. Land uses throughout this region have included 100 to 400 years of agriculture, open range grazing by hogs and other livestock, repeated logging, and elimination of naturally occurring wildfire, leaving less than 3 percent of upland landscape in entirely natural vegetation (Fort Rucker, 2009). The most common habitat types on Fort Rucker are hardwood-dominated mesic forest, mixed pine hardwood mesic forests, and mid-aged pine stands. The vegetation species common to these habitat types are summarized below. Other land cover types found on Fort Rucker include steep, forested, ravine slopes; xeric forest-clayhill type; young pine plantations; agricultural land, fallow fields, and old fields; eroded sites, waste areas, quarries; developed areas; floodplain forests; bay swamps; seeps, bogs, and wetlands; borrow pits; intermittent streams; oxbow ponds; beaver ponds; permanent streams; and man-made lakes (Fort Rucker, 2017a). incorporated by reference (Fort Rucker, 2017a). Developed areas include residential properties, golf courses, and similar open areas. These areas cover approximately 5,000 acres and include a mix of ornamental grasses, shrubs, and trees (Fort Rucker,2009).

3.6.1.2 Wildlife

Fort Rucker has a rich and diverse fauna. Natural animal communities in the area have been affected by urbanization. Two large mammals present at the time of settlement, the panther (*Puma concolor coryi*) and black bear (*Ursus americanus*), have been extirpated from the area. White-tailed deer (*Odocoileus virginianus*) and the introduced feral hog (*Sus scrofa*) are common, as are many smaller mammals that have been relatively undisturbed by urbanization. Multiple wildlife species are actively managed as game for sport hunting and fishing on Fort Rucker. Detailed information on the fauna occurring on Fort Rucker are in the Fort Rucker Integrated Natural Resources Management Plan (INRMP) which is incorporated by reference (Fort Rucker, 2017a).

3.6.1.3 Special-Status Wildlife

Fifteen wildlife species that are federal or state-listed, state-protected, or ranked by the Nature Conservancy's Alabama Natural Heritage Program have been observed within Fort Rucker or identified by US Fish and Wildlife Service as having potential to occur within the Preferred Alternative site (Table 2).

Table 2. Special-Status Wildlife Considered

Scientific Name	Common Name	Class	Observed Within Fort Rucker	Federal Status	State Status
Geomys pinetis	Southeastern pocket gopher	Mammal	Yes	No Listing	Protected
Columbina passerina	Common Ground Dove	Bird	Yes	No Listing	Protected
Mycteria americana	Wood Stork	Bird	No	Threatened	Protected
Hailiaeetus leucocephalus	Bald Eagle	Bird	Yes	Bald and Golden Eagle Protection Act	No Listing
Crotalus adamanteus	Eastern diamondback rattlesnake	Reptile	Yes	Under Review (threatened)	No Listing
Drymarchon corais couperi	Eastern indigo snake	Reptile	No	Threatened	Protected
Gopherus polyphemus	gopher tortoise, threatened, Candidate	Reptile	Yes	threatened, Candidate	Protected
Masticophis flagellum flagellum	Eastern coach whip	Reptile	Yes	No Listing	Protected
Alligator mississippiensis	American alligator	Reptile	Yes	Threatened	No Listing
Acipenser oxyrinchus desotoi	Atlantic sturgeon (gulf subspecies)	Fish	No	Threatened	Protected
Fusconaia burkei	tapered pigtoe	Bivalves	No	Threatened	Protected
Hamiota australis	Southern sandshell	Bivalves	No	Threatened	Protected
Pleurobema strodeanum	fuzzy pigtoe	Bivalves	Yes	Threatened	Protected
Ptychobranchus jonesi	Southern kidneyshell	Bivalves	No	Endangered	Protected
Villosa choctawensis	Choctaw bean	Bivalves	Yes	Endangered	Protected

The federally listed Choctaw bean (*Villosa choctawensis*) and fuzzy pigtoe 1 (*Pleurobema strodeanum)* have been recorded on Fort Rucker in recent surveys (Fort Rucker, 2017a). The American alligator (*Alligator mississippiensis*), which is listed as federally threatened only because of its similarity in appearance to the endangered American crocodile (*Crocodylus acutus*), also has been recorded on Fort Rucker. The eastern population of the gopher tortoise (*Gopherus polyphemus*) is a candidate species for federal listing and this species is an Army-designated species at risk (SAR). The SAR policy encourages proactive management efforts for SAR and their habitats (USFWS, 2012).

State-protected species which have confirmed populations, or have been sighted on the installation, are the Eastern diamondback rattlesnake (*Crotalus adamanteus*), gopher tortoise, Eastern coachwhip (*Masticophis flagellum*), common ground dove (*Columbina passerina*), and bald eagle (*Haliaeetusleucocephalus*) (Fort Rucker, 2017a).

Though not recorded, it is possible that the gulf subspecies of the Atlantic sturgeon (*Acipenser\oxyrinchus desotoi*), eastern indigo snake (*Drymarchon corais couperi*), and wood stork (*Mycteria americana*) could occur on Fort Rucker (USFWS, 2017). Bivalve species including tapered pigtoe (*Fusconaia burkei*), Southern sandshell (*Hamiota australis*), and Southern kidneyshell (*Ptychobranchus jonesi*) have the potential to occur on Fort Rucker, although they have not been found in recent surveys (USFWS, 2017; Fort Rucker, 2017a).

Special-status Plants

No plant species listed as endangered or threatened by the USFWS have been documented to occur on Fort Rucker based on literature searches, herbarium records, and onsite flora surveys conducted by Mount and Diamond (Mount and Diamond, 1992). A survey for threatened, endangered, or special concern plants was also completed in 2002 by Troy University with negative results (Mount and Bailey, 2003). Species of interest to the USFWS may occur on Fort Rucker, including the incised groovebur (*Agrimonia incisa*; a species of management concern, Flyr's nemesis (*Brickellia cordifolia*; a species of special concern), Baltzell's sedge (*Carex baltzellii*; a species for which consideration is encouraged), and Alabama anglepod (*Matelea alabamensis*; a species of special concern).These species have not been confirmed on Fort Rucker in recent surveys. The State of Alabama has no official list of threatened or endangered plants.

3.6.2 Environmental Consequences

Preferred Alternative

Overall, implementation of the IPMP at Fort Rucker would have a minor positive effect upon biological resources. The IPMP contains procedures whereby all pest management activities clearly define the target species and designate the specific actions to control those species. Pesticide types, amounts and application would be controlled in order to only treat a specific type of pest. No pest management

operations would be conducted that have the potential to negatively affect endangered or protected species or their habitats without prior coordination with the USFWS.

Non-chemical management techniques and limited pesticide use may keep target species from developing a resistance to specific pesticides. Site-specific impacts would vary based on, among other things, the specificity of the pesticide and its persistence in the environment. Buffer zones (generally 100 feet) established around sensitive areas, including sensitive species habitat, pristine habitat, rivers and streams, and wetlands, would adequately protect these areas.

Non-chemical controls and limited pesticide use would not be expected to impact wildlife populations, other than the target species. The introduction of exotic species for pest control purposes is a non-chemical means of pest control that could potentially have a local impact on flora and fauna. In this instance, only biological materials approved by the U.S. Department of Agriculture or appropriate regulatory agency would be used. Any biological control used by Fort Rucker would be coordinated with the appropriate federal and state officials. Protected migratory birds would not be controlled without coordinating with the appropriate federal and state officials.

No Action Alternative

The No Action Alternative would maintain existing practices with respect to pest management and its impacts on biological resources. It is possible for pests to develop a resistance to pesticides. As a result, there is the possibility of a minor negative cumulative impact on future pest management because it may be necessary to apply more pesticides in the future to obtain the same level of control. In addition, pesticides can bioaccumulate in animals eating the pests and plants that have been treated with pesticides and any increase in pesticide use could potentially result in an increase in the amount of pesticides bioaccumulated in those animals.

3.7 Cultural Resources

The United States has many sites of historic and archeological significance. The National Register of Historic Places (NRHP), maintained by the National Park Service, is the nation's official list of districts, buildings, sites, structures, and objects significant in American history, architecture, archeology, engineering, and culture. Currently more than 81,000 properties, including some United States Army (USA) facilities, are listed on the NRHP. No historic, archaeological, or Native American resources that warrant listing on the National Register of Historic Places occur within the boundary of the project (Fort Rucker, 2016a). Implementation of the Proposed Action would not impact cultural resources on Fort Rucker. Because there are no identified cultural resources within the boundary of any of the alternatives, this resource does not warrant further consideration and is excluded from further discussion. However, in the event of an inadvertent discovery of archaeological resources or human remains during site preparation, Fort Rucker would implement its standard operating procedures (SOPs), as outlined in the *Integrated Cultural Resources Management Plan Update* (Fort Rucker, 2016a). Work would not resume

until deemed appropriate and would be conducted in accordance with SOPs and in coordination with the State Historical Preservation Office and the Tribal Historic Preservation Office.

3.8 Socioeconomics

Socioeconomics are defined as attributes and resources related to the interaction of the human environment, population, and economic activity. Regional socioeconomic resources include employment, personal income and earnings, population, housing, and community services These elements are interrelated and do not normally react independently to changes in the regional economy.

3.8.1 Affected Environment

Demographics

Coffee County has a population of 51,226 and Dale County has a population of 49,226 (Southeast Alabama Regional Planning and Development Commission [SEARP&DC], 2017). Dothan in Houston County is the largest metropolitan area within the Wiregrass Community, with a population of 68,468 (SEARP&DC, 2017). Fort Rucker has a population of 13,883, which includes 3,471 full-time military, 1,834 part-time or transient military, and 8,578 DoD and non-DoD civilians (Fort Rucker, 2017b). The racial makeup of the counties around Fort Rucker is comparable to that of the region (U.S. Census Bureau, 2010). Because the Proposed Action would have no effect on demographics with any of the alternatives, this resource does not require further consideration and is excluded from further discussion.

Economic Development

Coffee, Dale, Houston, Henry, and Geneva Counties make up an area defined as the Wiregrass Community. Fort Rucker, which lies in Coffee and Dale Counties, is part of the Wiregrass Community. Planning and development in the region are coordinated by the Southeast Alabama Regional Planning and Development Commission (SEARP&DC), Region 7, which includes Barbour and Covington Counties in addition to the Wiregrass Community. Historically, Fort Rucker has had a substantial impact on the economy and demographics of the surrounding communities. Large changes in local populations occurred, with increases in the 1960s followed by decreases in the 1970s as a result of troop training associated with the Vietnam War (Fort Rucker, 2008). Currently, Fort Rucker has at least a $1.5 billion annual economic impact and is responsible for over 23,000 jobs in the Wiregrass region (SEARP&DC, 2017).

Housing

Approximately 45,010 housing units are present in Dale and Coffee Counties. Approximately 89 percent of housing units in Dale and Coffee Counties are occupied (U.S. Census Bureau, 2010). Military family housing on Fort Rucker consists of three neighborhoods with approximately 1,500 total housing units. The neighborhoods are generally located in the western half of the cantonment.

Recreation

Recreational opportunities on Fort Rucker include a running trail, fitness trail, fitness center, numerous athletic fields, lake activities, camping, hunting, and a golf course. In addition, there are undeveloped

areas within the cantonment area that can be used for passive recreation activities and picnics. A large portion of the cantonment area east of Third Avenue is designated for outdoor recreation. Most of this area is undeveloped woods (Fort Rucker, 2008).

3.8.2 Environmental Consequences

Preferred Alternative
Implementation of an integrated approach to pest management is expected to produce a minor positive cumulative effect in the immediate vicinity of Fort Rucker by reducing noxious pest populations and should reduce the cost of the overall program due to the reduction of pesticide purchases.

No Action Alternative
The No Action Alternative would maintain existing conditions with respect to socioeconomics. No effect on population, employment, income, or housing is expected.

3.9 Environmental Justice

Executive Order (EO) 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* (1994), requires federal agencies to achieve environmental justice "to the greatest extent practicable" by identifying and addressing "disproportionately high adverse human health or environmental effects of … activities on minority populations and low-income populations."

3.9.1 Affected Environment

The Fort Rucker population does not have a disproportionately high population of economically disadvantaged persons or concentrations of minority groups. Dale and Coffee Counties generally have a lower percentage of minorities and a similar percentage of disadvantaged persons compared to Alabama as a whole (U.S. Census Bureau, 2010).

3.9.2 Environmental Consequences

Preferred Alternative
Reducing noxious pest populations by implementing an integrated approach to pest management will have a minor positive effect on the local residents because there would be less health problems and lower health care costs.

No Action Alternative
The No Action Alternative would maintain existing conditions with respect to environmental justice. There would be no effect on minority or low-income populations at Fort Rucker or neighboring communities.

3.10 Protection of Children

Fort Rucker follows the guidelines for the protection of children as specified in EO 13045, *Protection of Children from Environmental Health Risks and Safety Risk* (Federal Register: April 23, 1997, Volume 62,38 Number 78). Approximately 24.5 percent of the population of Dale and Coffee Counties is under the age of 18, which is consistent with the surrounding region and the state of Alabama (U.S. Census Bureau, 40 2010). Children typically gather at schools, parks, recreational facilities, and daycare centers.

3.10.1 Affected Environment

Many of the residents and visitors of Fort Rucker are children. Out of concern for the safety of children, the Army takes precautions by a number of means, including, but not limited to, the use of fencing, limitations on access to certain areas, and provision of adult supervision. Fort Rucker also has an educational program to promote children's health and safety among military family members.

3.10.2 Environmental Consequences

Preferred Alternative

Implementation of an integrated approach to pest management would protect children to the same or slightly improved degree from current pest management practices, thus producing no site-specific impact or a negligible site-specific impact to children at Fort Rucker. Army facilities will adhere to guidelines that fall under AR 200-5 and AR 608-10, where there are Child Development Centers, Head Start, pre-school, or other similar programs.

No Action Alternative:

The No Action Alternative would maintain existing conditions with respect to the protection of children

3.11 Hazardous and Toxic Materials/Wastes

Hazardous substances are generally materials that pose a threat to human health or the environment. Typical hazardous substances are toxic, corrosive, ignitable, explosive, or chemically reactive. Regulations dealing with hazardous materials have specific regulatory definitions for hazardous materials, hazardous chemicals, hazardous substances, and so forth. Hazardous materials regulations require proper storage and handling of chemicals and require that spill contingency and response requirements related to hazardous materials be met.

Many pesticides are also hazardous materials and may persist in the environment long after they have been applied. Residual pesticides can adhere to indoor surfaces, affecting air quality. Repeated outdoor applications of a pesticide can cause residues to build up leading to potential soil, surface water and groundwater contamination, and bioaccumulation. Pesticide residues may be a health hazard when

pesticides are applied near food storage or preparation areas. Pesticide labels contain application instructions and warnings about residues

The Federal Environmental Pesticide Control Act of 1972 amendments established a program for controlling the sale, distribution, and application of pesticides through an administrative registration process under the Administrator of the EPA. The amendments provide for classifying pesticides for general or restricted use. Restricted use means that the EPA has determined that the pesticide may have adverse effects on the environment, even when it is applied exactly according to label instructions. This damage may include injury to the pest manager or other people unless additional precautions are taken. Restricted-use pesticides may only be applied by or under the direct supervision of a certified applicator. Contractors used by the USA for pest management must have current certification for the types of applications to be performed. The law further stipulates that application of pesticides must not jeopardize the existence of threatened or endangered species (40 CFR 171.9 and 50 CFR 402).

