INTEGRATED PEST MANAGEMENT PLAN
WHITE SANDS MISSILE RANGE, NEW MEXICO

INTEGRATED PEST MANAGEMENT PLAN
FOR
WHITE SANDS MISSILE RANGE

Directorate of Public Works Environmental Division
White Sands Missile Range, New Mexico

Cristina Rodden
Installation Pest Management Coordinator

Directorate of Public Works Environmental Division
White Sands Missile Range, New Mexico

February 2021

Approval Signatures

TITLE: Integrated Pest Management Plan for White Sands Missile Range

CONCURRENCE:

11 Jan 21

WILLIAM B. MILLER — Date
Pest Management Consultant, IMCOM USAEC

RODDEN.CRISTINA.L.1260407488 Digitally signed by RODDEN.CRISTINA.L.1260407488 Date: 2021.02.10 11:10:43 -07'00' — 2/10/2021

CRISTINA L. RODDEN — Date
Wildlife Biologist/Pest Management Consultant, Environmental Division

KNIGHT.BRIAN.DANIEL.1271283330 Digitally signed by KNIGHT.BRIAN.DANIEL.1271283330 Date: 2021.02.10 11:29:07 -07'00' — 2/10/2021

BRIAN D. KNIGHT — Date
Chief, Environmental Division

HARTELL.DEBORAH.J.1232193383 Digitally signed by HARTELL.DEBORAH.J.1232193383 Date: 2021.02.10 11:18:00 -07'00' — 2/10/2021

DEBORAH J. HARTELL — Date
Chief, Customer Support

GALLEGOS.JOSE.A.1232195408 Digitally signed by GALLEGOS.JOSE.A.1232195408 Date: 2021.02.10 15:25:37 -07'00' — 10 Feb 2021

JOSE A. GALLEGOS — Date
Director, Directorate of Public Works

APPROVED:

HOWELL.MATTHEW.RYAN.1114537108 Digitally signed by HOWELL.MATTHEW.RYAN.1114537108 Date: 2021.02.25 10:45:49 -07'00'

M. RYAN HOWELL — Date
Colonel, U.S. Army
Commanding

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

APPENDICES

AUTHORITY – INSTALLATION INSTRUCTION

Date: Fiscal Year 2021
From: Installation Garrison Commander
Subject: Integrated Pest Management Plan Implementation Authority
Title: Integrated Pest Management Plan, White Sands Missile Range, New Mexico.
Purpose: To implement Integrated Pest Management Plan at White Sands Missile Range.

Regulatory References:

- U.S. Department of Defense (DoD) Instruction 4150.07.
- AR 200-1, Environmental Protection and Enhancement.
- 40 Code of Federal Regulations (CFR) Part 158
- Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), 7 US Code (USC) 136, et seq.

Summary: The Integrated Pest Management Plan (IPMP) has been prepared in accordance with DoD Instruction 4150.07. The subject IPMP is a comprehensive document that will be used by all personnel working on White Sands Missile Range (WSMR). It has been designed to ensure installation compliance with Federal and State regulations governing pest management.

Security Classification: The title and document are unclassified. The document does not fall within the scope of directives governing the protection of information affecting national security. This IPMP will be designated "For Official Use Only."

Applicability: In accordance with DoD Instruction 4150.07, all Army installations are required to prepare and maintain an IPMP. All installation personnel and organizations will review the IPMP and ensure full compliance. Through implementation and cooperation, a safe, healthy, and clean environment for current and future generations can be ensured. No in-house or contract pest control operations, including pesticide (ex. herbicide, insecticide, rodenticide, etc.) applications, may be conducted on the installation without prior coordination and approval from the installation designated Integrated Pest Management Coordinator (IPMC).

Action: The IPMP is effective, the date of approval by the Installation Garrison Commander.

Responsibilities: Environmental Division, within the Garrison's Directorate of Public Works, is the office of primary responsibility for implementation of this IPMP. Tasked organizations are authorized to extract and reproduce those portions of the IPMP that are essential to accomplish necessary planning and to prepare supporting documents and reports.

The IPMC should ensure necessary coordination among installation personnel for necessary updates to this plan. Ms. Cristina Rodden is hereby designated the IPMC for implementation of this plan. Any changes to this assignment shall be documented in writing and, as such, be considered as an amendment to the IPMP.

Record of Annual Integrated Pest Management Plan Review and Approval of Pesticide Use Proposal

Annual Review and Approval of Pesticide Use Proposal	Date	Annual Review and Approval of Pesticide Use Proposal Completed*
1 : Year 1	10/20/2020 - Approved by PMC	RODDEN.CRISTINA.L.1260407488 Digitally signed by RODDEN.CRISTINA.L.1260407488 Date: 2021.02.25 12:34:14 -07'00'
2		
3		
4		
5	Full coordination and approval must be completed every 5 years.	

*This column will be signed by the Installation Pest Management Coordinator following annual updates to the Integrated Pest Management Plan and approval from the Pest Management Consultant.

Any routine Integrated Pest Management Plan updates resulting from the Annual Review should be recorded in errata sheets and included with this Plan. For any non-routine updates, confer with the Pest Management Consultant prior to execution.

ACROYNMS

AFPMB	Armed Forces Pest Management Board
AR	Army Regulation
DENIX	Defense Environmental Network & Information Exchange
DFAR	Defense Federal Acquisition Regulation
DoD	Department of Defense
DODI	Department of Defense Instruction
EPA	Environmental Protection Agency
EPAS	Environmental Performance Assessment System
ESA	Endangered Species Act
ESPP	Endangered Species Protection Program
F	Degrees Fahrenheit
FAR	Federal Acquisition Regulation
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
FMWR	Family and Moral, Welfare and Recreation
FOMA	Facility Operations & Maintenance Activities
FTE	Full Time Equivalent
FY	Fiscal Year
GPM	gallons per minute
HAZCOM	Hazard Communication
IAW	In Accordance With
IMPAC	International Merchant Purchase Authorization Card
IPM	Integrated Pest Management
IPMC	Integrated Pest Management Consultant
IPMP	Integrated Pest Management Plan
IPMT	Integrated Pest Management Techniques
ISSA	Inter-Service Support Agreements
KO	Contracting Officer
MC	Minor Construction
MCP	Military Construction Project
MH	Military Housing
MoM	Measures of Merit
MRE	Meals Ready to Eat
MSDS	Material Safety Data Sheet
NEPA	National Environmental Policy Act
NMDA	New Mexico Department of Agriculture
NMDGF	New Mexico Department of Game and Fish
OCONUS	Outside Continental US
OJT	On-the-Job Training
OSHA	Occupational Health and Safety Administration [or Act]
PAI	Pounds of Active Ingredient
PMC	USAEC Pest Management Consultant
PMQAE	Pest Management Quality Assurance Evaluator

PPE	Personal Protective Equipment
PPQ	Plant Protection and Quarantine
PUF	Plan Update Form
PUP	Pesticide Use Proposal
PWS	Performance Work Statement
RCRA	Resource Conservation and Recovery Act
QC	Quality Control
QCP	Quality Control Program
SPRP	Spill Prevention and Response Plan
TDD	Telecommunications Devices for the Deaf
TES	Threatened or Endangered Species
TG	Technical Guide
TIM	Technical Information Memorandum
USC	U.S. Code
USDA	U.S. Department of Agriculture
USAEC	U.S. Army Environmental Command
USD- AT&L	Under Secretary for Defense - Acquisition, Technology and Logistics
USFWS	US Fish and Wildlife Service
WS	USDA APHIS Wildlife Services

1.0 EXECUTIVE SUMMARY

The purpose of this document is to describe pest management activities performed by and for White Sands Missile Range (WSMR) and Fort Wingate. WSMR is managed by the U.S. Department of the Army and operated to support DoD readiness programs, including research, development, testing and evaluation of weapons and space systems, and military training. As the largest all-overland test range in the Western Hemisphere (about 2.2 million acres), WSMR's expansive and varied terrain is ideally suited to serve as the United States' premier military testing site. Varied terrain and diverse natural environment on WSMR provide a realistic setting for testing and training exercises. The mild climate allows year-round testing, and clear skies provide the long-range visibility necessary for observing missile flights and other activities. The large size of WSMR provides ample space for impact areas and safety zones, and mountain ranges provide suitable backstops and backdrops for certain laser and missile tests. The large size, restricted access, and no-flight zones minimize mission impacts on adjacent properties and local populations.

WSMR is responsible for integrated pest management (IPM) at its facilities in compliance with applicable local, state, and Federal laws and regulations, principally the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA), and related regulations, Executive Orders, and interagency agreements. This plan follows the management framework and principles established in Department of Defense (DoD) Instruction (DoDI) 4150.07, DOD Integrated Pest Management Program. The IPM plan applies to all of the facilities, activities, and individuals working, residing or otherwise conducting business on WSMR sites. This IPM plan will be implemented to the maximum extent possible. At no time will IPM operations be performed in such a manner as to cause harm to personnel or the environment. IPM responsibility begins with those individuals occupying or maintaining buildings or open space on WSMR property. Nonchemical control efforts will be used to the maximum extent possible before pesticides are used. All pesticide or herbicide applications on any WSMR property will be made by certified applicators only, either contractor or WSMR personnel. Pesticides and herbicides used on WSMR property must be listed on the Armed Forces Pest Management Board's (AFPMB) Standard Pesticides List and approved by the WSMR IPM Coordinator (IPMC).

The IPM plan for the WSMR describes the pest management requirements; outlines the resources necessary for surveillance and control; and describes the administration, safety, and environmental requirements of the program. The program utilizes state-certified Pesticide Applicators and other manpower (contractors, local city or county personnel, or armory personnel) as necessary to control pests. Pests addressed in the plan include rodents; cockroaches; bees and wasps; spiders; termites; mosquitoes; ants; ticks; flies; fleas; lice; stored product pests; nuisance crawling insects, such as earwigs and silverfish; bagworms; gypsy mouth larvae; vertebrate pests, such as raccoons, coyotes, raccoons, birds, and stray-feral cats and dogs; broadleaf and grassy weeds; and noxious and nonnative weeds. Without control, these pests could interfere with the military mission, damage real property and the environment, increase maintenance costs, and expose personnel to diseases. Actual pest management procedures are found in the Integrated Pest Management Strategies section 8.0.

2.0 Background

2.1 Purpose

The purpose of this IPMP is to meet DoD policy requirements pursuant to DoD Directive 4715.1E, Environment, Safety, and Occupational Health (ESOH), DoDM 4150.07, DoD Integrated Pest Management (IPM) Program (January 22, 2020), and Section 136 of Title 7, U. S. Code; including responsibility of installations to:

- Establish and maintain safe, effective, and environmentally sound IPM programs to prevent or control pests and disease vectors that may adversely impact readiness or military operations by affecting the health of personnel or damaging structures, material, or property.
- Ensure that DoD pest management programs achieve, maintain, and monitor compliance with all applicable Executive Orders and applicable Federal, State, and local statutory and regulatory requirements.
- Incorporate sustainable IPM philosophy, strategies, and techniques in all aspects of DoD and Component vector control and pest management planning, training, and operations, including IPMP and other written guidance to reduce pesticide risk and prevent pollution.

2.2 Plan Maintenance

Reviews of the IPMP and any resulting amendments or changes to the plan will be recorded and kept on file as part of the plan by the Environmental Division. This plan will be reviewed and updated annually by the IPMC and request funding for the 5-year revisions to the plan. The PMC shall review the IPM programs on-site every 3 years either in person or through an on-site external environmental compliance review and the PMC will annually review or technically approve this IPMP. This plan should be reviewed sooner if a major revision is proposed. Annual changes to the Plan shall be submitted to the PMC using the Plan Update Form (PUF) and Plan Update Proposal (PUP) available on the USAEC website.

The IPMP is subject to change:

- If any applicable laws, regulations, or requirements are altered;

- When any changes occur that increase potential health or environmental impacts from the management of pesticides; or

- At the request of the PMC.

Components of the IPMP should be reviewed and updated as needed to ensure that all information is as current as possible. Any amendments to the IPMP shall be implemented as soon as possible, but no later than 6 months after changes are made (unless legal requirements compel implementation sooner).

2.3 Integrated Pest Management Plan Objectives

The objectives of this IPMP are to:

- Provide guidance for operating and maintaining an effective IPM program at WSMR.
- Ensure that pest management issues do not adversely impact military readiness and mission.
- Comply with pertinent laws and regulations.
- Meet or exceed DoD pest management measures of merit.
- Identify and implement strategies for managing specific pests on the installation.
- Implement judicious use of both non-chemical and chemical control techniques to achieve effective pest management that minimizes economic, health, and environmental risks.
- Emphasize the use of mechanical, biological, and cultural control techniques, using chemical techniques sparingly with caution. Use chemical control methods only after careful consideration of alternative controls.
- Emphasize use of pest monitoring to determine if and when treatments are needed rather than by a predetermined schedule.
- Document coordination with other organizations and agencies.

2.4 Installation Description

WSMR is an Army installation with a tri-service presence (Army, Air Force, and Navy) and is managed and supported by the U.S. Army's Installation Management Command. WSMR encompasses the White Sands Test Center, a Major Range and Test Facility Base (MRTFB), and is managed and operated by the Army for research, development, testing, and evaluation (RDT&E) of military systems and similar high-technology commercial products.

WSMR's major tenant is the U.S. Army Test and Evaluation Command (ATEC) and uses the extensive test resources and infrastructure of this MRTFB to accomplish its RDT&E role. As one of the largest joint test and training ranges in the United States, WSMR provides unique infrastructure and test facilities including a nuclear survivability test reactor, radar test facilities, a high energy laser systems test facility, and a state-of-the-art range control center. As a U.S. Army facility, WSMR's mission is to provide resources and infrastructure for testing and development of weapons and equipment (both hardware and software) for military use in combat zones and for homeland security. In accordance with DoD Directive (DoDD) 3200.11, WSMR may be used by other DoD users (including DoD training users), and by users outside the Department such as U.S. Government Agencies, State and local governments, allied foreign governments, and commercial entities.

WSMR spans approximately 40 miles from east to west, and 100 miles from north to south, encompassing a land area of nearly 2.2 million acres in south central New Mexico. Fort Bliss, which is comprised of approximately 1.1 million acres, borders the installation to the south and southeast. Holloman Air Force Base (AFB), which is comprised of approximately 59,700 acres, is adjacent to WSMR on the east.

NASA White Sands Test Facility (WSTF) is included within WSMR's Dedicated Use Area encompassing approximately 5000 acres and located on the southwest corner of the Installation. WSTF is considered a tenant operated and managed by NASA and an existing MOU with WSMR. The WSMR land area encompasses two areas that fall under the jurisdiction of Department of the Interior (DOI): White Sands National Monument (WSNM) operated and managed by the National Park Service (NPS), and San Andres National Wildlife Refuge (SANWR), operated and managed by the U.S. Fish and Wildlife Service (USFWS). Also partially encompassed by the WSMR land area, lies the U.S. Department of Agriculture's (USDA) Jornada Experimental Range (JER). Co-use of these areas is governed by Memoranda of Agreement (MOA) between WSMR and the managing agency. The City of Las Cruces lies approximately 15 miles southwest of the installation, Alamogordo lies about 10 miles east, and Albuquerque is approximately 100 miles north. The southern part of WSMR is bisected by US 70, which connects the Cities of Las Cruces and Alamogordo. The Main Post of WSMR is located south of US 70 to the east of the Organ Mountains. WSMR holds leases and partner agreements with surrounding land owners on approximately 3.3 million acres. In these areas, known as "call-up" areas, WSMR is able to evacuate people temporarily during periodic hazardous test events, effectively doubling the size of the land area when required. Associated with the land area, restricted airspace overlies and extends beyond the WSMR land boundary.

3.0 Responsibilities – Overview

3.1 Garrison Commander

- Assume overall responsibility of the IPM program.
- Ensure that the installation meets DoD policy requirements as defined in DoD Directive 4715.1E, "Environment, Safety, and Occupational Health (ESOH)
- Provide implementation authority and necessary resources to carry out the objectives of the IPM program.
- Officially designate, within the installation IPMP Implementing Instruction, an IPMC to implement the installation IPM program and to maintain the installation IPMP.
- Approve and sign the IPMP cover page and Implementing Instruction.
- Implement any formal agreements with Federal or State regulatory agencies regarding pesticide use on the installation. For example, in coordination with the PMC, the Garrison Commander shall implement any pest quarantine agreements with the US Department of Agriculture/Animal Plant Health Inspection Service (USDA/APHIS).
- Initiate formal review of suspected violations of the Federal Insecticide, Fungicide, and Rodenticide Act of 1976 (FIFRA), as amended. Suspected violations, such as pesticide misuse or record falsification, shall be reported through appropriate command channels to the office of the certifying official. [per DoDM 4150.7, DoD Pest Management Training and Certification (January 2020)].

3.2 Director, Directorate of Public Works

- Ensure overall implementation and management of the IPMP.
- Ensures that all installation landscaping projects/contracts preferentially use native species and do not plant invasive species.
- Ensures that facility designs incorporate cost-effective pest-resistant features and pre-construction termiticide specifications, as appropriate.
- Provide review and approval of pesticide monitoring and application contracts consistent with the pest management strategies of this plan using only pesticides approved by the PMC.
- Review and approve the use of Federal and State purchase cards for procurement of pest-control services and pesticides that are authorized on a case-by-case basis. Pesticide use must strictly conform to pest-specific strategies described within Section 8 of this IPMP.
- Fund DPW applicator certification training, equipment, pesticides, and PPE.

3.3 Master Plans

- The Installation Real Property Office shall ensure that all real estate agreements with tenants require coordination with the IPMC, and compliance with the installation IPMP. Specifically, the installation real property office shall include the following language within all new, or renewed real estate agreements with tenants who conduct retail operations: "Retail facilities that store and display materials containing pesticides shall do so in accordance with the container Environmental Protection Agency (EPA) label and FIFRA requirements. In addition, they must comply with 29 CFR and 40 CFR requirements."

3.4 Environmental Division

- Identify a qualified individual in DPW Environmental Division, for written designation by the Garrison Commander within the IPMP DoD Instruction, to serve as IPMC for implementation of this plan.

- Ensure that the designated IPMC has the appropriate authority, educational background, and management skills to implement the IPMP.

- Plan and budget for the development and maintenance of the IPMP.

- Ensure coordination of IPM program among all installation organizations.

- Ensure that qualified personnel review and update the IPMP annually. Annually update the IPMP, coordinate the review and approval of annually updated IPMPs, and plan the funding for initial and 5-year revisions of IPMPs as necessary.

- Ensure that the IPMC forwards the IPMP to the PMC for review, technical approval, and signature on the cover sheet.

- Ensure that installation IPM programs are managed to minimize the amount of pesticides that become hazardous wastes.

- Ensure that the IPMP identifies areas within the installation that contain threatened or endangered species (TES) or associated habitat and that personnel using pesticides on the installation know the potential impact that pesticide applications could have on TES.

- The IPMC is responsible for coordinating with the DPW Endangered Species Biologist to initiate consultation with regional USFWS office under Section 7 of the Endangered Species Act (ESA) for any pest management actions potentially affecting TES. Any "formal" Section 7 consultations must include DPW Endangered Species Biologist for WSMR.

- Provide review and approval of pesticide monitoring and application contracts.
- Ensure IPMP and pesticide applications comply with all applicable environmental regulations and directives.

3.4.1 Installation Pest Management Coordinator

- Ensure that all pest management operations performed on the installation, are recorded, and ensure that all records are properly maintained.

- Ensure that data are reported to the PMC.

- Monitor training requirements and certifications of all civilian and contract pesticide applicators on the installation.

- Report pesticide applications, using DD Form 1532, Pesticide Management Report, or an electronic equivalent, to the PMC. (See section 8.5.1 – Reports)

- Submit annually to the PMC, the Pesticide Use Form (PUF) and Pesticide Use Proposal (PUP) for renewed approval of installation's Authorized Pesticide Use List, as well as any additionally required pesticides.

- Provide technical implementation of the IPMP. Review AFPMB TG-1: AFPMB Publications "Tech Guide".

- Formally coordinate appropriate portions of the IPMP with the installation DPW Endangered Species Biologist, Facilities Engineers, Fire Department, Installation Medical Authority, Safety Officer, Public Affairs Officer, Supply Manager, and Building Managers.

- Provide Pest Management Quality Assurance Evaluator (PMQAE) oversight of pesticide monitoring and application contractors if the installation does not have a separately designated PMQAE.

- Provide pest management education and information to installation-level personnel through building managers.

- Provide monitoring and coordination with installation organizations to identify new and recurring pests.

- Provide consultation to the Director, Directorate of Public Works on requests for the use of State or Federal Government purchase cards to buy pesticides or pest control services.
- Provide notification to the Installation Medical Authority of pesticide applications. Notify and coordinate with installation organizations, including building managers of pesticide applications; ensure that areas treated with pesticides are properly posted.

- Ensure that the appropriate individuals sign the cover sheet of the IPMP.

- Forward the IPMP to the PMC for review, technical approval, and signature on the cover sheet, after review and signature by installation departments including IPMC and Chief, Directorate of Installation Services.

After the signature is obtained from the PMC, the IPMC forwards the plan to the garrison/installation commander for his/her signature(s). The IPMP must be updated and re-signed every five years.

- Institute procedures to prevent terrorists from acquiring DoD pesticide dispersal equipment or pesticides, notify the FBI of any suspicious theft of pest control equipment, and ensure that the identity of personnel and pesticide formulations provided by contractors is known and approved by trained PMQAEs or DoD certified pesticide applicators.

3.4.2 Pest Management Quality Assurance Evaluator

- Provide PMQAE oversight of pest monitoring and pesticide application contractors.

- Maintain required PMQAE certification, or DoD pesticide applicator certification, through DoD training at least every three years.

- Ensure pre-approval, from the PMC, of all contract statements of work for installation pest control services.

- Ensure that contract statements of work specify only those pesticides that have been pre-approved by the PMC within the installation IPMP.

3.5 DPW Operations and Maintenance Division - Pest Controllers

- Provides indoor (pests) and outdoor (pests and weeds) pest management services to designated buildings and housing on WSMR that are not currently under contract pest management services.

- Requests approval to use and purchase new pesticides for pest management operations from the IPMC.

- Keeps record of locations and what pesticides are used and provides records to the IPMC on a quarterly basis.

- Coordinates with Environmental Division with nuisance wildlife issues.

- Complies with WSMR Medical Surveillance Program on an annual basis.

3.6 Installation Medical Health

3.6.1 McAfee U.S. Army Health Clinic

- The clinic's Medical Surveillance Program provides occupational health services to DPW pesticide applicators, Environmental Division wildlife biologists, and other personnel who handle vertebrate pests.

- Program includes annual checkups, immunizations and blood work.

3.6.2 Preventive Medicine Service

- Conduct surveillance for pests that could adversely affect the health and welfare of the installation.

- Coordinate with local health officials to determine the prevalence of disease vectors and other public health pests in the area surrounding the installation.

- Monitor pesticides sold at the Commissary and the Post Exchange.

- Provide periodic verification that pest control personnel (pesticide applicators) are provided with and use appropriate personal protective equipment and that the equipment is stored separately from pesticides.

- Verify that all pesticide applicators are enrolled in medical surveillance programs.

- Provide consultation on HAZCOM training and technical matters to supervisors when requested.

- Determine the type, source, and prevalence of vectors, which affect health and efficiency of personnel.

- Recommend preventative and control measures for pests and monitor the effectiveness of installation pest management efforts.

- Conduct sanitary inspections of facilities to determine need for pesticide application.

- At the direction of the Medical Treatment Facility commander, make sure that medical treatment facilities personnel neither store nor use EPA-registered pesticides, with the exception of disinfectants, germicides, and insect repellents and permethrin-treated clothing for protection of deploying personnel against insect vectors.

- Develop and publish installation HAZCOM guidance and assist commanders and supervisors with program implementation.

3.7 Fire Department

- Maintain information of location of chemical storage sites, including pesticides.

- Provide periodic inspection of pesticide storage sites.

- Maintain “first responder” capabilities for hazardous spills or incidents involving pesticides.

3.8 Safety Officer

- Provide support to ensure pesticide operations comply with OSHA and Army safety standards.

- Provide respirator fitting tests and certifications.

3.9 Director of Family and Morale, Welfare and Recreation Directorate

- Coordinate contracted pesticide actions with the IPMC and PMQAE.

- Ensure that personnel performing pest control at FMWR dining facilities, the Desert Emerald Park and other landscape and maintained areas receive adequate training and achieve and maintain pest management certification.

- Maintain adequate records of pest management operations.

- Ensure that all pesticide use data are provided to the IPMC in accordance with the specific contract Scope of Work (SOW).

3.10 AAFES General Manager

- Coordinate contracted pesticide actions with the IPMC and PMQAE.

- Maintain adequate records of pest management operations.

- Ensure that pesticide use data are provided to the IPMC in accordance with the specific contract SOW or interagency agreement.

3.11 Pest Management Consultant

- Implement pest management policies and programs for the Army installations.

- Review installation IPM programs on-site every three years; the substitution of environmental compliance on-site external reviews for on-site reviews by a PMC is permitted to meet DoD program requirements.

- Annually reviews and technically validates installation IPMPs, including the installation's PUP and PUF for the upcoming year. Approve 5-year revisions of installation IPMPs.

- Certify DoD pest management personnel, when certification requirements are met.

4.0 INTEGRATED PEST MANAGEMENT

4.1 Legal Mandate

There are many sources of information to obtain regulations for the management of pesticides. Many government personnel have access to the Defense Environmental Network & Information Exchange (DENIX), where Environmental Performance Assessment System (EPAS) checklists are available for Federal, State, and Army regulatory and procedural requirements.

4.1.1 Federal Legislation

The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA).
This act, as last amended in 2008, 7 U.S. Code (USC) 136-136y, deals with the sale, distribution, and use of pesticides. FIFRA provides the EPA with the authority to oversee, among other things, the registration, distribution, sale and use of pesticides.

The Act applies to all types of pesticides, including insecticides, herbicides, fungicides, rodenticides, and antimicrobials. Civil penalties for any commercial applicator who violates any provision of this regulation may be assessed not more than $5,000 for each offense, and any private applicator may be assessed a civil penalty of not more than $1,000 for each offense. Criminal penalties for any commercial applicator who knowingly violates any provision of this act shall be fined not more than $25,000 or imprisoned for not more than 1 year, or both. Criminal penalties for any private applicator who knowingly violates any provision of this act shall be guilty of a misdemeanor and shall on conviction be fined not more than $1,000, or imprisoned for not more than 30 days, or both.

The full text of the FIFRA can be found at the following:

http://www.law.cornell.edu/uscode/text/7/chapter-6/subchapter-II

The Hazardous Materials Transportation Act of 1975.
This Act, as last amended in November 1990, 49 USC 1501, et al., is the Federal legislation that governs the transportation of hazardous materials, including pesticides, in the nation. The policy of Congress is to improve the regulatory and enforcement authority of the Secretary of Transportation to protect the nation adequately against the risks to life and property that are inherent in the transportation of hazardous materials in commerce (49 USC 1801). Any person that knowingly violates this regulation is liable to the U.S. Government for a civil penalty of at least $250 but not more than $25,000 for each violation. An individual's misrepresenting the condition of hazardous materials or tampering with hazardous materials shall be fined under 18 USC, imprisoned for not more than 5 years, or both. The maximum amount of imprisonment is 10 years if a violation involves the release of a hazardous material that results in death or bodily injury to any person.

The US Department of Transportation hazardous materials regulations can be found at the following:

http://www.osha.gov/SLTC/trucking_industry/transportinghazardousmaterials.html

The Endangered Species Act (ESA) of 1973.
The purpose of this Act, (16 USC 1531-1547, et al., last amended in January, 2002), is to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved, to provide a program for the conservation of such endangered species and threatened species, and to take such steps as may be appropriate to achieve the purposes of the treaties and conventions for protection of endangered species (16 USC 1531(b)). Under ESA, the policy of Congress is that all Federal departments and agencies must seek to conserve endangered species and threatened species and must use their authorities in furtherance of the purposes of this act. Further, Federal agencies must cooperate with State and local agencies to resolve water resource issues in concert with conservation of endangered species (16 USC 1531(c)).

Any person who knowingly violates this regulation may be assessed a civil penalty by the Secretary of up to $25,000 for each violation. Criminal violations for any person who knowingly violates any provision of this chapter, upon conviction, may be fined not more than $50,000 or imprisoned for not more than one year, or both.

The full text of ESA can be found at the following:

http://www.fws.gov/laws/lawsdigest/ESACT.HTML

The Occupational Safety and Health Act (OSHA). This Act, last amended in June 2002, 29 USC 651-678, is a Federal statute that governs the issues related to occupational safety and health. The purpose and policy of this act are to assure every working man and woman in the nation safe and healthful working condition and to preserve our human resources by, among other things, providing for the development and publication of occupational safety and health standards, providing for an effective enforcement program, and providing for appropriate reporting procedures with respect to occupational safety and health which procedures will help achieve the objectives of this act and accurately describe the nature of the occupational safety and health (29 USC 651(b)(9)(10)(12)). Any employer who willfully or repeatedly violates the requirements this regulation may be assessed a civil penalty of $5,000 but not more than $70,000 for each violation. Any employer who has received a citation for a violation of the regulation may be assessed a civil penalty of up to $7,000 for each violation. Any employer who fails to correct a violation for which a citation has been issued may be assessed a civil penalty of not more than $7,000 for each day during which such failure or violation continues. Any employer who willfully violates any standard, and that violation caused death to any employee, shall, upon conviction, be punished by a fine of not more than $10,000 or by imprisonment for not more than six months, or by both; except that if the conviction is for a violation committed after a first conviction of such person, punishment shall be by a fine of not more than $20,000 or by imprisonment for nor more than one year, or both.

Access to all of the OSHA regulations can be found at the following:

http://www.osha.gov/law-regs.html

The Clean Water Act (CWA) 33 USC 1251 et seq.
The CWA establishes the basic structure for regulating discharges of pollutants into the waters of the United States and regulating quality standards for surface waters.
The basis of the CWA was enacted in 1948 and was called the Federal Water Pollution Control Act, but the Act was significantly reorganized and expanded in 1972. "Clean Water Act" became the Act's common name with amendments in 1977.

Under the CWA, EPA has implemented pollution control programs such as setting wastewater standards for industry. EPA also set water quality standards for all contaminants in surface waters.

The CWA made it unlawful to discharge any pollutant from a point source into navigable waters, unless a permit was obtained.
In accordance with the CWA, if you are in CWA jurisdictional Water's of the US, EPA requires a National Pollutant Discharge Elimination System (NPDES) permit to control discharges from point sources such as pipes or man-made ditches.

4.1.2 Department of Defense (DoD) Directives, Instructions, Manuals and Guides

DoD Instruction 4150.07, DoD Manual 4150.07 Volume 1 and 2, DoD Pest Management Program.
The DoDI and DoDM, sets forth the policy, responsibilities, and procedures for pest management programs and provides the basis for development of installation-specific pest management plans. This instruction establishes the DoD policy of maintaining safe, efficient, and environmentally sound integrated pest management programs to prevent or control pests that may adversely affect health or damage structures, material, or property. The DoD Plan for the Certification of Pesticide Applicators stipulates the certification of U.S. Army military and civilian pest managers. Requires pesticide application on DoD installations to be performed by appropriately certified personnel.

Access to DoD Instruction, dated 26 December 2019 can be found at:
https://www.esd.whs.mil/Portals/54/Documents/DD/issuances/dodi/415007p.pdf?ver=2019-12-26-104614-100

Access to DoD Manual, dated 22 January 2020 can be found at:
https://www.esd.whs.mil/Portals/54/Documents/DD/issuances/dodm/415007_vol1.pdf?ver=2020-01-22-132922-467
https://www.esd.whs.mil/Portals/54/Documents/DD/issuances/dodm/415007_vol2.PDF?ver=2020-01-22-132922-573

- DoDI, DoDI 4150.07, Installation commanders shall initiate a formal review if violations of the FIFRA as amended, are suspected. Any certified applicator that violates any provision of FIFRA, as amended, or the implementing regulations will have his or her certificate reviewed for possible suspension or revocation. Suspected violations, such as pesticide misuse or

record falsification, shall be reported through appropriate command channels to the office of the certifying official. The certifying official shall review the suspected violation and determine if further action is required. If no action is warranted, the installation commander shall be notified in writing that a review of the suspected violation has been conducted and that it has been determined that a violation of FIFRA has not occurred. If the certifying official determines that a violation may have occurred, he or she shall initiate action to temporarily suspend the certificate of the applicator(s) and forward the matter to the lead agency, Under Secretary for Defense - Acquisition, Technology and Logistics (USD - AT&L) for review and final action. If the lead agency determines that a violation of FIFRA has occurred, that agency shall report information on the case and action taken by the Department of Defense to the EPA Administrator.

- DoDM 4150.07, Volume 2 outlines the DoD Pest Management Training and Certification Program. The Manual is not intended to conflict with, be used instead of, or supersede other DoD training Directives or Office of Personnel Management Qualification Standards. The purpose of the manual is to establish training goals, provide a uniform training process, training standards, and procedures to prepare DoD pest management personnel to meet DoD pest management policy objectives.

The DoDI and DoDM supports DoD policy to maintain safe, efficient, and environmentally sound integrated pest management programs. It promotes prevention and control of pests that may adversely impact readiness or military operations by affecting the health of personnel or damaging structures, materiel, and/or property.

Technical Guides (TG). DoDI and DoDM 4150.07 is supplemented by TGs that provide specific criteria and procedures for the operation of a pest management program. The TGs are guidance only and non-regulatory. The following TGs are appropriate to have on hand. TG 1 “Armed Forces Pest Management Board Publications” provides a comprehensive list of all Armed Forces Pest Management Board publications and the following website provides a link to all of the

Technical Guides available online: https://www.acq.osd.mil/eie/afpmb/technical_guidance.html

DoD Directive 4715.1E, Environment, Safety, and Occupational Health (ESOH). This directive, dated 19 March 2005, establishes policies on ESOH to sustain and improve the DoD mission. The directive also continues to authorize the Armed Forces Pest Management Board (AFPMB) [Added July 2005].

To access the DoD Directive 4715.1E, click on the following hyperlink: https://www.esd.whs.mil/Portals/54/Documents/DD/issuances/dodd/47151Ep.PDF?ver=2019-12-30-141505-590

4.1.3 U.S. Army Regulations (ARs) and Policies

Army Regulations Publications can be found at:
https://armypubs.army.mil/ProductMaps/PubForm/AR.aspx
AR 40-12, Quarantine Regulations of the Armed Forces, 24 January 1992. This regulation is intended to prevent the introduction and dissemination, domestically or elsewhere, of diseases of

humans, plants and animals, prohibited or illegally taken wildlife, arthropod vectors and pests of health and agricultural importance. https://health.mil/vaccines

AR 200-1, Environmental Protection and Enhancement. This AR, dated 13 December 2007, directs the Army to use IPM principles to achieve pest management objectives. This update supersedes and replaces AR 200-5, Pest Management, and AR 200-3, Natural Resources — Land, Forest and Wildlife Management.

AR 40-5, Preventive Medicine. This AR, dated May 2007, establishes measures to protect human health from medically important pest related injury and disease, from occupational exposures to pesticides, and other risks from pest management operations.

AR 608-10, Child Development Services. This AR, dated July 1997, prohibits the use of herbicides around Child Development Centers.

DA Pam 40-11, Preventive Medicine. July 2005, This pamphlet outlines the goals of the Army's preventive medicine program, introduces traditional preventive medicine topics including disease prevention and control, covers field preventive medicine and environmental health topics.

4.1.4 State Regulations

Although Federal agencies maintain sovereignty under section 7 USC 136, DoD voluntarily complies with the substantive portions of State pesticide and pest management laws and regulations when such compliance does not adversely impact DoD missions.

Information on the use of pesticides in New Mexico may be found at: http://www.nmda.nmsu.edu/pesticides/.

Specific State of New Mexico requirements include:

- Commercial applicators must document that they hold insurance for applying pesticides that meets the following minimum coverage. New Mexico Department of Agriculture (NMDA) cannot issue a commercial applicator license until proof of insurance has been received. Liability insurance for applicators using ground or manual equipment: $10,000 each occurrence and $25,000 aggregate bodily injury; property damage of $25,000; and single-limit $50,000. For applicators using aerial equipment (planes or helicopters) the limits go up to $25,000 each occurrence and $50,000 aggregate bodily injury; property damage of $50,000; and single-limit $100,000. The deductible must be $1,000 or less. As an alternative to insurance, applicators can take out a surety bond of $100,000.

- Service vehicles used by commercial applicators and operators must be prominently marked with the name of the firm and the commercial applicator's license number so they are visible from both sides of the vehicle.
- Service containers in the bed of trucks and sprayers towed behind vehicles must be marked with the brand name or the common name of the pesticide they contain or a placard on

equipment that States they contain pesticides. Pesticides and application equipment in service vehicles cannot be left unattended unless locked up or otherwise inaccessible to other persons.

- Pesticides in storage must be secure and safe from unauthorized access and the storage cabinet, room or building must be posted with an English/Spanish warning sign. Warning signs shall display "Caution Pesticide Storage Area". Products must be stored so they cannot contaminate food, animal feed, fertilizer, seeds, clothing, or personal protective equipment.

- Application equipment must be kept in good working order and must be calibrated. It must be cleaned between uses so no potentially incompatible or illegal residue from a previous application will result. Any pesticide left in application equipment at the end of a job must be disposed of properly, not just dumped somewhere. NMDA will inspect application equipment to verify its condition at the time of the inspection and will sticker it with the date inspected.

- Pesticide waste must be disposed of properly and empty containers must be crushed or pierced so they cannot be re-used for any other purpose.

- Waste cannot be allowed to contaminate land or water and cannot be poured down a drain or allowed to go down a storm drain. Open burning or open dumping of pesticide waste or containers is illegal.

- Applicators who use bait boxes must label the boxes with their business name, the name of its pesticide or active ingredient and its EPA registration number, and the Poison Control number (800-222-1222).

- State Limited Use Pesticides. In addition to EPA Restricted Use Pesticides, States may determine that the use of certain pesticide products be restricted within their State. They may also require special reporting requirements for these products. The chemicals controlled as State limited use and the reporting requirements for these products are listed below.

- New Mexico lists the following as State-limited-use pesticides: Products containing any of the active ingredients 2,4-D or 2,4-DP. The following information must be recorded for each application of the State-limited-use pesticide by a commercial applicator.

    1. Name of the person for whom the pesticide was applied.
    2. Target pest(s) and crop site.
    3. Year, month, day, and time the pesticide was applied.
    4. Brand name or common name of the pesticide and U.S. Environmental Protection Agency registration number(s) of the pesticide(s).
    5. Direction and estimated velocity of the wind and the temperature at the application site at the time the pesticide was applied. This requirement shall not apply to application of baits in bait stations or pesticide applications in or immediately adjacent to structures.
    6. Concentration of the pesticide(s) applied. Example: pounds, ounces, or pints of pesticide formulation per gallon applied.

7. Volume of use-dilution preparation applied, if applied in categories 1A, 1B, 2, 3A, 3B, 5, 6, 7D, and 8
8. Location of the land or city address to which pesticide was applied.
9. Name and address of the business or agency and the name of the individual making the application.

4.2 Integrated Pest Management Operations

The cornerstone of the IPMP effort is development of pest management strategies for each pest and disease vector category present or anticipated at WSMR. This IPMP adheres to the outline in DoDM 4150.07, Volume 1, entitled "CONTENT OF IPM PLANS, SUGGESTED FORMAT" for specific pest management strategies. These strategies will be followed to ensure that pests do not interfere with the military mission, damage real property, increase maintenance costs, or expose installation personnel to diseases. It is DoD policy (DoDD 4715.1E) to establish and maintain safe, effective, and environmentally sound IPM programs to prevent or control pests and disease vectors that may adversely impact readiness or military operations by affecting the health of personnel or damaging structures, materiel, or property.

IPM is a planned program, incorporating continuous monitoring, education, record-keeping, and communication to prevent pests and disease vectors from causing unacceptable damage to operations, people, property, materiel, or the environment. IPM uses targeted, sustainable (effective, economical, environmentally sound) methods including education, habitat modification, biological control, genetic control, cultural control, mechanical control, physical control, regulatory control, and where necessary, the judicious use of least-hazardous pesticides. Priority should be given to using non-chemical (mechanical, biological, and cultural) control techniques. Chemical control methods should only be used after careful consideration of alternative methods.

A pest management plan is a long-range, comprehensive installation planning and operational document that establishes the strategy and methods for conducting a safe, effective, and environmentally sound IPM program. Written pest management plans are required as a means of establishing and implementing an installation pest management program.

IPM is the method of choice for DoD pest management and disease vector control. IPM is a sustainable approach to managing pests and controlling disease vectors by combining applicable pest management tools in a way that minimizes economic, health, and environmental risks. IPM uses regular or scheduled monitoring to determine if and when treatments are needed and employs physical, mechanical, cultural, biological, genetic, regulatory, chemical, and educational tactics to keep pest numbers low enough to prevent unacceptable damage or impacts.

Treatments are not made according to a predetermined schedule; they are made only when and where monitoring has indicated that the pest will cause unacceptable economic, medical, or aesthetic damage. Treatments are chosen and timed to be most effective and least disruptive to natural controls of pests. Least hazardous, but effective pesticides are used as a last resort

4.3 Priority of Pest Management Work

Installation-specific pests have been identified at WSMR and represented in Table 1. For each of the applicable pest/disease vector categories on WSMR, IPM strategies have been developed and are located in section 8.0.

Table 1. Priority of Pest Management Work

Category	White Sands Missile Range	Note and References
1. Public Health-Related Pests	• Rodents • Cockroaches • Mosquitoes • Bees, Hornets and Wasps • Spiders • Ants • Filth Flies • Scorpions and Centipedes	Hantavirus: http://www.cdc.gov/hantavirus/ Westnile Virus: http://www.cdc.gov/ncidod/dvbid/westnile/index.htm Zika: http://phc.amedd.army.mil/topics/discond/diseases/Pages/Zika.aspx
2.Noxious And/or Invasive Insects	• Red Imported Fire Ants • Africanized Bees	Red Imported Fire Ants: https://www.invasivespeciesinfo.gov/animals/rifa.shtml Africanized bees: http://www.afpmb.org/sites/default/files/pubs/techguides/tg34.pdf
3. Top 10 Non-Native/ Invasive Vegetation and other unwanted vegetation	1. Saltcedar 2. African Rue 3. Lehmann's Lovegrass 4. Russian Olive 5. Russian Knapweed 6. Tree of Heaven 7. Hologeton or Saltlover 8. Napa Thistle 9. Slimleaf Wallrocket 10. Johnson Grass	The following link provides lists of State and Federal noxious weeds: http://plants.usda.gov/java/noxiousDriver NM Specific: https://plants.usda.gov/java/noxious?rptType=State&statefips=35

Category	White Sands Missile Range	Note and References
4. Vertebrate Pests	• Birds • Common Nuisance Wildlife (Bobcats, Raccoons, Skunks, Ringtails, Javelina, Oryx, Fox) • Feral Cats and Dogs • Coyotes • Bats • Snakes • Gophers and Ground Squirrels	Birds Protected by The Migratory Bird Treaty Act can be found at http://www.fws.gov/migratorybirds/RegulationsPolicies/mbta/mbtintro.html Furbearers and big game species are protected by State law and managed by NM Department of Game and Fish (NMDGF). Must consult with NMDGF prior to controlling nuisance wildlife. For feral/stray animals reference http://www.afpmb.org/sites/default/files/pubs/techguides/tg37.pdf

5.0 HEALTH AND SAFETY

5.1 Medical Surveillance of Pest Management Personnel

McAfee U.S. Army Health Clinic Service, Industrial Hygiene and Preventive Medicine are responsible for the implementation of the following steps for DoD pesticide applicators:

1. Schedule occupational health exam
2. Complete OSHA respiratory questionnaire
3. Perform physical exam
4. Conduct respiratory fit testing
5. Conduct annual follow-up
6. Develop a written respiratory protection plan.

5.2 Hazard Communication

The hazard communication program provides the initial approach to reducing potential hazards to workers at WSMR. A written worker HAZCOM program is in place that contains the following:

- Training to inform employees of issues such as Material Safety Data Sheets (MSDS) and hazardous materials labels and other warning signs.
- A list of the hazardous chemicals known to be present.
- Methods used to inform employees of the hazards associated with non-routine tasks.
- Access to MSDS for each hazardous chemical that employees may be exposed to while working.

MSDS for the pesticides being used by DPW are located in the office of the pest management shop. MSDS for the Desert Emerald Recreational Area are located in at the Desert Emerald Recreational Area pest management shop. Labels and MSDS for all the products used on the installation including the contractors are also available from the IPMC.

Pesticides will never be transferred into a drinking container, such as a water bottle or milk jug. All pesticide products should have a legible EPA registered product label identifying the product name, registration number, active ingredients, application directions, health and safety information, and other pertinent information. Wet and dry products should be stored separately with wet products on spill containment shelves.

In the event of a pesticide spill, the guidance provided in the AFPMB Technical Guide #15, "Pesticide Spill Prevention and Management" (https://www.acq.osd.mil/eie/afpmb/docs/techguides/tg15.pdf) will be followed.

5.3 Personal Protective Equipment

At a minimum, the following personal protective equipment will be available to pest control personnel for handling pesticides and vertebrate pests:

- Solvent resistant gloves
- Aprons
- Boots
- Splash protective eyewear
- Hearing protection
- N-95 mask or profession-grade respirator
- Heavy-duty leather gloves
- Professional-grade bee suit

A daily change of protective clothing is provided for each pesticide applicator. Protective clothing consists of a complete change of outer clothing and coveralls. Home laundering is prohibited and a washer and dryer are present in the shop for laundering.

Additional protective equipment may be required based upon requirements specified on the pesticide labels and must be available for use by pesticide applicators.

Information used to determine additional personal protective requirements are found in AFPMB Technical Guide https://www.acq.osd.mil/eie/afpmb/docs/techguides/tg14.pdf

Safe Work Practices for Working with Wildlife:
https://pubs.usgs.gov/tm/15/c02/tm15c2.pdf

Contractors are required to have the proper equipment prior to entering the installation and must use it in the proper manner while applying pesticides on WSMR.

5.4 Fire Protection

The IPMC insures that all pesticides stored by WSMR are inventoried and reported to the installation fire department. The fire department conducts periodic inspections of the pesticide storage sites. The following web-site provides a summary of fire protection planning for pesticide fires: https://www.acq.osd.mil/eie/afpmb/docs/techguides/tg16.pdf

5.5 Pest Management Vehicles

The pest management vehicles used by DPW pest management personnel at WSMR are listed in Table 2.

Table 2. Pest Management Vehicles/Equipment

Location	Vehicle Number	Vehicle & Equipment Description
Main Post Pest Shop		
	Admin #51403	John Deere XUV 855 Gator w/45-gallon sprayer
	Admin #65001	300-gallon Multi Pro 5800 Toro Sprayer
	Admin #65004	300-gallon Multi Pro 5700D Toro Sprayer
	G43-2887N	Ford F250 Utility Truck
	G43-2901N	Ford F250 Utility Truck
	G43-3039S	Ford F250 Pickup Truck (Dog-Catcher Truck)
		40-gallon power sprayer
		50-gallon on demand sprayer
		Dyna Jet L 30 ULD (Fogger)
		(2ea) 1-gallon B&G Hand Sprayer
Stallion Range Center		
	Admin #36900	John Deere 6-Wheel Gator w/50gal sprayer
	Admin #65007	200-gallon Workman Toro Sprayer
	G43-2923N	Ford F350 Utility Truck
		(2ea) 1-gallon B&G Hand Sprayer
		4-gallon Backpack Sprayer

5.6 Protection of the Public

Pesticide applications at WSMR do not impact off-site locations or adjacent land. Should there be a potential for on-site pesticide applications to affect off-site locations, the installation IPMC will coordinate with the Public Affairs Officer to perform any notifications to local government agencies.

5.7 Pesticide Inventory

Appendix 7 provides an inventory list of these pesticides. Refer to the PUP, for the most current list of all pesticides used on WSMR.

5.8 Pesticide Storage Methods and Facilities

Pesticides are stored on WSMR by DPW Operations and Maintenance Division. Pesticides are stored in building 1708 (Figure 1) on the main post, building 34251 at the Stallion Range Center (Figure 2). All of the storage facilities are located within fenced areas that are securely locked when unoccupied.

All of the storage areas meet the requirements of AFPMB.

Figure 1. Pesticide Storage, Bldg 1708

Figure 2. Pesticide Storage, Stallion Range Center

In building 1708, pesticide mixing is done in the sink (Figure 4). The sink drains into a bucket and has a fume hood that is routinely checked by industrial hygiene. Mixing at the Stallion Range Center is done on a bermed concrete pad outside the storage area. In accordance with their contract, all contractors are required to mix pesticides prior to entering the installation.

6.0 ENVIRONMENTAL CONSIDERATIONS

6.1 Sensitive Areas

There are a number of sensitive areas where pesticides are applied. These include, the Child Development Center (CDC; B-272), the Frontier Club (B-1330), the Italian Café (B-426), the Roadrunner Lanes/bowling alley (B-234), the Commissary (B-262), AAFES Shopette (B-260), the Mountain View Café (B-120), DFAC Truman Kimbro (B-21090), McAfee U.S. Army Health and Dental Clinic (B-1363). Pesticide applications in the food areas are completed after hours and all food preparation areas are covered prior to and during the applications. In accordance with AR 608-10, para. 5-48n, Child Development Services, 15 July 1997, herbicides are not used in weed control in children's play areas. However, herbicides are applied for weed control in landscaped areas in front of the CDC only.

The elementary/middle school located on WSMR is owned and maintained by the Las Cruces Public School District. No pesticide applications are applied by DPW pest management personnel or contractors. LCPSD understands that they are required to coordinate any pesticide applications with the installation prior to applying.

6.2 Threatened and Endangered (T&E) Species, Protected Species and Critical Habitats.

6.2.1 T&E Species

WSMR is home to the White Sands Pupfish (NM State Threatened), the Todsen's Pennyroyal (Federally Endangered) and the Aplomado Falcon (Federally Endangered with a "non-essential" designation for a 10(j) experimental population).

Native pupfish populations are located at Salt Creek and Malpais Spring. Introduced populations established with stock from Salt Creek are located at Mound Spring, Lost River, and other locations on Holloman Air Force Base.

Todsen's pennyroyal (Hedeoma todsenii Irving) is a member of the mint family and on WSMR fifteen populations have been discovered and documented in the middle San Andres Mountains. The preferred habitat is high northerly facing steep, open, pinyon-juniper slopes on limestone and gypsum substrates.

The Northern Aplomado Falcon inhabits areas of open grassland, savanna, and shrub-steppe from tropical lowlands up to 12,000 feet. Aplomados historically ranged from southwest United States, through Central America, and across most of South America. These falcons had become extinct in the northern extent of their range and are being reintroduced in the grasslands of the Jornada del Muerto Basin located in the NW corner of WSMR.

While the willow flycatcher has been documented at WSMR during migration, the endangered Southwestern Willow Flycatcher (SWFL) was not documented until 21 June 2009, when a single bird was observed at Davies Tank about 5 miles east of the main post cantonment area.
The lack of breeding activity at WSMR is likely due to a lack of breeding habitat for the SWFL which is a riparian obligate.

6.2.2 Protected Species

Most bird species at WSMR are protected by the Migratory Bird Treaty Act (MBTA) of 1918. It is unlawful ‘‘by any means or in any manner, to pursue, hunt, take, capture, [or] kill’’ any migratory birds except as permitted by regulation (16 U.S.C. 703). ‘‘Take’’ means to ‘‘pursue, hunt, shoot, wound, kill, trap, capture, or collect’’ or to attempt these activities (50 CFR 10.12). It is illegal for any person to (intentionally or unintentionally) take, possess, transport, sell, or purchase a bird or their parts, such as feathers, nests, or eggs, without a permit, or to attempt to do any of these things.

All eagles and their nests (active or empty) have additional protections under the Bald and Golden Eagle Protection Act. Under the MBTA, it is unlawful ‘‘by any means or in any manner, to pursue, hunt, take, capture, [or] kill’’ any migratory birds except as permitted by regulation (16 U.S.C. 703). ‘‘Take’’ means to ‘‘pursue, hunt, shoot, wound, kill, trap, capture, or collect’’ or to attempt these activities (50 CFR 10.12). It is illegal for any person to (intentionally or unintentionally) take, possess, transport, sell, or purchase a bird or their parts, such as feathers, nests, or eggs, without a permit, or to attempt to do any of these things. Furthermore, all pest management activities at WSMR fall under the 2006 “Memorandum of Understanding between the U.S. Department of Defense and the USFWS to Promote the Conservation of Migratory Birds”. WSMR follows the 2000 “Interim Empty Nest Policy of the U. S. Fish and Wildlife Service, Region 2.”

Tularosa springsnail (*Juturnia tularosae*), is an endemic springsnail in the southwest. These aquatic snails were first described by Hershler et al. (2002) along the Salt Creek drainage within White Sands Missile Range (WSMR), New Mexico. Tularosa springsnails are 2-5 mm in diameter and have 2-8 convex whorls rotating in a clock-wise manner from the aperture or opening. Tularosa springsnails, as with many other Hydrobiidae, have a high degree of endemism and can be adapted to extreme water chemistry. Although *J. tularosae* is not protected under the Endangered Species Act, its level of endemism could have implications that impact Department of Defense (DoD) mission goals in the future. Currently, long-term habitat suitability, distribution and population trends are being calculated to manage conflicts between this springsnail species at risk and military operations. Effort will be made to ensure no conflicts will occur to this species of springsnails in the event USFWS may reconsider listing the species under the ESA.

6.2.3 T&E Species Requirements

The EPA identifies pesticides with the potential to affect federally listed threatened and endangered species or their critical habitat. The EPA, Endangered Species Protection Program (ESPP), requires pesticide applicators to, when directed by the label, visit the EPA website or call the indicated toll free number to see if a local county Bulletin contains relevant information. Even if the information contained in the county Bulletin is not relevant to the intended use of the pesticide, applicators must still copy or download the county Bulletin. Bulletins will be good for six months, at which time applicators will need to revisit the website (or call the toll free number) to again obtain the county Bulletin.

EPA has stated that pesticides bearing label directions only for use indoors, and where the applied product remains indoors, will not be subject to ESPP.

Applicators that ignore label language directing them to obtain a county Bulletin from the EPA website, or toll free number, run the risk of violating labeling directions. Applications that adversely impact a federally listed threatened or endangered species could constitute an Endangered Species Act violation, in addition to an enforceable label violation. Pesticide applicators are encouraged to visit the ESPP website at http://www.epa.gov/espp and familiarize themselves with the county Bulletins.

To comply with the ESPP regulations, follow these steps:

1. Review the label of every product you use to determine whether it contains endangered species prohibitions.

2. If the label does contain endangered species language, check the ESPP website, or call EPA's toll-free number: 1-800-447-3813, before using the product.

3. Review Endangered Species Protection Program U.S.

4. Do not use the product in a manner inconsistent with the county Bulletin (which is an extension of the product's label).

5. Maintain a copy of the county Bulletin in your files.

6. Recheck the labels of products you use at least once every six months for the generic label statement about county Bulletins.

If proposed application of pesticide has the potential to affect any threatened, endangered, or otherwise protected species, NEPA requirements must be met and/or the IPMC must notify the DPW Endangered Species Biologist who must contact the local USFWS office to consult under Section 7 of the ESA or for coordination under the MBTA or other applicable regulations.

6.3 Noxious Weeds

Lehmann Love Grass (Eragrostis lehmanniana), African rue (Peganum harmala), Saltcedar (Tamarix sp.), Saltlover (Halogeton glomeratus), Russian Olive (Elaeagnus angustifolia), and Tree of Heaven (Ailanthus altissima) are the major exotic and invasive plant species on WSMR. There is currently a large scale effort to control Saltcedar, Russian Olive, and Tree of Heaven on WSMR. The cut and stump application and foliar spray methods are being used to control invasives in remote riparian habitats and aerial applications are being used in the basins and along Range Roads to treat monotypic stands of saltcedar. Currently, African Rue is not being managed. However, future management plans include mapping and treatment along Range Roads and at Military Sites.

Saltlover has recently been discovered in an isolated location on WSMR. Current efforts to eradicate the invasive are being implemented by using mechanical methods. Herbicides will be used in future treatments.

6.4 Environmental Documentation

Previous requirements of AR 200-2 (Environmental Effects of Army Actions) have been incorporated into 32 CFR part 651 as Environmental Analysis of Army Actions. Under 32CFR 651.10(b) an Environmental Assessment (EA) is required for an IPMP. The programmatic EA for the Army pest management program can be found at:
https://aec.army.mil/application/files/5914/9520/3465/ipm_final.pdf

A Finding of No Significant Impact (FONSI) for entomology programs at U.S. Army Installations can be found at:
https://aec.army.mil/application/files/4314/9520/2707/ipm_no-significant.pdf

Under the Clean Water Act, a National Pollutant Discharge Elimination System (NPDES) permit is required to add pesticides to certain waters. Point source discharges of biological and chemical pesticides that leave a residue in waters of the U.S. must have an NPDES permit. A determination has been made that WSMR has no "waters of the US" and thus has no NPDES permit requirements.

The following documents can be found archived in the Environmental Division library of building 163.

1. Cooperative Agreement For Protection and Maintenance of White Sands Pupfish between U.S. Army - White Sands Missile Range U.S. Air Force - Holloman Air Force Base, National Park Service - White Sands National Monument, USFWS, and New Mexico Department of Game and Fish , 1 May 2006

2. Final Biological Assessment For Development And Implementation Of Range-Wide Mission And Major Capabilities At White Sands Missile Range, New Mexico Regarding Todsen's pennyroyal (Hedeoma todsenii), Northern aplomado falcon (Falcofemoralis septentrionalis), Southwestern willow flycatcher (Empidonax traillliextimus) and Mexican spotted owl (Strix occidentalis lucida), August 2009.

3. Environmental Assessment for Implementation of the Treatment of Salt cedar at White Sands Missile Range, August 2011.

4. White Sands Missile Range Integrated Natural and Cultural Resources Management Plan and Environmental Assessment, 2015-2019.

6.5 Pesticide Spills and Remediation

Information on pesticide spills is available in the Armed Forces Pest Management Board (AFPMB) Technical Guide #15, "Pesticide Spill Prevention and Management" https://www.acq.osd.mil/eie/afpmb/docs/techguides/tg15.pdf

6.6 Disposal Procedures and Methods

The contractor is responsible for the proper disposal of any pesticide wastes generated from their pest control efforts on the installation. DPW pest management and Desert Emerald Recreational Area personnel use the residue rinseate from pesticide containers as a diluent for normal pesticide applications.

All pesticide waste is properly disposed of following established installation procedures in coordination with the installation Hazardous Waste Management Center, located in building 1870. Waste from pesticide operations is carefully characterized. Care is taken to distinguish between hazardous waste and acute hazardous waste because their residues and containers must be handled differently. Under the Resource Conservation and Recovery Act (RCRA), a container that has held an acute hazardous waste can be considered "empty" if it has been appropriately triple rinsed (see 40 CFR 261.7(b)(3)). Empty containers are made un-reusable by cutting a hole in the bottom of the container, unless contrary to label directions. Empty containers (see 40 CFR 261.7) are disposed of through the solid waste disposal path. Likewise, other equipment and supplies are decontaminated, as appropriate, and either processed for reutilization or disposed. Any contaminated equipment or supplies must be evaluated for disposal as hazardous waste. Any de-registered or surplus pesticides is inventoried through the installation hazardous materials office and sent for disposal or reutilization through normal installation procedures; this is typically through the Defense Reutilization and Marketing Office (DRMO).

The following link provides access to the EPA website on the proper storage and disposal of pesticide products: http://www.epa.gov/pesticides/regulating/storage.htm.

For further guidance on disposal procedures and methods refer to AFPMB TG-21 'Pesticide Disposal Guide for Pest Control Shops.
https://www.acq.osd.mil/eie/afpmb/docs/techguides/tg21_update.pdf

6.7 Operations Involving Aerial Application

Aerial herbicide applications have been implemented as a method to control Salt cedar on WSMR. AR 200-1 requires that an Aerial Spray Statement of Need (ASSON) be enclosed with an installation's IPMP (See Appendix 8). WSMR also has met NEPA requirements for aerial application of herbicides. An EA and FONSI were completed in 2011 for the treatment of saltcedar to analyze various control methods, to include aerial and ground application of herbicides.

6.8 Desert Emerald Park and Recreational Area

WSMR's eleven-hole golf course has been closed and is now the Desert Emerald Recreational Area and managed as a park and recreational area. It is still managed by the Family, and Moral, Welfare and Recreation Directorate (FMWR). Currently, Tresco Inc. is contracted to manage landscape operations, to include tree and shrub, mowing, watering, pest control, and weed control. All pest control operations and pesticide us is reported to the IPMC and PMQAE. Wildlife is managed by the Garrison DPW Environmental Division.

7.0 PROGRAM ADMINISTRATION

7.1 Pest Management Operations

7.1.1 Funding

Pest management oversight activities, such as the annual review of the IPMP, the five-year update of this plan are funded through VENQ, Army environmental funds. Operations of the pesticide applicators are funded through MDEP QDPW, Operation and Maintenance funds.

The IPMP does not provide overall guidance on how to fund Garrison real-property or reimbursable pest control operations to ATEC tenants or other non-military tenants on WSMR. Refer to IMCOM Common Levels of Support and Reimbursable Services Catalog for guidance.

Specific funding program recommendations developed by the IPMC are considered annually and incorporated when approved by the Garrison. The IPMC ensures specific program funding is reflected in the Garrison Annual Work Plan. The stray/feral animal control and vertebrate nuisance wildlife conflict programs are currently funded through MDEP QDPW. Nuisance wildlife exclusion requirements on Garrison real-property are funded as requirements arise.

7.1.2 Self-Help

WSMR currently does not have a self-help program. Should a self-help program be initiated, the IPMC shall insure that the necessary training, record keeping and reporting requirements are complied with. Additional information on the Army's self-help program is available at: https://www.acq.osd.mil/eie/afpmb/docs/techguides/tg42.pdf

7.1.3 Poison Control

Dialing 1-800-222-1222 will connect to the nearest poison-control center. The hotline is available for emergencies related to poison incidents and preventions, in addition to providing information and professional advice on, pesticide use, drug interactions, and related topics.

For immediate emergency care, call WSMR Dispatch at 678-1234.

New Mexico Poison Center

https://nmpoisoncenter.unm.edu/
MSC09 5080
1 University of New Mexico
Albuquerque, NM 87131-0001
Emergency: 1-800-222-1222
Administrative Line: (505) 272-2222 (normal business hours)
Fax number: (505) 272-5892

7.2 Contracts/Quality Assurance

The DoD will use pest management contracts when cost-effective or when advantageous for non-routine, large-scale, or emergency services, especially when specialized equipment or expertise is needed. Appendix 5 provides samples of contract SOW language for monitoring and pesticide application contract services. Contracts for installation pest management must be monitored by personnel either certified as a DoD pesticide applicator, or as a DoD PMQAE.

WSMR current Pesticide Contractors:

1- Tresco Inc. Ground Maintenance and Janitorial Contractors has a commercially certified applicator controlling weeds in designated areas on post.
2- FMWR is purchasing pest control services for their food establishments (Frontier Club, Bowling Alley) using an Impact Statement Card.
3- DTRA – PHETS Complex on Stallion Range. Ground Maintenance and Janitorial Contractors has a commercially certified applicator controlling weeds in designated areas within the PHETS complex.
4- CESU-NMSU Cooperative Agreement with Industrial Weed Control Inc. to perform management and control of exotic and invasive plant species.
5- William Beaumont Army Medical Center - McAfee Medical and Dental Center, building 1316 contracting pest control services with J&J World Wide Service – ECOLAB.