Pesticide containers, wastes from pesticide mixing, and any material that comes in contact with the pesticides may be considered hazardous waste if it meets the EPA criteria. Any hazardous waste generated as a result of pest management activities requires disposal in accordance with label directions. Additionally, facilities are required to dispose of any pesticide, pesticide container, or pesticide residue in a manner consistent with labeling, not including open dumping or burning (40 CFR 165.7). The 1972 amendments authorize states to regulate the sale or use of any pesticide within a state, if such regulation does not permit any sale or use prohibited by the Act. State pesticide regulatory programs are to be at least as stringent as the Federal Insecticide, Fungicide and Rodenticide Act. State and local programs typically contain regulations that are tailored to an industry or activity that is prevalent or particularly sensitive in a state. Although DoD and Army regulations are generally more stringent, there may be cases where state and local pesticide regulations provide standards that are more stringent or specifically identify a requirement that may be qualitatively regulated under the federal program. State and local pesticide programs generally include regulations that address the following topics: restrictions or requirements for the sale, distribution, or use of selected pesticides; disposal requirements for excess pesticides and pesticide wastes, such as pesticide containers; restrictions on the control of specific animal or insect species; specifications for bulk pesticide storage tanks or storage facilities; operational requirements for selected application methods; and record keeping and applicator certification requirements. A typical USA facility might have small quantities of hazardous materials associated with bombing and gunnery ranges, motor pool, janitorial, and grounds maintenance activities. Materials might include ordnance, antifreeze, degreasing solvents, cleaners, fertilizer, and pesticides. Some pesticides are hazardous materials that require special management practices. Pesticides at Army facilities and training lands would be applied in accordance with specified procedures.

3.11.1 Affected Environment

Fort Rucker hazardous waste streams result from site operations such as cleaning and maintenance of aircraft, vehicles, and buildings, as well as grounds maintenance and various other equipment operations

at the installation. Also incorporated into the hazardous waste stream is the management of hospital wastes, lead-based paint, pesticides, herbicides, and unexploded ordnance (Fort Rucker, 2017i).

Hazardous materials acquisition, use, handling, and disposition are managed by the Fort Rucker Hazardous Materials Control Center (HMCC). The Fort Rucker Logistics Readiness Center Office, Supply and Services Branch, is responsible for overseeing the HMCC and coordinating hazardous materials supply requirements for post-wide activities. Central visibility and tracking of hazardous materials by the HMCC provides a way to redistribute excess but serviceable items, thus helping to reduce expenditures and avoid hazardous waste disposal. Since the HMCC's establishment in 1998, the HMCC process has saved more than $1.5 million through efficient procurement, redistribution, avoiding disposition of excess hazardous materials, and shelf-life extensions (Fort Rucker, 2017i).

The requirements for accumulation, storage, handling, and disposal of hazardous waste on Fort Rucker are identified in Fort Rucker's Hazardous Waste Management Plan (HWMP) (Fort Rucker, 2016c). This plan was developed in accordance with Army Regulation (AR) 200-1, *Environmental Protection and Enhancement*; the ADEM Administrative Code; and the Resource Conservation and Recovery Act, as amended. The HWMP implements the requirements of AR 200-1, Chapter 10-1 and provides installation personnel with specific procedures and responsibilities to manage hazardous wastes consistent with federal, state, and local laws and regulations. The requirements in the HWMP are applicable to all military, civilian, and contract personnel at Fort Rucker (Fort Rucker, 2016c). Fort Rucker has an Installation Restoration Program (IRP) which tracks and monitors sites on Fort Rucker that may require restoration and remediation due to contamination. These areas are commonly referred to as solid waste management units (SWMUs) and areas of concern (AOCs). All SWMUs and AOCs on Fort Rucker are low risk, with relatively low potential to impact the natural environment or public. None of the SWMUs or AOCs have extensive groundwater contamination.

All pesticides recommended for use in the Fort Rucker IPMP are EPA as well as state registered pesticides. Pesticide registration is the process through which EPA examines the ingredients of a pesticide; the site or crop on which it is to be used; the amount, frequency and timing of its use; and storage and disposal practices. EPA evaluates the pesticide to ensure that it will not have unreasonable adverse effects on humans, the environment and non-target species. A pesticide cannot be legally used if it has not been registered with EPA's Office of Pesticide Programs. After a pesticide is registered by EPA, states can register pesticides under specific state pesticide registration laws. A state may have more stringent requirements for registering pesticides for use in that state. Ultimately, states have primary responsibility (called primacy) for pesticides used within state borders.

3.11.2 Environmental Consequences

Preferred Alternative

The Preferred Alternative would have a minor positive impact by reducing the quantity of hazardous and toxic waste/materials purchased and stored. Implementing an integrated approach to pest management will limit the amount of pesticide purchased and mixed for a specific application, thus reducing the

amount of residual waste generated. The IPMP only allows pesticides that are least-toxic to the environment to be used. The Army has an aggressive pollution prevention program that minimizes the need to store and dispose of hazardous materials and has a policy to remain on the leading edge of pollution prevention technology. Additionally, Fort Rucker would continue to use only certified applicators, as required by Army regulations.

No Action Alternative

The No Action Alternative would maintain existing conditions and would result in a minor negative impact since the quantity of pesticides purchased and stored would not be reduced.

3.12 Cumulative Impacts Summary

In some cases environmental impacts may not result directly from any particular action, but from the combination of impacts of multiple, independent actions over time. The CEQ regulations implementing NEPA define a cumulative impact for purposes of NEPA as follows: *Cumulative impact is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time* (40 CFR Section 1508.7). The range of alternatives considered must include the No Action Alternative as a benchmark against which to evaluate cumulative impacts.

The CEQ guidelines state that cumulative impacts analyses should be limited to the impacts that can be evaluated meaningfully by the decision-makers. The guidelines further state that the area to use in defining the cumulative impacts geographical boundary should extend to the point at which the resource is no longer affected significantly (CEQ, 1997). Significant cumulative impacts would occur if incremental impacts of the Proposed Action (or the alternatives), added to the environmental impacts of past, present, and reasonably foreseeable actions, result in an adverse significant impact on regional resources. For an impact to be considered cumulative, these incremental impacts and potential incremental impacts must be related in space and time, so that they are either capable of combining (when considering potential incremental impacts of future 30 projects) or have, in fact, combined (when considering impacts of current and past projects).

3.12.1 Preferred Alternative

No cumulative effects are expected to result from implementation of the Proposed Action. However, once INRMP measures to reduce impacts are implemented, the short-term cumulative impacts would be less than significant.

3.12.2 No Action Alternative

Existing conditions would not change under the No Action Alternative. Thus, there would be no potential for interaction with other reasonably foreseeable projects resulting from the No Action Alternative.

4 Findings and Conclusions

Based upon the analyses contained in this EA, it has been determined that the implementation of an integrated pest management approach would be the most effective and preferred method to control pests at Fort Rucker. An IPMP is predominately a management decision that would result in environmentally safer and more economical measures for installation pest management and would encourage installation pest managers to consider the effects of their actions upon other installation-controlled resources. This approach would effectively control most pest populations by reducing the size and spread of pest infestations. It also closely matches the goals and intent of the USA and would provide the greatest long-term potential for effective pest control. The USA makes every effort to plan, design, and institute a management plan that would minimize long-term impacts. Best management practices would be used in the identification and abatement of any pest management problems.

Implementation of the IPMP would result in the efficient management of pesticides at Fort Rucker. The IPMP establishes explicit responsibilities, standard operating procedures, and long-range goals for managing pesticides on Fort Rucker property in compliance with all applicable federal laws, regulations, EOs, Presidential Memoranda, and DoD and Department of the Army guidelines. The procedures recommended in the IPMP require close interaction between the installation pest manager and other installation offices. Environmental and human resources under Fort Rucker's control would receive more consideration and protection than previously afforded.

Impacts of implementing the IPMP are negligible on land use, air quality, noise levels, and the protection of children. However, the impacts of implementing the IPMP are positive for the remaining suite of resources evaluated. The long-term effect of the project is expected to benefit Fort Rucker and provide a positive impact on natural resources. Furthermore, there are no indications that implementation would violate any federal, state or local environmental laws or regulations. The requirements of the NEPA have been met and based upon the foregoing findings and conclusions, issuance of a Finding of No Significant Impact would be appropriate, and preparation of an Environmental Impact Statement is not required prior to implementation of the proposed action.

Attachment 1- Intergrated Pest Management Plan

INTEGRATED PEST MANAGEMENT PLAN
Headquarters, US Army Garrison Fort Rucker

Prepared for

COMMANDER
U.S. ARMY AVIATION CENTER OF EXCELLENCE

Prepared by

DIRECTORATE OF PUBLIC WORKS
ENVIRONMENTAL AND NATURAL RESOURCES DIVISION
FORT RUCKER, ALABAMA 36362

March 02, 2018

Department of the Army
Headquarters, US Army Garrison Fort Rucker
US Army Aviation Center of Excellence and Fort Rucker

Integrated Pest Management Plan
FY 2018

Revised Dec 2017 By:

ROBERT H. TURNBOW, JR., PhD
Former Entomologist and Installation Integrated Pest Management Coordinator
Fort Rucker, Alabama

Reviewed By:

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GOLF COURSE

Mr. David Plunkett, **Superintendent, Silver Wings Golf Course**: Phone (334)255-2103 (office); (334)598-0089 (pro-shop);

ARMY ENVIRONMENTAL COMMAND, FORT SAM HOUSTON, TX

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MISCELLANEOUS

Garrison Safety Office (GSO): Phone (334) 255-1027

HAZMAT Emergency Response Team (Directorate of Public Safety): 911

CHEMTREC emergency telephone number (around the clock information service available to fire fighters, law enforcement officials and other emergency responders who need immediate critical response information for emergency incidents involving chemicals and hazardous materials): Phone (800) 424-9300

Entomological Sciences Division, United States Army Public Health Command (for training assistance for pest Management and Preventive Medicine; pest management program consultation and technical assistance; identification of insects, ticks, and rodents; vector-borne disease risk assessments; and entomological readiness evaluation): Phone (210) 221-5154; DSN (312) 471-5154

State of Alabama Pesticide Registrations: Mr. David Petty, Pesticide Management Division, Alabama Department of Environmental Management: Phone (334) 240-7244; e-mail David.Petty@agi.alamama.gov
State of Alabama Department of Agriculture & Industries: Phone (334) 240-7100.

EXECUTIVE SUMMARY

Purpose

This plan describes a comprehensive integrated Pest Management (IPM) program for the US Army Aviation Center of Excellence and Fort Rucker. IPM is a sustainable approach to managing pests by using and combining a variety of tools including biological, cultural, physical and chemical methods in a way that minimizes economic, health and environmental risks. Federal agencies are mandated by Section 136 et seq. of Title 7, United States Code, “Federal Insecticide, Fungicide and Rodenticide Act 1976 (FIFRA) as amended” to use IPM. This plan is a guide to reduce reliance on pesticides and to enhance environmental protection. It reflects current Department of Defense and (DOD)/Department of the Army (DA) policies, procedures and standards, and incorporates the requirements of the Environmental Protection Agency (EPA) and the State of Alabama. Adherence to the plan ensures compliance with applicable laws and regulations as well as with current IPM practices and principles.

Scope of the Integrated Pest Management Plan

The contents of this plan apply to all organizations, tenants, contractors, subcontractors and private partners performing pest management operations on Fort Rucker. All organizations on Fort Rucker are required to contact the Directorate of Public Works (FR-DPW) for pest management contract support, review and compliance in accordance with applicable Federal, State and local laws and Inter-service/Intra-service Support Agreements specifying responsibilities for pesticide applications, records, and contracts.

The IPM plan for Fort Rucker describes the installation’s pest management requirements, outlines the resources necessary for surveillance and control, and describes the administrative, safety and environmental requirements of the program. This plan is a working document and is continually updated to reflect current management practices, industry standards, regulatory requirements and installation coordination. IPM operations on Fort Rucker include both State-certified, privately contracted pest management technicians as well as DoD-certified Government personnel. Pests included in the plan are weeds and other unwanted vegetation, termites, mosquitoes, crawling arthropods (e.g., ants, crickets, cockroaches, spiders, ticks, etc.), leaf defoliators (eastern tent caterpillars and fall webworm), commensal rodents, bats, birds and other vertebrate pests. Without control, these pests could interfere with the military mission, damage real property, increase maintenance costs, and expose installation personnel to diseases.

Program Objective

The IPM objective is to identify operational procedures that use the least toxic method to control pest populations in a cost-effective, environmentally sound manner. IPM is a

planned decision-making process that incorporates education, record keeping and best management practices to prevent pests and diseases from causing damage to personnel and property. At no time will pest management operations be done in a manner that will cause harm to personnel or the environment. Non-chemical control efforts will be used to the maximum extent possible before pesticides are used.

Authority

Army installations conducting either in-house and/or contracted pest management operations are required to prepare a written installation pest management plan that is to be reviewed and updated annually. The installation pest management plan is to be based on the IPM philosophy. The IPM philosophy of pest control shall be used for all pest control activities conducted at the installation. The following IPM Plan was prepared for Fort Rucker in accordance with the following regulations:

a. Section 136 et. Seq. of Title 7, United States Code, “Federal insecticide, Fungicide, and Rodenticide Act” (FIFRA) as amended.
b. DOD Instruction 4150.07, “DoD Pest Management Program”, 28 May 2008.
c. Army Regulation (AR) 200-1, “Environmental Protection and Enhancement”, 13 December 2007.

Table of Contents

1.0 US ARMY GARRISON FORT RUCKER

1.1 Fort Rucker History

Fort Rucker is a 62,857-acre United States (US) Army installation located in portions of Coffee and Dale Counties, Alabama. The installation was originally situated on 58,000 acres of sub-marginal farmland that the Federal Government was acquiring as a wildlife refuge, and was opened in May, 1942 as ”Camp Rucker”.

In September, 1942, 1,259 additional acres south of Daleville, AL were acquired for the construction of an airfield to support the training camp. It was known as Ozark Army Airfield until January, 1959, when the name was changed to Cairns Army Airfield.

During World War II Camp Rucker trained four infantry divisions as well as dozens of units of less than division size; these included tank, infantry replacement, and the Women’s Army Corps units. Toward the latter part of World War II, the “camp” also housed German and Italian prisoners-of-war on the southern edge of post.

Camp Rucker was inactive from March, 1946 until August, 1950, between WWII and the Korean Conflict. The principal Army unit operating at Rucker during the Korean Conflict was the 47th Infantry Division, with trained replacement troops for combat in Korea. The post again became inactive in June, 1954, after an armistice was signed.

Camp Rucker reopened in August, 1954 when the Army Aviation School began moving from Fort Sill, Oklahoma to Alabama. The first classes began in October of that year. On 1 February 1955, the Army Aviation Center was officially established at Rucker. In October of that year, the post was given permanent status with the name change from Camp Rucker to Fort Rucker.

After extensive studies by Department of the Army and the US Army Training and Doctrine Command, in March, 1983, the Chief of Staff of the Army recommended forming a separate aviation branch. The Secretary of the Army approved that recommendation on 12 April 1983. The installation currently designate as the US Army Aviation Center of Excellence and Fort Rucker.

1.2 Mission Statement

The US Army Aviation Center of Excellence and Fort Rucker trains, educates, and develops agile and adaptive Army Aviation professionals, manages the Aviation Enterprise, and integrates indispensable aviation capabilities and requirements across the war fighting functions to enable commanders and Soldiers on the ground to fight and win in an increasingly complex world. Named the U.S. Army Aviation Center of Excellence (USAACE) in 2008, Fort Rucker serves as the headquarters for Army Aviation. Fort Rucker is also home to U.S. Army Garrison – Fort Rucker (USAG-FR), USAACE, and multiple other tenants including AMC, ARNG, FORSCOM, MEDCOM, TRADOC, USAR, U.S. Air Force, and Veterans Administration activities. The major

tenants include the US. Army Combat Readiness Center, U.S. Army Warrant Officer Career College, US Army Aviation Center Logistics Command, U.S. Army Aeromedical Center, US Army Aeromedical Research Laboratory, School of Army Aviation Medicine, US. Army Air Traffic Services Command and 164th Theater Airfield Operations Group. Dependent schools for grades 1 through 8 are also on the reservation.