7.3 Outleases – Agricultural

WSMR leases the Oscura Grazing Allotment, also called the Mendiburu Ranch for livestock grazing. The allotment consists of Bureau of Land Management, State Land and DoD deeded lands. No pesticides are currently applied on this allotment. All outleases which use pesticides are required to comply with the IPMP and report to the IPMC.

7.4 Inter-Service Support Agreements

WSMR has an inter-service support agreement with the Residential Communities Initiative – Balfour Beatty Communities (BBC/RCI), Defense Commissary Agency (DeCA) Facilities and Holloman Air force Base.

The current BBC managers are contracting weed and pest control with chemical applications in the privatized housing complex. Pesticide use and reporting per DoDI's and AR's are strictly adhered to and provided to the IPMC.

Emergency pest management support under current ISAs is provided by DPW on a reimbursable basis. Emergency is defined as nuisance pests that may cause health or immediate threats to the workforce and residents (e.g., rattlesnakes, zoonotic diseased vertebrates, nuisance predators). DPW Pest Control provides stray/feral animal control on a reimbursable basis. DPW Environmental Division provides non-reimbursable support and education with wildlife.

Upon agreement expiration, pest management sections will be reviewed and updated for accuracy and applicability before renewal.

7.5 Reports and Records

7.5.1 Reports

Below are the primary environmental documentation requirements for the IPM program.

Monthly Pesticide Use Reporting
In accordance with DoDM 4150.07, DoD Pest Management Program, and AR 200-1, Environmental Protection and Enhancement, the installation must report all pesticide applications using DD Form 1532 Pest Management Report or an equivalent computerized spreadsheet. Monthly reports will be completed by all organizations applying pesticides on the installation and copies provided to the IPMC on a monthly basis.

Annual Reporting of Measures of Merit
DoD's strategic plan for environmental security, drafted in 1993, mandates a reduction in the environmental risk from pesticides used in DoD programs and provides three Measures of Merit for Pest Management. IPMC will consolidate all pesticide use on the installation and provide PMC with the amount of pounds of active ingredients used on the installation at the end of each fiscal year.

Measure of Merit 1 – Installation Pest Management Plans. One hundred percent of DoD installations will have pest management plans prepared, reviewed, and updated annually by pest management professionals. The IPMC, is responsible for annual updates and five year revisions.

Measure of Merit 2 – Pesticide Use Reduction. DoD will maintain the achieved reduction in annual pesticide use on DoD installations. This reduction is set at an average of the FY 2002 and 2003 usage, which is 389,000 pounds of active ingredient (45% of the original 1993 baseline – a 55% reduction). Pesticide applications by contractors shall be included.

Measure of Merit 3 – Installation Pesticide Applicator Certification. One hundred percent of DoD's installation pesticide applicators will be properly certified (either by DoD or the appropriate State). Direct-hire DoD employees have a maximum of 2 years to become certified after initial employment. Contract employees should have appropriate State certification when the contract is awarded. Contractors and DPW personnel will provide IPMC with updated certifications. IPMC will monitor certifications and provide updates in the annual Pesticide Use Form (PUF).

Annual Review of Installation IPM Program and Technical Approval of Pesticide Use Proposal (PUP) and Pesticide Use Form (PUF)**.**

The IPMC submits the updated PUP and PUF for approval by the PMC annually (Appendix XX). PMC on-site external reviews (EPAS) by PMC occurs as funding is available and meets DoD program requirements.

7.5.2 Records

The following records will be maintained by the IPMC to document and report pesticide applications for WSMR:

- The computerized spreadsheet equivalent of the Pesticide-Use Reports - DD Form 1532-1 "Pest Management Maintenance Report"
- DoD IPMC/QAE Training Certification
- Copies of all pesticide applicator's certificates
- Copies of Liability Insurance for contractors

7.6 Training and Certification

7.6.1 Training

The following trainings are recommended for an effective IPM program at WSMR.

- DoD Pesticide Applicator Training. All DoD personnel who apply or supervise the application of pesticides shall be trained and certified within 2 years of employment.
- DoD personnel who are undergoing apprenticeship training but are not yet certified shall apply pesticides only under the direct supervision of a DoD-certified pesticide applicator. Initial certification is valid for up to 3 years. DoD-certified pesticide applicators shall be recertified every 3 years.

- The U.S. Navy and U.S. Army provide IPMC/PMQAE certification courses for quality assurance evaluators, natural resources personnel, contract administrators and writers, and other personnel who provide oversight of pest management operations

- Termite Inspection Training to meet USDA annual, biannual, or triennial inspection requirement.

- The US Army Medical Zoology Branch, Department of Preventive Health services provides training materials for 3 pest management courses: DoD Pest Management Certification (6H-F12/322-F12), DoD Pest Management Recertification (6H-F13/322-F13), and DoD Pest Management QAE/IPMC (6H-F33/322-F31). All DoD certified pest management courses can be found at: https://www.acq.osd.mil/eie/afpmb/training_courses.html

7.6.2 State Certification

All contractors applying pesticides on WSMR must hold a NM State applicators license and be certified in the appropriate categories. Appendix 3 lists all current IPMC/PMQAE and pesticide applicators certifications. The following link lists certification categories for pesticide applicators: https://www.nmda.nmsu.edu/nmda-homepage/divisions/aes/pesticides/categories

7.7 Pesticide Security

WSMR's Main Post, and Stallion Range Center, pest management facilities are all securely locked when not in use and have chain link fences around them. Additional information on pesticide security on the installation: https://extranet.acq.osd.mil/eie/afpmb/cac/techguides/tg7.pdf

Directorate of Emergency Services (DES) provides installation police operations and security to ensure the pest control building on main post and Stallion Range are secure, to prevent terrorists from acquiring pesticides or pesticide dispersal equipment. DPW Pest Control notify DES of any suspicious theft of pest control equipment, or pesticides and DES will notify the FBI if necessary.

7.8 Disease Surveillance, Prevention and Control

Disease prediction is key in prevention and control. Data on the number and location of human cases, the vector quantity and type, ecological and climate patterns as well as infection rates in hosts animals and vectors can give a picture of when, where and how a disease is spreading or declining. This and other data can help predict future outbreaks, identify unique disease cycles, as well as frame research, preparedness and prevention plans.

Preventative Medicine and Industrial Hygiene Department at McAfee United States Army Health Clinic, in conjunction with the IPMC work together with all available resources to stay current with diseases that could affect the workforce and families at WSMR.

Vector-borne (Zika, West Nile Virus, Lyme Disease, Plague), and Infectious Viruses (Hantavirus, Rabies, Canine Distemper and Parvo) are targeted for surveillance and prevention at WSMR.
https://www.acq.osd.mil/eie/afpmb/docs/techguides/tg41.pdf

Centers for Disease Control and Prevention (CDC) 1600 Clifton Rd Atlanta, GA 30333 800-CDC-INFO (800-232-4636) TTY: (888) 232-6348 http://www.cdc.gov/	Doña Ana County Health and Human Services Silvia Sierra, Director 845 N. Motel Blvd Las Cruces, New Mexico 88007 Voice: (575) 525-5833 Fax: (575) 525-5876 https://donaanacounty.org/health

Additional wildlife related diseases of concern for WSMR include White-nose Syndrome (WNS) and Chronic Wasting Disease (CWD).

Since the winter of 2006, WNS has killed more than 5.7 million bats in Eastern North America. WNS is a disease caused by a non-native, cold-loving fungus which can be found in the caves of the affected regions. As WNS spreads, the challenges for understanding and managing the disease continue to increase.

A coordinated effort has begun among State, Federal, and Tribal wildlife agencies, and private partners to respond effectively to WNS and conserve species of bats. As a DoD federal partner in this effort, the DPW Environmental Division is working to conserve bat species that occur on WSMR.

CWD is a prion disease that affects North American cervids. The known natural hosts of CWD are mule deer, white-tailed deer, elk, and moose. CWD was first identified as a fatal wasting syndrome in captive mule deer in Colorado in the late 1960s and in the wild in 1981. It was recognized as a spongiform encephalopathy in 1978. To date, no strong evidence of CWD transmission to humans has been reported. WSMR conducted a long-term desert mule deer study from 2003 – 2010, and determined CWD is not a significant limiting factor in their population.

7.9 Coordination – DoD, Other Federal, State, and Local Agencies

The following Memoranda of Understandings have been set up with various organizations and agencies.

- Memorandum of Understanding between the U.S. Environmental Protection Agency and the U.S. Department of Defense with Respect to Integrated Pest Management, dated 20 March 1996.

- Memorandum of Understanding between the U.S. Department of Defense and U.S. Department of Agriculture Animal and Plant Health Inspection Service on Animal Damage Control (ADC), dated 28 August 1990.

- Protocol for Military Clearance, April 2004, To prevent the introduction or dissemination of exotic plant pests and animal disease agents into the United States, by establishing and implementing guidelines, regulations, and policies that mitigate risks associated with military movement of troops, vehicles, equipment, and vessels of conveyance.

7.10 Pesticide Approval Process

The following steps need to be taken to ensure the pesticides used on the installation are properly approved.

1) Access the approved list of State pesticides via the following links:
http://npirspublic.ceris.purdue.edu/state/state_menu.aspx?state=NM

2) Match current pesticides used on the installation with State list and determine if any of the pesticides are not properly State-registered.

3) IPMC needs to complete the Pesticide Use Proposal and submit to the PMC annually before the end of the FY (September 30), or as needed for emergent requirements.

7.11 Sale and Distribution of Pesticides

Pesticides are sold both in the commissary and the AAFES store. The IPMC ensures that all pesticides being sold are registered in the State of New Mexico and are not restricted use pesticides.

7.12 IPM References and Links

Some links to key IPM and Important information websites:

Volume 1:
DoD Pest Management Manual (DoDM) 4150.07, Volume 1 and 2:
https://www.esd.whs.mil/Portals/54/Documents/DD/issuances/dodm/415007_vol1.pdf?ver=2020-01-22-132922-467

Volume 2:
https://www.esd.whs.mil/Portals/54/Documents/DD/issuances/dodm/415007_vol2.PDF?ver=2020-01-22-132922-573

U.S. Army Environmental Command Pest Management webpage:
https://www.acq.osd.mil/eie/afpmb/

U.S. Army Environmental Center "Guidelines to Prepare Pest Management Plans for Army Installations and Activities," September 1996
https://www.acq.osd.mil/eie/afpmb/docs/techguides/tg18.pdf

The U.S. Environmental Protection Agency pesticide information website:
http://www.epa.gov/pesticides/

U.S. Army Public Health Command, (formerly the U.S. Army Center for Health Promotion and Preventative Medicine (CHPPM))
http://phc.amedd.army.mil/Pages/default.aspx

U.S. E.P.A. Endangered Species Protection Program (Pesticide Use Limitations)
http://www.epa.gov/oppfead1/endanger/bulletins.htm

U.S. E.P.A. ECOTOX Database
http://www.epa.gov/ecotox

U.S.D.A. Plant Protection and Quarantine Program
http://www.aphis.usda.gov/plant_health/

National Invasive Species Council
http://www.invasivespecies.gov/

New Mexico Department of Agriculture – Pesticide Compliance
http://www.nmda.nmsu.edu/pesticides/

National Pesticide Information Center
http://npic.orst.edu/index.html

Noxious Weeds in U.S.
https://plants.usda.gov/java/noxComposite

Centers for Disease Control and Prevention
https://www.cdc.gov/

8.0 IPM STRATEGIES

8.1 Public Health Related Pests

8.1.1 RODENTS

White-throated Woodrat (Neotoma albigula)

White-footed Deer mouse (Peromyscus leucopus)

Distinguishing Features

White-footed Deer Mouse:
These mice occupy a variety of habitats, ranging from mixed forests to grasslands to open, sparsely vegetated deserts. They are almost strictly nocturnal. Deer mice do not hibernate. Their winter activities may include taking up quarters in a pile of logs, from which they venture nightly in search of food. Their food consists of a variety of items, chiefly seeds. Deer mice breed in every month of the year, with peaks in the periods from January through April and from June through November.

Woodrat:
Adults weigh about 5-9 ounces, 7-10 inches long. The tail is longer than the head and body combined. They have smooth (not shaggy) fur, large ears and a pointed nose.

House mouse (Mus musculus):
The adult house mouse is small and slender and about 1-2 inches long, excluding tail. It has large ears, pointed nose and small eyes. The tail is as long as the head and body combined. The fur color varies, but it is usually a light grey or brown, but could be darker shades.

Norway or Brown Rat (Rattus norvegicus): The fur is coarse and usually brown or dark grey, while the under parts are lighter grey or brown. The length can be up to 25 cm (10 in), with the tail a further 25 cm (10 in), the same length as the body. Adult body weight averages 550 g (19 oz) in males and about 350 g (12 oz) in females, but a very large individual can reach 900 g (32 oz).

Reason for Control

Directly transmitted diseases such as rat-bite-fever, salmonella, leptospirosis, and hantavirus. The vector for hantavirus on WSMR is Peromyscus maniculatus, the deer mouse. Hantavirus was detected on WSMR in 1997 and 1998. There are other Peromyscus species on WSMR but none carry the Sin Nombre Virus, which causes hantavirus pulmonary syndrome in humans.

Due to the old age of facilities on WSMR rodent infestations have to continuously be addressed. DPW pest control personnel performs "some" decontamination procedures, but for the most part the Test Center Operations, Environmental Services contract has to perform 5 – 10 decontaminations per month just so they can use the facilities.

Diseases that are usually indirectly transmitted, such as typhus and the plague, may be contracted when lice, fleas, mites, or ticks, bite a disease-infected rat, then a person.

Rodent burrows can cause structural damage by undermining the foundations of buildings, roads, and walkways.

Rodents can cause damage by gnawing, damaging plastic and lead pipes, doorframes, upholstery, and electric wires; and through the destruction and contamination of food crops and stored foods.

Site
All areas that buildings, warehouses, and storage areas along with the adjacent landscaped areas should be monitored for rodent activity.

SURVEILLANCE

Responsible Entity

Building Managers, occupants, gardeners, and landscape maintenance personnel, in coordination with a certified pesticide applicator, are responsible for surveillance.

Methods, Locations, and Frequency

Method (Devices)	Locations	Frequency
Observations of droppings, nests, commodity and/or food damage, and reports of sightings from Building Managers and occupants.	All buildings on the installation	Continuous
Reports of foul odors, holes, and burrows.	All buildings on the installation	Continuous
Scratches and sharp gnawing marks on the bottoms and corners of doors and walls, on ledges, and on stored material.	All buildings on the installation	Continuous
Inspection of traps (glue traps, bait stations and boxes).	All buildings on the installation	Continuous
Dark, greasy rub marks caused by the rat's oily fur repeatedly brushing against painted surfaces or wooden beams.	All buildings on the installation	Continuous
Check for tracks and tail draglines on dusty surfaces indoors and in loose soil and mud outdoors.	All buildings on the installation	Continuous

CONTROL

Control Standard

Management efforts should continue until all visible signs of infestation are absent in and around buildings and adjacent landscaped areas.

Monitoring for the detection of new infestations should continue year-round.
The action threshold is any observed animal or sign of infestation (nests, droppings).
Control is defined as a significant reduction in the number of droppings or mounds seen around bait stations and turf areas within 30 days after treatment.

Control Methods

Priority should be given to using non-chemical (mechanical, biological, and cultural) control techniques. Chemical control methods should only be used after careful consideration of alternative methods.

Responsible Entity

Building managers, DPW pest management personnel, occupants, gardeners, and maintenance personnel are responsible for non-chemical control methods.

Mechanical Control Methods

Eliminate entryways for rodents by repairing holes in walls, crack, and crevices with 1/4-inch galvanized hardware cloth or copper mesh and caulk.

Seal gaps around exterior doors with weather stripping. Door sweeps can be used to prevent rodent entry.

Repair, replace damaged, or missing window screens. Repair roof soffits and seal all openings on the roof.

Inspect and repair damaged air vents, louvers, vent pipes and shafts, tile roofs, and gaps around the chimney.

Glue boards and snap traps are usually the most effective devices for controlling small numbers of rodents. Killing rodents instantly with a trap is possibly the most humane method of control. If using a trap, use expanded-trigger traps whenever possible and use the following methods for successful trapping.

- Place traps in areas where they are inaccessible to children and pets.

- Use effective baits: for Norway rats, use a piece of bacon or a slice of a hot dog; for wood rats, raisins, and nuts; for mice, gumdrops, peanut butter and raisins. Since rodents are sensitive to changes in the environment, traps should be pre-baited. Place baited traps out for several days without setting the trap. Check traps daily to see if bait was taken. Once rodents take the bait, add fresh bait, and set the trap.
- Set three traps side-by-side and perpendicular to the wall with the triggers facing the wall. Alternatively, set two traps end-to-end and parallel to the wall, with the trigger facing out.
- Place traps for wood rats on tree limbs, under vegetation, on backyard trellises and fences, and other aboveground sites.
- Traps should be inspected daily, and stale baits should be replaced.

Biological Control Methods

Pathogens are the main agent used for the biological control of rodents. The pathogens that have been used are of the genus Salmonella; none is rodent-specific and all can cause severe infection in man and domestic animals. No pathogens will be used on WSMR.

There are currently no feasible biological control methods to eliminate rodent infestations.

Cultural Control Methods

Eliminate food sources and habitat. Train facility personnel on the importance of sanitation and good housekeeping. Remove all available food sources making sure that all food residues are removed. Store any remaining food in rodent-proof containers.

Do not leave food or crumbs on counters, tables or on the floor overnight.

Regularly clean under the refrigerator and stove. Open the stovetop and remove food and grease.

Rinse all cans, bottles, and plastic containers before recycling and discarding.
Clean out debris in attics, basements, closets, lockers, and lounge areas.

Collected waste must be stored for pickup in rodent-proof containers or kept in a rodent-proof room constructed of materials that cannot be easily gnawed. Make sure garbage can and dumpster lids seal tightly when closed. Regularly clean dumpsters, garbage cans, and other trash containers thoroughly.

Building grounds, loading docks, and interior space at street level and below should be kept as free as possible of debris that rodents can use for shelter. Anything soft, such as rolled carpeting, insulation, or padded furniture, should be removed.

Remove or relocate away from buildings, woodpiles, building materials, and other items that might serve as hiding or nesting sites.

Keep grass mowed to about 2 ½ to 3 inches and keep shrubs and other low plants pruned, to facilitate monitoring.

Clear away brush, weeds, and heavy ground covers, especially around foundations.

Chemical Control Methods

Chemical treatment, baiting, is initiated when non-chemical treatments fail to eliminate rodent infestations. In accordance with DoDM 4150.07, electromagnetic exclusion or control devices and ultrasonic repellent or control devices are not used on WSMR. These devices have been found to interfere with the ability of bats to echolocate.

Sensitive Areas

Food establishments, the child development center, the youth center and the medical center are sensitive areas where the use of rodenticides should be used with extreme caution.

Prohibited Practices

New Mexico regulations require applicators that use bait boxes, to label the boxes with their business name, the name of its pesticide or active ingredient and its EPA registration number, and the Poison Control number (800-222-1222).

Rodenticides should not be used indoors except under extreme circumstances. Rodents that have ingested a toxic dose of a rodenticide may crawl into wall voids and other inaccessible areas to die.

The decaying carcass can produce foul odors and attract insects such as dermestid beetles or blowflies, which feed on the dead animal. Once they have consumed the carcass, the insects will seek other food sources, and may become pests themselves.

Environmental Concerns

Some pesticides are toxic to fish and wildlife. Do not apply directly to water or where surface water is present. Follow label cautions and instructions to reduce hazards to non-target species from drift, runoff, groundwater contamination, and/or spills. Coordination and/or consultation with IPMC, DPW Environmental Division, USFWS and NMDGF may be required prior to application to sensitive habitats

Additional Comments

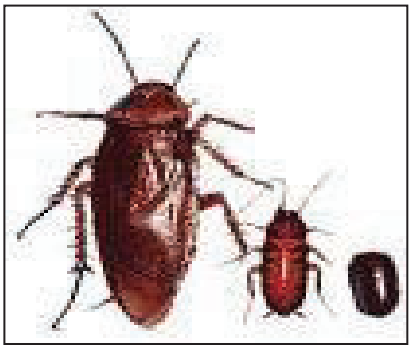
Additional information can be found in TG 41 - Protection from Rodent-borne Diseases with special emphasis on occupational exposure to hantavirus

All pest management procedures will be conducted in accordance with the Federal Insecticide, Fungicide, and Rodenticide Act, as amended; DoDM 4150.07, DoD Pest Management Program; Installation Pest Management Plan; and other applicable Federal, State, local, and host nation laws. Use appropriate PPE in accordance with label directions.

Pest controllers should be instructed on the dangers posed by Hantavirus and should be instructed in how Hantavirus is transmitted, preventive measures to reduce exposure, symptoms of the disease and when to seek medical attention. It is mandatory that PPE be worn by pest controllers while maintaining bait stations, removing dead rodents, conducting surveys or any other procedure when exposure to rodent feces/urine is possible. The PPE equipment includes respirators with high-efficiency particulate air (HEPA) filters, goggles, solvent resistant gloves, coveralls, and protective footwear.

Before modifying historic structures, the DPW Environmental Division must be contacted and NEPA requirements must be complied with.
Rodenticide baits are normally effective only if there is little alternative food for the rodents, sanitation, therefore, is a prerequisite for baiting.

8.1.2 COCKROACHES



American cockroach (Periplaneta americana)

German cockroach (Blattella germanica)

Distinguishing Features

Oval-shaped body, six legs, long antennae, flat and low-lying body, fast-moving, winged.

Reason for treatment

Cockroach droppings, or frass, contain allergens, which have been shown to trigger asthma attacks in children.

Although there is no direct evidence linking cockroaches to actual disease outbreaks, cockroaches have been shown experimentally to transport a number of pathogenic bacteria and viruses on their legs and bodies. Thus, cockroaches, through their nocturnal feeding habits, represent a serious potential health problem.

Damage to stored goods.

Site

Kitchens, bathrooms, break areas, water pipes, and other areas where food and water sources are present.

SURVEILLANCE

Additional information on surveillance can be found at:
https://www.acq.osd.mil/eie/afpmb/docs/techguides/tg29.pdf

Responsible Entity

Certified pesticide applicator, building managers, and occupants.

Methods, Locations, and Frequency

Method (Devices)	Locations	Frequency
Visual assessments of sticky traps to determine infestation rates.	All buildings on the installation	Bi-weekly

CONTROL

Control Standard

Cockroach treatments should be triggered by trap counts when minor infestations are observed within living and working areas.

Trap counts containing more than two cockroaches in a two square foot area or more than six cockroaches found at any building would trigger the control actions listed below.

Control Methods

Use non-Chemical control methods (including sanitation, pest avoidance, use of physical barriers, and pest source reduction) prior to applying pesticides.

Chemical control methods should only be used after careful consideration of alternative methods.

If it is necessary to use EPA approved pesticides, this should be done on a limited basis and only to remove cockroaches from hiding places or to eliminate small populations.

Responsible Entity

Building Managers and occupants are responsible for non-chemical control methods in coordination with the certified pesticide applicator.

Chemical applications can be performed by either a DoD or State certified pesticide applicator.

Mechanical Control Methods

Eliminate cockroach harborage by caulking (or filling with other material) minor cracks, crevices, holes in walls or floors where cockroaches may enter.

Steam clean or pressure wash all possible structural crevices and equipment in food handing and trash storage areas where appropriate. Vacuum all possible structural crevices and equipment in food handing and trash storage areas when steam cleaning or pressure washing is inappropriate.

Fix leaks, improve drainage, and install screened vents to increase airflow in high moisture areas.

Weather-strip around doors and windows where roaches may enter.

Basement floor drains should be fitted with screens or basket inserts that are cleaned regularly.

Biological Control Methods

There are currently no biological control methods to eliminate cockroach infestations.

Cultural Control Methods

Clean cupboards, drawers, floor drains, kitchen appliances, and sinks to remove food particles and grease.

Put garbage in a container with a tight-fitting lid or in a sealed plastic bag and take out daily.

Store foods in the refrigerator or seal them in roach-proof containers.

Keep kitchen counters and shelves clean; do not leave dirty dishes out overnight.
Mop floors regularly.

Remove stacked boxes, cartons, rolled carpeting and any stored paper or cardboard materials, particularly in dark, damp locations.

Chemical Control Methods

Chemical control methods such as, bait stations are very effective, but are slower acting than liquid pesticide applications.

Sensitive Areas

Food establishments, food storage areas, child development centers and youth centers.

Prohibited Practices

At no time will pesticides be applied in a food-handling establishment without current or historical surveillance data documenting the pest infestation.

Pesticide treatments will be conducted only when the food preparation area is not in operation and must be used according to the pesticide label precautions.

Automatic aerosol pesticide dispensing devices will not be used in food serving or preparation areas.

Pesticides will not be stored in food serving facilities.

Environmental Concerns

Some pesticides are toxic to fish and wildlife. Do not apply directly to water or where surface water is present. Follow label cautions and instructions to reduce hazards to non-target species from drift, runoff, groundwater contamination, and/or spills. Coordination and/or consultation with IPMC, DPW Environmental Division, USFWS and NMDGF may be required prior to application to sensitive habitats.

Additional Comments

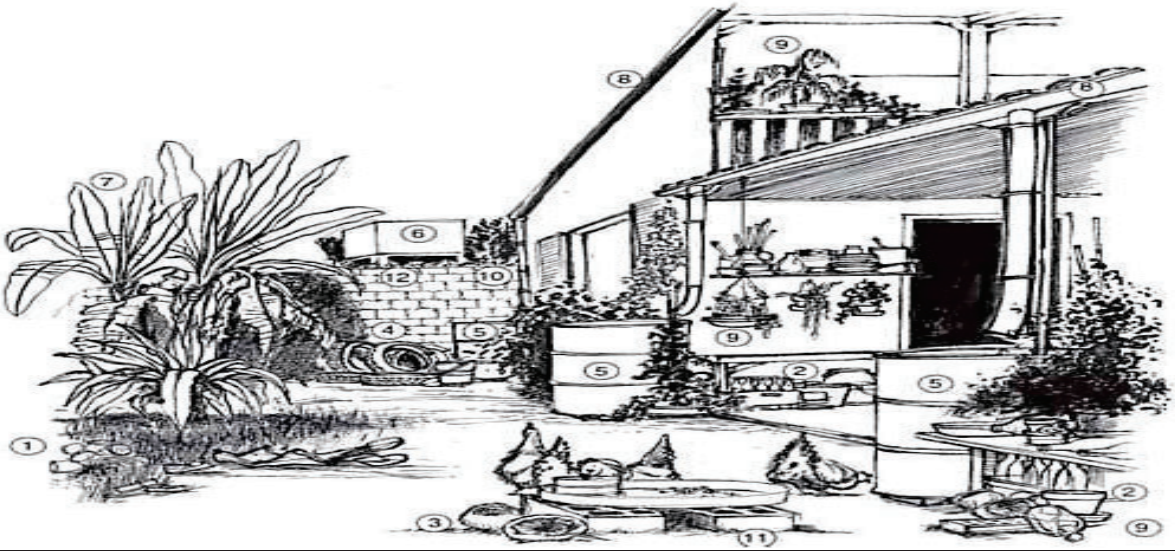
To minimize the chance of developing pesticide resistance, avoid the continuous use of a single pesticide class.

8.1.3 MOSQUITOES

Pest: **MOSQUITOES-Container Breeding Aedes**	Site: **CANTONMENT AREA AND TRAINING AREAS**

Purpose: To control Container Breeding *Aedes* mosquitoes thereby reducing human annoyance and the risk of disease

Aedes aegypti (left) and *Aedes albopictus* (right) mosquitoes can be distinguished from each other by the presence of a white stripe on the thorax of *Aedes albopictus*.



Examples of outdoor breeding sites of *Aedes* spp. (1) discarded cans/plastic containers, (2) bottles, (3) coconut husks, (4) tires, (5) barrels, (6) water storage tanks, (7) bromeliads and axils of banana trees, (8) obstructed roof gutters, (9) plant pot saucers, (10) broken bottles fixed on walls to deter burglars, (11) holes in unused construction blocks, and (12) the upper edge of block walls. From Rozendaal, 1997.

Surveillance of Container Breeding Aedes

2.1 Conducted By: Installation Preventive Medicine. Special requests for surveillance support for a specific health threat can be obtained from USAPHC-Regions. Pest Management Technicians.

2.2 Methods & Frequency: Installation personnel detect and report biting mosquitoes. Inspect water containing objects (rain buckets, cemetery flower urns, rain gutters, discarded tires or other water containing objects). Seasonal conditions (Typically April/May – Oct/Nov) and breeding habitat are noted on an ongoing basis.

1.3 Specific Surveillance Measures:

2.3.1. The BG-Sentinel Trap (Preventive Medicine)

The BG-Sentinel™ trap is specifically designed to collect daytime-feeding mosquitoes, and has been found to collect *Ae. aegypti* and *Ae. albopictus* more effectively than the standard CDC light trap. Traps should be baited with CO_2 from dry ice, when available. Also, commercially available lures that can improve a trap's effectiveness have been designed specifically to attract *Ae. aegypti* and *Ae. albopictus.* The BG-Sentinel™ trap requires a lure for effective trapping. Product manuals detail specific setup procedures and instructions for use of each piece of surveillance equipment. Take care when handling the BG-Sentinel™ trap, as some components have durability limitations.

Equipment	**NSN**
BG SentinelTM Trap	3740-01-628-9326
BG-Lure® for BG SentinelTM Trap (Note: trap will not work without lure)	3740-01-628-9325
Catch Bag for BG SentinelTM Trap	3740-01-628-9327
Wall charger for BG SentinelTM Trap	3740-01-628-9324

Black Jar for egg collection and larval identification:

A manufactured ovitrap is available in the DoD stock system (Mosquito Trap-and-Kill, NSN 6840-01-628-4751), and ovitraps can also be constructed with any dark colored container. Simply fill the container partially with water and place a wooden tongue depressor or paper towels along the inside of the cup. Check the tongue depressor and paper towels regularly for the presence of eggs.

Integrated Control of Container Breeding Aedes

Mechanical and Physical Control

Method & Location: Ensure placement of screens in windows on buildings occupied at night to exclude adult mosquitoes. Temporary standing water sites (e.g., tire ruts) should be graded or filled to eliminate mosquito breeding. Precautions must be taken not to damage wetlands. Eliminate artificial container (e.g., tires, wrinkled tarps, refuse, neglected equipment, and neglected toys) breeding sites.
Conducted By: Installation Maintenance Personnel

Method & Location: Proper wearing of clothing including wearing long sleeve shirts rolled down.

Conducted By: Installation Personnel

Type: Cultural

Method & Location: Remove and discard any refuse or materials capable of holding water such as tires and broken equipment. Potential for breeding exists particularly at vehicle storage yards where waste tires may accumulate.

Table 1. indicating appropriate cultural management practices for various water containing objects on the installation.

Larval Habitats	Empty/Clean Regularly	Store Under Roof	Fill with Sand	Throw away/recycle
Buckets	Yes	Yes		Yes
Discarded Containers				Yes
Flower Pot Saucers	Yes		Yes	
Roof Gutters	Yes			
Tires		Yes		Yes
Tree Holes			Yes	

Examples of outdoor breeding sites of *Aedes* spp. (1) discarded cans/plastic containers, (2) bottles, (3) coconut husks, (4) tires, (5) barrels, (6) water storage tanks, (7) bromeliads and axils of banana trees, (8) obstructed roof gutters, (9) plant pot saucers, (10) broken bottles fixed on walls to deter burglars, (11) holes in unused construction blocks, and (12) the upper edge of block walls. From Rozendaal, 1997.

Conducted by: Installation personnel.

Personal Protection for Biting Mosquitos

Basis for Treatment: Mosquitoes (and other biting arthropods) in the area

Method & Location: Installation personnel (treatment of uniforms with Permethrin and use of DEET on skin only).