2.0 RESPONSIBILITIES (DOD INSTRUCTION 4150.07, page 13, E2.11)

2.1 Garrison Commander

a. Designate an Installation Integrated Pest Management Coordinator (IPMC) to oversee all aspects of the installation IPM plan, including in-house, formally contracted, and GPC-contracted operations; housing, engineer, and medical department operations; and pesticide applications for grounds operations, out-leasing, golf course operations, wood preservation, natural resources, forestry operations, self-help, and pesticide sales.
b. Approve and support the Integrated Pest Management (IPM) Plan.
c. Ensure installation personnel performing pest control receive adequate training and achieve pest management certification, as required.
d. Ensure all pest management operations are conducted safely and have minimal impact on the environment.

2.2 Director of Public Works (DPW)

a. Determine pest management requirements for the installation.
b. Initiate requests for aerial application of pesticides if and when necessary.
c. Request and monitor contract pest management operations.
d. Ensure pest management operations comply with applicable laws and regulations and that equipment and facilities meet Fort Rucker's needs for personal health protection and the protection of real property.
e. Maintain adequate records of pest management operations.

2.3 US Army Aeromedical Center, Preventive Medicine

a. Conduct surveillance for pests that could adversely affect the health and welfare of the installation.
b. Coordinate with local health officials to determine the prevalence of disease vectors and other public health pests in the area surrounding the installation.
c. Monitor pesticide sales at Commissary and Post Exchange System.
d. Evaluate health aspects of the pest management program.

2.4 US Army Veterinary Command, Fort Rucker, Veterinary Services

a. Conduct surveillance for pests that damage or destroy food stored in installation

facilities.
b. Report the occurrence of zoonotic diseases seen in military/companion animals at the veterinary treatment facility to Public Health Service and local Health agencies.

2.5 Installation Integrated Pest Management Coordinator (IPMC)

a. Prepare, monitor, and update the installation Integrated Pest Management (IPM) Plan.
b. Coordinate with activities conducting pest surveillance or controlling pests to ensure all applicable information is recorded and reported as required by this Plan.
c. Function as liaison between those individuals who store and apply pesticides (e.g., public works, golf course, pest control contractors, and tenant activities) and activities or individuals who document or deal with pesticide use in their programs (e.g., Environmental Office, Safety Office, Fire Department, Industrial Hygienist).
d. Monitor certification and continuing pest management training for pesticide applicators on the installation.
e. Coordinate with local, State and Federal agencies as necessary to conduct the installation's pest management program.
f. Coordinate and monitor contracts dealing with pesticide application and keep a copy of each contract on file.
g. Answer pest management questions form the Garrison Commander, the Army Environmental Command (AEC), and Department of the Army.
h. Monitor sale and distribution of pesticides on the installation.
i. Submit pest control contracts to AEC for review and approval by AEC Pest Management Consultant (PMC).
j. Annually submit IPM Plan to AEC PMC for review and approval IAW DODI 4150.07, paragraphs 5.4.20.1 and E4.2.1.6.
k. Submit the following forms to the AEC PMC as required Annual Plan Update Form (PUF); Out-of-Cycle-Pesticide Use Request (OCPUR); Pesticide Use Proposal (PUP).

2.6 Building Occupants

a. Apply good sanitary practices to prevent pest infestations.
b. Use IPM control techniques such as good housekeeping practices, pest exclusion, snap traps, glue boards and structural repairs before requesting further assistance from Fort Rucker DPW.
c. Apply only those pesticides approved by DOD, DA and Fort Rucker DPW.
d. Cooperate fully with Fort Rucker DPW personnel and contractors in scheduling pest management operations to include preparing the areas to be treated.

2.7 Pest Management Contractor

a. Use IPM control techniques to the maximum extent possible.
b. Control pests in accordance with current Fort Rucker IPM Plan.
c. Operate in a manner that minimizes risk of contamination to the environment and personnel.
d. Ensure superiors and the Government are informed of changes in pest management requirements.
e. Request pest management supplies and equipment in a timely manner.
f. Maintain effect liaison with installation health and environmental officials and provide certification and pesticide data in a timely manner.

2.8 Golf Course (MWR)

a. Golf Course personnel who apply pesticides will adhere to Federal, DOD, DA, and Fort Rucker requirements for certification, use of approved pesticides and pesticide use reporting.
b. Golf course Superintendent will submit annual pesticide approval requests by September 1st each year.

2.9 Private Partners

a. These include the utilities (electrical, sewer, water and gas companies), privatized family housing and privatized Army Lodging, all of whom are required to follow all Federal, DOD, DA and Fort Rucker directives, regulations and policies.
b. These companies and partners are required to submit an annual pesticide usage proposal to IPMC by September 30 each year and actual pesticide usage following any applications each month.

3.0 GENERAL

3.1 Installation Description

a. **Topography and Physiography**. Fort Rucker extends northwestward from the floodplain of the Choctawhatchee River, rising gradually from 164 feet mean sea level (msl), through undulating to rolling, sometimes deeply dissected, forested terrain to elevations slightly above 515 feet msl. The installation is in the Buhrstone Hills sub-district, which developed on indurated resistant siliceous claystone and sandstone terrain and Fort Rucker consequently consists of typically narrow and winding ridgetops that range from highly dissected along the creeks and Lake Tholocco in the eastern portion of the post to gently rolling in the western and extreme eastern portions. Drainage-ways are typically narrow bands of alluvium along small streams.
b. **Geology and Soils**. The East Gulf Coastal Plain is an elevated former sea bottom, with sedimentary geologic and sedimentary rock. Geologic formations

that outcrop on Fort Rucker include: Tuscahoma Sand, Hatchetigbee and Tallahatta Formations, Lisbon Formation, Residuum, Alluvial High Terrace Deposits, and Low Terrace Deposits. No minerals are mined and no petroleum deposits are known. Predominant soil series that occur on the Fort Rucker main installation include the Troup-Orangeburg-Nankin-Lucy series and Troup-Luverne-Conecuh series. In the far eastern portion of the main installation there is also an area of Troup-Red Bay-Orangeburg series soils.

c. **Surface Water Resources**. The main Fort Rucker Installation and all satellite stagefields are located in the Choctawhatchee River Basin, with the Choctawhatchee River to the southeast and Pea River to the northwest of the installation. Fort Rucker has approximately 335 miles of streams and rivers within the main reservation. Claybank Creek and its tributaries constitute 82% of the streams and rivers on the installation. Of the five lakes on Fort Rucker, four of them (Beaver, Buckhorn, Ech and Parcours) are small (less than 20 acres) reservoirs built on tributary streams of Claybank Creek. Lake Tholocco is an approximately 620 acre impoundment of Claybank Creek and is used for both recreation and training activities. Neither Fort Rucker, nor the surrounding areas, use surface water as a source of drinking. However, surface water is used extensively for agricultural purposes. The Choctawhatchee River and most of its tributaries are classified as “Fish and Wildlife” waters by the Alabama Department of Environmental Management (ADEM). This designation indicates that surface waters are suitable for the propagation of fish, aquatic life, and wildlife but are not suitable for swimming, drinking water or food processing.

d. **Wetlands**. Wetlands are areas of transition between terrestrial and aquatic systems where the water table is usually at, or near, the surface, or the land is covered by shallow water. Information including inventory, protection and management of, these areas is described in the Fort Rucker Integrated Natural Resources Management Plan (Appendix B).

e. **Climate.** The climate in the Fort Rucker area is classified as Humid Subtropical and is characterized by short, mild winters and long, hot summers, intensified by the influx of moist tropical air from the Gulf of Mexico. The average frost free period is 257 days (mid–March to mid-November), and below freezing temperatures occur infrequently during the winter. Daytime temperatures average almost 80 degrees Fahrenheit during the summer and about 52 degrees Fahrenheit in the winter. Daily humidity ranges from a high of about 91 percent to a low of about 54 percent. Precipitation is heavy, averaging about 54 inches annually. There is a bimodal distribution of rainfall with peaks occurring in late winter and in mid-summer. A yearly average of 144 days with measurable Daily humidity ranges from a high of about 9l percent to a low of about 54 percent. Precipitation is heavy, averaging about 54 inches annually. There is a bimodal distribution of rainfall with peaks occurring in late winter and in mid-summer. A yearly average of ll4 days with measurable precipitation of 0.0l inches or greater and only traces of snowfall were recorded over a 31-year period (1954-1985).

f. **Vegetation**. The most prevalent habitats on Fort Rucker are hardwood-dominated mesic forest, mixed pine-hardwood mesic forests, and mid-aged pine

stands. Other habitats found on Fort Rucker include steep, forested, ravine slopes; xeric forest-clayhill type; young pine plantations; agricultural land, fallow fields, and old fields; eroded sites, waste areas, quarries; developed areas; floodplain forests; bay swamps; seeps, bogs, and wetlands; borrow pits; intermittent streams; oxbow ponds, beaver ponds, permanent streams; and man-made lakes. The forest type is typically dominated by mesophytic hardwoods, such as diamond-leaf oak, white oak, yellow poplar, American beech, maples, southern magnolia, water oak and black gum. Smaller trees include holly, dogwood, sweet bay, silverbell, hornbeam, sweetleaf, ironwood, and Hercules' club. The shrub understory typically includes red buckeye, mountain laurel, piedmont azalea, sweet shrub, Florida anise, and members of the blueberry-huckleberry complex. Herbs include a wide variety of wildflowers and ferns. In areas with increased light penetration, greenbrier, poison ivy, and switch cane may be common.

g. **Wildlife.** Mammals found in the region include whitetail deer, river otter, coyote, red fox, grey opossum, and various species of bats, squirrels and rodents. Most game animals and natural predators found in the Southeastern United States are indigenous to the installation. Over 110 bird species are found in the Fort Rucker region, either permanently or as migrants. Common birds on the installation include passerines such as the northern cardinal, wood, thrush, vireos, and warblers, as well as several woodpeckers. Fort Rucker is within the range of the endangered red-cockaded woodpecker, but the lack of old, infected pine trees has apparently eliminated desired nesting areas for this bird. Raptors present include the screech owl, red-shouldered hawk, red-tailed hawk, broad-winged haw, and Cooper's hawk. Over 70 species of salamanders, frogs, lizards, snakes and turtles are found on Fort Rucker. These include the common tree frog, American toad, slimy salamander, five-lined skink, copperhead, eastern diamondback rattlesnake, canebrake rattlesnake, cottonmouth, eastern box turtle and snapping turtle. The installation's lakes and waterways contain several species of fish including channel catfish, bluegill, largemouth bass, gar, pirate perch and black crappie.

h. **Other**. More detailed topography descriptions, geology, hydrology, climate, major soil association, vegetation, petroleum and minerals can be found in the Fort Rucker INRMP (Appendix 2). The Fort Rucker Environmental and Natural Resources Division of the Directorate of Public Works maintains copies of wetland delineations data and spill plans. As necessary, these documents are used whenever pesticide application is considered in order to evaluate the potential fate and impact on natural resources.

3.2 Inventory of Land Use

a. **Inventory of Land Use**. There are two categories of ground on Fort Rucker: Improved and unimproved. The Real Property Branch of the Master Planning Division of the Directorate of Public Works, Bldg 1120, (334) 255-1707 gathers all Real Property information on an annual basis. Contact the Real Property

Officer at that number for information.

b. **Improved grounds**: Building sites and other improved grounds occupy about 7.5% of Fort Rucker's land area. The grounds maintenance program involves, to varying degrees, soil analyses, fertilizing, liming, lawn care, landscape plans and plantings, integrated pest control, and tree maintenance. Improved grounds include acreage on which intensive maintenance activities are planned and performed annually as fixed requirements. These activities variously include pest management, mowing, irrigation, dust and erosion control, drainage maintenance, weed and brush control, planting for landscape benefits, and other intensive practices. Fort Rucker contains a total of approximately 4725 acres of developed land that requires maintenance at some level.
c. **Unimproved grounds**: Unimproved grounds include surfaced areas, woodlands and other areas that require little or no maintenance. Activities on unimproved grounds do occur, but not on a regular basis, and are generally unpredictable and dependent on mission and management activities. In the course of reforestation, site preparation, invasive species and aquatic vegetation management activities, the Natural Resources Branch (Forestry and Fish and Wildlife) of the Environmental Division of the Directorate of Public Works uses IPM in the management of various types of vegetation on unimproved grounds.
d. **Outleases.** Outleases include those for the Fort Rucker National Bank and the Army Aviation Center Federal Credit Union. Utilities on the installation are privatized and outleases are also held by Alabama Power for a solar panel farm and a number of electrical substations on the installation.

3.3 <u>Demographics</u>. Fort Rucker is located near the center of the Southeast Alabama Regional Planning and Development District, which is composed of Barbour, Coffee, Covington, Dale, and Geneva Counties; the cantonment is located in Dale County. The district's population density was 55.8 persons per square when counted in 1990. Adjoining jurisdictions include the cities of Daleville on the south, Ozark on the north and Enterprise on the west. The town of Level Plains also adjoins the installation to the west. The cantonment, or built-up area, occupies approximately 7 square miles and is situated at the southern end of the reservation. Included in the cantonment are administrative buildings, training facilities, maintenance and operations activities, medical activities, troop billeting areas, and three housing development as well as a variety of aviation assets. These latter include basefields, stagefields, remote training sites, an aerial gunnery range and specialized training facilities and simulators. Fort Rucker has four operational basefields which are permanent airfield facilities capable of independent operation. Each basefield has a command and control element responsible for day-to-day maintenance and operation of assigned aircraft. Included are air traffic control and ground support capabilities (crash-rescue, etc.). Stagefields are permanent airfield facilities, which are manned only during flight training operations. Each of Fort Rucker's 14 operational stagefields has a published traffic pattern and rules of procedure as well as air traffic control, fire rescue support, and refueling capabilities. Most stage fields are in outlying rural areas. There are more than 150 remote training sites which are primarily located on privately owned, leased lands used for combined operations. Fort Rucker also utilizes 19 civilian airports within the local

flying area. An aerial gunnery range complex, which consists of multiple weapons firing positions and a common impact area is located in the northern portion of the reservation. The airspace boundaries of the installation extend well beyond the military reservation proper. Military aircraft train and maneuver over 26,000 square miles of airspace in parts of Alabama, Georgia, and Florida.

3.4 Plan Maintenance.

a. The IPMC, (334) 255-1659 (DSN: 558-1659), maintains the IPM Plan. The IPMC annually updates and coordinates the review and approval of the IPM Plan; plans funding for initial and 5-year revisions of the IPM Plan as necessary. Pen and ink changes are made to the plan throughout a fiscal year.
b. Updates, including a pesticide use proposal (PUP) and program update form (PUF), are sent to the AEC Pest Management Consultant annually. Five year revisions of the plan are required.

4.0 PRIORITY OF PEST MANAGEMENT

This section contains background information on each pest category and the specific pests required control at Fort Rucker. For much of the year, roaches, ants, and flies constitute the most important pests from the standpoint of general annoyance. Fire ants are active year-round, but less so during the winter months. From March into November bees, wasps and hornets constitute an important pest problem. Ticks, mosquitoes, spiders and poisonous snakes are the most important pests from the standpoint of disease transmission and/or medical threats.