Insect Repellent, personal application, Ultrathon
EPA Reg # 58007-1; NSN 6840-01-284-3982

Insect Repellent, clothing application, aerosol (Permethrin Arthropod Repellent)
EPA Reg # 50404-6-58188; NSN 6840-01-278-1336

Insect Repellent, personal application & sunscreen, 20% DEET/SPF15 (Sunsect)
EPA Reg # 66306-1; NSN 6840-01-288-2188

Insect Repellent, personal application & sunscreen, 20% DEET/SPF15 (Sunsect)
EPA Reg # 66036-1; NSN 6840-01-452-9582

Insect Repellent, clothing application, permethrin (IDA) (**FOR MILITARY USE ONLY**)
EPA Reg # 63120-3; NSN 6840-01-345-0237

Insect Repellent, personal application, 30% DEET (SP532-Ultra30/LippoDEET)
EPA Reg # 82810-1-58188; NSN 6840-01-584-8393

Insect Repellent, personal application, 25% DEET , pump spray bottles(Cutter Backwoods DEET Insect Repellent) EPA Reg # 305-61-121; NSN 6840-01-584-8598

Insect Repellent, personal application, 20% Picaridin, pump spray bottle (NATRAPEL Insect Repellent) EPA Reg # 39967-53-56575; NSN 6840-01-619-4795

Chemical pest management techniques for Container Breeding *Aedes* (Before applying/using any chemical treatment, consult your Command IPM consultant first. Verify the product is registered for use in the US State or IAW with the Final Governing Standard for the Host Nation)

Basis for Treatment: Confirmed mosquito presence in area. Confirmed mosquito-borne disease, as determined by the Preventive Medicine Environmental Health office and local health department officials.

Method & Location: Treatment of breeding sites that cannot be addressed in a non-chemical manner. Conducted By: Pest Management Technicians. Preventive Medicine Environmental Health personnel.

Altosid EPA Reg #: 2724-421 NSN 6840-01-424-2495

Summit Bactimos (BTI) EPA Reg #: 6218-47 NSN 6840-01-377-7049

Ovitrap Mosquito Trap-N-Kill (Dichlorovas) EPA Reg # 8730-50-66433 NSN 6840-01-628-4751

Control Standard: Mosquitoes not on personnel during potential exposure period. Mosquito trap and larval counts low.

Precautions and Concerns when doing Chemical Control

PRECAUTIONS FOR SENSITIVE AREAS: Do not use repellents on individuals who may show a chemical sensitivity to their ingredients. This is particularly true when dealing with infants and children under 12 years of age.

PROHIBITED PRACTICES: The use of repellents not in accordance with label instructions.

ENVIRONMENTAL CONCERNS: Do not alter or disrupt designated wetlands. Do not treat uniforms where excess permethrin residue or spray-over would contaminate the environment. Targeted adulticide treatments only considered if disease threat exists.

REMARKS: Source elimination and larval control are the best strategies to reduce the threat of mosquitoes.

Where to go for more information:

Armed Forces Pest Management Board: https://www.acq.osd.mil/eie/afpmb/

Army Public Health Center (APHC) Zika Virus website:
http://phc.amedd.army.mil/topics/discond/diseases/Pages/Zika.aspx

Centers for Disease Control and Prevention: http://www.cdc.gov/

Pest Management Support Technical Guidance;
https://www.acq.osd.mil/eie/afpmb/pest_tech_guidance.html

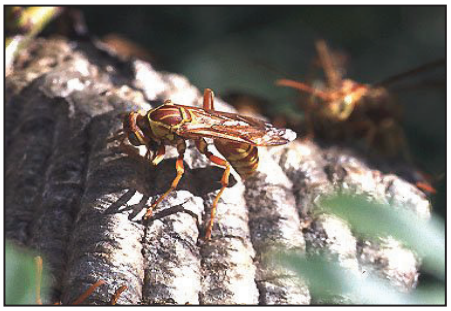
Walter Reed Biosystematics Unit: http://www.wrbu.org/index.html

Rozendaal, J. A. 1997. Vector Control: Methods for Use by Individuals and Communities. World Health Organization, Geneva. 412 pp.
https://www.who.int/en/news-room/fact-sheets/detail/zika-virus

8.1.4 BEES, HORNETS, AND WASPS

Honeybee (Apis mellifera)

Hornet (Vespidae)



Paper wasp (Vespidae.)

Tarantula hawk (Pompilidae)

Distinguishing Features

Honeybee:
Golden-yellow in color with darker bands of brown, 1/2-inch in length, hairy body.

Hornet:
Mostly black with a white pattern on most of its face, hence the common name, "bald-faced". They build large grayish-brown carton like structures, many times hanging from a tree or bush. They are considered wasps.

Wasp:
Many are reddish-brown or dark red. Some species are more orange, while others have varying bright stripes of red and yellow. About 1 inch in length, but a few may be as small as 1/2-inch or as large as 1-1/2 inches.

Tarantula Hawks:
Also known as spider wasps grow up to 2 inches in length. They have a blue to black robust body which provides elusiveness and protection from their prey, the tarantula. Tarantula Hawk wings range from blue-black to red, orange, or mahogany in color. The coloring of the wings provides warning to potential predators of the Tarantula Hawk. This type of warning coloration is referred to as aposematic coloring. At the end of the wasp's legs they have hooked claws used for attaching themselves to other insects or plants and also for grappling with other insects.

Female Tarantula Hawks have a stinger that can be up to 7 mm long and provides one of the most painful stings of any insect.

Reason for Control

Allergic reactions to the venom that stinging insects may cause. Reactions may include non-life-threatening reactions such as hives, swelling, nausea, vomiting, abdominal cramps, and headaches and life-threatening reactions such as anaphylactic shock, dizziness, unconsciousness, difficulty in breathing, and laryngeal blockage. Death can occur from severe allergic reactions or multiple stings occurring in a single encounter.

Site

Exterior and interior sections of walls, electric control panels, attics, picnic and outdoor recreational areas, and other areas as determined by surveillance.
Nests can be found underground, under eaves, in wall voids, in trees, logs, rock piles, and other protected sites.

SURVEILLANCE

Responsible Entity

Building Managers and occupants, in coordination with DPW pest management personnel are responsible for surveillance.

Methods, Locations, and Frequency

Method (Devices)	Locations	Frequency
Conduct an initial inspection to eliminate potential nesting sites on all buildings.	All buildings on the installation	In the spring
Regularly inspect the exterior of buildings during the spring and early summer to facilitate detection of incipient nests.	All buildings on the installation	Monthly during the spring, summer and fall

CONTROL

Control Standard

No major infestations or medical emergencies associated with bee, wasp, or hornet stings.
No callbacks to chemically treated areas within 30 days after treatment.

Control Methods

Priority should be given to using non-chemical (mechanical, biological, and cultural) control techniques.

Chemical control methods should only be used after careful consideration of alternative methods.

Responsible Entity

Building Managers are responsible for non-chemical control methods in coordination with DPW pest management personnel.

Chemical applications can be performed by either a DoD or State Certified Pesticide Applicator.

Mechanical Control Methods

When feasible, exterior portions of buildings should be constructed out of hardwoods or other materials unsuitable for carpenter bee nesting.

Fill depressions and cracks in exterior wood surfaces so they are less attractive as nesting sites. Caulk any holes and cracks in the building that can be used by bees or wasps to gain access into the structure.

Paint or varnish exposed surfaces regularly to reduce weathering. Protect the ends of timbers with wire screening or metal flashing.

Windows and screens should be tight fitting and in good condition. Screens should be replaced if torn. Door sweeps can be installed to eliminate access points.

Remove potential water sources by repairing leaky outdoor faucets and directing air conditioner drainage to areas where water will not pool.

Sticky traps can be used to reduce small numbers of foraging wasps in an area.

Nest removal and trapping should be conducted by DPW pest management personnel.

Biological Control Methods

There are currently no biological control methods to eliminate bee/wasp infestations.

Cultural Control Methods

Since garbage is a prime foraging/predation site for wasps, garbage containers should have tight fitting lids and should be emptied and cleaned frequently. Disposable liners can be used and replaced when soiled or damaged. Dumpsters should be cleaned frequently by washing them with a strong stream of water.

Keep food and drinks covered when outdoors.

Feed pets indoors or ensure all food is consumed at each feeding.

Avoid wearing brightly colored or patterned clothing, perfume, cologne, or scented soaps when entering an area of bee and/or wasp activity.

Avoid going barefoot in vegetation, especially clover and other blooming ground covers. Remain calm when a bee or wasp lands on your skin then gently and slowly brush it away.

When swimming in pools or other bodies of water, avoid bees or wasps trapped on the surface. Bees and wasps should be removed promptly from swimming pools.

Avoid areas of increased insect activity (near nesting or foraging sites).

Chemical Control Methods

Chemical treatment should be initiated as a last resort when non-chemical treatments fail. If infestations are high or risk of damage is great, insecticides may be used to augment other methods of control.

Aerosol formulations must be used with extreme caution. Aerosol applications should be applied directly to nests and wasps will attack applicators when sensing a poison applied to their nests. Applicators must use appropriate PPE and adhere to label cautions.

Desiccant dusts are the preferred method of chemical control. They are inert dusts combined with absorptive powders (diatomaceous earth or boric acid) that destroy insects by abrading their protective outer body cover, causing them to dry out. Desiccant dusts are low in toxicity to people and animals, do not lose their effectiveness over time, and should be used before resorting to other chemical means.

Residual dusts can be very effective at controlling nests found in wall voids and underground nests.

Outdoor ground nests can be similarly controlled by approaching the nest at night and dusting the entrance; this procedure should be followed by plugging the entrance with dusted steel wool.

Sensitive Areas

Children's playgrounds and youth centers. Avoid chemically treating wasps and bees in congested, poorly ventilated work-sites when personnel are present.

Prohibited Practices

Treatment of nests will be performed only at times when children are not present or directly exposed.

Gasoline should never be poured into underground nest holes. This dangerous practice creates a fire hazard, contaminates the soil, and prevents the growth of vegetation.

Environmental Concerns

During WSMR's rangewide bee study conducted in 2007, they estimated 187 bee species present, which may actually represent only 50-70% of the total WSMR. Native bees are beneficial and are generally not considered pests, so extreme care should be considered prior to considering chemical control of bee populations on WSMR. Coordination with DPW Environmental Division is required if control of bees is required outside of the installations, cantonment area.

Most wasps provide an extremely beneficial service by eliminating large numbers of other pest insects through predation and should be protected and encouraged to nest in areas of little human or animal activity. Bees are important pollinators and produce food products such as honey and honeycomb.

Some pesticides are toxic to fish and wildlife. Do not apply directly to water or where surface water is present. Follow label cautions and instructions to reduce hazards to non-target species from drift, runoff, groundwater contamination, and/or spills. Coordination and/or consultation with IPMC, DPW Environmental Division, USFWS and NMDGF may be required prior to application to sensitive habitats.

Additional Comments

Before modifying historic structures, the Environmental Division must be contacted and NEPA requirements must be complied with.

8.1.5 SPIDERS

Funnel weaver spider (Agelenopsis spp.)

Orb weaver spider (Araneus spp.)

Wolf spider (Hogna permunda)

Black widow (Latrodectus variolus, L. mactans, and L. hesperus)

Brown recluse (Loxosceles spp.)

Distinguishing Features

Eight legs with no wings or antennae. Their bodies have only two sections - a fused head and thorax, and an abdomen. All spiders have a pair of jaw-like structures with a hollow, claw-like fang at the end.

Reason for Control

Most spiders are too small or have venom too weak to harm humans and many suspected spider bites are actually caused by insects (fleas, bedbugs, mosquitoes) or mites (scabies, bird mites, etc.). However, reactions to the venom of poisonous spiders can range from mild to life-threatening (primarily for small children, the elderly, or people who are hypersensitive), but death is unlikely in most cases. If the bite of any spider causes an unusual or severe reaction, contact a physician.

The two spider groups of medical importance found on WSMR are:

- Black widow: Not all adult black widows exhibit the red hourglass on the abdomen — some may have a pair of red spots or have no marking at all. Female black widows often exhibit various red markings on the abdomen, commonly two red spots. However, black widow young are believed to have at least some sort of marking on their abdomens. Adult male black widows are half the size of the females, and are usually gray or brown rather than black and red; while they may sometimes have an hourglass marking on their abdomen, it is usually yellow or white, not red..
- Brown recluse (or violin) spider: Brown recluse spiders are usually between 6–20 mm (¼ in and ¾ in), but may grow larger. While typically light to medium brown, they range in color from cream-colored to dark brown or blackish gray. These spiders usually have markings on the top side of their body, with a black line coming from it that looks like a violin with the neck of the violin pointing to the rear of the spider, resulting in the nicknames fiddleback spider, brown fiddler, or violin spider.

Site

Dark, sheltered, relatively undisturbed places.

SURVEILLANCE

Visual inspection.

Responsible Entity

Building Managers and occupants, cleaning and maintenance personnel, in coordination with a certified pesticide applicator are responsible for conducting surveillance.

Methods, Locations, and Frequency

Method (Devices)	Locations	Frequency
Sticky traps can be placed along floorboards to provide an idea of population levels in a structure.	Inside buildings inside and outside doorways, windows and equipment	Continuous

CONTROL

Control Standard

No visual signs of webs or spiders indoors or on equipment outdoors.

No signs of black widows, brown recluse, and hobo spiders from sticky traps within 30 days after chemical treatment.

Control Methods

Priority should be given to using non-chemical (mechanical, biological, and cultural) control techniques.

Chemical control methods should only be used after careful consideration of alternative methods.

Responsible Entity

Building Managers, occupants, and cleaning, landscape and building maintenance personnel are responsible for non-chemical control methods.

Mechanical Control Methods

Areas adjacent to buildings should be kept free of trash, leaf litter, heavy vegetation, and other accumulations of materials.

Plants should be trimmed away from structures to discourage spiders from taking up residence near human occupied structures.

Keep lawns mowed to a height of 3 inches or less.

Install yellow or sodium vapor light bulbs at outside entrances. These lights are less attractive than incandescent bulbs to night-flying insects, which, in turn, attract spiders.

Outdoor lighting should be turned away from windows and doorways.

Sweep, mop, hose, or vacuum webs and spiders off buildings regularly.

Eliminate building entry points by caulking, repairing window and door screens, and filling cracks and crevices around windows, doors, and foundations, with materials such as expanding polyurethane foam or caulking.

Weather strip doors or install a door sweep to eliminate gaps.

To reduce harborage areas, place boxes off the floor and away from walls and seal the boxes with tape. Clean up clutter in garages, sheds, basements, and other storage areas.

Eliminate excess moisture in crawl spaces by increasing venting, placing plastic over bare soil, and repairing leaks.

Increase lighting in crawl spaces by the addition of screened vents.

Biological Control Methods

There are currently no biological control methods to eliminate spider infestations.

Cultural Control Methods

Vacuum or sweep windows, corners, storage areas, basements, and other infrequently used areas to remove spiders and their webs. Hand-held portable vacuums are an effective control. Vacuum the web and the spider and dispose of the material in a trash receptacle.

Ensure food and organic wastes are stored properly to prevent insect infestations.

Wear shoes at all times and use gloves when moving rocks, wood or other debris.

Do not leave clothes, shoes, sleeping bags, or other items on the floor and shake out all items prior to use.

Ensure adequate lighting when working in crawl spaces or other infrequently used areas.

Chemical Control Methods

Due to the anatomic structure of spiders they tend to have little contact with surface areas. Thus, chemical control of spiders by applying pesticides to surfaces inside buildings is not recommended and should be considered only as a last resort. Residual sprays are not recommended for use in buildings that are occupied or will be occupied in the near future. If residual materials are used in unoccupied buildings or in areas where other methods fail, applications are recommended only along baseboards, door casements, and corners, and only where spiders are present.

Sorptive dusts containing amorphous silica gel (silica aerogel) and pyrethrins, which can be applied by certified pesticide applicators only, may be useful in certain indoor situations. Particles of the dust affect the outer covering of spiders (and insects) that have crawled over a treated surface, causing them to dry out.

Insecticides will not provide long-term control and should not be used against spiders outdoors. Typically, pesticide control of spiders is difficult unless the pesticide is sprayed directly on the spider.

Sensitive Areas

The child development center and youth centers.

Environmental Concerns

Spiders are beneficial to humans because they control a wide variety of insect pests such as mites, flies, and mole crickets. Spiders should be left alone in gardens, shrubbery, and other vegetated areas.
To remove a non-venomous spider from indoor areas, invert a wide-mouthed jar, cup, or bowl over the spider.

Using a piece of stiff paper or thin cardboard large enough to cover the mouth of the container, slide it slowly under the jar while keeping the jar pressed against the surface on which the spider is standing. Hold the paper over the top as a cap, carry the jar outside and release the spider by shaking the container.

Some pesticides are toxic to fish and wildlife. Do not apply directly to water or where surface water is present. Follow label cautions and instructions to reduce hazards to non-target species from drift, runoff, groundwater contamination, and/or spills. Coordination and/or consultation with IPMC, DPW Environmental Division, USFWS and NMDGF may be required prior to application to sensitive habitats.

Additional Comments

If bitten by a spider, wash the bite area with soap and water. Some bites may exhibit localized pain around the bite area. If bitten by a black widow spider, and the pain is moderate or there are whole-body symptoms (localized or generalized severe muscle cramps, abdominal pain, weakness, and tremor), seek emergency care at a hospital. If symptoms are severe, call 911 for emergency medical transport, so that evaluation and treatment can start in route to the hospital.

If you are bitten by a brown recluse spider, try and remain calm. Too much excitement or movement will increase the flow of venom into the blood. Apply a cool, wet cloth to the bite or cover the bite with a cloth and apply an ice bag to the bite. Do not apply a tourniquet. It may cause more harm than benefit. Try to positively identify the spider or catch it to confirm its type. A brown recluse bite can be serious and may require immediate medical care. Call a doctor if: You have severe symptoms throughout your body. An open sore and necrosis develop. Necrosis is black, dead tissue.

8.1.6 ANTS

Carpenter ant (Camponotus spp,)

Western harvester ant (Pogonymermex occidentalis)

Distinguishing Features

The body of an ant is clearly divided into three sections: the head, the thorax, and the gaster.

Ants are social insects living in colonies comprised of one or a few queens, and many workers. The queen generally stays deep and safe within a nest. Most ants that you see are workers and these are all females. Depending on species, workers may be similar in size, or come in a range of sizes.

Ants tend to come in dark or earth tones. Different species are black, earth-tone reds, pale tans, and basic browns.

Reason for Control

- Ants will consume and contaminate food.
- Build unsightly mounds on property.
- Cause structural damage by hollowing out wood for nesting.
- Cause painful bites or stings and may cause allergic reactions.

Site

All buildings, warehouses, storage areas, landscape areas and dirt lots.

SURVEILLANCE

Responsable Entity

Building Managers and occupants, landscape personnel in coordination with DPW pest management personnel, are responsible for surveillance

Methods, Locations, and Frequency

Method (Devices)	Locations	Frequency
Visual observation of ants, trails, or nests.	Around all buildings on the installation, landscaped areas and children's play areas	Weekly during the spring, summer and fall

CONTROL

Control Standard

There is no single threshold level for house-infesting ants. Threshold levels need to be set separately for each site. For example, a single ant in a first-aid station may be one too many. In an eating area, control actions might be initiated if there were more than a half-dozen ants in a day, while most people's tolerance for ants in a rustic and open recreation room would likely be much higher.

Control Methods

Priority should be given to using non-chemical (mechanical, biological, and cultural) control techniques. Chemical control methods should only be used after careful consideration of alternative methods.

Responsible Entity

Building Managers, building occupants and landscape maintenance personnel are responsible for non-chemical control in coordination with a certified pesticide applicator.

Mechanical Control Methods

The most effective way to mechanically control ants is to vacuum the infested area and eliminate the queen ants from the colony

Biological Control Methods

There are currently no biological control methods to eliminate ant infestations.

Cultural Control Methods

Educate personnel on the importance of and employing good sanitation techniques anywhere food is handled, stored or prepared.
Ensure that food containers are clean and kept in closed ant proof (glass containers with rubber gaskets or plastic containers with tight-fitting, snap-top lids) containers when not in use.

Use soapy water or rinse any bottles, cans, wrappings, and other items that may have food residues before storing them for recycling. These items should be disposed of regularly.

Keep attractive substances, like sugar and honey, in a refrigerator.

Keep organic waste and garbage in closed, tight-sealing containers as far away from buildings as possible.

Empty trash from the building frequently.

Place garbage in sealed plastic bags before placing it into a dumpster or other storage receptacle.

Ant-proof structures by sealing crack and crevices with caulk and silicon sealers. Repair torn screens and install door sweeps.

Modify ant habitat: trim branches and trees located close to structures so the branches do not act as runways from nest sites to roof or siding; alter landscaping to minimize the number of aphids and other honeydew-producing insects that attract ants; move firewood outdoors; and don't stack wood next to structures.

Chemical Control Methods

There are a number of different formulations of pesticide products used for ant control. These may include such things as:

- Baits, including bait stations and granular/pelleted products;
- Gels
- Dusts
- Liquid pesticide formulations

Sensitive Areas

Children's playgrounds and youth centers.

Prohibited Practices

Areas should be quarantined while pesticides are used to eliminate ant infestations.

Environmental Concerns

Some pesticides are toxic to fish and wildlife. Do not apply directly to water or where surface water is present. Follow label cautions and instructions to reduce hazards to non-target species from drift, runoff, groundwater contamination, and/or spills.
Coordination and/or consultation with IPMC, DPW Environmental Division, USFWS and NMDGF may be required prior to application to sensitive habitats.

Additional comments

The red imported fire ant is now found on WSMR and throughout southern New Mexico. These ants are more aggressive than most native ant species, and have a painful sting. An animal, including humans, typically encounters them by inadvertently stepping into one of their mounds, which causes the ants to swarm up the legs, attacking as a group.

Fire ants compete successfully against other ants, and have been enlarging their range. They are a pest, not only because of the physical pain they can inflict, but also because their mound-building activity can damage plant roots and destroy landscaping. Their stings are rarely life-threatening to humans and other large animals. However, they often kill smaller animals, such as birds. The sting of the fire ant has venom composed of a necrotizing alkaloid, which causes both pain and the formation of white pustules that appear one day after the sting.

8.7.7 FILTH FLIES

House Fly (Musca domestica)

Fruit Fly (Drosophila spp.)

Distinguishing Features

Flies belong to the order Diptera and is one of the largest groups of insects. Diptera means "two wings." Flies have only two wings (one pair), instead of four wings (two pair) found in most other types of winged insects.

Flies can be divided into two groups, determined by their appearance and food preferences. Filth flies, such as the house fly, blow flies and flesh flies, are relatively small, soft-bodied insects with large eyes and are strong fliers. Other filth flies include drain flies, fruit flies and phorid flies, and are smaller with more delicate bodies and legs.

	Large Filth Flies	Small Filth Flies
Adult	stout bodies, short legs	slender bodies, long legs
Larvae	Maggot	maggot or worm-like
Food Preferences	manure, carrion, garbage	drain sludge, organic debris, rotting plant material

Reason for Control

Filth flies are vectors of diseases including hookworm, whipworm, tapeworm, pinworm, roundworm, cholera, bacillary dysentery, infantile diarrhea, typhoid, paratyphoid and food poisoning. Filth flies pick up pathogenic organisms from sewage, garbage, manure, decaying bodies and other such sources, initially picking up dangerous organisms with their mouth and other body parts. The organisms are then passed on to humans and animals through the feces and vomitus of the fly.

Site

All buildings, warehouses, and storage areas should be monitored. Special emphasis should be given to areas where food is stored and prepared.

SURVEILLANCE

Responsible Entity

Building Managers and occupants, cleaning and maintenance personnel and food establishment personnel, in coordination with a certified pesticide applicator are responsible for conducting surveillance.

Methods, Locations, and Frequency

Method (Devices)	Locations	Frequency
Visual observation of flies	Inside all buildings Around trash cans and dumpsters	Weekly during spring, summer and fall

CONTROL

Control Standard

No visual signs of flies indoors. There are no standards for flies outdoors.

Control Methods

Priority should be given to using non-chemical (mechanical, biological, and cultural) control techniques.

Chemical control methods should only be used after careful consideration of alternative methods.

Responsible Entity

Building Managers and occupants, cleaning and maintenance personnel and food service personnel, in coordination with a certified pesticide applicator are responsible for conducting surveillance.

Mechanical Control Methods

Mechanical fly control techniques include the use of fly paper and ultraviolet lights traps. Light traps should be placed where they cannot be seen from outside the building, no more than 5 feet above the floor, and away from competing light sources and food preparation areas.

Biological Control Methods

There are currently no biological control methods to eliminate fly infestations.

Cultural Control Methods

The key to managing flies is sanitation. By eliminating the material, (e.g., trash, food spills) they are attracted to is usually sufficient in preventing fly infestations. Without thorough sanitation, other control methods are largely ineffective. Therefore, trash should be kept in plastic bags and sealed containers with tight-fitting lids. Dumpsters should be kept as clean as possible, emptied regularly and kept as far away from buildings as is practical. Manure and other decaying plant and animal material should be promptly removed. Eliminate areas of excessive moisture.

Keep doors, windows, and vents closed to reduce fly entry points. Automatic door closing devices and air curtains that blow air away from doorways can be installed to supplement an integrated fly management program.

Keep food and drinks covered when outdoors.

Feed pets indoors or ensure all food is consumed at each feeding and clean up their feces regularly.

Chemical Control Methods

While the use of pesticides is usually not the best means of managing filth fly problems, sometimes chemical control can be a valuable component of an integrated fly management program. Pesticide-releasing fly strips can be placed in attics and smaller, unoccupied enclosed rooms where filth flies are a problem. Contact (non-residual) pesticides labeled for fly control can be applied as a space treatment ("fogged") to kill adult flies. This type of control provides only temporary relief, however, and cannot be relied upon to eliminate the problem. Residual pesticides – those that remain active for some time – can be applied to outdoor surfaces where flies rest, such as the outside surfaces of barns, stables, restaurants and houses. Some pesticide bait formulations are also available for outdoor fly control, including use around dumpsters.

Sensitive Areas

Children's playgrounds, youth centers and food establishments.

Environmental Concerns

Pesticides are applied only when necessary and only at times when personnel are not present or directly exposed.

At no time are personnel permitted in a treatment area ("fogged") during pesticide application. Re-entry of work-site personnel is permitted only when monitoring indicates the area is safe to enter.

Some pesticides are toxic to fish and wildlife. Do not apply directly to water or where surface water is present. Follow label cautions and instructions to reduce hazards to non-target species from drift, runoff, groundwater contamination, and/or spills.

Coordination and/or consultation with IPMC, DPW Environmental Division, USFWS and NMDGF may be required prior to application to sensitive habitats.

8.1.8 SCORPIONS AND CENTIPEDES

Bark Scorpion (Centruroides exilicauda)

Centipede (Scolopendra polymorpha)

Distinguishing Features

Scorpions have stout bodies which are elongated in front, with a large pair of pincers and 4 pairs of legs, followed by a slender, segmented tail-like abdomen with a stinger at the tip. They range in size from 1 to 5 inches, depending on the species, with colors ranging from yellowish-brown to black.

Centipedes normally have a drab coloration combining shades of brown and red. Size can range from a few millimeters to about 30 cm (12 in). A key trait of centipedes is a pair of venom claws or forcipules formed from a modified first appendage

Reason for Control

The venom of the North American scorpion can cause severe pain and swelling at the site of the sting, numbness, frothing at the mouth, respiratory difficulties, muscle twitching, and convulsions. The sting is more dangerous to infants, small children and the elderly. However, fatalities are rare.
The sting administered from a centipede bite is typically harmless to humans and symptoms are fleeting, lasting only a few hours. However, the larger the specimen, the greater the pain will be. Small children and individuals with known insect allergies may experience more severe reactions.

Site
Recreational areas, buildings, warehouses, and storage areas.

SURVEILLANCE

Responsible Entity

Building Managers and maintenance personnel, in coordination with a certified pesticide applicator, are responsible for surveillance.

Methods, Locations, and Frequency

Method (Devices)	Locations	Frequency
Visual observation of scorpions and centipedes	Throughout the installation	Continuous in spring, summer and fall

CONTROL

Control Standard

No visual sign of scorpions in areas of complaint.

Control Methods

Priority should be given to using non-chemical (mechanical, biological, and cultural) control techniques.

Chemical control methods should only be used after careful consideration of alternative methods.

Responsible Entity

Building Managers and maintenance personnel are responsible for non-chemical control methods in coordination with a certified pesticide applicator.

Mechanical Control Methods

Scorpions can enter buildings through openings around plumbing fixtures and loose-fitting doors and windows, and cracks in foundations and walls. Outdoor lights attract insects and thus the scorpions that feed on insects. Yellow outdoor lighting is less attractive to insects and is recommended in areas where scorpions are prevalent. The first strategy for control is to modify the area surrounding a house because scorpions are difficult to control with insecticides.

Clean the yard by removing all trash, logs, boards, stones, bricks, and other objects from around the foundation of the home.

Prune overhanging tree branches away from the house because they can provide a path to the roof for scorpions.

Install weather-stripping around loose-fitting doors and windows.

Caulk around roof eaves, pipes, and any other cracks that allow entrance into the home.

Make sure window screens fit tightly in the window frame and keep them in good repair.

Biological Control Methods

There are currently no biological control methods to eliminate scorpion or centipede infestations.

Cultural Control Methods

Clean the yard by removing all trash, logs, boards, stones, bricks, and other objects from around the foundation of the home.

Prune overhanging tree branches away from the house, because they can provide a path to the roof for scorpions.

Don't store firewood inside the house; bring in only wood to be directly placed on the fire, and check for scorpions and centipedes before bringing the wood inside.

Install weather-stripping around loose-fitting doors and windows.

Caulk around roof eaves, pipes, and any other cracks that allow entrance into the home.

Make sure window screens fit tightly in the window frame, and keep the screens in good repair.

Chemical Control Methods

Pesticides are not always effective against scorpions because they hide in cracks and crevices during daylight hours. Adult scorpions are more difficult to kill with pesticides because of their larger body size and thicker cuticle.

Sensitive Areas

Children's playgrounds and youth centers.

Environmental Concerns

Some pesticides are toxic to fish and wildlife. Do not apply directly to water or where surface water is present. Follow label cautions and instructions to reduce hazards to non-target species from drift, runoff, groundwater contamination, and/or spills.
Coordination and/or consultation with IPMC, DPW Environmental Division, USFWS and NMDGF may be required prior to application to sensitive habitats.

8.1.9 AFRICANIZED HONEY BEES

Africanized Honey Bee (Apis mellifera ssp.)

Distinguishing Features

Golden-yellow in color with darker bands of brown, 1/2-inch in length, hairy body.

The Africanized Honey Bee (AHB) does not significantly differ in appearance from the common European Honey Bee. However, the AHB is much more aggressive, especially in the protection of its nest. The AHB also has a larger area around the hive that they consider their home turf. Thus, one is apt to be in their area of the hive and not recognize it.

Reason for Control

AHB's have been documented on the installation. These bees will attack in mass and may cause severe injury or even death.

Allergic reactions to bee and wasp stings may include non-life-threatening reactions such as hives, swelling, nausea, vomiting, abdominal cramps, and headaches and life-threatening reactions such as shock, dizziness, unconsciousness, difficulty in breathing, and laryngeal blockage. Death can occur from severe allergic reactions or multiple stings occurring in a single encounter.

Site

Known AHB nesting locations include, water meter boxes, metal utility poles, cement blocks, junk piles, and house eaves. Other potential nesting sites include overturned flower pots, old tires, mobile home skirts, and abandoned structures. Holes in the ground and tree limbs, mail boxes, even an empty soda pop, should be viewed potentially as "home" to the AHB.

SURVEILLANCE

Responsible Entity

DPW pest management personnel are responsible for surveillance.

Methods, Locations, and Frequency

Method (Devices)	Locations	Frequency
Conduct an initial inspection to eliminate potential nesting sites on all buildings.	All buildings on the installation	In the spring
Regularly inspect the exterior of buildings during the spring and early summer to facilitate detection of incipient nests.	All buildings on the installation	Monthly during the spring, summer and fall

CONTROL

Control Standard

No major infestations or medical emergencies associated with bee, wasp, or hornet stings.

No callbacks to chemically treated areas within 30 days after treatment.