4.1 Disease Vectors and Medically Important Arthropods

a. **Mosquitoes**: Mosquitoes are potential vectors of human and other animal diseases. Diseases such as Dengue Fever, Malaria and Yellow Fever are of historical concern. More recently, only Eastern Equine Encephalitis and West Nile Virus have been of regional interest. Chikungunya and Zika Virus are of potential concern. Mosquitoes are considered Fort Rucker's most important potential disease vectors and known vectors of most of the above diseases can be found throughout the installation. The encephalidites (encephalitis = inflammation of the brain) are the most common mosquito-borne diseases in the US. West Nile Virus is permanently established in the US, including south Alabama. The monitoring, surveillance and control of mosquito populations remains an important IPM requirement even if disease incidence has been historically low. Mosquito control is initiated and coordinated with Environmental Health and Medical personnel based upon surveillance data and established thresholds. Habitat management and reduction of breeding sites are the primary objectives in the control of mosquito populations. Management of larval mosquito populations is occasionally required. Adult mosquito control in the form of outdoor fogging is rarely required. Active duty personnel can minimize the nuisance and vector potential using the DOD Arthropod Repellent System. Other personnel conducting outdoor activities especially during the early evening

hours, can minimize the mosquito nuisance by wearing proper clothing (minimizing exposed skin surface) and utilizing an appropriate mosquito repellant.

b. **Ticks**: Ticks can be of concern in training, housing and recreational areas. The Army Public Health Center (APHC) provides support in conducting arthropod surveillance including ticks. Ticks are of concern as both a nuisance and a disease vector. Lyme disease, Rocky Mountain Spotted fever, and Human Monocytic Ehrlichiosis (HME) are vectored by ticks. Vector-borne assessments for the installation indicate that the overall risk of humans contracting these diseases on the installation is small. Ground training exercises conducted by SERE students at Fort Rucker, has brought a new awareness of ticks as a pest. Ticks can be controlled by clearing and controlling brush and weed growth, using repellents and visual inspections of oneself after exposure. Chemical controls are seldom required.
c. **Rodents**: Rodent populations are of concern due to their potential as disease vectors and due to damage they can cause to structures and their contents, especially foodstuffs. Most diseases associated with rodents are transmitted to man via rodent bites or through contract with soils, water, or food contaminated with infected rodent fecal matter and/or urine. Rats and mice routinely damage buildings and other structures because of their attempts to gain entry, reach stored foods, or create nests or dens. Their efforts result in widened openings where penetrations occur through exterior walls as well as through interior walls, cabinetry and furniture. Mice frequently nest around stationary electrical appliances, damaging wires. Odors from feces and urine are generally offensive to most people. Commensal rodents are controlled through use of snap traps, glue boards, and anticoagulant baits. IPM includes eliminating holes, cracks and entry points into buildings.
d. **Bees and Wasps**: Bees, wasps and hornets occur throughout the installation, frequently building nests on or in structures. Their stings are painful and may cause allergic reactions in some people. *Polistes* wasps and yellow jackets are of primary concern on the installation. Most nesting and foraging activity by these pests occurs during the period March through October. However, *Polistes* wasp queens over-winter in large aggregations in attic, soffit and other protected areas associated with buildings. This habit occasionally allows wasps to “spill over” into building interiors especially during warming events in the late winter or early spring requiring atypical seasonal control efforts. Carpenter bees can be both a nuisance (males are territorial) and damaging pest. Damage is typically limited to unpainted, large dimension (2X4 and larger) structural components. Dusting and sealing carpenter bee galleries sufficient for control. Infestations are uncommon on the installation.
e. **Spiders**: The highly venomous southern black widow spider, *Latrodectus mactans*, and the invasive brown widow spider, *Latrodectus geometricus*, occur on the installation. For behavioral reasons the latter is more frequently encountered at Fort Rucker since its arrival on the installation some years ago. Due to awareness training and education bites by these spiders seem to be

infrequent. NOTE: Bites attributed to the brown recluse spider, *Loxosceles reclusa*, have occasionally been reported at Fort Rucker, but occurrence of the species on the installation has not been confirmed. Preventive sprays to control spiders are generally of little value. However, spot treatments to eliminate actual infestations can be appropriate.

f. **Poisonous Snakes:** The southern copperhead, water moccasin, eastern coral snake, pygmy rattlesnake, eastern diamondback rattlesnake and canebrake (timber) rattlesnake occur on the installation. These snakes are occasionally encountered during the early spring, summer and fall months in training and housing areas as well as undeveloped lands installation-wide. Soldiers are briefed and trained to avoid contact with all snakes. Any snake bite is treated as a potential medical emergency. Lyster Army Health Clinic (US Army Aeromedical Center) does not have an emergency room.

g. **Bed Bugs**: Bed bugs have resurfaced as an important problem on the installation, particularly in temporary or transient lodging facilities. Bed bugs are not known to transmit any diseases but are annoying due to their blood sucking habits which can be severe in heavy infestations and may also produce a dermatitis. Heating of furnishings (150ºF for 4-6 hours), freezing, laundering of linens and clothing and chemical treatments are part of an IPM approach to control of these pests.

h. **Fire ants**: Fire ants are a ubiquitous problem on the installation, occupying most improved grounds areas including recreational sites and turf and ornamental plantings. Their mass numerical response to disturbances and aggressive stinging behavior with individual ants capable of multiple stings make fire ants a medically important pest. The severity of stings varies with individuals. A normal reaction results in pain, swelling, redness around the site of the sting followed by the formation of a white pustule with lingering itching. Serious reactions, including death, have occurred in humans and pets when victims fail, or are unable to escape from, a disturbed colony and incur massive numbers of stings. Systemic allergic reactions occur in some victims. Area-wide and targeted treatments with a combination of insecticide baits and growth regulators can be used to suppress fire ant populations and activity. Insecticidal sprays typically provide only temporary relief from fire ants and seldom eliminate colonies. However, such treatments are useful in temporarily suppressing fire ant activity in areas where outdoor events are scheduled.

4.2 Stored Products Pests

Stored products pests are generally of minor concern on the installation. Historically, however, in the 1980's, two major infestations occurred on the installation requiring fumigation of the entire inventory of infestable (not in cans or bottles) foods in the Commissary had to be fumigated. On one occasion, 52 line items, including such products as pasta, cereals, flour, granola bars, dried fruits, and dried pet foods were discovered to be infested simultaneously with a variety of stored products pests. Typically only minor infestations involving a single lot and product have been identified by building/housing occupants and/or inspectors. Freezing for 48-72 hours has been

the treatment of choice in such instances.

4.3 Animal Pests: Animal pests periodically require control. Management of these populations is conducted mainly in response to isolated incidents. Trapping and exclusion from structures are the primary means of controlling these animals. The species below may be encountered anywhere on Fort Rucker.

a. **Non-poisonous snakes**: Non-poisonous snake are present virtually throughout the reservation. While not a major problem, occasional calls to remove snakes (including non-poisonous snakes) from outdoor recreational areas as well as buildings are received. Nuisance snakes are generally removed and released.
b. **Birds:** Birds are an occasional problem on the installation. Bird excrement provides an excellent growth medium for two organisms of potential health concern which cause cryptococcosis and histoplasmosis. All bird species, excluding the pigeon, European starling, and house/English Sparrow, are protected by the Migratory Bird Treaty Act (MBTZ) and a permit issued by the US Fish and Wildlife Service is required before impacting MBTZ species to include their nests and eggs. The most common and difficult bird problem at Fort Rucker has involved the hangars at airfields where roosting and nesting pigeons and the European starling have been a long-term headache. Shooting, poisoning and exclusion from the hangars because of open aircraft doors have had limited practical value in controlling these birds in the hangars. Netting has been installed all hangars to restrict access to overhead structures where nesting and roosting could occur. This has reduced the number of calls about birds in hangars but not eliminated them. Birds that circumvent the netting usually end up trapped above the netting and subsequently die, requiring calls to remove the carcasses.
c. **Bats:** Bats, most particularly the Brazilian free tailed bat, have been an ongoing problem on the installation for the past 20 years. Multiple infestations in various locations have become the norm. Most of the infestations have been associated with brick veneer structures in which construction defects or structural failures allow the bats access to the void between the block and brick of such structures. Colonies up to 3500 individuals have been encountered. As with birds, excrement provides growth medium for the causal agent of histoplasmosis and bats are known carriers of rabies. Additionally, bat urine and excrement produce a particularly foul, undesirable odor that typically becomes an issue with mature colonies. Attempts to control bats on the installation have involved the installation of exclusion devices following evacuations of the roost for nighttime feeding flights during non-breeding season of the year. Brazilian free tailed bats maintain nurseries during the May through August in the Fort Rucker area. Unfortunately, exclusion from a roosting site at one location usually proves to be only a temporary solution to the problem as the bats seem to be able to readily locate new roosts from an apparently limitless number of potential, undiscovered roosting sites on the installation.
d. **Stray Dogs and Cats:** Stray and feral dogs and cats occasionally need to be captured on the installation. Fort Rucker has a contract with the city of Ozark,

Alabama to perform stray animal control services on the installation. Ozark's Animal Control Officer is responsible for capture, impoundment (Ozark facility) and disposition of reported stray dogs and cats according to contract specification (see Appendix C). Routine stray reports of stray dogs or cats are called in to (334) 225-2222. Emergencies, such as when an animal is suspected of being rabid, are called in to 911.

e. **Feral Hog Management**: Feral hogs have been of growing concern over the past 20 years. Ecological damage in the form of reduced water quality, increased soil erosion, competition for resources with native wildlife, predation on native wildlife and propagation of non-native plant species have been direct impacts of feral hog activities. Damage to infrastructure, agricultural crops, and recreational facilities has also been significant. Disease threats associated with feral hogs to humans and wildlife are very real. The Natural Resources Branch of the Environmental Division of the Directorate of Public Works has developed and manages a program to reduce the impacts of feral hogs on the installation (see Appendix E).
f. **Coyote Management**: Coyotes have been identified as a limiting factor of the whitetail deer and eastern wild turkey populations, including growth and recruitment, on Fort Rucker lands. The Natural Resources Branch of the Directorate of Public Works has implemented a management plan for the coyote on the installation (see Appendix D).
g. **Other Animal Pests:** Skunks, armadillos, raccoons, deer, squirrels, coyotes and foxes occur on Fort Rucker and can occasionally constitute a pest problem. The Game Warden, a function of the Directorate of Public Safety, has the responsibility for controlling such animals under most circumstances.

4.4 Real Property Pests (Structural/Wood Destroying Pests)

Subterranean termites are the most destructive structural pests found on Fort Rucker. Although modern construction methods have reduced the use of wood for structural support in buildings, subterranean still impact just about any cellulose-based product in buildings and structures, including flooring, paneling, decking, furnishings and even the paper on sheet rock, resulting in significant repair and replacement costs. Other wood-boring and wood decay organisms play a secondary role as pests on the installation. Carpenter ants, the old-house borer, dry-wood termites, powder post beetles do occasionally cause problems.

a. **Termites:** As indicated above, subterranean termites are the primary structural pest on Fort Rucker. To date, Formosan termites (a type of subterranean termite) have not been found on the installation but do occur in the Mobile area of south Alabama bordering counties of the Florida panhandle to the south. Fort Rucker is extra-limital to the distribution of dry-wood termites but furnishings of family housing occupants have occasionally brought onto the installation as the result of pcs moves from installations within the range of dry-wood termites. Treatments and repairs of damages resulting from termite activities of all types result in substantial costs to the installation. Fort Rucker is wholly located within

Region 1 (USDA Forest Service Home and Garden Bulletin 64) giving a relative hazard rating for subterranean activity as very heavy. Thus, annual termite (and wood decay) inspections are required. Findings from these inspections are documented on DD Form 1070. All active infestations are treated. Preventive soil pre-treatments are required for new construction and certain types of renovation. The Unified Facilities Guide Specification (see Appendix M; copy maintained in the office of the IPMC) is included in contract specifications to meet the requirement for these pre-treatments. Inspection of all soil treatment applications by a Government furnished DoD certified controller or accredited QAE inspector is required to ensure that new facilities are properly treated.

b. **Carpenter Ants**: Carpenter ants occur commonly on the installation in woods situations but rarely impact buildings or structures. Carpenter ants require wet wood to excavate in order to form residence galleries. The ants do not feed on wood. Only wood that is continually moist, such as that associated with roof or plumbing leaks is at risk of infestation. Elimination or these moisture source typically eliminates the infestations. Depending upon the extent on gallery excavations, however, infested wood may need to be replaced.
c. **Old-House Borer**: Old-house borer has been encountered occasionally but not recently. Infestations previously requiring action were all associated with unheated/uncooled shed in family housing unit in which structural members (2X4's) that had attained a specific, moisture content through age became infested. Generally, replacement of infested wood eliminates an infestation.
d. **Powder post Beetles:** The few powder post beetle infestations that have found on Fort Rucker were all associated with furnishings in family housing. Not being real-property, elimination of such infestations was the responsibility owners. As the infested furnishings put the housing at risk of infestation, treatment or removal of the furnishings were required. Fumigations or heat (high) treatments can be used to eliminate infestations.

4.5 Household and Nuisance Pests

Flies and crawling insects (ants, cockroaches, crickets, earwigs, beetles, etc.) and spiders commonly invade billets, family housing, food service facilities, warehouses, administrative offices and other buildings. All pests in this category are regarded primarily as household and nuisance pest; however, many are also potential disease vectors.

a. **Cockroaches:** With the advent of the many insecticidal and growth-regulator based baits available to control cockroaches that are now on the market, roaches have become easier to control but still constitute one of the primary nuisance pests in buildings on Fort Rucker. German roaches are less common in facilities than historically, but still constitute the most difficult roach species to control. Poor sanitation is be basis of most German roach infestations. Smoky Brown and American roaches are generally invader species, generally found outdoors or in sewer systems, and sealing potential entries into buildings, such as thresholds, gaps around windows and doors, and utility penetrations generally

goes a long way to controlling infestations of these two species. Asian roaches, which are an invasive species, have become a significant pest at some locations on the installation. Asian roaches are strongly attracted to light and can enter poorly sealed buildings in large numbers as a result.

b. **Flies:** Flies generally are considered as nuisance pests but have been found to carry organisms that cause typhoid, dysentery and other diarrheas. Fly activity is somewhat seasonal depending on temperature and availability of breeding material. Control of flies is primarily through elimination of breeding habitat (which is somewhat species specific), prevention of entry into buildings, high sanitation levels, cleaning of dumpsters following garbage pick-up (especially at food handling facilities), and timely disposal of wastes.
c. **Fleas:** Fleas are an occasional problem mainly in housing units, billets and rental cabins that allow pets. Insecticides including growth regulators must be used on occasion. Use of systemic pesticides in companion/pet animals is an alternative control available by prescription from the Fort Rucker Veterinary Treatment Facility (Bldg 9402). Systemic pesticides are used to eliminate fleas (and ticks) in our military working dogs.
d. **Spiders:** The southern house spider, pholcid or cellar spiders, wolf spiders, and jumping spiders are common household or building invaders that are responsible for the majority spider complaints on the installation. Exclusion is an important component of control of these nuisance species. Indoor spiders are generally best controlled by use of sweeping and vacuuming, removing both spiders and webs. Preventive sprays are generally of limited value in eliminating spider infestations. The two venomous spiders found on Fort Rucker the southern black widow and the brown widow) are seldom found inside buildings with climate control but can be numerous on occasion outdoors and in non-climate controlled environments. Chemical controls may have some value in these environments if spiders are located and sprayed.
e. **Ants:** Ants are a very common problem involving and the number of species generating complaints is large. Nesting sites include wall and attic voids, cracks in woodwork, foundation joints, etc. Nests may be outdoors with ants foraging into buildings. Generally, the most effective ant controls include sanitation, preventing access to buildings by sealing cracks and joints, and the use of baits targeting species based on foraging habits. Insecticides have value by reducing numbers of foraging individuals, but seldom eliminate ant colonies.
f. **Earwigs:** Earwigs are occasional invaders of buildings in event of heavy rains. Reduction of cover such as thatch, bark chips, and rock in ornamental plantings can limit populations in the immediate vicinity of buildings. Eliminating access points into buildings is also useful. Insecticidal sprays are generally not warranted.