Control Methods

Priority should be given to using non-chemical (mechanical, biological, and cultural) control techniques.

Chemical control methods should only be used after careful consideration of alternative methods.

Responsible Entity

DPW pest management personnel.

Chemical applications can be performed by a certified pesticide applicator.

Mechanical Control Methods

Fill depressions and cracks in exterior wood surfaces so they are less attractive as nesting sites. Caulk any holes and cracks in the building that can be used by bees or wasps to gain access into the structure.

Windows and screens should be tight fitting and in good condition. Screens should be replaced if torn. Door sweeps can be installed to eliminate access points.

Remove potential water sources by repairing leaky outdoor faucets and directing air conditioner drainage to areas where water will not pool.

Sticky traps can be used to reduce small numbers of foraging wasps in an area.

Nest removal should be conducted by DPW pest management personnel.

Biological Control Methods

There are currently no biological control methods to eliminate AHB infestations.

Cultural Control Methods

Keep food and drinks covered when outdoors.

Avoid wearing brightly colored or patterned clothing, perfume, cologne, or scented soaps when entering an area of bee activity.

Avoid going barefoot in vegetation, especially clover and other blooming ground covers.

Remain calm when a bee or wasp lands on your skin then gently and slowly brush it away.

When swimming in pools or other bodies of water, avoid bees trapped on the surface. Bees should be removed promptly from swimming pools.

Avoid areas of increased insect activity (near nesting or foraging sites).

Chemical Control Methods

Chemical treatment should be initiated as a last resort when non-chemical treatments fail. If infestations are high or risk of damage is great, insecticides may be used to augment other methods of control.

Aerosol formulations must be used with extreme caution. Aerosol applications should be applied directly to nests.

Desiccant dusts are the preferred method of chemical control. They are inert dusts combined with absorptive powders (diatomaceous earth or boric acid) that destroy insects by abrading their protective outer body cover, causing them to dry out. Desiccant dusts are low in toxicity to people and animals, do not lose their effectiveness over time, and should be used before resorting to other chemical means.

Residual dusts can be very effective at controlling nests found in wall voids and underground nests.

Sensitive Areas

Children's playgrounds and youth centers. Prior to treatment of AHB's, evacuate personnel from congested, poorly ventilated work-sites.

Prohibited Practices

Treatment of nests will be performed only at times when children are not present.

Gasoline should never be poured into underground nest holes. This dangerous practice creates a fire hazard, contaminates the soil, water sources and prevents the growth of vegetation.

Environmental Concerns

During WSMR's rangewide bee study conducted in 2007, they estimated187 bee species present, which may actually represent only 50-70% of the total WSMR. Native bees are beneficial and are generally not considered pests, so extreme care should be considered prior to considering chemical control of bee populations on WSMR. **Coordination with DPW Environmental Division is required prior to the removal of beehives.**

Some pesticides are toxic to fish and wildlife. Do not apply directly to water or where surface water is present. Follow label cautions and instructions to reduce hazards to non-target species from drift, runoff, groundwater contamination, and/or spills. Coordination and/or consultation with IPMC, DPW Environmental Division, USFWS and NMDGF may be required prior to application to sensitive habitats.

Additional Comments

Before modifying historic structures, the Environmental Division must be contacted and NEPA requirements must be complied with.

8.1.10 Red Imported Fire Ants

Distinguishing Features

Red imported fire ants construct mounds of loose soil, resembling gopher diggings, above-ground mounds are generally numerous and easily sighted. Worker ants are dark, small, highly variable in size, aggressive, and sting relentlessly. Workers have the same body proportions from the tiniest to the largest. Head width never exceeds the abdomen width, even in the largest workers.

New colonies will only forage within a few feet of their nest, while older, larger colonies (more than a year old) can forage more than 39 feet from their nest and cover a territory of 537 to 968 square feet (50-90 square meters).

Reason for Control

- When disturbed, red imported fire ants swarm and sting in concert. The multiple stings are painful and can cause an allergic reaction in some people. Nests and colony building can damage trees, yard plants, walls of structures, and outdoor electrical fixtures. Can cause damage to the environment by indiscriminately consuming almost any plant or animal. Can damage electrical installations such as the wiring of air conditioning units or traffic lights by shorting them out.

Site

The red imported fire ant is native to South America but is known to occur in all or part of the southern States from North Carolina to southern California. While the fire ant has not yet been observed on WSMR, it has been identified in both southern Texas and southern Arizona. Potential habitat includes:

- In or around open areas that traffic or handle hay, sod, soil moving equipment, Desert Emerald Recreational Areas and railroad and truck shipping yards.

- Streets that transect urban and suburban areas, railroad rights of ways, natural gas and high voltage power line rights of way, open areas along streams, parks and public recreation areas.
- Locations such as shopping centers, apartment complexes and landscaped office buildings. Pay close attention to areas next to curbs, around water sources and sides of ridges.
- In areas within buildings that contain potential food and water sources for ants such as; kitchens, bathrooms, garbage and waste containers and food storage areas.
- Cracks or crevices in the foundation and exterior walls of buildings that contain electrical wiring, and/or potential food or water source for ants.
- Long-standing wood or construction piles.

SURVEILLANCE

- Irrigation or points of water leaks that provide a continuous water source for ants.
- Near hummingbird and bird seed feeders.
- Areas where personnel congregate.

Responsible Entity

DPW pest management personnel and landscape maintenance personnel are responsible for identifying fire ant infestations.

Methods, Locations, and Frequency

Method (Devices)	Locations	Frequency
Area Detection Survey involves visual observation of areas beyond already known infested areas, looking at highway right of ways, other open areas such as pastures, parks, pipelines, and power line right of ways for fire ant mounds. Also look at sites of new construction. For areas of great concern such as warehouses, docks, or railroad yards, detection surveys should be more intense visual surveys, possibly supplemented with delimiting surveys (bait/attractant trap). While driving, carefully examine both road shoulders for mounds. Make survey stops along the way at any appropriate site. If weather has been very hot or dry prior to survey, or if grass is tall, mounds may not be visible from a vehicle. Make stops at 3-mile intervals and walk one quarter-mile along each side of the road to visually survey for mounds. At these sites, walk about one half-mile along on both sides of the road or through the location.	Cantonment and training areas	Surveys are best conducted during mid- to late-spring and/or early- to mid-fall, depending on the geographical location. Choose days (or times of the day) with air temperatures above 65°C and below 90°C. In areas that are difficult to survey during the summer and fall due to tall grass, survey early in the spring or even in the late fall after a killing frost that reduces grass height. During these times of the year, choose days with sunshine and temperatures in the 50s (°F) if possible to determine ant activity of visible mounds.
Large Block Design Surveys are best for areas that are known to be infested. This survey will allow coverage of large areas in a short amount of time to detect ant populations.		
Small Block Design method will speed up the survey while determining the outer limits of the infestation. Survey both rural and urban/suburban areas.		

Method (Devices)	Locations	Frequency
Delimiting Surveys using bait/attractant traps can be used in small area control programs and eradication programs. While the Federal Imported Fire Ant (IFA) Quarantine Program does not require control or eradication programs, suggestions for delimiting surveys are provided by the IFA Program. Some States such as California have detailed, delimiting survey protocols developed for residential areas. The trapping should be very small for new colonies and 50 to 90 square meters for older colonies. Plan to place bait traps in a grid pattern over your survey area, for Large Areas (> 10 acres) with some visible mounds, place approximately 4 traps per acre. Small Areas (< 10 acres) with no to few visible mounds, place approximately 25 traps per acre. Leave the traps in place for approximately 1 hour.		
Determine the intensity of the required survey by the distance of the survey point from known areas of infestation and the volume of commerce between the point of inspection and the infested area as well as the amount of time since the last survey.		

CONTROL

Control Standard

Observations of any of the following on a mound can be defined as an infestation: red imported fire ant eggs, larvae or pupae warming near the mouth of the nest and/or red imported fire ant workers or winged ants on or nearby the mound.

Management efforts should continue until all visible signs of infestation are absent. Monitoring for the detection of new infestations should continue year-round. Any observed or sign of infestation requires action.

Control Methods

Priority should be given to using non-chemical (mechanical, biological, and cultural) control techniques. Chemical control methods should only be used after careful consideration of alternative methods.

Responsible Entity

DPW pest management personnel, certified pesticide applicators and landscape maintenance personnel are responsible for control.

Mechanical Control Methods

Caulking should be applied to seal around all plumbing and other installations that travel from outside the building into walls or rooms to eliminate points of entry for ants.

Caulking should be applied to cracks or crevices in building foundations, walls or other structural elements that may serve as possible entry points for ants.

Ants typically swarm in the spring and fall and forage when temperature conditions are favorable. Ants will often swarm directly before or after summer rains. Inspect the exterior of buildings or installations and seal any cracks or crevices prior to these seasonal influxes to prevent infestations.

Do not store and pile wood or construction materials outdoors for an extended period of time.

Remove all outdoor wood or construction piles.

If wood or construction piles cannot be removed, ensure these piles are placed as far away from buildings as possible.

Eliminate any water leaks that may provide a source of moisture for ants.

Over watering of landscape areas, resulting in a continuous source of moisture for ants should be prevented.

Avoid landscaping that requires excessive moisture.

Any landscaping or plants that have become infested with ants should be removed.

Biological Control Methods

Phorid flies are known to be parasitic on a number of ant species including the red imported fire ant. This method of control has only been tested for a short time and yields variable results.

Cultural Control Methods

Building occupants and Building Managers should clean up all food spills when they occur with a solution of soap and water.

Educate personnel on the importance of employing good sanitation techniques anywhere food is handled, stored or prepared.

Ensure that food containers are clean and kept in closed ant proof (glass containers with rubber gaskets or plastic containers with tight-fitting, snap-top lids) containers when not in use.
Use soapy water or rinse any bottles, cans, wrappings, and other items that may have food residues before storing them for recycling. These items should be disposed of regularly.
Keep attractive substances, like sugar and honey, in a refrigerator.

Keep organic waste and garbage in closed, tight-sealing containers as far away from buildings as possible.

Empty trash from the building frequently.

Place garbage in sealed plastic bags before placing it into a dumpster or other storage receptacle.

Remove any potted plants from the building that have become infested.

If ants are observed, try to determine the point of entry of the ant(s) and the attractant source before cleaning up the area. If there is a trail, determine where the trail originates and inform the Building Manager.

If ants are found inside a building, the infested area should be washed with soap and water to remove ants and ant trails. If the area is carpeted, vacuum the site where ants are observed.

Chemical Control Methods

There are several proven methods that can remove individual colonies of fire ants. Insecticidal mound drenches with common insecticides are generally effective against fire ant colonies. The mound is flooded with a large volume of a liquid containing a contact insecticide such as carbaryl or diazinon. Numerous insecticides are currently labeled for this use. A major problem with this method is that the queen is sometimes too deep within the colony to be contacted by the toxicant. Care must be taken not to disturb the mound prior to application of the drench because a disturbance will alert the colony and the queen may be taken deeper into the mound.

Application of insecticidal surface dusts or granules have a limited effect on a colony if they are not watered in. The dissolved granules must come into direct contact with the ants to have any effect. As in mound drenches, care must be taken not to disturb the colony prior to application. The queen can be taken to a point within the mound where she may not come in contact with the poison.

Some insecticides are marketed as injectants. These are usually more effective than surface applications or mound drenches but are also more expensive and can be dangerous if not handled properly.

Fumigants are also commercially available. Again, they are expensive and dangerous if not handled properly.

A number of fire ant baits are available. These can be used for treating individual mounds or for broadcast treatment of larger areas. The bait should not be placed on the mound itself. Baits are much slower than the control methods listed above, but are generally safer, cheaper and more effective in the long run.

The active ingredients in ant baits are rapidly degraded by high temperature, high humidity, and intense sunlight. The baits can be rendered ineffective in a few hours by these conditions. Follow this procedure when using baits.

Apply the bait according to label directions. Sprinkle the recommended amount around each mound but not on the mound itself. It is best to apply the bait in the early evening.
Most bait labels State that the material should not be applied within 6 hours after precipitation occurs (either rainfall or heavy dew). Moisture tends to make the bait's attractant oils rancid and less appealing to foraging ants.

Sensitive Areas

Children's playgrounds, youth centers and human inhabited work and landscape areas.

Environmental Concerns

Some pesticides are toxic to fish and wildlife. Do not apply directly to water or where surface water is present. Follow label cautions and instructions to reduce hazards to non-target species from drift, runoff, groundwater contamination, and/or spills. Coordination and/or consultation with IPMC, DPW Environmental Division, USFWS and NMDGF may be required prior to application to sensitive habitats.

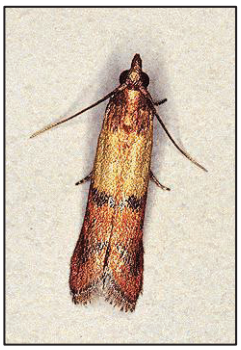
Additional comments

More information on red imported fire ants can be found on the USDA websites below.

http://www.invasivespeciesinfo.gov/animals/rifa.shtml
http://www.aphis.usda.gov/plant_health/plant_pest_info/fireants/

8.2 PESTS FOUND IN AND AROUND BUILDINGS

8.2.1 PESTS OF STORED FOOD PRODUCTS



Indian meal moth (Plodia interpunctata)

Rice weevil (Sitophilus oryzae)

Distinguishing Features

Various species. Due to international trade, any pest species of stored food products may be present on the installation.

Reason for Control

Food pests contaminate food with their bodies and waste-products, which can result in human-health problems such as allergies from ingesting insect parts and economic loss.

Site

Surveillance should be conducted in all buildings, warehouses, and storage facilities where food, paper, or other susceptible products are stored.

SURVEILLANCE

Responsible Entity

Building Managers and occupants, food handling establishment personnel, cleaning staff, and maintenance personnel are responsible for surveillance in coordination with preventive medicine personnel and a certified pesticide applicator.

Methods, Locations, and Frequency

Method (Devices)	Locations	Frequency
Examine food and other susceptible products for damage, check for insects, excrement, and other signs of infestation.	Break areas and kitchen areas in buildings Commissaries and MRE storage areas	Weekly Veterinarians should examine new shipments as they arrive and bi-weekly thereafter. Staff should maintain constant surveillance.

CONTROL

Control Standard

Management efforts should continue until all visible signs of infestation are absent.

No signs of product damage or pests observed in all buildings, warehouses, and storage facilities where food, paper, or other susceptible products are stored.

Control Methods

Priority should be given to using non-chemical (mechanical, biological, and cultural) control techniques.

Chemical control methods should only be used after careful consideration of alternative methods.

Responsible Entity

Building Managers and occupants, food establishment personnel, cleaning staff, and maintenance personnel, in coordination with preventive medicine personnel, are responsible for non-chemical control techniques for food pests.

Mechanical Control Methods

Eliminate harborage by caulking (or filling with other material) minor cracks, crevices, holes in walls or floors.

Fix leaks, improve drainage, and install screened vents to increase airflow in high moisture areas.

Weather-strip around doors and windows to eliminate entry points. All windows, air exchangers, and vents should be screened with 16-mesh screen, unless fitted with operable louvers. Loading-dock and warehouse doors should be equipped with full-length vinyl strips or inflatable boots whenever possible.

Basement floor drains should be fitted with screens or basket inserts that are cleaned regularly.

In storage areas, stock like commodities together and products should be stacked a minimum of 18-inches away from all walls and partitions. Control aisles should be maintained at a minimum of 18-inches between each three stacks or rows of product.

Biological Control Methods

AFPMB https://www.acq.osd.mil/eie/afpmb/docs/techguides/tg27.pdf, provides guidance on pheromone traps.

Cultural Control Methods

Store susceptible food or other products in airtight containers or in a refrigerator or freezer.

Store infrequently used food items (e.g., pancake flour, grains, spices, etc.) in the freezer. Locate and remove the food source when insects are found. If the infestation is found before it spreads to other packages, control may be relatively easy.

Immediately seal and dispose of infested products.

Carefully inspect all packages, especially those that have been opened or exposed. Do not purchase broken or damaged packages of food materials and dispose of all products that have any sign of infestation.

Do not mix old and new lots of foodstuffs. If the old material is infested, the pest will quickly invade the new.

Clean containers before filling them with fresh food.

Store bulk materials, such as pet foods, in containers with tight-fitting lids.

Keep storage units dry.

Stored-product pests can also breed in rodent baits. Do not place rodent bait in food storage areas.

Clean cupboards, drawers, floor drains, kitchen appliances, and sinks to remove food particles and grease.

Steam clean or pressure wash all possible structural crevices and equipment in food handing and trash storage areas where appropriate. Vacuum all possible structural crevices and equipment in food handing and trash storage areas when steam cleaning or pressure washing is inappropriate.

Wash shelves with soap and water, and scrub corners and crevices or vacuum them with a crevice attachment to remove eggs and pupae after an infestation has been found.

Put garbage in a container with a tight-fitting lid or in a sealed plastic bag and take out daily.

Keep kitchen counters and shelves clean, do not leave dirty dishes out overnight. Mop floors regularly.

Remove stacked boxes, cartons, rolled carpeting and any stored paper or cardboard materials, particularly in dark, damp locations.

Spilled food, waste packaging or packing material, broken pallets, trash containers, and other debris should be cleaned up and disposed of at the end of each workday. Spills or debris should not be allowed to collect within a storage area for more than 24 hours.

The grounds surrounding the perimeter of a facility that stores food should be maintained in a clean and orderly manner with bulk trash receptacles positioned away from the building and covered at all times.

Chemical Control Methods

Chemical treatment is initiated when non-chemical treatments fail to eliminate infestations.

The best chemical control methods depend on the type of pest. Therefore, it is critical to identify the pest prior to treatment.

Sensitive Areas

Food handling areas

Certified pesticide applicators will coordinate with food service personnel to ensure the safety, effectiveness, and efficiency of the chemical treatment.

Prohibited Practices

Do not apply pesticides when buildings are occupied and never apply them where they might wash into the sanitary sewer or into outside storm drains.

At no time are personnel permitted in a treatment area during pesticide application without proper PPE. Re-entry of work-site personnel is permitted only when monitoring indicates the area is safe to enter.

Environmental Concerns

Follow label cautions and instructions to reduce hazards to non-target species from drift, runoff, groundwater contamination, and/or spills. Coordination and/or consultation with IPMC, DPW Environmental Division, USFWS and NMDGF may be required prior to application to sensitive habitats.

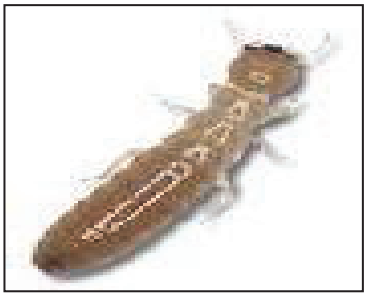
8.2.2 Subterranean and Drywood Termites

Distinguishing Features

Reproductive males and females can be winged or wingless. The bodies of primary winged reproductive's, also called swarmers or alates, vary by species from coal black to pale yellow-brown. Wings may be pale or smoky gray to brown and have few distinct veins. Swarmer termites are about 1/4 to 3/8 inch long. Wingless reproductive's in the colony are generally white to cream-colored and may have short wing buds.

Workers are wingless, white to creamy white, and 1/4 to 3/8 inch long.
Soldiers resemble workers in color and general appearance, except that soldiers have large, well-developed brownish heads with strong mandibles or jaws.

Drywood termites (Cryptotermes brevis)



Distinguishing Features

Light yellow to black with clear to smoky gray wings, about 7/16 inch long. Worker termites (nymphs), are up to 3/8 inch long, wingless, white to grayish with white to yellowish-brown heads, and soldiers are similar but with large rectangular darker heads bearing well developed jaws (mandibles) used to defend the colony.

Reason for Control

Termites damage wooden structures and incidental wood in steel and concrete buildings, such as trim or molding, paneling, furring strips, or door and window frames. Files, stacked books, or any other cellulose material, such as fiberboard sheathing or insulation panels are also sources of food for termites. Most termite problems in large office buildings involve subterranean colonies that persist for years on buried scrap wood and constantly explore upwards for new sources of food. These colonies are often a nuisance because of the periodic emergence of large numbers of winged "swarmers" that find their way into occupied space.

Site

All building foundations, crawl spaces, walls, sinks, bathtubs, and toilet areas should be monitored for subterranean termite activity.

SURVEILLANCE

Subterranean termites are usually located in soil with tunnels connecting the nest to outside sources of wood. Early detection and control are necessary to prevent damage to wooden structures and cellulose-containing materials inside buildings. Because contact with air dehydrates termites, they tunnel into wood, often undetected, inside mud tubes. Significant damage can occur even though the surface of the wood is intact. But termites can be detected before they cause structural damage. Careful inspections at regular intervals will detect termite infestations before significant damage can occur (refer to AFPMB TG-29 for guidance).

Responsible Entity

Building Managers and maintenance personnel, in coordination with a certified pesticide applicator, are responsible for surveillance.

Methods, Locations, and Frequency

Method (Devices)	Locations	Frequency
Termite inspections are conducted in accordance with AFPMB TG-29, IPM in and around Buildings, July 2003.	All buildings on the installation	Complete inspection of all buildings on an annual basis
Monitor for mud tubes, wood damage, mud in cracks and crevices, peeling paint, and swarming.	All buildings on the installation	Continuous

CONTROL

Control Standard

Management efforts should continue until all visible signs of infestation are absent to include no evidence of swarmers and no evidence of new mud tubes.

Effective control is defined as no sign of termites or new wood damage within 30 days after the treatment period ends (note that baiting may take a few months for effective control).

Effective control is also defined as no sign of termites in buildings that incorporated physical barriers or chemical treatments prior to construction.

Control Methods

For new construction, incorporate physical barriers or chemical treatments prescribed in the Unified Facilities Guide Specifications (http://www.wbdg.org/ccb/browse_org.php?o=70).

Responsible Entity

Building Managers, maintenance personnel and certified pesticide applicators are responsible for non-chemical control methods.

Mechanical Control Methods

Ensure proper drainage around buildings by installing, repairing, or relocating gutters, siding, roofing, vents, drains, downspouts, and vapor barriers to reduce moisture under buildings.

Repair leaking pipes, drains, sinks, showers, toilets, and air conditioners.

Grade areas around buildings to direct landscape irrigation, rain, and surface water away from building foundations.

Turn sprinkler heads so water is not directed toward buildings.

Coat foundation walls with rubberized asphalt membranes to reduce moisture under the building.

Install a sump pump or French drain in extremely wet areas.

Seal all cracks in the foundation, flooring, and walls.
Replace damaged wood with treated lumber or other termite resistant material wherever possible.

Pre-treated lumber can be used to replace existing lumber to prevent re-infestation in areas of potential termite activity.

As appropriate, incorporate mesh termite barriers or basaltic termite barriers into construction plans.

Ensure wood does not come in contact with soil. Generally wood should be at least eight inches above the soil. Wood that is in contact with soil must be replaced with concrete. Check local building codes for appropriate clearances.
Remove all wood debris and stumps within 10 feet of foundations.

Swarming termites should be collected with a vacuum cleaner, and then destroyed.

Biological Control Methods

Open the earthen tubes of subterranean termites to allow natural predators such as ants to easily enter the colony and kill the termites.

The fungus Metarhizium anisopliae has recently been formulated into a microbial pesticide that is effective against termites. The fungus is extremely infectious among termites and is spread in the termite colony by direct contact, grooming, and trophallaxis (the exchange of alimentary fluids) and causes death within 8 to 11 days.

Cultural Control Methods

Do not store firewood or lumber directly on the ground. Use cinder blocks or other non-wood material to raise wood at least eight-inches away from soil.

Never bury lumber, tree branches, or other wood cuttings near buildings.

Inspect new lumber or other wood items for termite infestations prior to purchasing. Examine treated wood products to determine the presence of the American Lumber Standard Committee accredited inspection agency quality marking.

Chemical Control Methods

If pesticides are used, spot treat only those areas where structural pests have been detected or areas that are not accessible for monitoring to reduce human exposure.

Termite baiting is preferred over pesticide barrier applications because of the lower risk of contaminating soils and a greater probability of eliminating entire termite colonies.

As appropriate, incorporate soil treatment or treated lumber into construction plans.
In masonry buildings with minor termite damage or localized swarming, satisfactory control can often be accomplished with pressurized injection of insecticide directly into the wood, or into the crevices from which the swarmers are emerging. If possible, the crevices should then be caulked or otherwise sealed.

Subterranean termite problems that cannot be solved with spot injection and sealing must be treated with far more extensive insecticide application. Standard techniques involve pumping the chemical into holes drilled through the building's slab and/or into the soil around the building's foundation.

Sensitive Areas

Children’s playgrounds and youth centers.

Prohibited Practices

Ensure no termiticide gets in air ducts underneath buildings. Do not treat beneath structures that contain cisterns or wells. Do not treat soil that is water-saturated or frozen. Do not apply termiticides, when buildings are occupied.

Environmental Concerns

Some pesticides are toxic to fish and wildlife. Do not apply directly to water or where surface water is present. Follow label cautions and instructions to reduce hazards to non-target species from drift, runoff, groundwater contamination, and/or spills. Coordination and/or consultation with IPMC, DPW Environmental Division, USFWS and NMDGF may be required prior to application to sensitive habitats.

Additional Comments

Contract specifications for termite control/treatment, must be approved by the IPMC and PMC prior to construction or repair of buildings.

A DoD certified pesticide applicator, IPMC or PMQAE, must monitor and evaluate any pre-construction termite treatments on site to ensure that contractual requirements are met.

8.2.3 WOOD-BORING BEETLE

Distinguishing Features

Wood-boring beetles range in size from under an eighth of an inch to more than 2 inches. Many of them are dark colored, but some are metallic blues and greens striped with yellow or red. Knowing the kind of wood, hardwood or softwood, can be helpful in identifying the beetle species involved.

Reason for Control

Wood-boring beetles can infest live trees, recently harvested wood, and dry, seasoned wood, which can result in economic loss as well as damage furniture and buildings.

Site

- All structures that are constructed wholly or partially of wood
- Stored wood products
- Trees

SURVEILLANCE

Responsible Entity

Building Managers, maintenance personnel and certified pest controllers are responsible for surveillance.

Methods, Locations, and Frequency

Method (Devices)	Locations	Frequency
Inspect buildings and trees for signs of wood borer damage by looking for exit holes where adult beetles have emerged.	All buildings and trees in the main area of the installation and at Stallion Range Center	Annual

CONTROL

Control Standard

Management efforts should continue until all visible signs of infestation are absent.

Monitoring for the detection of new infestations should continue year-round.

No new signs of wood-boring beetle damage.

Control Methods

Priority should be given to using non-chemical (mechanical, biological, and cultural) control techniques.

Chemical controls should only be used after careful consideration of alternative methods.

Responsible Entity

Building managers, occupants and certified pesticide applicators.

Mechanical Control Methods

Ensure proper drainage around buildings by installing, repairing, or relocating gutters, siding, roofing, vents, drains, downspouts, and vapor barriers to reduce moisture under buildings.

Repair leaking pipes, drains, sinks, showers, toilets, and air conditioners.

Grade areas around buildings to direct landscape irrigation, rain, and surface water away from building foundations.

Turn sprinkler heads so water is not directed toward buildings.

Coat foundation walls with rubberized asphalt membranes to reduce moisture under the building.

Install a sump pump or French drain in extremely wet areas.

Seal all cracks in the foundation, flooring, and walls.

Replace damaged wood with treated lumber or other resistant material wherever possible.

Pre-treated lumber can be used to replace existing lumber to prevent re-infestation in areas of potential activity.

Ensure wood does not come in contact with soil. Generally wood should be at least eight inches above the soil. Wood that is in contact with soil must be replaced with concrete. Check local building codes for appropriate clearances.

Remove all wood debris and stumps within 10 feet of foundations.

Protect wood from infestation by painting or varnishing to seal pores, cracks, and holes where eggs could be laid.

Biological Control Methods

Clerid beetles have been reported as important predators of many wood-boring beetles and may reduce infestations to trees and other outdoor areas.

Cultural Control Methods

Inspect furniture and other objects before bringing them into buildings. Fumigate all objects that show signs of beetle infestation.

Small wooden items (not those containing fabrics, pelts, or paints) can be heated in an oven at 120° to 140°F for 6 hours or placed in a deep freeze at 0°F for 72 hours. Longer treatments may be required if the wood is thicker than 2 inches.

Destroy infested wood by burning or taking it to an approved landfill.

Do not store firewood or lumber directly on the ground. Use cinder blocks or other non-wood material to raise wood at least eight-inches away from soil.

Never bury lumber, tree branches, or other wood cuttings near buildings.

Inspect new lumber or other wood items for infestations prior to purchasing. Examine treated wood products to determine the presence of the American Lumber Standard Committee accredited inspection agency quality marking.

Chemical Control Methods

Unless live beetles or fresh wood powder around holes are seen, chemical treatment is not necessary. If pesticides are used, spot treat only those areas where structural pests have been detected or areas that are not accessible for monitoring to reduce human exposure.

In situations where spot treatments have failed or in serious infestations where there are large numbers of beetles throughout the structure, fumigation may be the best control option.

Fumigants can kill existing wood-boring beetle infestations, but will not prevent future infestations.

The most effective chemical treatment is the application of borates, however it can take up to a year and a half to eradicate wood-borers after a borate treatment. Desiccating dusts can help in preventing infestations and can be placed in confined spaces such as attics and wall voids where they can remain effective for the life of the building.

Sensitive Areas

Children's playgrounds and youth centers.

Prohibited Practices

Do not apply termiticides when buildings are occupied.

Environmental Concerns

Some pesticides are toxic to fish and wildlife. Do not apply directly to water or where surface water is present. Follow label cautions and instructions to reduce hazards to non-target species from drift, runoff, groundwater contamination, and/or spills. Coordination and/or consultation with IPMC, DPW Environmental Division, USFWS and NMDGF may be required prior to application to sensitive habitats.

8.3 NON-NATIVE AND/OR INVASIVE VEGETATION

8.3.1 SALT CEDAR

Saltcedar (Tamarix ramosissima)

Distinguishing Features

Saltcedar is a deciduous shrub or small tree growing to 12'-15' in height. Slender, long gray-green branches are spreading or upright, often forming dense thickets. Scalelike leaves are gray-green, alternately arranged, narrow, pointed, about 1/16" long, and overlap one another on the stems. Active growth occurs from early or mid-spring to fall, when leaves drop. Leaves often become encrusted with salt secretions. Branches take on a brown-purple color as they age. Bark is reddish-brown and smooth on young branches, becoming ridged and furrowed on older limbs. Large numbers of pink to white flowers, about 1/16" across, appear in a dense mass on 1/2"- 2" spikes at branch tips from March to September.

Reason for Control

On WSMR, saltcedar has become widely distributed along major range roads, at natural spring areas and earthen tanks and in areas in the Tularosa and Jornada del Muerto Basins with a shallow water table. Saltcedar is an aggressive competitor often growing in virtually monocultural stands and is a suspected factor in lowering water tables and adversely altering wetlands and associated wildlife habitats. The presence of saltcedar on WSMR requires active and persistent control measures due to the aggressive nature of this invasive species, which has overtaken stretches of numerous riparian corridors across the western U.S.

- The National Environmental Policy Act of 1969, as amended (42 U.S.C. 4321 et seq.)
- Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990, as amended (16 U.S.C. 4701 et seq.), Lacey Act, as amended (18 U.S.C. 42)
- Federal Plant Pest Act (7 U.S.C. 150aa et seq.)
- Federal Noxious Weed Act of 1974, as amended (7 U.S.C. 2801 et seq.)

- Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.)

Site

Rangewide.

SURVEILLANCE

Responsible Entity

The IPMC, and the Environmental Division with help from cooperators, and contractors hired to conduct the surveys.

Methods, Locations, and Frequency

Method (Devices)	Locations	Frequency
Conduct surveys when the plant is beginning to go dorment and bright orange, so easily identifiable.	Rangewide	November - December
Conduct post treatment surveys during growing seasons to document regrowth.	Rangewide	April - May

CONTROL

Control Standard

Management efforts should continue until all visible signs of saltcedar are absent.

Control Methods

Priority should be given to using non-chemical (mechanical, biological, and cultural) control techniques. Chemical controls methods should only be used after careful consideration of alternative methods.