4.6 Ornamental Plant and Turf Pests

A variety of insect pests can damage or destroy turf and ornamental plantings. By and large, most damage to plantings is limited are receives no treatments. Other plantings,

such as those associated with the golf course require continuous surveillance and frequent treatments.

a. Bagworms: Bagworms occasionally attack junipers and cedars on the installation, occasionally causing series defoliation. A biological “insecticide” is available to effect control.
b. Mole crickets: Occasionally, a significant turf pest whose burrowing and feeding activities can cause significant turf die-off. Surveillance and timing of insecticidal applications are key.
c. A commonly occurring defoliator known to attack more than 100 species of trees. Damage is usually not serious. Colonies can be removed by pruning and destroying tents.
d. Eastern tent caterpillar: Frequently appearing in very early spring on plum, apple and related trees. Defoliation is seldom serious. The tents are more of an aesthetic issue than anything else. The latter issue can be addressed by pruning and destroying tents.

4.7 Undesirable Vegetation and Microbial Organisms

a. Weed Control: Weed control is performed twice seasonally using herbicides on paved surfaces such as sidewalks, parking lots, runways, parking aprons and utility enclosures. Aquatic weed control is required occasionally in installation lakes to enhance recreation and to manage invasive species. Weed control to maintain fence lines, signposts, and building perimeters is generally done mechanically.

b. Disease: If disease is found in trees or ornamentals and depending upon location, remedial treatments may be required. For the most part, diseased/decadent trees are removed and/or replaced. Local Extension Service offices provide of Auburn University provide literature and assistance when needed. Maintenance of plantings in housing areas is the responsibility of the RCI housing partner. Maintaining plantings in a healthy vigorous state and use of native species which tend to be more locally adapted are integrated approaches to avoiding significant disease issues. Most problems are controlled (or removed) soon after discovery in order to avoid serious problems.

c. Aquatic Weed Control: Fort Rucker has a number of ponds and lakes that occasionally require mechanical or chemical spot treatments to control aquatic weeds. Non-native species are the basis for many of the problems. Aquatic weed control is designed to provide for maximum efficient utilization of available water resources, consistent with the installation mission and wetland protection procedures. The program intent is to increase the potential use of ponds and streams and to protect aquatic resources.

4.8 Other Pest Management Requirements

The BASOPS Contractor is responsible for pick-up and disposal of carcasses/remains resulting from their pest control activities, such as trapping and baiting of rodents.

Additionally, the Contractor is responsible for picking up road kills and other dead animals upon receipt of a valid service order. Disposal of deceased family pets is an owner responsibility. Disposal of carcasses and other remains shall be IAW the provisions of the Fort Rucker Branch Veterinary Services Standing Operating Procedures for Disposal of Non-regulated and Regulated Medical Waste (MCVX-SE-RR-AP—4, 31 Oct 01. Only the dumpster located vicinity of the deer skinning shed near the Game Warden Office (Bldg 24201) is now available for carcass disposal. The dumpster is picked up daily on weekdays. Odors requiring remediation may arise from such situations as dead animals in walls, crawl spaces, decaying vegetation, or molds and fungi from other sources. Removal of dead animals in and around buildings and structures is the responsibility of the BASOPS maintenance Contractor personnel. Corrective actions may include use of treatments to mask odors on a temporary basis.

4.9 Quarantine Pests

When required, a local USDA inspector may check incoming materials and cargo for the presence of insect eggs, larvae, or adult pests. Retrograde cargo may be received on the installation periodically and is inspected if required. Housing inspectors receive training so that they will be aware of concerns with in-bound household goods shipments.

4.10 West-Nile Virus

West Nile Virus (WNV) is an encephalitis disease mainly transmitted by mosquitoes to humans. The disease, which cycles between birds and humans was first documented in North America in New York in 1999. Approximately 80% of people who are infected do not show any symptoms. About 1 in 5 infected with WNV will develop severe illness. Severe symptoms include high fever, neck stiffness, stupor, disorientation, coma, tremors, convulsions, muscle weakness, vision loss, numbness and paralysis. Symptoms may last several weeks. Less than 1% develops a serious, sometime fatal, neurologic illness. Neurological effects may be permanent. People over 50 are more likely to develop serious symptoms. The initial outbreaks of the disease spread across the country in the early 2000's and led to expectation of recurring, widespread epidemics. Initially, enhanced surveillance was conducted of disease incidence in dead birds. Adult mosquito trapping was expanded and public awareness training was initiated. The DoD response was to direct installations to be develop a West-Nile Virus (WNV) Response Plans. A copy of the Fort Rucker plan constituting Appendix H of this plan is on file in the office of the IPMC. In North America WNV is now endemic with outbreaks happening mostly in the summer months and fall. No cases of West-Nile have ever been documented on the installation. Should an outbreak occur, the West-Nile Virus Response Plan is available for implementation.

4.11 Zika Virus

Zika virus is primarily spread through the bite of an infected Aedes species mosquito. Outbreaks spread to the Western Hemisphere from Africa and Asia in 2015. Most

occurrences of the virus in the United States have been linked to travelers returning to the country. With recent outbreaks world-wide, the number of Zika cases among travelers visiting or returning to the United States will likely increase. The imported cases may result in local spread of the virus in some areas of the United States. Transmission from person to person by mosquito has been suspected in south Florida. Known vectors of Zika virus (*Aedes albopictus* and *A*. *aegyti*) occur on Fort Rucker. Department of the Army has directed that at a minimum, the installation implement a three-prong effort consisting of:

a. Enhanced surveillance of adult and larval stages of these day biting mosquitoes.
b. Testing of mosquitoes collected during surveillance for the presence of Zika virus using U.S. Army Public Health Center (Provisional) entomological testing laboratories.
c. The installation use integrated measures such as source reduction, physical control, adult and larval control, and other appropriate control measures to reduce breeding habitat and feeding opportunities of the mosquitoes. The Zika Vector Surveillance Guide and Response Plan (Appendix I, copy in the office of the IPMC) shall be used to guide a Fort response to an outbreak.

At Fort Rucker, Preventive Medicine has primary responsibility for the implementation of a. and b. above. Actual controls are the province of the BASOPS Maintenance Contractor. Some mosquito controls including traditional chemical controls are ineffective against Zika virus. The primary mosquito vectors (*Aedes* spp.) are active during daylight hours and evening fogging is likely to do little to control these mosquitoes. Simply adjusting the hours that fogger trucks operate is not an option because of impacts on beneficial insects that pollinate crops and other plants. Control programs that include distribution of larvae-killing bacteria in pellets into standing water are ineffective because these species breed in water collected in small containers and tree holes which are not likely to be treated with pellets. Residents should make sure water is not allowed to stand for more than two days in items such as gutters, bird baths, improperly stored tarps, wading pools, pet dishes and discarded drink and other potential containers.

5.0 INTEGRATED PEST MANAGEMENT (IPM)

IPM is the use of multiple techniques to prevent or suppress pest populations at acceptable levels in a given situation. Although IPM emphasizes the use of non-chemical strategies, chemical controls remain a part of the IPM process. IPM strategies depend on surveillance to establish the need for control and to monitor the effectiveness of management efforts. The use of routine, scheduled treatments in the absence a determination of need is prohibited.

5.1 IPM Approach

There are four basic methods of control used in the IPM approach. These methods are described below. While any one of these methods may solve a pest problem, often

several methods are used concurrently, particularly if long–term control is needed. For example, screens may be used to prevent mosquitoes from entering buildings, breeding sites may be drained or filled to eliminate larval habitat, and insecticides by be used to kill larval and adult mosquitoes. Screens will protect people indoors but have no impact outdoors. Larval treatments and elimination of breeding sites have no impact on resident adult populations. Although chemical control is an integral part of IPM, nonchemical control is stressed. Chemical control is usually temporary and, in the end, more expensive. Nonchemical control, which may initially be more expensive than chemicals, will usually be more cost effective in the end. Nonchemical controls also have the added advantage of being nontoxic, thereby reducing the potential risk to human health and the environment.

a. **Legal Mandate:** Federal Agencies are mandated by Section 136 et seq. of Title 7, United States Code, FIFRA, 1976 as amended to use IPM. IPM is a sustainable approach to managing pests by combining biological, cultural, physical and chemical tools in a way that minimizes economic, health and environmental risks. The Army is committed to IPM at its facilities and installations as the best approach to control pests and reduce pesticide reliance and resistance.
b. **Mechanical and Physical Control:** This type of control alters the environment in which a pest lives (trapping, removal and exclusion). Examples include harborage elimination through caulking or filling voids, screening, mechanical traps or glue boards, and nets and other barriers to prevent entry into buildings.
c. **Cultural Control:** Strategies in the method involve manipulating environmental conditions to suppress or eliminate pests. For example, spreading manure from stables onto fields to dry prevents fly breeding. Elimination of food and water for pests through good sanitary practices may prevent pest populations from becoming established or from increasing.
d. **Biological Control:** In this control strategy, predators, parasites or disease organisms are used to control pest populations. Sterile flies may be released to lower reproductivity. Viruses and bacteria may be used which control growth or otherwise kill insects. Parasitic wasps may be introduce to kill eggs, larvae, or other life stages. Biological control may be effective in and of itself, but is often used in conjunction with other types of control.
e. **Chemical Control:** Pesticides kill livings organisms whether they are plants (herbicides), insects (insecticides), mold//mildew/fungi (fungicides), mites (miticides), molluscicides (snails and slugs), bacteria (bactericides), mice/rats (rodenticides) or birds (avicides). At one time, chemicals were considered a panacea, as it were, to the effective control of pests, but resistance has rendered many pesticides ineffective and effects on non-targets have been substantial. Modern pesticides generally have limited residual action. While this has reduced human and animal exposures and reduced environmental impact, the cost of chemical control has risen due to requirements for more frequent applications. Since personal protection and special handling and storage requirements are necessary with the use of chemicals, the overall cost of using chemical as a sole

means of control can be quite costly when compared with nonchemical control methods.

6.0 HEALTH AND SAFETY

6.1 Medical Surveillance of Pest Management Personnel

Medical monitoring is required for all Fort Rucker personnel involved in pest management operations. For Government employees, medical surveillance is conducted by the Fort Rucker Aeromedical Center Preventive Medicine-Occupational Health Section to ensure that personnel are fit for the job and that there are no physical conditions that would make them especially vulnerable to potential pesticide health hazards. Contract pest management personnel who apply pesticides on the installation are included in a medical surveillance problem provided by the Contractor. The program is in compliance with current Occupational Safety and Health Administration/EPA standards.

a. Some common symptoms produced by cholinesterase-inhibiting substances are listed in Table 1.

Table 1. Symptoms Caused by Cholinesterase Inhibiting Substances

Mild Poisoning	Moderate Poisoning	Severe Poisoning
Anorexia	Nausea	Diarrhea
Dizziness	Salivation	Pinpoint, non-reactive
Weakness	Abdominal Cramps	pupils
Respiratory	Perspiration	Lacrimation
Difficulty	Slow pulse	Vomiting
Anxiety	Muscular tremors	Loss of Sphincter
Tremors of tongue	Heart Block	control
and eyelids		Convulsions
Cyanosis		Coma
Miosis		
Impairment of		
Visual acuity		

b. Personnel who handle or otherwise come into contact with wild animals in the course of their duties receive rabies prophylaxis. This includes military police, wildlife Biologists and pest management personnel. Special gloves and equipment designed for handling wild animals are procured and used by all personnel involved in such operations.
c. All Government employees whose duties place them in close personal contact with pesticides through quality assurance evaluations or contractor representative responsibilities are monitored by Occupational Health.

6.2 Hazard Communication

The globally Harmonized System, recently adopted by the Occupational Safety and Health Administration standardizes the way chemical-based hazards are communicated to workers, primarily through labeling and safety data sheets (formerly material data sheets). Soldiers and employees are trained to standard by their employers. Personnel are given hazard communication training, which includes a review of hazardous materials in their workplaces. Following initial hazard communication classes, additional training is given to new employees or when new hazardous materials are introduced into a workplace. Current SDSs for pesticides and other chemicals used in pest management are kept in the Pest Management Facilities (Bldgs 1490 and 20039). Copies of SDSs for products carried as truck stocks are also typically carried in pest management vehicles. SDSs must be available to workers at all times during their work shifts. The IPMC maintains a file containing all product labels and SDSs for all pesticides on the currently approved Pesticide Use Proposal for the installation.

6.3 Respiratory Protection

The BASOPS Contractor and other employers are responsible for ensuring that their personnel are enrolled in a respiratory protection program. Safety personnel are responsible for developing programs to ensure personal protective equipment is available, properly maintained, and correctly used IAW AR 385-10. All pest management personnel must conform to all applicable post respiratory protection programs. Appendix R Respirator User Guide is available in the office of the IPMC.

6.4 Personal Protective Equipment

Approved respirators, chemical resistant gloves, goggles, boots and protective clothing (as specified by applicable laws, regulations and/or pesticide labels) must be provided by employers of pest management personnel. Personal protective equipment, including respirators, gloves, eye and hearing protection, and protective clothing are to be utilized by all pest management personnel engaged in handling pesticides in accordance with the requirements set forth in the FIFRA (40 CFR 162), Occupational Safety and Health Administration Standards (29 CFR 1910), DoD Instruction 4150.7, and individual pesticide labels. Personal protective equipment is to be worn as necessary by all pest management personnel.

6.5 Workplace Monitoring

Annual occupational hazard surveys shall be performed by Fort Rucker Preventive Medicine to evaluate occupational health hazards associated with pest management operations at Fort Rucker.

6.6 Laundering Facilities

Bldg 1490 is equipped to house a washer and dryer, but the BASOPS Contractor Pest Management Section has contracted with a subcontractor to perform laundering required by the section. Laundering is performed off the installation. The Forestry and Fish and Wildlife Sections of the Natural Resources Division have a washer and dryer set-up in their storage facility, Bldg 1455.

6.7 Emergency Decontamination Facilities

Emergency eyewash and deluge shower are located inside the mixing room of Bldg 1490. Similar decontamination facilities are located on the mixing pad adjacent to Bldg 20039. All pest management personnel are instructed in the proper use of the equipment in the event of pesticide contact with skin or eyes.

6.8 Fire Protection

All pesticide storage at Fort Rucker, with the exception of those pesticides sold or distributed by the Commissary, Exchange Four Seasons Store and the Self-Help Center, are in Bldgs 1490 or 20039. Fire protection in the two pest management storage facilities is IAW the former AFPMB TG No. 16, Pesticide fires: Prevention, control, and cleanup. Bldg 1490 is monitored by smoke and heat detectors and is equipped with a sprinkler system in chemical storage areas. Alarm systems for the building are wired directly to the primary fire station on the installation. The pre-fire building plan for Bldg 1490 is provided in Appendix N (copies maintained in the office of the IPMC). Pesticide inventories are provided to the Fire Prevention Branch of the Fire Prevention and Protection Division of the DPS quarterly.

6.9 Pest Control Vehicles

All pest management vehicles are Government- or MWR-owned. Inventory of these vehicles is provided in Appendix F (copy maintained in the office of the IPMC). Vehicles transporting or carrying truck stocks of pesticides are placarded and labeled "Contaminated with Pesticides" in accordance with Federal law. Vehicles carrying pesticide truck stocks are light utility trucks (LUTs) with lockable storage compartments. At no time are pesticides left unsecured in vehicles when unattended. Pesticides and contaminated equipment are not carried in the cabs of vehicles. Pesticide labels and Safety Data Sheets (formerly Material Safety Data Sheets) of all chemicals stocked or carried in a vehicle are also on the vehicle. Portable eye lavage and spill kits are carried in each pest control vehicle.

7.0 ENVIRONMENTAL CONSIDERATIONS

The Fort Rucker Pest Management Program is committed to conducting operations in a safe manner. Environmental stewardship emphasizes the importance of considering the environmental implication in the application of integrated pest management efforts.