Responsible Entity

The IPMC and Environmental Division are responsible for hiring cooperators/contractors that specialize in invasive plant species management.

Mechanical Control Methods

Mechanical Treatments – Administered by the use of heavy equipment to physically remove saltcedar by mulching. Saltcedar can be effectively controlled by mulching the above ground plants using newly specialized equipment followed by herbicide application.
Mulching is less disturbing to the ground than root crown removal—which is normally administered via bulldozer—thus reducing damage to cultural resources.

Mechanical control methods will not be implemented without prior coordination with the IPMC, and the Environmental Division. Cultural surveys must be completed prior to mechanical control methods are implemented.

Biological Control Methods

The introduction of the saltcedar leaf beetle—a natural predator of saltcedar—has been studied as an effective means of control with varying degrees of success. When introduced to mixed stands of vegetation, these beetles feed only on saltcedar, making this control method an attractive alternative due to its high target specificity (DeLoach, 2003; NPS, 2007). The recent moratorium on the use of the saltcedar leaf beetle as a biological control agent (USDA APHIS, 2010), however, has eliminated this alternative method as an option. Another biological control method, involving the use of introduced goats, has been rejected due to expense, limited efficacy, and potential to transmit disease to existing desert bighorn sheep populations on WSMR.

Cultural Control Methods

Wash and clean military and landscaping equipment, tools and vehicles after conducting activities in areas with invasive/exotic plant species to prevent the spread.

Chemical Control Methods

Aerial Herbicide Applications – Administered by helicopter, using broadcast foliar application of herbicide (e.g., Habitat® [imazapyr]).

Hand Cutting with Herbicide Applications – Administered via cut-stump method, using a chainsaw and backpack herbicide applicator. This treatment involves cutting stems as close to the soil surface as reasonably possible, applying herbicide around the perimeter of the stump within 1 minute of cutting, and retreating any resprouts 12 to 24 months following initial treatment. This selective type of treatment will be used in dense riparian ecosystems with native vegetation deemed inappropriate or inaccessible for helicopter use.

Hand Herbicide Application – Administered by the use of foliate or basal bark spray via backpack sprayers, and vehicle mounted equipment. This selective type of treatment will be used in dense riparian ecosystems with native vegetation deemed inappropriate or inaccessible for helicopter use.

Sensitive Areas

Salt Creek, Malpais Spring, and Mound Spring Complex in which White Sands Pupfish is present. All other riparian habitats across WSMR.

Environmental Concerns

- Some pesticides are toxic to fish and wildlife. Do not apply directly to water or where surface water is present.
- Follow label cautions and instructions to reduce hazards to non-target species from drift, runoff, groundwater contamination, and/or spills.
- Coordination and/or consultation with IPMC, DPW Environmental Division, USFWS and NMDGF may be required prior to application to sensitive habitats.

Additional comments

Additional information on the control of saltcedar on WSMR can be found in the Final Environmental Assessment for Implementation of the Treatment of Saltcedar at White Sands Missile Range.

8.3.2 HALOGETON

Saltlover (Halogeton glomeratus)

Distinguishing Features

This plant produces a usually erect stem with several curving branches up to about 25 centimeters (10 in) tall. It has a taproot reaching up to half a meter deep in the soil and many lateral roots. The branches are lined with narrow, fleshy, blue-green leaves each up to about 2 centimeters long tipped with stiff bristles. The inflorescences are located all along the stem branches next to the leaves. Each inflorescence is a small cluster of tiny bisexual and female-only flowers accompanied by waxy bracts. The winged, membranous flowers surround the developing fruit, which is all that remains on the plant when it is ripe, the leaves and flower parts having fallen away. The fruit is a pale cylindrical utricle. The plant produces large amounts of seeds, which are dispersed by many vehicles, including human activity, animals (including ants), water flow, wind, and by being carried on the dry plant when it breaks off at ground level and rolls away as a tumbleweed. The seeds have the ability to germinate within one hour after being exposed to water.

Reason for Control

Damaged habitat of threatened and endangered species (flora and fauna). Displaced native vegetation and lowering of biodiversity. Human health problems (allergies, irritants, infections, etc.) .Increased requirements for land management. Increased soil erosion, damaged watersheds, water quantity and quality problems, and damaged fisheries. Reduced opportunities for land use.

Site

Found in highly disturbed soil, particularly along roadsides, military sites and launch complexes.

SURVEILLANCE

Responsible Entity

The IPMC, and the Environmental Division with help from cooperators, and contractors hired to complete the surveys.

Methods, Locations, and Frequency

Method (Devices)	Locations	Frequency
Visual surveys	Roadside, military sites and launch complexes	Spring through fall

CONTROL

Control Standard

Management efforts should continue until all visible signs of infestation are absent.

Control Methods

Priority should be given to using non-chemical (mechanical, biological, and cultural) control techniques. Chemical control methods should only be used after careful consideration of alternative methods.

Responsible Entity

The IPMC and Environmental Division are responsible for hiring cooperators/contractors that specialize in invasive plants species management.

Mechanical Control Methods

Digging up individual plants and/or scrapping with road grading equipment.

Biological Control Methods

Currently, there are no effective biological control methods for this invasive plant species.

Cultural Control Methods

Wash and clean military and landscaping equipment, tools and vehicles after conducting activities in areas with invasive/exotic plant species to prevent the spread.

Chemical Control Methods

Halogeton is susceptible in the preflowering stage to 2,4-D at 2 pounds active ingredients per acre (2.2 kg ai/ha). Approximately 17 percent of the plants survive this rate.
Higher 2,4-D rates of six pounds active ingredient per acre (6.7 kg ai/ha) are recommended to kill all halogeton; however, the immediate surrounding native plants are severely impacted.

Sensitive Areas

Salt Creek, Malpais Spring, and Mound Spring Complex in which White Sands Pupfish is present. All other riparian habitats across WSMR.

Environmental Concerns

Some pesticides are toxic to fish and wildlife. Do not apply directly to water or where surface water is present. Follow label cautions and instructions to reduce hazards to non-target species from drift, runoff, groundwater contamination, and/or spills. Coordination and/or consultation with IPMC, DPW Environmental Division, USFWS and NMDGF may be required prior to application to sensitive habitats.

8.3.3 AFRICAN RUE
(Peganum harmala)

Distinguishing Features

African rue is a perennial plant with a low-growing, bushy habit reaching 2 to 3 ft. (0.6-0.9 m) in height. The white, five-petal flowers are present from late spring to early fall in the axils of the leaves. Leaves are succulent, alternate, irregularly divided, 0.8-2 in. (2-5 cm) long and bright green. African rue is found in disturbed environments such as roadsides and fields in desert to semi-desert areas. The plant is found in many western States, although it may be extirpated from California. It is native to the Mediterranean and the Middle East. African rue produces primarily by seed, but severed roots can produce new shoots. The plant can be poisonous to people and livestock.

Reason for Control

Damaged habitat of threatened and endangered species (flora and fauna). Displaced native vegetation and lowering of biodiversity. Human health problems (allergies, irritants, infections, etc.) .Increased requirements for land management. Increased soil erosion, damaged watersheds, water quantity and quality problems, and damaged fisheries. Reduced opportunities for land use.

Site

Locations where the soil has been disturbed, particularly along roadsides, military sites, and launch complexes.

SURVEILLANCE

Responsible Entity

The IPMC, and the Environmental Division with help from cooperators, and contractors hired to complete the surveys.

Methods, Locations, and Frequency

Method (Devices)	Locations	Frequency
Visual surveys	Roadside, military sites and launch complexes	Spring through fall

CONTROL

Control Standard

Management efforts should continue until all visible signs of infestation are absent.

Control Methods

Priority should be given to using non-chemical (mechanical, biological, and cultural) control techniques. Chemical control methods should only be used after careful consideration of alternative methods. Use the least toxic chemical control product whenever possible.

Guidance:
https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5410106.pdf

Responsible Entity

The IPMC and Environmental Division are responsible for hiring cooperators/contractors that specialize in invasive plants species management.

Mechanical Control Methods

Mechanical control of established populations by mowing or scrapeing is typically unsuccessful because the plant resprouts from the roots.

Biological Control Methods

Currently, there are no effective biological control methods for this invasive plant species.

Cultural Control Methods

Wash and clean military and landscaping equipment, tools and vehicles after conducting activities in areas with invasive/exotic plant species to prevent the spread.

Recommended African Rue Management

African rue (Peganum harmala) is a poisonous, invasive weed native to the Mediterranean area (North Africa and mid-eastern Asia. It was accidentally introduced into the United States in about 1928 near Deming, New Mexico. From there, the plant has radiated and spread slowly but

steadily in all directions and currently can be found across Arizona to California and across New Mexico to trans-Pecos Texas, north into Northern New Mexico. Seeds and leaves are toxic to domestic ruminants.

This plant is perennial and develops a wide spreading and deep root system that challenges chemical treatments. One management system that has proved effective is that proposed by Dr. Rafael Corral, Pest Management Coordinator and Botanist at Ft. Bliss, Texas.

The method consists of the following steps:

1. In the last half of April and the first half of May, when the plant is vigorously sprouting and just before flowering, weed whackers cut the plant back to near ground level.

2. About 45-60 days later, Arsenal herbicide is sprayed on the resprouting plant leaves and buds.

3. Repeat steps 1 and 2 after initial flowering has completed and before the second flowering period. This second treatment time can be carried out in late August and/or September into the first half of October, depending on the degree of vigor of the plants.

4. This two step process applied twice per year may need to be repeated during the second year, and in extreme cases, an additional year. Control levels may reach 80% the first year and as much as 95% at the end of the second year.

5. Monitoring on treated plants is necessary in order to asses resprout percentage and plan for re-application during the same year or following years as noted.

Sensitive Areas

Salt Creek, Malpais Spring, and Mound Spring Complex in which White Sands Pupfish is present. All other riparian habitats across WSMR.

Environmental Concerns

Some pesticides are toxic to fish and wildlife. Do not apply directly to water or where surface water is present. Follow label cautions and instructions to reduce hazards to non-target species from drift, runoff, groundwater contamination, and/or spills. Coordination and/or consultation with IPMC, DPW Environmental Division, USFWS and NMDGF may be required prior to application to sensitive habitats.

8.3.4 LAWN AND LANDSCAPING WEEDS

Russian thistle (Salsola kali)

Puncture Vine or Goatshead, (Tribulus terrestris)

Examples

Various weeds, insects, mites, nematodes and plant diseases.

Reason for Control

If allowed to become established, weeds will spread quickly creating conditions that are aesthetically unacceptable and potentially damaging to horticultural plantings due to competition for water, nutrients, and sunlight.

Weeds can also displace turf, which impacts the aesthetic quality and can form clumps that present a tripping hazard.

Insect pests can cause extensive damage to landscaped areas by feeding on the roots, leaves, or crowns.

Site

All lawn and landscape areas including maintained trees, shrubs, and flower beds.

SURVEILLANCE

Responsible Entity

Landscape maintenance personnel and/or DPW pest management personnel are responsible for surveillance.

Methods, Locations, and Frequency

Method (Devices)	Locations	Frequency
Observations of plant or turf stress and damage such as yellowing or browning, or foliage predation would initiate further action. (Visual)	All installation turf areas	Spring and Summer
A drench test can be conducted to detect chinch bugs, adult billbugs, and caterpillars including armyworms, cutworms, and larvae of lawn moths (sod webworms). This is done by mixing 1 to 2 fluid ounces (2-4 tablespoons) of dishwashing liquid with a gallon of water. Two gallons may be required where soils are dry. Apply the solution to 1 square yard of lawn as evenly as possible. Within 10 minutes, the drench will cause insects to move to the surface. The insects can then be collected and identified. To identify insects unaffected by the drench test, the thatch should be cut back to examine the soil around the roots and crowns.	Areas showing yellowing or browning	On evidence of yellowing or browning of the turf

CONTROL

Control Standard

Management efforts should continue until all visible signs of infestation are absent. Monitoring for the detection of new infestations in horticultural plantings should continue year-round.

Control Methods

Priority should be given to using non-chemical (mechanical, biological, and cultural) control techniques. Chemical control methods should only be used after careful consideration of alternative methods. Use the least toxic chemical control product whenever possible.

Responsible Entity

Landscape maintenance personnel (non-chemical control), DPW pest management personnel (chemical control), and certified pesticide applicators.

Mechanical Control Methods

Install moisture and irrigation control systems to ensure irrigation is at the appropriate level. Inappropriate irrigation is the most common cause of lawn and landscape stress. Over-watering (shallow, frequent sprinkling) retards deep root growth and increases lawn susceptibility to disease and infestation.

Ensure sprinklers are spaced to provide adequate coverage, are not sunken or tilted, and the sprinkler heads match within each system. Irrigation equipment should be checked periodically to insure that it is in good repair and that all areas of the landscape receive adequate coverage.

Keep lawn mower blades sharp and keep grass mowed at 2 ½ to 3 inches. Adjust mowing frequency to changes in the growing season.

Increase water penetration and reduce soil compaction by periodic aeration.
Remove thatch buildup to improve water, fertilizer, and air penetration and reduce caterpillar and chinch bug populations. Seed the area with desired grasses wherever lawns are thinned by de-thatching procedures.

Weeds can be physically controlled in small areas by hand pulling or hoeing.

Prescribed burning or flaming may be used in large areas. Ensure proper coordination with the DPW Environmental Division and Fire Department.

Low spots should be leveled or drained to avoid waterlogged soils that favor weeds and pathogens.

Fungal encroachment can be slowed by improving soil fertility, aeration, irrigating for longer periods of time, and watering only in the early morning hours.

Biological Control Methods

Use native plants in landscape areas. Native plants have an increased resistance to local pests and are better suited for the local climate.

Biological pesticides containing organisms such as Bacillus thuringiensis and beneficial nematodes are commercially available for controlling specific lawn insects. These materials have minimal impacts on natural enemies of insect pests and other beneficial organisms such as earthworms. Birds, moles, and other vertebrates also feed on lawn insects.

Chinch bugs can be controlled with the big-eyed bug and the tiny wasp Eumicrosoma beneficum. It should be noted that common insecticides such as chlorpyrifos and herbicides such as simazine significantly reduce populations of these biological control organisms in lawns, thus triggering repeated pest outbreaks.

Depending upon the specific pest species, insects such as lady beetles (ladybugs), mites, lacewings, microorganisms (soil fungi, bacteria, and viruses), and nematodes may be introduced to control pest populations.

Cultural Control Methods

Select plant species that are resistant to local pests when planting new areas or replacing plants in established landscapes.

Wash and clean landscaping equipment and tools after conducting landscape maintenance activities in areas with pest infestations.

Excessive nitrogen fertilizer produces weak grass blades with thin cell walls that are susceptible to pest attack. A soil test should be obtained before planning annual fertilization programs. Do not allow fertilizers to be washed into creeks, storm drains, ponds, lakes, or oceans.

Chemical Control Methods

Before using pesticides or herbicides in landscape areas, ensure the pest has been properly identified.

Control is rarely or never needed for most types of insects because they are harmless or beneficial. Common beneficial insects include predatory ants, ground beetles, rove beetles and blister beetles. Other common arthropods that are primarily decomposers and do no significant injury to turfgrass include springtails and millipedes. To protect beneficial insects, avoid using broad-spectrum pesticides that will kill them along with the pests.

The proper herbicide should be selected (post-emergence or pre-emergence) and only be applied to the designated treatment area in accordance with label instructions.

The insecticides azadirachtin, pyrethrum (pyrethrins), and imidacloprid are relatively safe products for lawn insect management. However, each of these products is effective only on certain pests and all must be properly timed and applied to be effective.

Avoid the use of diazinon and other broad-spectrum insecticides, including carbaryl and pyrethroids to reduce the risks to non-target organisms.

Sensitive Areas

Children's playgrounds and youth centers.

Environmental Concerns

Some pesticides are toxic to fish and wildlife. Do not apply directly to water or where surface water is present. Follow label cautions and instructions to reduce hazards to non-target species from drift, runoff, groundwater contamination, and/or spills. Coordination and/or consultation with IPMC, DPW Environmental Division, USFWS and NMDGF may be required prior to application to sensitive habitats.

8.3.5 BROADLEAF WEEDS

Common chickweed (Stellaria media)

White clover (Trifolium repens)

Distinguishing Features

Broadleaf weed seedlings, in contrast to the grasses, usually have wider leaves with net-like venation.

Broadleaves are dicots and have two cotyledons or seed-leaves, which usually emerge above the soil and expand to become the first visible "leaves."

The true leaves of broadleaf weeds usually have a leaf stalk, but in some species the true leaves may be without a leaf petiole.

Broadleaf weed seedlings may have an erect stem, be viny or twining in growth habit, or may be prostrate (growing flat on the ground).

Reason for Control

If allowed to become established, perennial weeds will spread quickly, creating conditions that are aesthetically unacceptable and potentially damaging to horticultural plantings due to competition for water, nutrients, and sunlight. Broadleaf weeds can also displace turf which impacts the aesthetic quality and form clumps that present a tripping hazard.

Site

Installation wide, paying particular attention to landscaped areas and road shoulders.

SURVEILLANCE

Responsible Entity

Landscape maintenance personnel, DPW pest management personnel, and/or certified pesticide applicator are responsible for surveillance.

Methods, Locations, and Frequency

Method (Devices)	Locations	Frequency
Conduct a thorough assessment of the types of weeds that are present and note areas where weed problems currently exist or seem to be developing. Note the site conditions such as extremely wet, dry, or poorly drained soils, cracks in sidewalks or foundations, etc.	Installation wide	Monitor for weeds on a regular basis throughout the growing season, particularly in the spring. Initial assessments should be conducted in late summer or early fall (mid-August through mid-September) to ensure weedy annuals and perennials can be identified. Newly planted areas should be monitored intensively after planting to ensure detection and timely treatment of weeds that may have been imported via the root balls or containers of new plants. This is especially important in minimizing the establishment and spread of rhizomatous weeds.

CONTROL

Control Standard

Quantitative control standards for common broadleaf "weeds" should be established for each turf area on installation. Only those limited turf areas that require a weed-free appearance (e.g., flag pole ceremonial site) should be subject to intensive lawn maintenance. The goal in high maintenance lawn areas should be to crowd out "weeds" by enhancing cultivation of the chosen grass.

Certain designated landscaped areas, road shoulders, fence-lines, and other open areas should be maintained in a weed-free State.

Control Methods

Priority should be given to using non-chemical (mechanical, biological, and cultural) control techniques. Chemical control methods should only be used after careful consideration of alternative methods.

Responsible Entity

Landscape maintenance personnel are responsible for non-chemical control methods.

Chemical applications can be performed by either a DoD or State certified pesticide applicators.

Mechanical Control Methods

Remove individual weeds from small areas by pulling and digging to remove the entire root system.

Reduce access to sunlight, moisture, and/or nutrients by applying a spunbonded weed control fabric in combination with mulch, applying a thick, heavy application of mulch only, or using concrete walkways, borders, or decorative areas.

Use dense shrub plantings and groundcovers to reduce weed access to sunlight.

Use drip irrigation rather than overhead sprinkler irrigation wherever possible.

Select native grass and landscape plant species for the area.

In new landscape areas, pre-irrigation can be used to germinate weed seeds, so they can be removed prior to planting.

Ensure soils are properly drained and monitor watering levels to reduce surface water runoff, soil erosion, nutrient loss, and root diseases.

Soil pasteurization can be used to destroy weeds in soil beds by placing clear plastic on top of the moist soil for 4 to 6 weeks during the hottest part of the year.

Power trimming of weedy areas can be used to prevent seed development and reduce plant vigor. Usually this method is considered a temporary treatment to keep weeds in check until a more effective option can be implemented.

When new shrub beds are being installed or existing shrub beds renovated where landscape fabric cannot not be utilized, it may be helpful to cultivate the soil, irrigate, wait for germination of weeds, and repeat several times. This treatment helps reduce the amount of weeds that are initiated from the "seed bank" in the soil.

Install tree wells for single trees and/or other objects on turf areas (using a weed control fabric and mulch). Small groups of trees can also be mulched with landscape fabric underneath.

Concrete underlayment and mowing strips may be added under or around fences, picnic tables, benches, etc. Installation of pavement eliminates weed habitat altogether except where cracks and joints exist. These can be filled with a crack sealant.

Tractor-mounted grading implements (e.g., ComboPlane, Turfterra) may be cost-effective in large graveled areas.

Clean and seal cracks and joints in asphalt and concrete. Periodically reseal as needed to prevent the development of openings where weeds can develop.

New streets should include a unified curb and gutter, which eliminates the joint between the gutter bar and the curb.

Limit the use of small, open-seamed pavers in favor of alternative materials where feasible and acceptable within appropriate design and planning criteria. Such materials include imprinted/colored concrete (e.g., Bomanite), exposed aggregate concrete, mortared bricks, larger paving units, mortared stone, etc.

A revolving wire brush on a hydraulically operated arm attached to a street sweeper may be used for weed control along streets where the gutter meets the street pavement.

Biological Control Methods

The IPMC and DPW Environmental Division will recommend that all landscaping and grounds maintenance contracts and in-house work uses only native, non-invasive plants free of disease and pests, and weed-free seed.

Cultural Control Methods

Keep turf healthy with proper mowing, fertilizing, aeration, overseeding, topdressing, and irrigation. Grass should be kept at 2 ½ to 3 inches, with fertilizing and watering occurring as needed.

Ensure fence lines, ditches, road shoulders, and other disturbed areas are kept weed-free to reduce sources of infestation.

Thoroughly clean equipment after working in a weed infested area and prior to working in new landscape areas to reduce seed and weed dispersal.

Inspect all nursery stock and turf for weeds prior to planting.

Only use seed and soils that are certified as weed-free.

When selecting grass seed mixes, match species and cultivars to site and use conditions and choose those that have been bred for disease resistance, drought tolerance, slower growth rates, etc.

Reduce water runoff from landscape areas to avoid irrigating unwanted areas.

Chemical Control Methods

When deemed necessary and appropriate, systemic post-emergent herbicides (e.g., glyphosate) can be used to effectively control established perennial weeds.

Timely spot treatment of young perennial weeds before they become widely established and cutting of dense stands before treatment will help minimize applications. Broadcast applications of chemicals are highly discouraged.

Select the proper herbicide labeled for control of the target weeds. Target and treat only those areas where a problem exists; blanket applications are rarely necessary. Preferentially use spot treatments instead of broadcast applications of herbicides and other pesticides.

Since many flower and landscape plants are also considered broadleaf plants and can easily be damaged or killed by broadleaf herbicides, select an application method that will avoid drift, and specifically target only those plants needing control.

Treat plants when they are growing actively and therefore best able to take up the herbicide. Plants growing under drought stress or in a "resting" state may show little to no effect from an herbicide treatment.

Avoid herbicide application when winds are above five mph or when temperatures exceed 85 degrees F.

Ensure soils are moist and no rain is expected for at least 24 hours after application.

Do not mow turf areas for two to three days before and after application.

Wait until turf areas have established before treating newly seeded lawns with broadleaf herbicides.

Sensitive Areas

Children's playgrounds and youth centers.

Prohibited Practices

Unless broadleaf weeds are prevalent in turf areas, use of weed-and-feed fertilizers is not authorized since the herbicide in these materials contributes to non-point source pollution and is associated with the slow decline and death of shrubs and trees. Fertilizers should only be applied as indicated by soil test results. Spot [vice broadcast] applications of herbicide should be used to control or eliminate sparse broadleaf weeds.

Environmental Concerns

Some pesticides are toxic to fish and wildlife. Do not apply directly to water or where surface water is present. Follow label cautions and instructions to reduce hazards to non-target species from drift, runoff, groundwater contamination, and/or spills. Coordination and/or consultation with IPMC, DPW Environmental Division, USFWS and NMDGF may be required prior to application to sensitive habitats.

8.4 VERTEBRATE PESTS
8.4.1 STRAY - FERAL CATS AND DOGS

Feral cat (Felis domesticus)

Feral dog (Canis familiaris)

Distinguishing Features

The primary feature that distinguishes feral from stray domestic cats and dogs is the degree of reliance or dependence on humans, and in some respect, their behavior toward people. Feral cats and dogs survive and reproduce independently of human intervention or assistance.

Reason for Control

Stray/feral animals on military installations can affect the health and welfare of personnel, their pets, and wildlife populations by spreading disease, scaring and/or hurting humans and killing wildlife.

Ensure all entities on WSMR are aware that WSMR has an approved DPW Stray-Feral Animal Control Program. Disseminate all current Standard Operating Procedures, Policies and Regulations as needed and enforce compliance. The IPMC is the lead for the program and should be contacted for assistance.

Site

Installation wide.

SURVEILLANCE

Recording the number of calls received by area residents. Visiting known feral animal colonies.

Responsible Entity

WSMR community, DPW pest management personnel, DPW Stray Animal Caretaker, Directorate of Emergency Services (DES), IPMC, the DPW Environmental Division, Privatized Housing RCI Tenant (Balfour Beatty Communities) and residents.

Methods, Locations, and Frequency

Method (Devices)	Locations	Frequency
WSMR community, DPW pest management personnel, DES, IPMC, and the DPW Environmental Division reporting sightings of Stray or feral cats and/or dogs	Entire installation	Continuous

CONTROL

Control Standard

Management efforts should continue until there is a significant reduction in the number of sightings and reports from the installation community. The sighting of feral dogs or cats on the installation should trigger aggressive control techniques.

Mechanical Control Methods

Refer to AFPMB Techinical Guide No. 37
https://extranet.acq.osd.mil/eie/afpmb/cac/techguides/tg37.pdf for guidance on how to control stray/feral animals on military installation.

Cultural Control Methods

Provide public awareness and education to the WSMR community, specifically on keeping cats indoors and dogs in backyards or fenced in areas. Educate the importance of vaccinating and sterilizing pets. Provide information about the hazards caused by stray animals and to stress the link to personnel health, safety and welfare and protection of wildlife from these animals. Enforce a "no-feeding" policy for both feral animals and wildlife. Cat numbers can be reduced by eliminating their habitat. Old buildings should be sealed and holes under foundations plugged.

Sensitive Areas

Children's playgrounds, and youth centers. Control of feral animals in sensitive wildlife habitats requires coordination with the IPMC, DPW Environmental Division, USFWS and NMDGF.

Prohibited Practices

Hunting or trapping feral animals and wildlife near Post housing and in immediate surrounding areas is prohibited by policy.

Environmental Concerns

Control of feral cats or dogs in any area which could affect wildlife populations and their habitats requires coordination with the IPMC, DPW Environmental Division, USFWS and NMDGF. Coordination and/or consultation with IPMC, DPW Environmental Division, and NMDGF may be required prior to application to sensitive habitats.

8.4.2 BIRDS

Barn Swallow (Hirundo rustica)

European House Sparrow (Passer domesticus)

Distinguishing Features

Birds are characterized by feathers, a beak with no teeth, the laying of hard-shelled eggs, a high metabolic rate, a four-chambered heart, and a lightweight but strong skeleton. The hollow bones and air sacs facilitate the relatively light body weight and more efficient respiratory system required for flight.

Reason for Control

Nuisance birds can cause damage to buildings, vehicles, and aircraft, spread disease, and cause project delays which can result in substantial economic loss.

Physical damage to the surface of buildings, vehicles, and aircraft can occur from the uric acid in bird fecal matter.

Physical damage to structures can also occur from woodpeckers when drumming or foraging on wooden siding, eaves, or trim boards.

Active bird nests are protected, and can therefore cause schedule delays and financial loss in construction, demolition, or other projects.

Bird fecal matter can also carry a variety of microorganisms that can pose a disease threat to humans, such as:

- Ornithosis (caused by the bacterium Chlamydia psittaci)
- Histoplasmosis (caused by inhalation of spores of a soil-inhabiting fungus [Histoplasma capsulatum] that grows where bird droppings accumulate)

- Cryptococosis (caused by the fungus Cryptococcus neoformans)

- Birds can also carry external parasites such as mites, fleas, and ticks, which act as secondary disease vectors

Site

All buildings, hangars, recreational sites, children's playgrounds, and youth centers.

SURVEILLANCE

Responsible Entity

Building Managers, occupants, maintenance personnel, the IPMC and DPW Environmental Division are responsible for conducting surveillance.

Methods, Locations, and Frequency

Method (Devices)	Locations	Frequency
Perform an initial inspection of all buildings to determine potential nesting and roosting sites.	All buildings	Early Spring
Conduct visual inspections of buildings paying particular attention to rafters, ledges, and other potential roosting and nesting sites for signs of damage, nest material, or fecal matter.	All buildings	Spring and Summer

CONTROL

Control Standard
No active bird nests, perching, or fecal matter observed in buildings, hangars, or other project areas.

No physical damage from woodpeckers observed on exterior wood surfaces.

If a control method has previously been implemented, no signs of bird droppings or nuisance birds within 30 days after treatment.

Control Methods

Nearly all bird species at WSMR are protected by the Migratory Bird Treaty Act, with the exception of the European starling, European house sparrow, rock dove (pigeon), and Eurasian collared dove. Therefore, control methods for birds must always be coordinated with DPW Environmental Division.

Control methods with any potential to affect protected bird species (including adults, nests, eggs, or nestlings) can only be conducted with a permit from the USFWS Migratory Bird Office. DPW Environmental Division is responsible for obtaining all such permits for WSMR.

Responsible Entity

The IPMC and DPW Environmental Division are responsible for non-chemical control methods.

Mechanical Control Methods

Permanent exclusion of birds from roosting and nesting sites is the control method of choice. These methods can initially be labor intensive, expensive and often require the services of a bird management professional, but provide control that is effective, permanent, and cheaper in the long run.

Exclude birds from buildings and by sealing entryways into attics, soffits, and other entry points with caulk, metal wool, screen wire or hardware cloth. Barriers of hardware cloth or other wire screen are often the most efficient way to keep birds off and out of limited areas on utilitarian structures that are not in the public view. A 3/4-inch mesh is the largest size that will eliminate sparrows and starlings. Horizontal nesting areas afforded by ledges and window air conditioners can be eliminated by the use of aesthetic structural materials affixed above them and at a 45 degree angle.

Discourage nesting and perching on interior and exterior building structures by using monofilament line, wire springs, coils, spikes, netting, or bristle wire on ledges, beams, and rafters. Spring-tensioned stainless steel wires strung at different heights along projecting elements such as ledges, lintels, sills, and string courses can be used on historic structures or any high-visibility site.

Structures used by drumming woodpeckers can be screened, netted, or filled with caulk, foam or other material to reduce the resonance, making them less attractive drumming sites. Lightweight sheet metal or 1/4-inch hardware cloth may be fastened directly over woodpecker-damaged areas. If done at the first sign of damage the bird may be discouraged and move on to another location. This metal sheeting or wire mesh can be painted to match the siding.

Fruit trees can be wrapped with screen mesh. Wire mesh, such as chicken wire, wrapped around tree trunks or limbs being damaged by a sapsucker will often persuade the bird to relocate.

In open areas, trees can be pruned or thinned to reduce flocking and rock and dense vegetation "barriers" can be planted along the shoreline of lakes and ponds to discourage geese.

Scaring Devices (such as noise-makers and plastic owls) are ineffective for long-term control and should only be considered when temporary and immediate bird dispersal is required.

Physical removal of birds and their nests may only be done for the control of European house sparrows (Passer domesticus), European starlings (Sternus vulgaris), and rock doves (pigeons) (Columba livia) and Eurasian collared doves (Streptopelia decaocto). Trapping, netting, and other means to physically remove birds or nests must be coordinated with the IPMC and DPW Environmental Division to ensure proper coordination with State and Federal agencies and to prevent violation of the MBTA (see Appendix 6).

Lethal bird management methods may be used only as a last resort only when substantial human-health risk or economic loss may occur, and only under a permit issued to DPW Environmental Division by the USFWS.

Biological Control Methods

Many species of falcons and hawks are natural predators of pigeons and other small birds. However, urban sites with limited nesting areas for raptors make natural predation inadequate for effective control.

Cultural Control Methods

- Cover the tops of products that are subject to potential contamination.
- Keep building windows and doors closed when not in use.
- Discourage bird feeding.
- Ensure garbage can and dumpster lids are kept closed.

Chemical Control Methods

Repellents are used only as a temporary measure; permanent solutions should be sought.

Repellents should be used when other non-chemical means are ineffective, impractical, or not feasible.

Several sticky, polybutene gel products are available as bird repellents. The glue-like gels do not contain poison but birds find them sticky and become reluctant to land. Repellent gels are most effective when only a few birds are present (too many birds attempting to land will eventually remove the gel).

Gel products must be applied to clean, non-porous or sealed surfaces and must be scraped off and reapplied every year or two to maintain their effectiveness.

Gels are not recommended in most circumstances because they are eventually degraded by dust and air pollutants and are capable of staining or even spalling underlying masonry.

Sensitive Areas

Children's playgrounds and youth centers.

Prohibited Practices

Most bird species at WSMR are protected by the Migratory Bird Treaty Act of 1918. It is unlawful ''by any means or in any manner, to pursue, hunt, take, capture, [or] kill'' any migratory birds except as permitted by regulation (16 U.S.C. 703). ''Take'' means to ''pursue, hunt, shoot, wound, kill, trap, capture, or collect'' or to attempt these activities (50 CFR 10.12).

It is unlawful to possess, transport, sell, or purchase a bird or their parts, such as feathers, nests, or eggs, without a permit, or to attempt to do any of these things.

All eagles and their nests (active or empty) have additional protections under the Bald and Golden Eagle Protection Act. Furthermore, all pest management activities at WSMR fall under the 2006 "Memorandum of Understanding Between the U.S. Department of Defense and the USFWS to Promote the Conservation of Migratory Birds". WSMR follows the 2000 "Interim Empty Nest Policy of the U. S. Fish and Wildlife Service, Region 2".

Do not disturb or attempt to move a bird or nest without consulting with DPW Environmental Division. If eggs or young are in a nest when a permit is requested, the application may be denied. It is best to request the permit during the nonbreeding season and well before spring nest construction begins. At WSMR, the primary nesting season is March through August, although some species may nest outside of that timeframe.

The use of pesticides, poison baits and perches are prohibited.

Environmental Concerns

Because most birds are protected, and civil and criminal penalties may apply you must consult with DPW Environmental Division to address any nuisance bird issues.

Before modifying historic structures or demolishing buildings, the DPW Environmental Division must be contacted to complete NEPA requirements to ensure compliance with cultural resource laws and MBTA.

Coordination and/or consultation with IPMC, DPW Environmental Division, USFWS and NMDGF may be required prior to application of exclusion material or modification to sensitive habitats.

Additional Comments

Microorganisms in bird droppings are typically contracted through inhalation when the excrement is dry and becomes airborne. Germicides are sometimes applied to accumulated excrement prior to cleaning. However, thorough saturation with water and the use of a respirator are usually sufficient protective measures. Removed excrement should be collected in plastic bags, sealed, and disposed of at a sanitary landfill. Bird excrement removal on public buildings should not be performed during normal working hours. All work should be done from the outside of the building and barricades and signage must be provided to keep the public clear of the work site.

The use of tools that can damage building surfaces, such as coarse wire brushes, should not be used under any circumstances on historic structures, only nonmetallic tools (such as plastic spatulas and brushes with natural fiber or nylon bristles) should be used to remove excrement.

8.4.3 COMMON NUISANCE WILDLIFE

Raccoon (Procyon lotor)

Bobcat (Lynx rufus)

Distinguishing Features

The most common nuisance wildlife vertebrates on WSMR include oryx, raccoons, bobcats, skunks, ringtails, javelina and foxes.

Reason for Control

Can transmit diseases such as rabies, leptospirosis and internal parasites such as the baylisascaris roundworm. May cause injury to humans and domestic animals. Have the potential to cause extensive damage to landscaped areas, structures, buildings and the Desert Emerald Recreational Area.

Site

Installation wide.

SURVEILLANCE

Responsible Entity

Building Managers, occupants, maintenance personnel, housing residents, IPMC, and the DPW Environmental Division are responsible for surveillance. USDA-APHIS Wildlife Service Agent can assist upon request.

Methods, Locations, and Frequency

Method (Devices)	Locations	Frequency
An initial assessment of structures and adjacent areas should be conducted to reduce the potential for nuisance wildlife populating the area.	All installation buildings	Continuous
Monitoring for nuisance wildlife include observations of droppings, nests or dens, commodity and/or food damage, remnants of foraging or feeding, reports of sightings, animal tracks, and unusual odors.	All installation buildings	Continuous

CONTROL

Control Standard

Management activities should continue until all potential access sites to buildings are blocked and any damage or nuisance activity has ceased.

Control Methods

Only non-chemical (mechanical, biological, and cultural) control methods should be used.

Responsible Entity

The IPMC, DPW Environmental Division, USDA-APHIS Wildlife Service Agent, NMDGF and DES Game Wardens (emergencies only) and DPW pest management personnel. Personnel handling nuisance wildlife are highly encouraged to receive the Rabies Preventive Vaccinations (No Exposure). The following websites provide educational material: https://www.cdc.gov/rabies/index.html

Mechanical Control Methods

Physical exclusion is the practical and reliable way to control nuisance wildlife.

Open spaces beneath structures, such as porches, decks, and garden and tool sheds, should be tightly screened with 1/4- or 1/3-inch galvanized hardware mesh. The bottom edge of the wire should be buried at least 6 inches deep, extended outward for 12 inches, and then back-covered with soil.

Remove heavy brush, rock and lumber piles, logs, and stumps from areas adjacent to buildings.

Keep grass mowed to 3-inches or less.

Repair or replace damaged or missing window screens.

Trim trees and shrubs back at least 5-feet from roof edges to reduce access to buildings.

Trim overgrown shrubbery to reduce hiding areas.

Stack firewood tightly, leaving no major gaps suitable for use as a den and at least 18 inches off the ground.

Electrified fences may be used to deter nuisance wildlife. However, electrified fences may not be suitable for all situations and must have warning signs.

Cover chimneys with a spark arrester that meets local fire codes. Ensure the spark arrester is tightly secured to prevent nuisance wildlife from pulling them loose.

Raccoons, bobcats, ringtails, and foxes are protected furbearers. Javelina are a protected big game species. All these species are protected by NM State law and managed by the NMDGF. The IPMC and DPW Environmental Division must consult with the NMDGF prior to trapping, handling, and/or culling of all protected wildlife species.

When used properly, live animal traps can offer non-lethal solutions to conflicts. However, despite the perception that live capture in cage traps is humane, animals often experience stress and physical damage during capture. Captured animals may also suffer from exposure to extreme weather and lack of water. Such injuries, trauma, and disorientation can lead to the death of an animal days after it has been released. Relocation or cull procedures of any animal will be determined on every nuisance animal requiring management by PWE Environmental Division.

Resources:
http://www.wildlife.State.nm.us/
https://www.aphis.usda.gov/aphis/ourfocus/wildlifedamage/SA_Program_Overview/SA_Contact/ws-state-info?st=NM:New%20Mexico

Biological Control Methods

There are currently no biological control methods for nuisance wildlife.

Cultural Control Methods

Nuisance wildlife are generally attracted to areas that provide food, water, and shelter. Reducing or eliminating artificial sources, non-lethal exclusion and educating the public are considered the best management practice when dealing with nuisance wildlife.

Ensure garbage can and dumpster lids are tight-fitting, kept closed, and securely fastened to prevent foraging

Pet food should not be left outdoors, particularly at night.

Remove fallen fruit from around trees and other available food sources frequently.

Keep building windows and doors closed when not in use.

Prohibit and educate the negative outcomes of feeding wildlife.

DPW Environmental Division provides educational sources of what and how to deal with nuisance wildlife and who to contact in case of an emergency.

Chemical Control Methods

Animal repellents are temporary measures and rarely offer significant results.

Repellents can be used when other non-chemical means are ineffective, but only with prior coordination with DPW Environmental Division and approval from NMDGF.

Pesticides are prohibited for the control of nuisance wildlife.

Sensitive Areas

Child Development Center, youth center and playgrounds.

Prohibited Practices

Poison baits sold for the control of rodents should never be used in an attempt to control nuisance wildlife.

Environmental Concerns

Most of the species listed in this section are all protected by NM State law and managed by the NMDGF. The IPMC and DPW Environmental Division must consult with the NMDGF prior to trapping, capturing, culling and/or relocation of all protected wildlife species.

Some pesticides are toxic to fish and wildlife. Do not apply directly to water or where surface water is present. Follow label cautions and instructions to reduce hazards to non-target species from drift, runoff, groundwater contamination, and/or spills.
Coordination and/or consultation with IPMC, DPW Environmental Division, USFWS and NMDGF may be required prior to application to sensitive habitats.

Additional Comments

Rabies is a preventable viral disease of mammals most often transmitted through the bite of a rabid animal. The vast majority of rabies cases reported to the Centers for Disease Control and Prevention each year occur in wild animals like raccoons, skunks, bats, and foxes.
The rabies virus infects the central nervous system, ultimately causing disease in the brain and death. The early symptoms of rabies in people are similar to that of many other illnesses,

including fever, headache, and general weakness or discomfort. As the disease progresses, more specific symptoms appear and may include insomnia, anxiety, confusion, slight or partial paralysis, excitation, hallucinations, agitation, hypersalivation (increase in saliva), difficulty swallowing, and hydrophobia (fear of water). Death usually occurs within days of the onset of these symptoms.

It's important to remember that rabies is a medical urgency but not an emergency. Decisions should NOT be delayed. Wash any wounds immediately. One of the most effective ways to decrease the chance for infection is to wash the wound thoroughly with soap and water. See your doctor for attention for any trauma due to an animal attack before considering the need for rabies vaccination. Your doctor, possibly in consultation with your State or local health department, will decide if you need a rabies vaccination. Decisions to start vaccination, known as post exposure prophylaxis (PEP), will be based on your type of exposure and the animal you were exposed to, as well as laboratory and surveillance information for the geographic area where the exposure occurred.

Nuisance wildlife that seem tame or listless and wander about during daylight hours should be treated with great caution because this behavior is symptomatic of rabies. Specifically, if they exhibit no fear of people or pets and show some aggressive behavior, they should be reported immediately to DES Dispatch (678-1234) and/or DPW Environmental Division (678-2225).

8.4.4 COYOTES

Distinguishing Features

Coyotes (Canis latrans) typically grow to 30–34 in (76–86 cm) in length, not counting a tail of 12–16 in (30–41 cm), stand about 23–26 in (58–66 cm) at the shoulder and weigh from 15–46 lb (6.8–21 kg). In comparison to a domestic dog, coyotes tend to be more slender; have wide, pointed ears; a long, tapered muzzle; yellow eyes; slender legs; small feet; and an uncurled, bushy tail which is carried low to the ground. The pelage is usually a grizzled-gray color with a cream-colored or white underside but coloration is variable with individuals having blonde, reddish, and charcoal coat colors. There are the no distinguishing characteristics between sexes. Their backs have tawny-colored underfur and long, black-tipped guard hairs that form a black dorsal stripe and a dark cross on the shoulder area. The black-tipped tail has a scent gland located on its dorsal base. The calls of a coyote makes are high-pitched and variously described as howls, yips, yelps, and barks. These calls may be a long rising and falling note (a howl) or a series of short notes (yips). These calls are most often heard at dusk or night, but may sometimes be heard in the day, even in the middle of the day.

Reason for Control

- To reduce the spread of rabies, parvovirus, distemper and lyme disease.
- Preying on domestic pets.
- Threatening or frightening WSMR residents and workforce.
- Concerns of attacking humans.

Site

Installation wide.

SURVEILLANCE

Patrol and conduct coyote call-response surveys.

Placing trail cameras in areas where there are recent sightings or complaints.

USDA-APHIS Wildlife Service Agent and IPMC track the number of sightings and complaints from residents and the workforce on the installation.

Responsible Entity

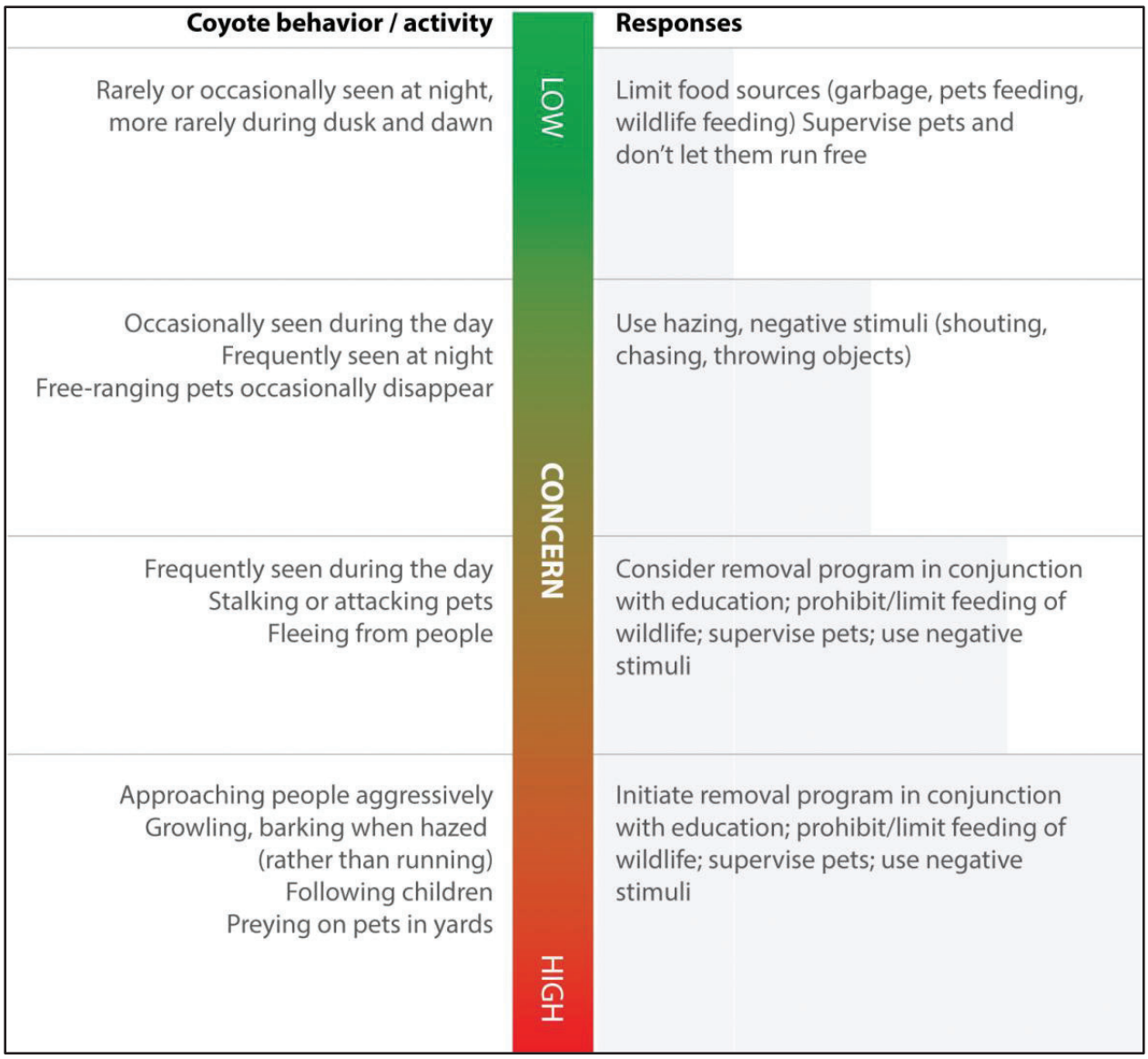
USDA-APHIS Wildlife Service Agent, and IPMC (DES Game Wardens, emergency only).

CONTROL

Control Standard

A significant reduction in the number of complaints from public, visual sightings, camera trap pictures and vocal responses detected during calling surveys.

Research which WSMR's control standard will follow:
https://urbancoyoteresearch.com/



Indicator chart of various coyote threat levels

Control Methods

If cultural methods do not properly manage coyotes, the use of mechanical control methods will be implemented.

Responsible Entity

USDA APHIS Wildlife Services, and IPMC. DES Game Wardens will be used in emergencies only situations only (e.g., sick, rabid or human related attack).

Mechanical Control Methods

Will use humane trapping methods to capture to relocate to remote area of the installation or to euthanize away from human occupied areas. Prior approval from NMDGF is required, due the chances of a non-target species being captured.

If a rabid or sick coyote is encountered on Main Post, use of firearms for lethal control will be granted with prior approval. The carcass will be collected and sent to the Vet Lab in Albuquerque to perform a necropsy and rabies test.

Cultural Control Methods

Providing education and outreach to housing area residents and the workforce on what they can do to assist in controlling coyote immigration. Reduce potential prey and other sources of food, water and shelter. Repellents may involve remotely activated lights or sound-making devices.

Use of sturdy, locking trash cans.

Chemical Control Methods

To prevent harm to non-target wildlife species, domestic pets and humans, no baits, or repellents will be used for the control of coyotes.

Sensitive Areas

Control of coyotes in sensitive habitats requires coordination with IPMC, DPW Environmental Division, USFWS and NMDGF.

Prohibited Practices

Hunting or trapping coyotes and other Wildlife on main post and in immediate surrounding areas is prohibited.

Environmental Concerns

Control of coyotes in any area which could affect wildlife populations and their habitats requires coordination with the IPMC, and NMDGF.

8.4.5 BATS

Big brown bat (Eptesicus fuscus)

Brazilian free-tailed bat (Tadarida brasiliensis)

Distinguishing Features

Bats are the only mammals capable of true flight, that is, flight powered by muscular movement as distinct from gliding. The wing is a double membrane of skin stretched between the enormously elongated bones of four fingers and extending along the body from the forelimbs to the hind limbs and from there to the tail. The thumb is small, clawed, and free from the membrane. The hind limbs are small and may be rotated in such a way that the knees bend backward rather than forward, as in other mammals; this is presumably an adaptation for takeoff and flight. Bats at rest hang head down, grasping a twig or crevice with their clawed feet; they take off into flight from this position.

Reason for Control

Bats can become a nuisance when they invade human-occupied structures. Their presence, ectoparasites, and odors from fecal matter and urine, and are all of concern. Bats may also transmit rabies and histoplasmosis.

Site

Installation wide.

SURVEILLANCE

Bats are usually detected by visual observation, droppings, smells (of droppings and urination), or by their high-frequency calls. The musty smelling droppings can easily be mistaken for those of mice or birds.

However, bat droppings can be identified by crushing into fine, shiny undigested insect parts. By contrast, mouse droppings are firm and do not disintegrate readily. No white color appears in bat feces as in bird feces.

In order to determine whether bats are roosting in a structure, visual surveys should be conducted at dusk at any possible entrance/exit points. A 1-2 hour survey or so for several consecutive days should be sufficient to identify all possible entry and exit ways. Use of high-frequency acoustic detectors, and minimal use of bright lights is recommended. Bats will often not exit roosts during heavy winds or rain, so surveys should not be conducted during these conditions..

Responsible Entity

DPW Environmental Division will conduct all surveys for DPW buildings. For buildings that are not owned by DPW, occupants will be responsible for funding surveys by qualified biologists and coordinate with the IPMC in the DPW Environmental Division.

Methods, Locations, and Frequency

Method (Devices)	Locations	Frequency
Perform an initial inspection of all buildings to eliminate potential roosting sites.	All buildings	Continuous
Conduct visual inspections of buildings and hangars paying particular attention to rafters, ledges, and other potential roosting sites for signs of damage or fecal matter.	All buildings	Continuous

CONTROL

Control Standard

No active bat colonies, in human-occupied buildings, hangars, or other project areas.

Control Methods

Use only non-chemical (mechanical, biological, and cultural) control techniques.

Responsible Entity

DPW Environmental Division is responsible for control methods in DPW owned buildings. For buildings that are not owned by DPW, occupants will be responsible for funding (refer to section 8.5 DPW reimbursable Work) bat exclusion in coordination with the IPMC and DPW Environmental Division. Permanent sealing of entry points (after bats are excluded properly) is the responsibility of the entity that maintains the building, and must also be coordinated with DPW Environmental Division. There may be considerations and NEPA requirements for historic structures.

Mechanical Control Methods

Exclusion of live bats, followed by the permanent sealing all entry points, is the preferred method to exclude bats from a building.

To avoid trapping bats inside a building, exclusions at WSMR will only be conducted from August 15 – October 31st.

The installation of one-way-door (polypropylene netting stapled or duct-taped over entry points, the bottom part hanging loosely one to several inches from the building, enables bats to crawl under and exit the roost site. Returning bats are not able to re-enter because the opening is covered and they will not fly up underneath the netting. Building surveys should be conducted for several evenings at dusk to ensure bats have not found another entry in the same structure. After about five days, when no more bats are seen exiting the building, the netting can be removed and the holes permanently sealed.

Reference: Bats in Buildings: Proper Exclusion Techniques in New Mexico, Guide L-202 Revised by Jon Boren, Extension Wildlife Specialist, http://aces.nmsu.edu/pubs/_l/l-202.pdf. https://www.batcon.org/

Bat proofing a structure is the best way to manage a bat infestation on a permanent basis. It is essential to seal all points of entry such as spaces under eaves, electrical conduits, and holes around the chimney and windows. Vents that must be kept open can be protected with a fine screen. Larger openings can be sealed with a high quality caulk, lath, sheet of metal, or window screen. Unlike rodents, bats will not gnaw their way through, but they will push away loose barriers.

Biological Control Methods

There are no biological control methods for bats.

Cultural Control Methods

Bats are important insect predators and therefore should be encouraged to roost in our neighborhoods in structures other than those where people are living and working. One way to achieve this is to install bat houses in trees, where bats will not represent a nuisance. Bat houses can be purchased in hardware stores and garden centers or easily built with scrap wood. Reference: "Bat House Builder's Handbook," Merlin Tuttle and Donna Hensley

Bat houses must be installed at various heights (from 1.8 m to 12.2 m), protected from the wind and oriented towards the sun in the morning. Different crevices of different widths, placed at different heights, will attract different bat species. The entrance should be at the bottom since bats enter from below, but no obstacles such as tree branches should obstruct it. It may take up to one year before bats occupy these new structures especially designed for them.

Chemical Control Methods

The use of pesticides for bat control is not recommended. Exclusion and removal are the preferred control methods.

Sensitive Areas

Historic structures, the Child Development Center, the youth centers and playgrounds.

Prohibited Practices

DoDM 4150.07 prohibits the use of ultrasonic repellent or control devices which can disrupt the echolocation ability of bats.

Environmental Concerns

Signs of WNS on bats should be reported to DPW Environmental Division immediately. Entry into any known bat habitat on WSMR requires prior coordination with the IPMC, and DPW Environmental Division.

8.4.6 SNAKES


Western Diamondback (Crotalus atrox)


Black-tailed Rattlesnake (Crotalus molossus)

Distinguishing Features

Snakes on WSMR are diverse with 27 species in four families occupying every habitat except barren gypsum lakebeds. Five species of rattlesnakes represent the only venomous reptiles on WSMR and all are potentially lethal to humans and pets. The most common and widespread species of rattlesnakes on WSMR include the western diamond-backed (Crotalus atrox) and the prairie rattlesnake (Crotalus viridis). Around the main post cantonment area the black-tailed rattlesnake (Crotalus molossus) is also fairly common.

Western diamond-backed rattlesnake (Crotalus atrox) is a heavy bodied snake with a triangular shaped head and can commonly grow to 183 cm (6.0 ft) in length. There are two dark diagonal lines on each side of its face running from the eyes to its jaws. It has dark diamond-shaped patterns along is back. The tail has black and white bands just above the rattles.

Black-tailed Rattlesnake (Crotalus molossus) can grow up to 1,219 mm or 48" in total length excluding rattle. It is a brown, gray, yellow-brown, or golden yellow rattlesnake with a series of large, black or brown, blotches on the back (dorsal blotches). The blotches appear jagged-edged because each of this snakes dorsal scales is usually but a single color. A few light patches mark the interior of each dorsal blotch. The blotches are hexagonal with thin "straps" trailing down the sides to the belly. On the posterior part of the body the blotches become narrow, muted crossbands. The tail is black, sometimes with muted, dark, gray-brown rings. The top of the snout is usually black or dark brown. The pupils are vertically elliptical and the dorsal scales are keeled. The neck is slender and the head is broad and triangular. On the end of the tail is a rattle composed of a series of loosely interlocking keratinous sections.

Prairie Rattlesnake (Crotalus viridis) have a triangular head, blunt nose, narrow neck, and stout body; they range in length from 15 to 60 inches. The background color above varies from pale green to brown; a series of brown or black blotches edged with a dark and then a light line extends the length of the body. The blotches often merge into rings on the tail. There are also blotches on the sides. The belly is pale yellow to white and lacks blotches.

All rattlesnakes have a heat-sensing pit located between the nostril and the eye. The fangs are hollow and hinged, allowing them to be folded back against the roof of the mouth. The tail ends in a rattle that helps warn potential predators of the snake's presence.

Reason for Control

Venomous snakes may cause injury, and potentially death, to humans and pets.

Site

Rattlesnakes are distributed across the entire installation and may be found at any time of the year.

SURVEILLANCE

Snakes are often encountered by personnel working around buildings on the periphery of the cantonment area and at remote sites located throughout the 2.28 million acre installation.

Responsible Entity

IPMC and DPW Environmental Division, DPW Pest Control

Methods, Locations, and Frequency

Personnel and Residents should use caution and visually inspect work places and homes for snakes, especially when working in facilities that are in remote locations that are not used by workers on a daily basis. Snakes are relatively infrequently encountered but can show up at any time of the year. Snake movement increases following summer rain events which coincide with newborn snakes searching for food and shelter. In the fall snakes will seek out shelter for overwintering and may enter buildings and/or crawl spaces underneath them.

CONTROL

Control Standard

IPMC and DPW Environmental Division should be vigilant for snakes during all months of the year, particularly during the summer rainy season.

Control Methods

Snakes should be captured and removed by professionals familiar with safe handling techniques and proper equipment. Captured snakes should be removed and released in appropriate habitats at least three miles from the capture site.

Responsible Entity

Contact the DPW Environmental Division or DPW Pest Control for safe removal of any snakes found in or in close proximity to facilities or houses.

Mechanical Control Methods

Keeping buildings securely shut with no gaps under doors and no bay doors left open will help to ensure that snakes do not gain entrance into buildings. Grounds maintenance personnel around buildings should endeavor to remove brush, rock piles, or any other structure that provides hiding places for snakes. Clean, open areas around buildings will discourage snakes from being near the facilities.

Biological Control Methods

None available that are effective.

Cultural Control Methods
Clean trash and debris around buildings and homes to prevent harboring rodents that attract snakes.

Chemical Control Methods

Pesticides are prohibited for the control of snakes; however, herbicides can be used to control weeds near facilities and houses to eliminate the habitat that attracts them.

Sensitive Areas

Child Development Center, youth center, and playgrounds.

Prohibited Practices

Pesticides are prohibited for the control of snakes.

Environmental Concerns

Rattlesnakes occurring on WSMR are not protected by the NMDGF or USFWS. The DPW Environmental Division does not condone killing of any snakes unless they are posing immediate and imminent threat to people or their pets and professionals are not available to assist in safe capture and removal.

Additional Comments

If bitten by a rattlesnake the victim should be immediately transported to the nearest hospital. Depending on where the victim is at the time of the bite the nearest treatment facility may be El Paso, Alamogordo, Las Cruces, or Socorro.

All rattlesnake bites are treated with the same anti-venom serum so NO attempt should be made to capture the snake for identification. Efforts should be made to keep the bite victim calm and stabilized. No attempt should be made to tourniquet, ice, or otherwise isolate the envenomated area. Bites from any of the non-venomous species of snakes on WSMR do not require emergency attention and are typically innocuous.

8.5.7 Gophers and Ground Squirrels

Botta's pocket gopher (Thomomys bottae)

Round-Tailed Ground Squirrel (Xerospermophilus tereticaudus)

Distinguishing Features

Pocket gophers, are burrowing rodents well equipped for digging and burrowing. WSMR has three species that occur on WSMR. The third species, not displayed above, is the yellow-faced pocket gopher (Cratogeomys castanops). This heavy-bodied animal is approximately 9 inches (24 cm) long and weighs 6 to 8 ounces (170-225 g). It has very small ears and eyes, a short naked tail and large forelimbs with long claws. The lips close behind the large incisor teeth, so that the teeth are always visible. This gopher ranges in color from pale gray or white to almost black. Mounds of fresh soil are the best sign of a gopher's presence. These mounds are formed as they dig tunnels and are typically crescent or horseshoe shaped. Pocket gophers live in a burrow system that can cover an area that is 200 to 2000 square feet with burrows from 6 inches to 6 feet below the surface.

The round-tailed ground squirrel is often mistaken for a gopher or a prairie dog. They have a long rounded tail that distinguishes them for either of the above. They have a semi-colonial social structure. They are called ground squirrels because they burrow in loose soil often under mesquite trees and creosote bushes. This ground squirrel usually lives in burrows within creosote bush scrub habitat. Their color may vary from light brown to a dark reddish-brown. They eat seeds, cacti and the green parts of shrubs and other plants. It is diurnal, and will remain underground during the hottest parts of the days in summer.

Reference:
UC IPM Outline, University of California Agriculture and Natural Resources.

Reason for Control

Pocket gophers and ground squirrels encroach upon landscaped areas, lawns, and gardens, eating roots, tubers, grasses, green plants, and prickly pears. They destroy irrigation systems and burrowing through them and ruin aesthetics of landscaped areas in the cantonment area.

Site

Pocket gophers and ground squirrels can be seen encroaching in landscaped areas, lawns, baseball fields and the Desert Emerald Recreational Area.

Surveillance

Observation of mounds, holes or evidence of plant damage.

Responsible Entity

Building Managers, occupants, landscape maintenance personnel, and certified pesticide applicators are responsible for conducting surveillance.

Methods, Locations, and Frequency

Method (Devices)	Locations	Frequency
Perform an initial inspection of all grassy areas and ornamental plantings	All areas	Spring
Watch for mounds, new holes and plant damage.	All areas	Continuous

Control

Control Standard

No new mounds or additional plant damage.

Control Methods

Priority should be given to using non-chemical (mechanical, biological, and cultural) control techniques. Chemical control methods should only be used after careful consideration of alternative methods.

Responsible Entity

Landscape maintenance personnel and certified pesticide applicators are responsible for non-chemical control methods.

Chemical applications can be performed by either a DoD or State Certified Pesticide Applicator.

Mechanical Control Methods

Trapping is the most effective means of control. The most common type of trap is a two-pronged pincher trap such as the Macabee trap which the gopher triggers when it pushes against a flat, vertical pan.

Biological Control Methods

There are no biological control methods effective for the control of gophers or ground squirrels.

Cultural Control Methods

Weed-free buffer areas can be created adjacent to landscaped areas and lawns.

Chemical Control Methods

Sensitive Areas

Child Development Center, youth center, playgrounds, and baseball fields.

Environmental Concerns

Some pesticides are toxic to fish and wildlife. Do not apply directly to water or where surface water is present. Follow label cautions and instructions to reduce hazards to non-target species from drift, runoff, groundwater contamination, and/or spills. Coordination and/or consultation with IPMC, DPW Environmental Division, USFWS and NMDGF may be required prior to application to sensitive habitats.

APPENDIX 1

PEST MANAGEMENT CONSULTANT ANNUAL
PESTICIDE USE PROPOSAL

At the beginning of each fiscal year, in conjunction with review of pest-specific management strategies, each installation shall propose a list of pesticides for approval by the PMC. The pesticides proposed are those intended for use on installation (by contractors or by installation personnel) to control pests identified, or anticipated to occur, on installation during the upcoming fiscal year. Pesticide use approval is obtained by completing the PUP form. The IPMC shall insure that this form is updated annually and submitted to the PMC for approval.