7.1 Protection of the Public

Precautions are taken during pesticide applications to protect the public, on and off the installation. Whenever pesticides are applied outdoors, care is taken to avoid drift onto non-targets. Wind speeds exceeding five miles per hour are cause for not initiating or suspending outdoors applications of liquid sprays and dusts. Precautions are also required to ensure that there is no contamination of potable water sources. Personnel wear proper personal protective clothing and equipment IAW recommendations specified by product labels and must meet medical monitoring standards as applicable. Applicators must also take into account sensitive areas and personnel. When appropriate, selective or public notification of pesticide applications is conducted through appropriate media.

a. Spill notifications (catastrophic or otherwise): HAZ/MAT Team (Fire Prevention and Protection Division, DPS) Phone 911 in the event that containment support is required; Environmental Division, DPW for clean-up advice and notification of the State and EPA if required.
b. Requirements and Means of Notifying Public Pre-Post Application of Pesticide(s): Notifications are telephonic, electronic (e-mail), per standing order, or in person. Signs are posted to designate re-entry times and dates in the event of space or fumigation treatments.

7.2 Sensitive Areas

Pest control personnel must be aware of the potential impacts associated with pesticide use within sensitive areas. A sensitive area is any place where pesticide use could cause great harm if not used with special care and caution. Sensitive areas include child development centers, barracks, residences, recreational areas, food service activities, medical treatment and patient care areas, in the vicinity of sensitive crops and around surface water sources, including wetlands). Areas around beekeeping activities are also considered sensitive. Extreme caution must be employed whenever the potential for human exposure to pesticides exists.

7.3 Child Development Centers (CDCs)

Fort Rucker has two such facilities: The CDC (Bldg 8938) and the 24/7 Facility (Bldg 8946). AFPMB TG No. 2, Integrated Pest Management in Child Development Centers and Schools (copy maintained in the office of IPMC) is a user guide designed for the Integrated Pest Management Coordinator (IPMC) and Child Development Center (CDC) Director to (A) understand integrated pest management (IPM) in order to limit pesticide exposure risks in such institutional environments, and (B) describe how to establish IPM Programs and effectively operate with the least administrative effort.

The IPM-in-CDCs and schools initiative is built upon long-established DoD IPM

principles including: planning and professional oversight, high training standards, recordkeeping and reporting and strategies for reducing pesticide use. Pests can adversely affect all humans. However, children are more susceptible to diseases and illnesses transmitted or caused by insects than most adults. Children are also more susceptible to the possible impacts of exposures to pesticides. Pesticide use in and around Child Developments Centers is restricted. Control of pests in these facilities should make maximum use of all available non-chemical remedies before use of pesticides is considered. Effective IPM practices include

a. Education, stressing good housekeeping, elimination of food and water for pests, reporting of pests to maintenance personnel, and maintenance of building integrity (close doors and windows when not in use).
b. Habitat modification: Eliminate sources of food, water and shelter for pests.
c. Design or re-design: Incorporate design changes that are least favorable for pests. For example, using wire racks, shelves, and baskets instead of boards and boxes can eliminate harborage for household pests.
d. Keep areas clean – keep all food in closed containers when not in use. This applies not only to kitchen areas but all areas of the facilities. Trash cans should be emptied and cleaned daily. Uneaten food should be removed from rooms and break areas immediately.
e. Modify Horticultural Activities – keep shrubs and trees properly fertilized and trimmed.
f. Design or Redesign of Landscape Plantings – keep shrubs away from building perimeters to reduce rodent and insect habitat. At CDCs, shrubs and trees plantings should be outside of the fenced area where children play.
g. Maintain Physical Control – use non-toxic methods to discourage pests from entering buildings or to remove pests once inside. Common physical controls include (A) vacuuming, (2) trapping, (3) barriers, (4) heat and cold, and (5) removing pests by hand.
h. Use biological controls – promote enhancement/conservation, foster pest predator populations and use microbial controls for selected pests such as mosquitoes.
i. Use Least-Toxic Chemicals and Pesticides.

When pesticide use is necessary, select pesticides using the following factors:

a. Safety – choose pesticides with low toxicities to protect the children.
b. Species specificity – consider selecting pesticides that are specific to the target species and not beneficial species.
c. Prevent resistance – seasonally, choose pesticides that use different modes of action from the prior season.
d. Speed – use quick knockdown, short-lived pesticide for emergency pest management treatments; for non-emergency pest control, the application of a less-toxic, slower-acting pesticide that provides longer control is more desirable.
e. Cost – many of the older and more persistent pesticides appear to be less expensive than the newer pesticides. However, newer pesticides are generally

applied at much lower rates of application yet provide the same or greater level of control.

f. Pesticide Application Guidelines – Trained and certified pesticide applicators (either DoD or State Applicator per DODI 4150.07) may only apply pesticides at DoD CDCs.
g. Notification and Posting Considerations – always notify and post routine procedures for application of all pesticides in CDCs. An emergency, such as paper wasps on the playground is the only exception for prior notification. Make notification of this kind of emergency application after the fact. Take all precautions to prevent or reduce exposure to staff and children.
h. The CDC should establish a parental notification registry to alert parents to pesticide applications. CDC administrators should make every effort to inform parents, guardians, and staff of the registry program. Registry program information should be posted where parents, guardians and staff will see the information.

Exemptions to Notification. Certain pesticides are exempted from notification due to their low toxicity and localized applications reducing the risk to children. These pesticides include:

a. Germicides, disinfectants, bactericides, sanitizing agents, water purifiers and swimming pool chemicals use in normal cleaning activities.
b. Personal insect repellents.
c. Human or animal ectoparasite control products administered by qualified health professionals or veterinarians.
d. Manufactured bait stations, paste, or gel bait insecticides placed in areas where human access is limited.
e. Aerosols used as a contact spray to removed site-specific pests such as wasps or spiders.

Emergency Pest Management Situation.

a. The CDC administrator may direct that an emergency pesticide application be made without prior notification in the event of an immediate threat to human health.
b. Subsequent notification. The CDC administrator should provide to parents, guardians of staff listed in the registry, a notification of the pesticide application for an emergency pest management situation either 24 hours after the CDC made the pesticide application or the morning of the next business day, whichever is earlier.
c. Method of notification. The CDC may provide the required notice (A) written notices sent to the homes of children or staff, (b) telephone calls, (c) direct contact, (d) notice delivered electronically through e-mail or FAX, or Text alert system.

Posting of Pesticide Application. Any pesticide applicator in a CDC or on the property

outside the facility should post a sign notifying the public of the pesticide application; this should be not less than 24 hours prior to application. The sign should be posted at a conspicuous location at the point of entry to the CDC and at the CDC registration desk.

7.4 Endangered/Protected Species and Critical Habitats

No federally-listed species have been recorded on Fort Rucker except for the American alligator, listed as threatened only due to its similarity of appearance to the endangered American crocodile. The bald eagle, formerly listed as threatened, does occur on the installation. The bald eagle is still protected under the Bald and Golden Eagle Protection Act. State-protected species that have confirmed populations, or have been sighted on the reservation, are the gopher tortoise, osprey, bald eagle, common ground dove, and southeastern pocket gopher. A number of federally-listed mussel species for which streams on Fort Rucker may provide suitable habitat. Although a survey conducted in 2003 did not locate any threatened or endangered mussel species, it is possible that they could occur on the installation. Lake Tholocco formerly supported populations of fresh water mussels, and since the lake has been restored, the mussels are expected to re-establish themselves. The gopher tortoise is of special concern as it is a federal Candidate species, a threatened species on the state listing, and an Army Species at Risk (SAR). Plans for surveillance for, and management of, these species are presented in the installation Integrated Natural Resources Management Plan 2018-2022. A copy of this plan constitutes Appendix B and is maintained in the office of the IPMC. Pest management activities under consideration or planned for implementation must take into account potential impacts by those activities on the species discussed above.

7.5 Environmental Documentation

The Environmental Division must see detailed proposals/designs/scopes of work and comment on specific issues, such as pesticides. asbestos, lead based paint, stormwater, air etc. in order to determine if further National Environmental Policy Act (NEPA) documentation maybe required for the project. A determination will be made when the design and/or scope of work is completed and submitted back to DPW-ENRD for further review.

7.6 Pesticide Spills and Remediation

Pesticide spill clean-up kits are maintained inside Bldg 1490 and outside Bldg 20039. Guidance from Armed Forces Pest Management Board TG No. 15, Pesticide Spill Prevention and Management, is followed for pesticide spill clean-up, decontamination, disposal, notification procedures, and components of spill kits.

Installation plans relating to management of spills include the Fort Rucker Installation

Spill Contingency Plan (ISCP), the Fort Rucker Spill Prevention, Control and Countermeasures Plan (SPCCP), and the Fort Rucker Storm Water Pollution Prevention Plan; and Best Management Plan for Sanitary Sewer System (SWPP/BMP). All of these plans are available at https://www.fortrucker-env.com.

7.7 Pesticide Waste and Excess Stock Disposal

Waste and excess pesticides are handled as follows:

a. Concentrates: Turned in to Defense Reutilization and Marketing Office (DRMO) at Eglin AFB for disposition.
b. Formulated pesticides: Stored for subsequent use if allowed by the product label. Best practice dictates that pesticides only be mixed in quantities that can be used up on a single work shift.
c. Rinsates: Stored for use as diluents in formulating other pesticide solutions or suspensions. Chemical compatibility can be an issue.
d. Leakage residues and large spills: Handled in accordance with recommendations provided on the product label and the directions of the individual remediation in the Environmental Division office of the DPW.
e. Pesticide containers: Triple rinsed, broken or punctured, and buried in a Subtitle D sanitary landfill. Expended aerosol cans are buried intact.

7.8 Pollution Control/Abatement Projects

There are no current pesticide pollution control or abatement projects on Fort Rucker.

7.9 Pollution Prevention

This pest management program complies with the applicable sections of Executive Order (EO) 13148 of April 21, 2000, Greening the Government through Leadership in Environmental Management. See http://www.ofee.gov/eo/eo13423 main.asp for details.

7.10 Prohibited Activities

a. At no time will a pesticide be used in any manner inconsistent with its label.
b. No pesticide will be used whose registration has been suspended or cancelled by the EPA or the State of Alabama.
c. Herbicides will not be used to control weeds in areas where children play.
d. Pesticides will not be used in CDC facilities without the prior approval of the AEC Pest Management Consultant.
e. Pesticide misuse—which includes use inconsistent with the label—is a violation of Federal Law. In accordance with DoD policy (see DOD 4150.7-P), Fort Rucker

personnel will record and report any instances of pesticide misuse and falsification of records by contractors to the State of Alabama.

7.11 Cultural Resource Management

The Fort Rucker Integrated Cultural Resources Management Plan (ICRMP) (Appendix J, copy maintained in the office of the IPMC) documents 315 prehistoric archaeological sites on the installation. Six of these fee-owned lands are eligible for the National Register of Historic Places, but no sites are currently on the Register. Aviation training for the most part occurs in locales that do not contain cultural resources. These activities occur primarily in developed spaces (e.g., buildings, structures, paved runways and surfaces on airfields and stagefields) or in airspace above and around Fort Rucker. Cultural resources in undeveloped areas, including the many archaeological sites, may be threatened by occasional use of open spaces (e.g., wildlife feeder plots, recreational fields, unforested areas) as emergency landing areas. The Forestry Section (stand management activities) and the Fish & Wildlife Section (development and maintenance of wildlife feeder plots and aquatic vegetation control in fisheries) do perform pest management activities in forested and undeveloped lands that are otherwise unmanaged. The ICMP establishes priorities and standards (including a number of SOPs) for the evaluation and management of historic properties on Fort Rucker. Personnel performing pest management activities must take into consideration potential impacts on cultural sites in developing and executing their management plans.

8.0 ADMINISTRATION

8.1 Contracts

a. Most Fort Rucker pest management services are currently contracted out under a BASOPS maintenance contract. Separate contracts are awarded for grounds maintenance functions (including certain specified or allowed pest management activities) ON (1) the cantonment and (2) airfields and stagefields. Golf Course pest management is performed by certified MWR personnel. The IPMC reviews all pest management contracts before issuance for bid as directed by Fort Rucker Integrated Pest Management Plan policy. The scope and applicability for the Contractor is provided in each contract. Termite treatments are included in the specifications of all new construction contracts, hence treatments in accordance with applicable product recommendations and labels are the sole responsibility of the general contractor. Fort Rucker retains the right to and does inspect and review all facets of each pretreatment operation. A Quality Assurance Evaluator accomplishes this task. Commercial contracts for pest control services in privatized family housing areas (solicited by the occupant) are currently not allowed by the Fort Rucker housing partner.
b. Performance work statement (PWSs) and instructions are maintained on file with the IPMC. The PWS follow accepted IPM guidance of emphasizing the need to

conduct surveillance first and use pesticide treatments as a last resort. Most pest management services on the installation are provided under a BASOPS maintenance contract.

8.2 Job Orders

a. Contract pest management technicians perform most pest surveillance and control under Standing Operating Orders (SOOs) managed by the Contractor. The SOOs cover most buildings and structures and outside facilities on the installation. Family Housing is excluded from the requirement. Housing residents are to contact the Fort Rucker housing partner to secure services.
b. Work requests for other than scheduled activities are performed under Demand Service Orders (DMOs): Phone 255-7041 or -7042.

8.3 Inter-Service Support Agreements

Fort Rucker provides pest management support to tenant activities as stipulated in applicable Intra-service and Inter-service support agreement (ISSAs). Services provided are comparable to services provided to other installation facilities and activities.

8.4 Agricultural Out-Leases

Presently, Fort Rucker has one agricultural out-leases. Agricultural out-leases are developed using the following the following procedures:

a. Prior to any agricultural pesticide application to an out-leased property, the lessee shall notify the IPMC of the intent to perform chemical pest control. The notification shall be in writing and contain (1) proposed date(s) of application, (2) pesticide to be applied (including label and SDS) and rate, (3) application method (equipment to be used, (4) application site, (5) pest to be controlled.
b. The IPMC will review the lessee's control plan to determine adequacy with the present Installation PMP as well as compliance with DOD, State, and Federal regulations and certifications. The lessee will be permitted to perform the planned pest control activity only after review and approval of the lessee's control plan. Any recommendations presented by Fort Rucker shall be incorporated as part of the lessee control plan, otherwise, permission for application shall be denied. Following completion of any approved applications, the lessee shall file a report summarizing the action, including date(s), unit of measure for area treated, target pest, name, EPA Reg No of the pesticide used, concentration or rate, quantity applied, labor time and identity of the certified applicator involved.

8.5 Resources

a. **Staffing**: The following personnel are involved with pest management on Fort Rucker. The list below includes activities with both full-time and part-time

employees. Copies of the Pesticide Applicator Certifications and the IPMC and Quality Assurance Evaluator Accreditations are maintained in the office of the IPMC.

- DPW – Installation Integrated Pest Management Coordinator (IPMC)
- Quality Assurance Evaluators
- Contracted pest management technicians (full-time, State certified)
- Government employees (Natural Resources) (full-time, DoD certified)
- Public Health Specialists (full-time, DoD certified)
- Veterinary Food Inspectors (full-time)
- Golf Course (MWR, full-time, DoD certified)

b. **Vehicles, Materials and Equipment**: All vehicles, materials and equipment are Government furnished. Current inventory of vehicles and equipment (Appendix F) is on file in the office of the IPMC. Pesticides are stored in one of two authorized pesticide storage facilities (see below). Pesticides and IPM products are ordered as required to maintain Fort Rucker facilities in accordance with the current IPM Plan. Inventories of pesticides in storage which must be included in the current Pesticide Usage Proposal approved by AEC are maintained by the owners of the pesticides. These inventories are updated as changes occur. Pesticides not stored in these facilities but which are brought onto the installation by Contractors in compliance with various contract specifications and requirements shall maintain those pesticides in locked storage compartments on Contractor owned vehicles when not in use and shall be removed from the installation at the end of each work day.

c. **DPW Pest Management Facility**: The DPW pest management facility (Bldg 1490) was completed in January, 1986. A facility floor plan and project justification package are provided Appendix L (maintained in the office of the IPMC). The then state-of-the-art facility provides proper storage, handling, mixing, and containment capabilities IAW current EPA and OSHA standards for such facilities. Office, locker room, equipment and pesticide storage, vehicle storage, storage security, ventilation, and equipment wash-down areas (floor drains sealed) are adequate. Formulation areas include counters with impervious surfaces and stainless steel deep sink with exhaust hood for toxic fumes. Ventilation in chemical storage areas operates 24/7 with a design capacity of 4 atmospheric turn-overs per hour (minimum). Two chemical storage rooms (insecticide and herbicide) are present in the facility. Emergency eyewash and deluge shower are provided. Locker space for eight personnel is provided in two separate (male/female) toilet and shower facilities. Washer and drier connections are present. The BASOPS Contractor operates the facility but storage of pesticides belonging to the Forestry and Fish and Wildlife Sections of the Division of Natural Resources Branch are also housed in the building. The facility lacks a perimeter security fence.

d. **The Silver Wings Golf Course pest management facility** (Bldg 20039), an RGF Ultra Shed System, was completed in l996. The specification for that facility is also in Appendix L (maintained in the office of the IPMC). A mixing pad adjacent to the storage building includes an emergency eyewash and deluge

shower. The golf course facility is located within a fenced enclosure across Combat Road from the clubhouse.

8.6 Reports and Records

a. Records of all pest management operations performed by engineering personnel, Preventive Medicine, Veterinarians, contractors, agricultural (when present), and self-help issues must be reported and maintained for the installation by the IPMC. Personal use of repellents (e.g., DEET and Permethrin) does not need to be reported.
b. Pest management surveillance and pesticide applications are documented on either a DD Form 1532-1 Pest Management Maintenance Record or in the case of certain outdoor applications a USAACE Form 2740 Pest Management Maintenance Record. Appendix O (on file in the office of the IPMC) includes copies of the forms specified here and below.
c. The monthly Pest Management Report (DD Form 1532 (see Appendix O) or approved alternate) is used to report all pest management operations on the installation. From 2001 through September, 2017 the Air Force Integrated Pest Management Information (IPMIS) version 3.0 was available and used to manage pest management information and records generated by installation pest management personnel. That capability was recently lost with a computer hardware/software upgrade.
d. The DD Form 1070 Termite and Wood Decay Inspection form is used to document findings resulting from required annual termite and wood decay inspections of installation facilities and structures (see Appendix O).
e. As indicated above (para 8.5c and 8.5d), pesticide storage on the installation is authorized only in Bldgs 1490 and 20039. The former facility stores pesticides belonging to the BASOPS Contractor Pest Management Section and the Natural Resources Branch of the Environmental Division of the DPW. The latter facility stores pesticides belonging to the golf course. Inventories of pesticides in storage shall be maintained by the owners of the pesticides in these facilities. The inventories can be electronic or log type but must be current and reflect receipts and issues by date. Copies of the inventory shall be provided to the IPMC at least quarterly. Access to these storage facilities shall be made available for inspection by the IPMC upon request.
f. Installation State Report (ISR) CLS 510: Required quarterly and annually. Report includes number of services including inspections performed indoors; number of services including inspections performed outdoors; number of indoor service orders completed and number of indoor service orders completed on time in accordance with assigned priorities; and number of outdoor service orders completed and number of outdoor services orders completed on time in accordance with assigned priorities. Due at the end of each fiscal year quarter.
g. Annual Measure of Merit Statistics: Report includes verification of installation having a Pest Management plan approved by the AEC Pest Management Consultant and signed by the Garrison Commander; verification that the

installation has an IPMC appointed on orders; report of the pounds of active ingredient (PAI) applied by all sources on the installation during the fiscal year; the top three categories applied based upon PAI; and explanation if the PAI is < or > 25% of the prior year's total. Due at the conclusion of each fiscal year.

h. Pesticide Use Proposal (PUP): Proposal listing pesticides with EPA Registration Numbers and Active Ingredients of each proposed for use on the installation during the next fiscal year. Submitted to the AEC Pest Management Consultant for review, comment and approval at the beginning of each fiscal year.

8.7 Training

a. Certification: Government (including MWR NAF) Fort Rucker employees who apply or oversee the application of pesticides must be DoD-certified in one or more of the following categories: Forest (2), Ornamental and Turf (3), Aquatic (5), Right-of-Way (6), Industrial, Institutional, Structural, and Health-Related, and/or Public Health (8). Certified personnel are retrained and re-certified every three years. In accordance with DoD policy, all contract personnel who apply pesticides on Fort Rucker must be State of Alabama Department of Agriculture and Consumer Services certified in one or more of the following Alabama categories: Aquatic Pest Control (AQ), Ground Applicator (GRD), Household Pest Control/Certified Applicator (HPC), Ornamental and Turf Pest Control/Supervisor (OTPS), Public Health (PH), Right-of-Way Pest Control (ROW) and Wood Destroying Organisms/Certified Operator. Personnel are retrained and/or recertified every three years.
b. Continuing Education and Training: Personnel who are State of Alabama certified in pesticide applications must attend pest management classes, workshops, seminars totaling eight hours each year (totaling thirty hours each certification cycle) or take a recertification examination to retain certification. Certified DoD personnel must complete a one week recertification course of training and examination at the Academy of Health Sciences, Fort Sam Houston, Texas or complete an Air Force sponsored on-line recertification course every three years.
c. Copies of certifications for pest management personnel are maintained as Appendix G in the office of the IPMC.

8.8 Quality Assurance/Quality Control

The QAE position for the grounds maintenance contracts is filled. That individual is trained and accredited. There are no current contracts for grounds maintenance on the cantonment (1) and at airfields and stagefields (2). New solicitations are for these contracts are to be bid in January, 2018. The QAE position for the pest management portion of the BASOPS pest management is currently vacant. After a hire is made, QAE training and certification will be obtained.

8.9 Design/Review of New Construction

Construction projects on Fort Rucker are reviewed with pest prevention and control in mind. Engineering and medical personnel review the design of new buildings or other structure and conduct a pest evaluation in the constructed facility prior to completion of the project to ensure that insect and rodent entry points and potential harborage have been eliminated.

8.10 Five-Year Plan

Many administrative elements of the program such as recurring and projected requirements are addressed in the five-year review and update. This serves as a tool to identify these requirements and the timeframes for implementation. The five-year review should also include facility changes (e.g., new construction), program management and resource requirements. Technical review and updates are made annually.

8.11 Funding

No independent budget is prepared for pest management services. The Business Management Division of the DPW allocates funds by contracts or work documents and does not break out costs by organization units. Annual pest management costs from which estimates might be projected are unavailable.

9.0 COORDINATION – DOD, OTHER FEDERAL, STATE AND LOCAL AGENCIES, AND PRIVATE PARTNERS

9.1 The Army Pest Management Program

The Army Pest Management Program is responsible for protecting personnel and material from illness and damage by pests, wherever in the world they may be. The program includes both medical and operational responsibilities. While these responsibilities do overlap, medical representatives focus on preventing and minimizing medical consequences of pests and pest management operations while the Assistant Chief of Staff for Installation Management (ADCSIM) and AEC concentrate on safe, effective implementation of day-to-day pest management operations and environmental consideration of pest management operations.

9.2 Fort Rucker Residential Communities (FRRC)

The Fort Rucker Residential Communities partner is responsible for all indoor and structural pest control services in family housing units. This includes control measures within five feet of foundations for the purpose of structure-associated pests, such as termites and household invaders. The FRRC is also responsible for grounds maintenance including any pest management functions required to improved grounds

within the defined footprint of family housing. All FRRC operations must be incompliance with applicable Federal and State Statutes. As stated in the Community Development and Management Plan and the Memorandum from Headquarters, Department of the Army (DAIM-ZA, Subject: Installation Management of Pest Control Activities on FRRC properties, 3 October 2003), FRRC operations are not required to comply with DoD Measures of Merit regarding applications and reductions. The housing partner at Fort Rucker has chosen to have their contractors who are providing pest management practices comply with the certification and reporting requirements specified in that policy memorandum.

9.3 The Army Environmental Command Pest Management Consultant

Provides technical oversight for the IPM Plan, and gives special attention to any pesticide application that: uses restricted-use pesticides; uses any pesticide that many significantly contaminate surface or ground water; includes 259 or more hectares (640 acres) in one pesticide application; may adversely affect endangered or other protected species or habitat; or, involves aerial application of pesticides.

9.4 The Installation IPM Coordinator and Preventive Medicine Personnel

Personnel maintain liaison at Fort Rucker to determine the prevalence of disease vectors and other public health pests in the area surrounding the installation.

9.5 Directorate of Public Works Pest Control Contractor

The BASOPS Contractor is responsible for all pest control on the installation excepting stray dog and cat control and feral animal control. Stray dog and cat control is managed under a contract with the city of Ozark, Alabama. The Game Warden manages other feral animal requirements.

9.6 Control of Mosquito Larvae

Control of mosquito larvae on open water (e.g., during an encephalitis outbreak) is coordinated with the following agencies:

a. State of Alabama – Proposed actions are coordinated with state health officials and environmental personnel should an outbreak occur.
b. Coffee and Dale County Health and Environmental Offices – Proposed actions are coordinated with personnel in counties affected should an outbreak occur.
c. Bureau of Land Management and US Fish and Wildlife Service – These services are consulted whenever any proposed action may be detrimental to endangered species of birds.
d. Governments of surrounding municipalities will be involved with coordinating mosquito control efforts should an outbreak of West Nile Virus occur in or around Fort Rucker.

9.7 Predator Control

As a result of impacts by the invasive coyote on the whitetail deer population, Fort Rucker has an active plan to manage coyote populations through trapping and shooting. Coyote hunting is allowed on Fort Rucker year round due to no closed hunting season, however, trapping is limited to the State furbearing trapping season. Over 243 coyotes have been removed through 2017. Due to the nonspecific habitat needs of coyotes, their mobility, and ability for immigration and emigration, an ongoing removal program must be employed. Details of this plan are provided in Appendix D (copy maintained in the office of the IPMC).

9.8 Military Construction Projects

Installation personnel coordinate with the Corps of Engineer to ensure that pesticide applications, such as termite pretreatments for new construction is properly performed and documented.

9.9 Private Partners

Private partners such as electrical, water, sewer companies must coordinate all pesticide applications with the IPMC and provide documentation for all such activities.

10.0 SALE AND DISTRIBUTION OF PESTICIDES

10.1 Family Housing

Corvias Military Living, the Fort Rucker housing partner, has sole responsibility for implementing and managing pest management in family housing areas. Corvias has no self-help program.

10.2 The Self Service Supply Center (SSSC). The Ability One Base Supply Center (BSC), Bldg. 1332, does not sell any pesticides or repellents.

10.3 Self-Help Pesticides for Building Occupants

Self-help pest management programs on military installations continue to be supported in DODI 4150.07 and the Armed Forces Pest Management Board (AFPMB) TG 42 Self-Help Integrated Pest Management provides guidance for implementing an effective self-help program. For many pest problems reliance on chemical means of control is unlikely to resolve pest problems alone. Education is an important part of the program. Sanitation, exclusion and harborage management are critical components of an integrated approach to resolving problems and attention to these factors must be encouraged. Education is an important part of the process. Appendix C in AFPMB Guide 42 includes a number of self-help information guides that can be used to help in resolving problems. Chemical controls do still have a role to play, however. The following chemical products are authorized and available (DPW lumber yard Bldg 1429)

for building occupants to use on a self-help basis at Fort Rucker:

a. Advance 360A Dual Choice Ant Bait Stations (EPA Reg. No. 499-496; abamectin)
b. Amdro Fire Ant Bait (EPA Reg. No. 73342-1; hydramethylnon)
c. Combat Source Kill Max for large roaches (EPA Reg. No. 64240-34; fipronil)
d. Combat Source Kill Max for small roaches (EPA Reg. No. 64240-33; fipronil)
e. Raid Wasp & Hornet Killer 33 (EPA Reg. No. 4822-553; prallethrin & cypermethrin) Note: For outdoor use only.
f. Spectracide Bug Stop Flying & Crawling Insect Killer (EPA Reg. No. 9688-256-8845; deltamethrin & S-bioallethrin)

10.4 Other Activities

a. AAFES: The pesticides sold in the AAFES Post Exchange Four Seasons Store, Bldg 9214, AAFES Triangle Shoppette, Bldg 22305, and AAFES mini-mall (Bldg 6600) are registered by the EPA for general use; restricted use pesticides are not sold. Pesticide products are grouped into several separate categories: Products applied to pets for ectoparasite control, repellents, household, and lawn and garden products. A spill clean-up kit is on hand in the immediate vicinity of the lawn and garden pesticide storage area. Store personnel are familiar with the use of the clean-up kit and with installation spill contingency procedures. Additional guidelines on pesticides in Exchanges can be found in DA Pamphlet 40-11, paragraph 4-7b(f)5.
b. The Fort Rucker Commissary: The Commissary carries limited supplies of EPA-registered, general use pesticides and repellents. A spill clean-up kit is on hand. Store personnel are familiar with the use of the clean-up kit and with installation spill contingency procedures. Additional guidelines on pesticides in Commissaries can be found in DA Pamphlet 40-11, paragraph 7b(f)5.

11.0 PEST MANAGEMENT SERVICES PROVIDED TO OTHER ACTIVITIES

11.1 Tenant Activities

Pest control services are provided to all tenant activities on Fort Rucker. This includes the US Army Aeromedical Center (and subordinate activities), the US Army Dental Clinic, Gulf Coast Veterinary Services Clinic, the Post Exchange (AAFES), the Post Commissary (DECA), the Alabama National Guard Media Center, US Army Combat Readiness Center, the US Army Aeromedical Research Laboratory, the Criminal Investigation Division, the Mission Installation Contracting Command – Fort Rucker, the Network Enterprise Center (NEC), the US Army Corp of Engineers, the 164th Theater Airfield Operations Group, the Logistics Readiness Center – Fort Rucker, the USAF 23d Flying Training Squadron and the USAR Center – Knox AHP.

11.2 Agencies Located Off the Installation

Other than airfields and stagefields located off the main reservation, there are no other agencies located off the installation that require pest management services.

12.0 DOD MEASURES OF MERIT FOR PEST MANAGEMENT

12.1 MEASURE OF MERIT 1: IPM PLANNING

DoD installations will maintain IPM plans that are reviewed and approved by DoD-certified pest management consultant and annually updated by the installation pest management coordinator. Plans are to be reviewed at no more than five year intervals by the AEC Pest Management Consultant.

12.2 MEASURE OF MERIT 2: PESTICIDE USE REDUCTION

The Department of Defense will maintain the reduction goal in annual pesticide use by both government and contractor pesticide applicators on DoD installations.

12.3 MEASURE OF MERIT 3: PESTICIDE APPLICATOR CERTIFICATION

One hundred percent of DoD pesticide applicators will be certified. Direct hire employees, certified in accordance with memorandum reference (a), have a maximum of 2 years to become certified after initial employment. Contracted employees shall have appropriate State or host-nation certification in the appropriate categories at the time the contract is let.

13.0 PROHIBITED PRACTICES

13.1 Electrically Operated Devices. Electromagnetic exclusion or control devices, ultrasonic repellent or control devices, and outdoor devices for electrocuting flying insects are not approved for use on DoD installations. However, indoor devices for electrocuting flying insects can be used when selected, purchased, located, and used in accordance with AFPMB TG No. 36. Pest surveillance traps and monitoring equipment, such as non-electrocuting mosquito light traps, are integral tools for IPM programs.

13.2 Paints and Coatings Containing Pesticides and Other Biocides. Paints containing insecticides are not approved for use on DoD property. This guidance applies to interior and exterior pesticide-containing paints intended for application to structural surfaces, such as walls, ceilings, and siding. It also applies to insecticides formulated and labeled for use as paint additives. Paints containing fungicides as mildew inhibitors may be used when application directions specify no special restrictions due to the fungicide. Approved marine anti-fouling compounds or coatings may be applied to protect surfaces of watercraft.

13.3 Preventive or Scheduled Pesticide Treatments. Regularly scheduled, periodic

pesticide applications are not approved for DoD property except in situations where the IPM plan clearly documents that no other technology or approach is available to protect personnel or property of high value (e.g., soil treatments during construction to prevent subterranean termite attacks). Installations shall not use preventive pesticide treatments, to include automated misting devices, unless the appropriate pest management consultant has given approval based upon current surveillance information or records documenting past disease vector or pest problems that require this approach.

14.0 REGULATED PESTS

There are no requirements for plant or animal quarantine active on Fort Rucker at the time of this writing.

15.0 PEST MANAGEMENT REFERENCES

15.1 Federal and State Laws and Mandates

The following references can be found at
http:www.law.cornell,edu/uscode/html/uscode07/usc sup 01 7 10 6 20 ll.html

a. Section 136 et seq. of Title 7, United States Code, FIFRA 1976, as amended.
b. Title 29, Code of Federal Regulations, 1996 revision, Section 1910, Occupational Safety and Health Standards.
c. Title 40, Code of Federal Regulations Parts 150-189, Pesticide Programs.
d. Sections 4321 to 4370a of Title 42, United States Code. “National Environmental Policy Act of 1969”, as amended.
e. Executive Order 12856 of August 3, 1993. Federal Compliance with Right-to-Know Laws and Pollution Prevention Requirements.
f. Public Law 104-170, Food Quality Protection Act of 1996.
g. Chapter 27, Title 2, Code of Alabama 1975 (/docs/default-source/pesticide-management/pesticide-rules-and-regulations/chapter-27-title-2-code-of-alabama 1975.pdf?sfvrsn=4).
h. Chapter 28 Title 2 Code of Alabama 1975 – Professional Services Law (/docs/default-source/pesticide-management/pesticide-rules-and-regulations/chapter-28-title-2-code-of-alabama-1975---professional-services-law-pdf?sfvrsn=2).

15.2 Department of Defense Regulations, Directives, and Memorandums

a. DODI 4150.07, Pest Management Program, May 29 2008, incorporating Change 1, September 15, 2017.
b. DOD 4150.07, DoD Pest Management Training and Certification Program. Volume 1, The DoD Plan for Pesticide Applicators, incorporating Change 1, December 14, 2017.
c. DOD 4150.07, DoD Plan for Training and Certification Program. Volume 2, The

DoD Plan for Non-Federal Insecticide, Fungicide, and Rodenticide Act Pesticide Applicators, including Change 1, effective December 8, 2017.

d. DOD 4150.07, DoD Plan for Training and Certification Program. Volume 3, The DoD Plan for Federal Insecticide, Fungicide, and Rodenticide Act Pesticide Applicators, including
e. Memorandum of Agreement between the United States Department of the Agriculture and the Department of Defense for Conduct of Forest Insect and Disease Suppression on Lands Administered by the US Department of Defense, December 1990.

15.3 Army Regulations

a. AR 11-34, The Army Respiratory Protection Program, 25 July 2013.
b. AR 40-5, Preventive Medicine, 25 May 2007.
c. AR 200-1, Environmental Protection and Enhancement, 13 December 2007.
d. AR 385-10, The Army Safety Program, 24 February 2017.
e. DA PAM 40-11, Preventive Medicine, 30 October 2015.
f. MIL-STD-903C, Sanitary Standards for Commissaries, 20 November 1986.
g. MIL-STD-904A, Guidelines for Detection, Evaluation and Prevention of Pest Infestation of Subsistence, 13 January 1984.
h. MIL-STD 909, Sanitation Standards for Food Storage Facilities, 31 August 1989.

15.4 Army Public Health Center (http://chppm-www.apgea.army.mil/default.asp)

a. No. 103, Plague Surveillance Guide, September 1995.
b. No. 119, Collecting and Shipping Insects for Resistance Testing, August 1980.
c. No. 138, Guide to Commensal Rodent Control, December 1991.
d. No. 142. Management Health Hazards Associated with Bird and Bat Excrement, December 1992.

15.5 Armed Forces Pest Management Board ()
（https://www.acq.osd.mil/eie/afpmb/techguides.html)

This includes all applicable Technical Guides (TG's), Pesticide Lists and the complete revised "Military Pest Management Handbook".

a. TG No. 2. Integrated Pest Management in Child Development Centers and Schools, November, 2016.
b. TG No. 7, Installation Pesticide Security, August 2013.
c. TG No. 14, Protective Equipment of Pest Control Personnel, April 2011.
d. TG No. 15, Pesticide Spill Prevention and Management, August 2009.
e. TG No. 17, Military Handbook – Design of Pest Management Facilities, August 2009.
f. TG No. 18, Installation Pest Management Program Guide, March 2013.
g. TG No. 20, Pest Management Operations in Medical Treatment Facilities, December 2016.

h. TG No. 21, Pesticide Disposal Guide for Pest Control Shops, July 2002.
i. TG No. 24, Contingency Pest Management Guide, September 2012.
j. TG No. 26, Tick-Borne Diseases: Vector Surveillance and Control, November 2012.
k. TG No. 27, Stored-Product Pest Monitoring Methods, December 2016.
l. TG No. 29, Integrated Pest Management in and around Buildings, December 2016.
m. TG No. 36, Personal Protective Measures Against Insects and Other Arthropods of Military Significance, November 2015.
n. TG No. 37, Integrated Management of Stray Animals on Military Installations, May 2012.
o. TG No. 39, Guidelines for Preparing DOD Pest Control Contracts Using Integrated Pest Management, February 1997.
p. TG No. 42, Self-Help Integrated Pest Management, no date.
q. TG No. 44, Bed Bugs – Importance, Biology, and Control Strategies, March 2012.
r. TG No. 45, Storage and Display of Retail Pesticides, November 2012; minor revision 2016.
s. TG No. 47, Aedes Mosquito Vector Control, March 2016.

15.6 Other

a. Product labels for all pesticides and growth regulators in use or in storage.
b. Safety Data Sheets (formerly Material Safety Data Sheets) for all pesticides and growth regulators in use or in storage.

16.0 ORGANIZATIONS PERFORMING PEST MANAGEMENT FUNCTIONS ON FORT RUCKER

Each of the following organizations has personnel or contractors performing pest management activities on the installation and are required to report such activities to the IPMC (POC's for information are indicated):

Alabama Power, POC Steve Meyers (334) 255-1691
Distribution Systems Division (substations and rights-of-way maintenance)
Hydroelectric Power Division (solar power farm)

Army Hotels (International Hotels Group), POC Van Danford, (334) 255-2984

BASOPS Maintenance Contractor (Pride Industries), POC Jan Dodson (334) 255-1689 (COR)

Construction Contractors (termiticide sub-contractors)
Corps of Engineers projects
Job Order Contract (JOC) projects

Other Construction and renovation projects

Dependent Schools, POC Bruce Pate (334) 255-1607

Golf-Course (MWR): POC David Plunkett (334) 255-4689

Grounds Maintenance Contractor(s), John Reed, (334) 255-2998
Airfield/Stagefield Grounds Maintenance
Cantonment Grounds Maintenance

Natural Resources Branch (Environmental Division), POC Doug Watkins, (334) 255-9363
Fish and Wildlife
Forestry

Privatized Housing (Corvias Military Living), POC Steve Smith (334) 255-2847
Orkin Pest Control (indoor)
Munie Greencare Professionals (outdoor)

Range Control Maintenance Contractor (Strategic Defense Solutions, Inc.), POC Mark Buxton (334) 255-4206

Self-Help Issues (Pride Industries), POC Jan Dodson, 255-1689 (COR)

Soldier Service Center Maintenance Contractor (Erica Lane Enterprises, Inc.), POC Scott Howell (334) 255-2465 (COR)

17.0 APPENDICES (maintained in IPMC Office)

A – Current Pesticide Use Proposal

B – Integrated Natural Resources Management Plan 2017-2021 (INRMP)

C – Contract for Control of Stray Dogs and Cats

D – Coyote Reduction Plan

E – Feral Hog Management Plan

F – Pest Management Vehicles and Equipment

G – Certifications for Pest Management Personnel

H - West Nile Surveillance and Response Plan

I - Zika Vector Surveillance Guide and Response Plan

J – Integrated Cultural Resources Management Plan Update US Army Aviation Center of Excellence and Fort Rucker, Fort Rucker, Alabama 2014-2018 Final Draft (ICRMP)

K – Annex M (CLS 510 Pest Management Services) to OPORD 18-011: IMCOM Enterprise Base Operations (BASOPS) Performance Work Statement (PWS) Templates (U)

L – Pest Management Facilities

M – Unified Facilities Guide Specification. Soil Treatment for Subterranean Termite Control

N – Fire Plan for Bldg 1490

O –Pest Management Forms

P – Table of Descriptive and Report Terms for Completing DD Forms 1532 and 1532-1

Q – SOP for Disposal of Nonregulated Medical Waste

R – Respirator User Guide

S – Fort Rucker Regulation 420-76

T – Fogging and Fumigation Safety

Attachment 2 – Tables

Table 1 Comparison of the Potential Effects on the Evaluated Alternatives

Resource	Preferred Alternative Environmental Consequences	No Action Alternative Environmental Consequences
Land Use	No Impact	No Impact
Air Quality	Potential for negligible short-term from release of pesticides to the air.	No Impact
Noise	Potential for minor, short-term noise impacts site-specific increases in noise levels if powered equipment or bird control noise devises are used for outside pest management practices.	No Impact
Geologic and Topographic Conditions	No Impact	No Impact
Soils	Potential for Short-term, Minor adverse effects from mechanical weed removal and chemical contamination of soils. Mechanical removal of vegetation would be controlled by reseeding. Chemical contamination would be minimized by using least-toxic pesticides.	Long Term, Moderate impacts due to repeated uses of non-managed pesticides.
Floodplains	Minor impacts to floodplains, such as erosion and soil and water contamination, could occur if chemical and non-chemical pest control techniques are improperly applied. To minimize potential impacts, buffer zones around floodplains would be implemented and no activities, such as the mechanical removal of pests or the application of aquatic herbicides, would occur in floodplains unless specifically approved by the agency with legal jurisdiction.	This alternative will have a negative impact on water resources because it is not an integrated method and would be anticipated to use more pesticides. Repeated outdoor applications of pesticides can cause residues to build up, leading to potential water contamination.
Wetlands	The IPMP could have minor, positive site-specific impacts on wetlands. Buffer zones around wetlands would be established and no activities would occur in wetlands or unless specifically in accordance with manufacturer's label and EPA guidance.	A negative impact on water resources a nonintegrated method and would be anticipated to use more pesticides. Repeated outdoor applications of pesticides can cause residues to build up, leading to potential water contamination.
Surface Water	Potential for Negligible short-term Minor impacts to surface water, such as erosion and soil and water contamination, could occur if chemical and non-chemical pest control techniques are improperly applied. To minimize potential impacts, buffer zones around floodplains would be implemented and no activities, such as the mechanical removal of pests or the application of aquatic herbicides, would occur in floodplains unless specifically approved by the agency with legal jurisdiction.	This alternative will have a negative impact on water resources because it is not an integrated method and would be anticipated to use more pesticides. Repeated outdoor applications of pesticides can cause residues to build up, leading to potential water contamination.
Groundwater	No Impact	No Impact

Resource	Preferred Alternative Environmental Consequences	No Action Alternative Environmental Consequences
Stormwater	Potential for Negligible short-term Minor impacts to stormwater, such as erosion and soil and water contamination, could occur if chemical and non-chemical pest control techniques are improperly applied. To minimize potential impacts, no activities, such as the mechanical removal of pests or the application of aquatic herbicides, would occur in unless specifically approved by the agency with legal jurisdiction.	This alternative will have a negative impact on water resources because it is not an integrated method and would be anticipated to use more pesticides. Repeated outdoor applications of pesticides can cause residues to build up, leading to potential water contamination.
Vegetation	The IPMP would have a minor positive effect upon biological resources. It contains procedures whereby all pest management activities clearly define the target species and designate the specific actions to control those species. Pesticide types, amounts and application would be controlled in order to only treat a specific type of pest. No pest management operations would be conducted that have the potential to negatively affect endangered or protected species or their habitats without prior coordination with the USFWS.	A long-term minor negative cumulative impact on future pest management because it may be necessary to apply more pesticides in the future to obtain the same level of control.
Wildlife	The IPMP would have a minor positive effect upon biological resources. It contains procedures whereby all pest management activities clearly define the target species and designate the specific actions to control those species. Pesticide types, amounts and application would be controlled in order to only treat a specific type of pest. No pest management operations would be conducted that have the potential to negatively affect endangered or protected species or their habitats without prior coordination with the USFWS.	A long-term minor negative cumulative impact on future pest management because it may be necessary to apply more pesticides in the future to obtain the same level of control. In addition, pesticides can bioaccumulate in animals eating the pests and plants that have been treated with pesticides and any increase in pesticide use could potentially result in an increase in the amount of pesticides bioaccumulated in those animals.
Special-Status Species	The IPMP would have a minor positive effect upon biological resources. It contains procedures whereby all pest management activities clearly define the target species and designate the specific actions to control those species. Pesticide types, amounts and application would be controlled in order to only treat a specific type of pest. No pest management operations would be conducted that have the potential to negatively affect endangered or protected species or their habitats without prior coordination with the USFWS.	A long-term minor negative cumulative impact on future pest management because it may be necessary to apply more pesticides in the future to obtain the same level of control. In addition, pesticides can bioaccumulate in animals eating the pests and plants that have been treated with pesticides and any increase in pesticide use could potentially result in an increase in the amount of pesticides bioaccumulated in those animals.

Resource	Preferred Alternative Environmental Consequences	No Action Alternative Environmental Consequences
Cultural Resources	No Impact	No Impact
Environmental Justice	A minor positive effect on the local residents because there would be less health problems and lower health care costs.	No Impact
Protection of Children	A minor positive effect on the children because there would be less health problems and lower health care costs.	No Impact
Hazardous and Toxic Substances	A minor positive impact by reducing the quantity of hazardous and toxic waste/materials purchased and stored. Implementing an integrated approach to pest management will limit the amount of pesticide purchased and mixed for a specific application, thus reducing the amount of residual waste generated. The IPMP only allows pesticides that are least-toxic to the environment to be used.	A minor negative impact since the quantity of pesticides purchased and stored would not be reduced.
Cumulative Impacts	No Impact	No Impact

Table 3. Special-Status Wildlife Considered

Scientific Name	Common Name	Class	Observed Within Fort Rucker	Federal Status	State Status
Geomys pinetis	Southeastern pocket gopher	Mammal	Yes	No Listing	Protected
Columbina passerina	Common Ground Dove	Bird	Yes	No Listing	Protected
Mycteria americana	Wood Stork	Bird	No	Threatened	Protected
Hailiaeetus leucocephalus	Bald Eagle	Bird	Yes	Bald and Golden Eagle Protection Act	No Listing
Crotalus adamanteus	Eastern diamondback rattlesnake	Reptile	Yes	Under Review (threatened)	No Listing
Drymarchon corais couperi	Eastern indigo snake	Reptile	No	Threatened	Protected
Gopherus polyphemus	gopher tortoise, threatened, Candidate	Reptile	Yes	threatened, Candidate	Protected
Masticophis flagellum flagellum	Eastern coach whip	Reptile	Yes	No Listing	Protected
Alligator mississippiensis	American alligator	Reptile	Yes	Threatened	No Listing
Acipenser oxyrinchus desotoi	Atlantic sturgeon (gulf subspecies)	Fish	No	Threatened	Protected
Fusconaia burkei	tapered pigtoe	Bivalves	No	Threatened	Protected
Hamiota australis	Southern sandshell	Bivalves	No	Threatened	Protected
Pleurobema strodeanum	fuzzy pigtoe	Bivalves	Yes	Threatened	Protected
Ptychobranchus jonesi	Southern kidneyshell	Bivalves	No	Endangered	Protected
Villosa choctawensis	Choctaw bean	Bivalves	Yes	Endangered	Protected

Attachment 3- References

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