FY21 PESTICIDE USE PROPOSAL		
Installation Name: White Sands Missile Range		
IPMC Name/Email: cristina.l.rodden.civ@mail.mil		
Reviewed and Approved as of: 20 Oct 2020		
PMC Reviewer: William B. Miller, Ph.D., telework: 210-793-7893; 210-466-1308; william.b.miller54.civ@mail.mil		
Full Pesticide Trade Name	**EPA Registration No.**	**Active Ingredients**
Advion Ant Bait arena	100-1485	Indoxacarb - 0.1%
Advion Ant Gel	100-1498	Indoxacarb - 0.05%
Alligare Imazapyr 45L	81927-24	Imazapyr, isopropylamine salt - 52.6%
Alpine WSG	499-561	Dinotefuran - 40.0%
Altosid XR Briquets	2714-421	S-Methopreme - 2.1%
Answer Bait Blox	56-57	Diphacinone - 0.005%
Arilon	352-776	Indoxacarb - 20%
Arsenal Powerline	241-431	Imazapyr - 26.7%
Battleship III	228-453-5905	MCPA - 37.84%, Fluroxypyr - 4.45%, Triclopyr - 4.07%
Bedlam	73748-4	3-phenoxyenzyl-(1RS<3RS)-2, 2-dimethyl-3-(2methylpop-1-enyl) cyclopropanecarboxylate - 0.40%; N-Octyl bicycloheptene dicarboximide - 1.60%
Bifen I/T	53883-118	Brodifecoum - 7.9%
Cyzmic CS	53883-261	Lambda-Cyalothrin - 9.7%
Demand CS	100-1066	Lambda-Cyalothrin - 9.7%
D-Fense SC	53883-276	Deltamethrin - 4.75%
Delta Dest	432-772	Deltamethrin - 0.05%
Esplanade 200 SC	432-1516	Indaziflam - 19.05%
Extinguish Plus	2724-496	Hydramethylnon (CAS #67485-29-4) - 0.365% S-Methoprene (CAS #65733-16-6) - 60.250%
Final All-Weather Blox	12455-89	Brodifecoum - 0.005%
Frequency	7969-281	topramezone - 29.7%
J.T. Eaton Peanut Butter Bait Blox	56-42	Diphacinone - 0.0005%
KAPUT-D-Gopher Bait	72500-9	Diphacinone - 0.005%
Intice Ant Gel	73079-8	Borax 3%
Master Line Kontrol 4-4 Mosquito	73748-4	Piperonyl Butoxide Technical- 4.6%, Permethrin - 4.6%

Maxforce Complete	432-1255	Hydramethylnon - 1%
Maxforce Quantum	432-1506	Imidacloprid - 0.03%
Maxxthor SC	81824-5	Bifenthrin - 7.9%
Milestone	62719-519	Triisopropanolamine salt of aminopyralid - 40.6%
Niban	64405-2	Boric Acid - 5%
Nuvan Prostrips	5481-553	Dichlorvos - 18.6%
Deltadust	432-772	Deltamethrin - 0.05%
Pendulum AquaCap	241-416	Pendimethalin - 38.7 %
Perspective	432-1569	Aminocyclopyrachlor - 39.5%, Chlorsulfuron - 15.8%
PH3	1015-76	Aluminum Phosphide - 60%
Phantom	241-392	Chlorfenapyr - 21.45%
P.I. Contact Insecticide	499-444	Piperonyl butoxide - 4.0%, Pyrethrins 0.5%
Polaris AC Complete	288-570	Imazapyr - 28.7%
Purge III	279-3388	MGK 264 - 3.05%, Piperonyl butoxide 1.95%, Pyrethrins - 0.975%
Ranger Pro	524-517	Glyphosate - 41%
Remedy	62719-552	Triclopyr - 60.45%
Rozol Pocket Gopher Bait	7173-184	Chlorophacinone - 0.005%
Sahara	241-372	Imazapyr - 7.78%, Diuron - 62.22%
Surflan AS	70506-44	Oryzalin - 40.4%
Suspend Polyzone	432-1514	Deltamethrin - 4.75%
Tapout	5905-578	Clethodim - 12.6%
Triclopyr 4	81927-11	Triclopyr - 61.6%
Trycera	5905-580	Triclopyr - 29.4%
Vendetta Plus Cockroach Gel Bait	1021-2593	Abamectin - .05%, Pyriproxyfen - 0.5%
Wasp & Hornet Killer	499-392	Tetramethin - 0.1%, Permethrin - 0.25 %, Piperonlyl butoxide - 0.5%

APPENDIX 2
POINTS OF CONTACT

WHITE SANDS MISSILE RANGE POINT OF CONTACTS

Installation POC Name	Rank/Title	Office	Telephone Number
Cristina Rodden	Civilian/ IPMC/PMQAE/ Wildlife Biologist	DPW Environmental Division	575-678-4438
	Major/ Occupational Health Doctor	McAfee Medical Center	575-678-3134
Chief Carlos Soto	Civilian Fire Chief	DES	575-678-0314
	Civilian /Safety Officer	Safety Directorate	575-678-5746
Trish Cutler	Civilian Wildlife Biologist/ T&E Species Biologist	DPW Environmental Division	575-678-2029
Debbie Nethers	NEPA Manager / Ecologist	DPW Environmental Division	575-678-2298
William Miller	PhD/Civilian /PMC	US Army Environmental Command	210-466-1306

APPENDIX 3
CERTIFICATES OF TRAINING/COMPETENCY

Quality Assurance Evaluators (PM QAEs) as well as all Certified Applicators (DoD-Certified or Contract State-Certified).

Title	Name	E-Mail Address	Telephone Number	Accreditation Certificate Number
IPMC	Cristina Rodden	cristina.l.rodden.civ@mail.mil	5756784438	IPMC-136-09-0818
PM QAE	Cristina Rodden	cristina.l.rodden.civ@mail.mil	5756784438	QAE-136-09-0818
PM QAE	Humberto Fernadez	humberto.fernandez1.civ@mail.mil	5759930344	QAE-174-01-0818
PM QAE				

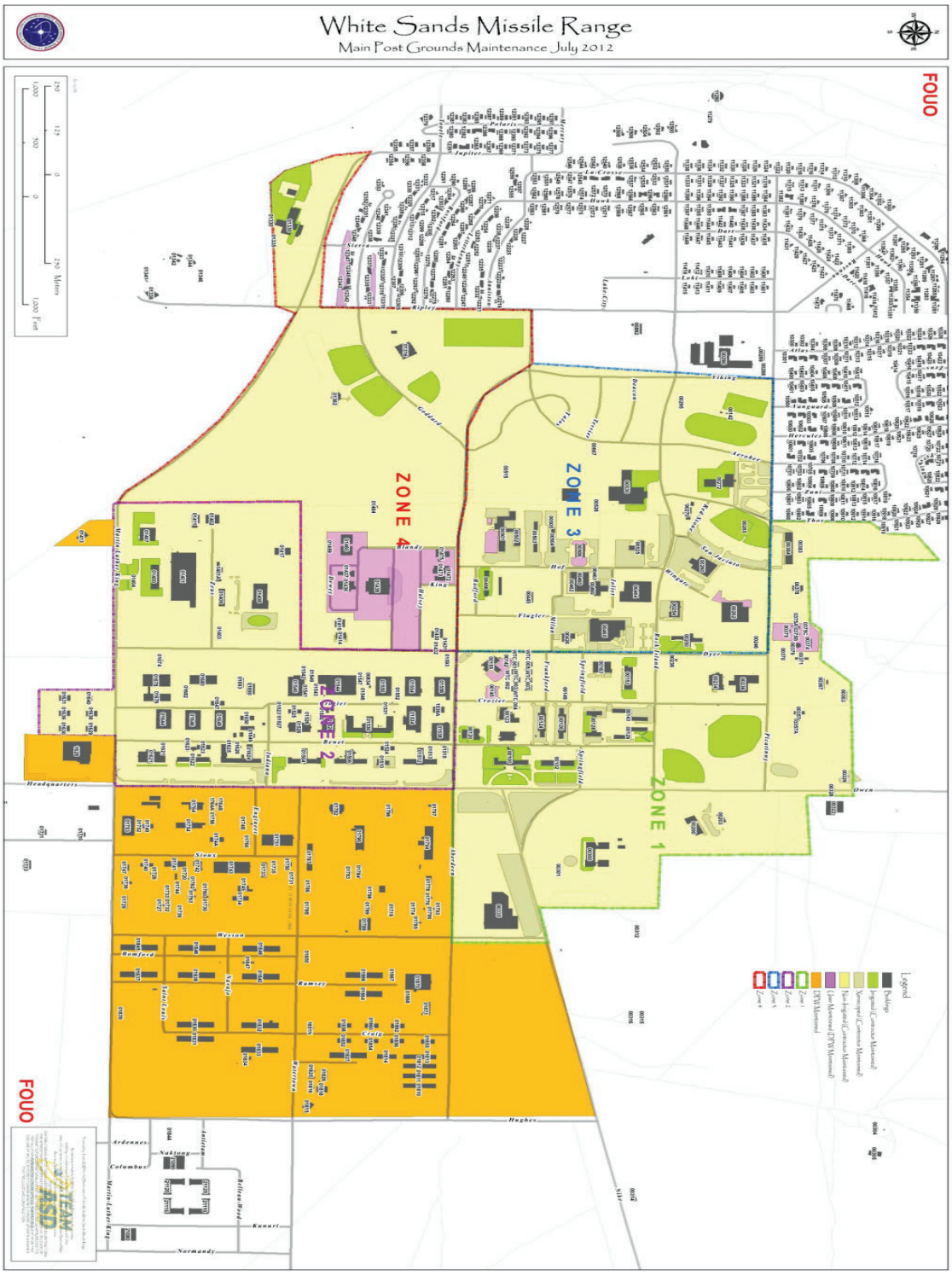
Please provide the following information about the pesticide applicators (either in-house or contracted.)
NOTE: Also include any U.S. Army employees who are in training for certification.

Name	Organization	DoD/State Cert. Number	Category/Subcategory Number(s) or Letter(s)
Mark Pacheco	WSMR	A-013-16-0519	2,3,5,6,7,8
Humberto Fernandez	WSMR	AF-174-01-0318	2,3,5,6,7,8
Miche Tellez	Socorro Janitorial Services Inc_DTRA PHETS	NM 66210	6B
Elijah Bason Paul	Tresco Inc.	NM 65537	3B
Raymond Pierce	USDA-APHIS WS	NM 64048	7B
Boyd Prouty	Industrial Weed Control	NM 54110	3B, 6B

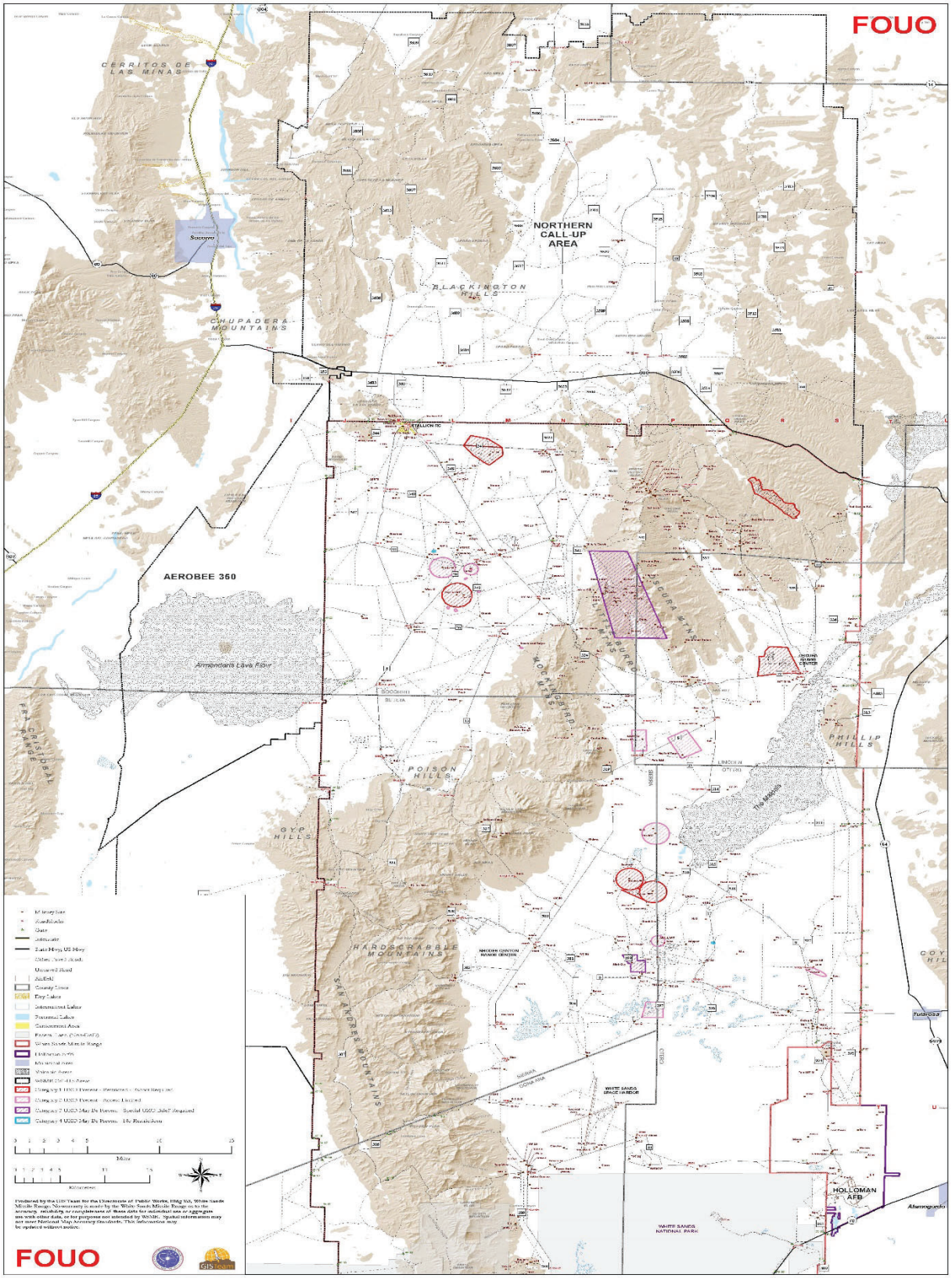
Name	Organization	DoD/State Cert. Number	Category/Subcategory Number(s) or Letter(s)
David King	Industrial Weed Control Inc.	NM 54336	3B, 6B
Steve Morales	Industrial Weed Control Inc.	NM 61731	3B, 6B
Victor Nunez	Industrial Weed Control Inc.	NM 64758	3B, 6B
Dan Calkins	Industrial Weed Control Inc.	NM 66020	3B, 6B
Jarrett Samaniego	Industrial Weed Control Inc.	NM 64759	3B, 6B
John Galvan	Rentokil, North America, Inc dba NM Pest Control	NM 65642	3A, 3B, 6B, 7A, 7B, 8
Miguel Salazar	Rentokil, North America, Inc dba NM Pest Control	NM65444	3A, 3B, 6B, 7A, 7B, 8

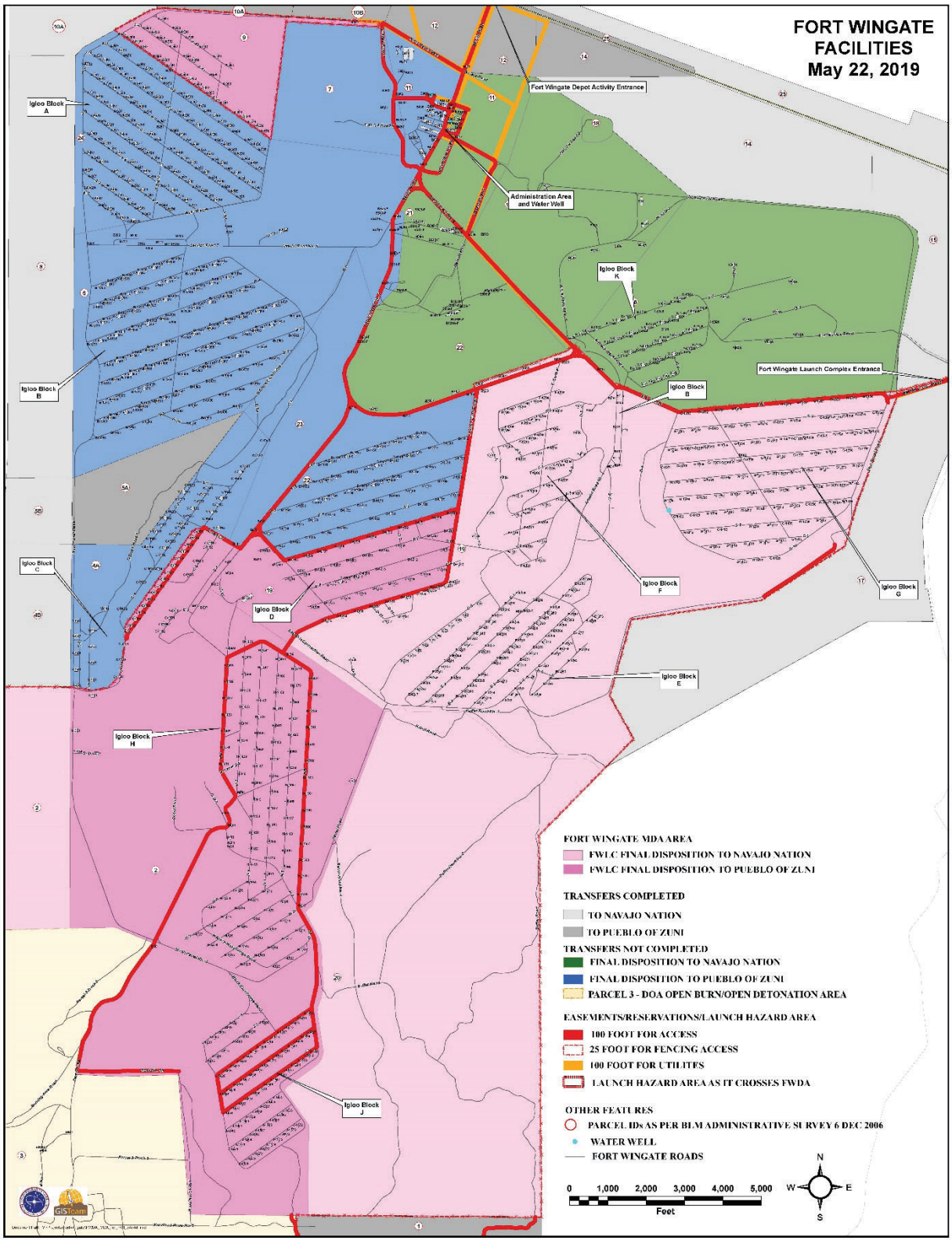
APPENDIX 4
INSTALLATION MAPS

Main Cantonment



WSMR UPRANGE and NCUPA




FORT WINGATE
FACILITIES
May 22, 2019
Igloo Block A
Igloo Block B
Igloo Block C
Igloo Block D
Igloo Block E
Igloo Block F
Igloo Block G
Igloo Block H
Igloo Block J
Igloo Block K
Igloo Block B
Fort Wingate Depot Activity Entrance
Administration Area and Water Well
Fort Wingate Launch Complex Entrance
FORT WINGATE MDA AREA
FWLC FINAL DISPOSITION TO NAVAJO NATION
FWLC FINAL DISPOSITION TO PUEBLO OF ZUNI
TRANSFERS COMPLETED
TO NAVAJO NATION
TO PUEBLO OF ZUNI
TRANSFERS NOT COMPLETED
FINAL DISPOSITION TO NAVAJO NATION
FINAL DISPOSITION TO PUEBLO OF ZUNI
PARCEL 3 - DOA OPEN BURN/OPEN DETONATION AREA
EASEMENTS/RESERVATIONS/LAUNCH HAZARD AREA
100 FOOT FOR ACCESS
25 FOOT FOR FENCING ACCESS
100 FOOT FOR UTILITES
LAUNCH HAZARD AREA AS IT CROSSES FWDA
OTHER FEATURES
PARCEL IDs AS PER BLM ADMINISTRATIVE SURVEY 6 DEC 2006
WATER WELL
FORT WINGATE ROADS
0 1,000 2,000 3,000 4,000 5,000
Feet
N
W
E
S
GISTeam

APPENDIX 5
DPW PESTICIDE INVENTORY LIST

DPW INVENTORY

Pesticide Name	EPA Reg #	Location	Pest	Formulation	Quantity of Undiluted Pesticide (enter # only and units in	Units	Rate per Gallon of Solution	Quantity of Final Solution (enter # only and units in next column)	Units	Final Concentration % of Solution*	Total Pounds of Active Ingredient	On Hand
INSECTICIDES												
Altosid XR	2724-421	Ponding Areas	Mosquito larvae	Briqutes	Not Used	lb		Not Used	lb	2.1	Not Used	25 lb
Answer	56-57	Exterior Areas	Gophers	Bait Block	Not Used	lb		Not Used	lb	0.005	Not Used	240 lb
Arilon	352-776	Bldgs. / Ext. Areas	Ants	Granules	31.020	oz	0.66	31.020	oz	0.0078125		25 oz
Bedlam Plus	1021-2569	Interior Bldgs	Bed Bugs	Aerosol	Not Used	oz		Not Used	oz	1.45	Not Used	170 oz
Delta dust	432-772	Bldgs. Voids	Bees	Powder	Not Used	oz		Not Used	oz	0.05	Not Used	31 oz
Demand CS	100-1066	Bldgs. / Housing	General Insecticide	CS	24.000	oz	0.80	24.000	oz	0.0078125		96 oz
Extinguish Plus	2724-496	Exterior Areas	Ants	Granules	Not Used	lb		Not Used	lb	0.615	Not Used	17 oz
J.T. Eaton PB Bait Blok	56-42	Bldgs. / Bait Boxes	Mice	Bait Block	96.438	lb		96.438	lb	0.005		558 lb
Kaput	72500-9	Open Fields	Gophers	Grain Bait	Not Used	lb		Not Used	lb	0.005	Not Used	370 lb
Kontrol 4-4	73748-4	Mosiquitoes	Mosquitoes	Liquid	Not Used	gal		Not Used	gal	9.2	Not Used	598 gal
Maxforce® Complete	432-1255	Exterior Areas	Insects	Granules	Not Used	oz		Not Used	oz	1	Not Used	25 oz
Maxforce® Quantum	432-1506	Interior Bldgs	Ants	Gel bait	37.000	gm		37.000	gm	0.03		1.25 gm
Nuvan Prostrips	5481-553	Unoccupied Bldgs.	Spiders	Strips	416.000	gm		416.000	gm	20		907 gm
PH3	1015-76	Open Fields	Gophers	Gas Tablet	Not Used	tabs		Not Used	tabs	55	Not Used	20 tabs
P.I.	499-444	Int/Ext Bldg/Housing	Bees	Aerosol	48.000	oz		48.000	oz	4.5		54 oz
Purge III	279-3388	Int Bldg	Gnats/Flys	Aerosol	29.000	oz		29.000	oz	5.975		37 oz
Wasp & Hornet	499-392	Int/Ext Bldg/Housing	Wasp	Aerosol	22.000	oz		22.000	oz	0.85		135 oz
HERBICIDES												
Battleship III	228-453-5905	Bldgs / Lots	Weeds & Grasses	Liquid	208.000	pt		208.000	pt	2-3pints/acre		40 gal
Esplanade 200SC (2 A/R)	432-1516	Bldgs / Lots	Weeds & Grasses	Liquid	Not Used	oz		Not Used	oz	0.003	Not Used	2.25 gal
Pendulum AquaCap	241-416	Bldgs / Lots	Weed Pre-emergent	Liquid	7.500	gal		7.500	gal	0.003		70 gal
Perspective	432-1569	Bldgs / Lots	Weeds & Grasses	Powder	200.000	oz		200.000	oz	1.75-11oz/acre		8.5 lb
Polaris AC Complete (2 A/R)	228-570	Bldgs / Lots	Weeds & Grasses	Liquid	52.000	gal		52.000	gal	0.0025		37.5 gal
Ranger Pro	524-517	Bldgs / Lots	Weeds & Grasses	Liquid	375.500	gal		375.500	gal	2		155 gal
Sahara	241-372	Bldgs / Lots	Sterilent	Powder	Not Used	lb		Not Used	lb	7-10lbs/acre	Not Used	40 lb
Triclopyr 4	81927-11	Bldgs / Lots	Woody Plants	Liquid	6.000	gal		6.000	gal	1		5 gal

APPENDIX 6
STATEMENTS OF WORK FOR PEST MONITORING/SURVEILLANCE AND CONTROL SERVICES

Introduction

Exemplar statements of work for contract "pest monitoring and surveillance services" and for "pest control services" are found below.

Many installations are reliant upon the services of outside pest control contract services. The AFPMB encourages use of IPM contract services where the installation has determined that they are economically advantageous or when advantageous for non-routine, large-scale, or emergency services, especially when specialized equipment or expertise is needed. However, use of contract services does require close monitoring and recordkeeping. Regularly scheduled, periodic pesticide applications are not approved for DoD property except in situations where the installation pest management plan clearly documents that no other technology or approach is available to protect personnel or property of high value. Installations shall not use preventive pesticide treatments, to include automated misting devices, unless the PMC has given approval based upon current surveillance information or records documenting past disease vector or pest problems that require this approach.

Any installation using contractor pest control services, including termiticide applications for new construction, should have a properly trained DoD employee who is a designated Pest Management Quality Assurance Evaluator (PMQAE). DoD-certified pesticide applicators or PMQAEs must inspect contract applications of pesticides for the control of termites and other wood-destroying organisms.

Only a DoD employee may directly oversee Federal contracts. None of the PMQAE duties may be delegated to a non-Federal employee. Each installation PMQAE must be either a DoD certified pesticide applicator, or obtain DoD PMQAE training and certification. The requisite PMQAE training may be obtained through any of the DoD Service schoolhouses. Training opportunities are listed on the AFPMB website at: http://www.afpmb.org/pubs/courses/courses.htm

ARMY STANDARD PERFORMANCE WORK STATEMENT FOR
INTEGRATED PEST MANAGEMENT SERVICES

FORWARD

The intent of this generic performance work Statement (PWS) is to provide a framework that installation organizations responsible for pest management services can use to solicit Integrated Pest Management (IPM) services. This PWS was written to result in a performance-based contract (PBC).

The installation should carefully assess their IPM requirements and the uncertainties involved in contract performance and select a contract type and structure that places an appropriate degree of risk, responsibility, and incentives on the Contractor for optimal performance. A hybrid contract (i.e., both fixed-price and cost-type tasks) may provide the best vehicle for optimal performance. Potential Contractors should be asked to prepare a Contractor Work Plan (CWP) as part of their proposal. They should be evaluated on the strength of their proposal and the cost estimate.

A designated DoD-certified Pest Management Consultant is required to review installation pest management service contracts and is available to assist with the evaluation of Contractor proposals. The following is a framework for developing a PWS to contract for performance based IPM services. It is the responsibility of the specification writer to insert installation/site specific information and requirements throughout the document. All text in italics must be customized. The specification writer should be sure to provide all necessary information for the potential contractors [such as building lists and pests present – see Appendix (A)]. Once drafted, a designated Army Pest Management Consultant will review and approve the technical specifications for inclusion in the contract solicitation.

Potential contractors should be required to submit a draft CWP with their proposal. Once the contractor is chosen, they will work together with the government representative to finalize the CWP.

INTEGRATED PEST MANAGEMENT SERVICES PERFORMANCE BASED CONTRACT (PBC) GENERIC PERFORMANCE WORK STATEMENT (PWS)

1.0 GENERAL INFORMATION

The Contractor shall provide integrated pest management (IPM) services to prevent and control a wide variety of arthropod and vertebrate pests including but not limited to cockroaches, termites, ants, fleas, stored product pests, mosquitoes, mice, rats, bats, bees, and wasps at <<Insert Installation Name>><<Insert any specifics regarding parts of the installation that are NOT included in this contract (i.e., Desert Emerald Recreational Area, specific buildings, major pests not listed above, etc.)>>

The purpose of this contract is to establish an environmentally sound and effective IPM program to prevent general arthropod and vertebrate pests and disease vectors from adversely affecting Army installation operations. This includes, at a minimum:

1. Thoroughly inspecting all areas suspected of pest infestation(s) and surrounding areas/facilities as necessary.

2. Communicating constantly with the government COR regarding planned actions and recommendations.

3. Recommending structural and procedural modifications to reduce food, water, harborage and access used by pests.

4. Using appropriate non-chemical technologies to control pests, where possible.

5. Judiciously using pesticide products, formulations and application methods that present the lowest potential hazard to human health, non-target animals and the environment.

6. Recording and reporting all integrated pest management operations including surveillance, inspections, non-chemical and chemical control.

Federal agencies are mandated by Public Law (Section 136r-1 of title 7, United States Code) to use IPM. The Contractor shall use best management practices and recognized industry standards for managing pests such as those established by national pest management organizations, and follow the guidance provided by State Pesticide Regulatory agencies and State institutions of higher learning. However, the Contractor shall be responsible for complying with all Federal, DoD, Army, State, and local laws, including but not limited to DoDM 4150.07, the National Environmental Policy Act of 1969, PL 92-516, the Federal Insecticide, Fungicide and Rodenticide Act of 1972, as amended and AR 200-1. This Performance Work Statement (PWS) reflects current Army and DoD requirements, policies and practices, allowing offers to propose a price and solution to known requirements.

The Contractor will develop and follow a Contractor Work Plan (CWP) to accomplish the requirements of this contract.

2.0 DEFINITIONS

Certified Applicator/Operator: Any individual who applies pesticides or supervises the use of pesticides, and who has been authorized to do so by successfully completing a training program approved by the EPA, followed by formal certification by DoD or a State.

Contracting Officer's Representative (COR): An individual who is responsible for technical administration of the contract and assures proper Army surveillance of the Contractor's performance.

Contractor Work Plan (CWP): A Contractor-developed document submitted as part of the Contractor proposal that describes how the requirements of this contract will be met. The plan establishes strategies and methods for conducting a safe, effective, and environmentally sound IPM program.

Integrated Pest Management Coordinator (IPMC): The individual designated by the installation Commander to coordinate and oversee all pest management activities on the installation.

Integrated Pest Management (IPM): A planned program incorporating a wide variety of technological and management practices to achieve long-term and environmentally-sound pest suppression and prevention. IPM uses targeted, sustainable methods including education/communication, habitat modification, non-chemical control, biological control, and, where necessary, the use of pesticide compounds, formulations, and application methods that present the least potential hazard to humans and the environment. Federal Agencies are mandated by Public Law (Section 136r-1 of Title 7, USC) to use IPM.

Integrated Pest Management Plan (IPMP): A long-range, well-defined planning and operational document that describes the IPM program. Written pest management plans are required as a means of establishing and implementing IPM.

Out of Cycle Pesticide Use Request (OCPUR): The OCPUR is a supplement to the PUP. An OCPUR is a pesticide use request for pesticides that were not included in the installation's annual Pesticide Use Proposal. (See below for information on the Pesticide Use Proposal)

Pesticide: Any substance or mixture of substances, including biological control agents, that may prevent, destroy, repel, or mitigate pests and is specifically labeled for use by the EPA. Also, any substance or mixture of substances intended for use as a plant regulator, defoliant, desiccant, or biocide. The AFPMB does not review or approve disinfectants or biocides.

Pesticide Use Proposal (PUP): The PUP documents the exact pesticides proposed to be used on an installation the following year. The pesticides listed on this proposal must be approved by the designated DoD-certified Army Pest Management Consultant through the COR and IPMC prior to use. The Army Pest Management Consultant confirms that the pesticides are registered by the EPA and State and are being used for the correct target site and pest.

3.0 PERFORMANCE OBJECTIVES AND STANDARDS

Table 1: Performance Requirements Summary

Performance Objective	Performance Standard	Acceptable Level of Performance
Develop approved Contractor Work Plan (CWP) to include an IPM Plan. Templates for developing the IPM plan are included in Technical Exhibit (A) *electronic files provided upon request* Complete one IPM Outline for each pest for each site type [Technical Exhibit (A)]	CWP includes information required in section 4.1 and Technical Exhibit (A) of this PWS and is submitted to the COR. Plan complies with Federal, State and industry best management practice standards. Army approval through the COR.	Draft CWP includes 100% of the information required in section 4.1 of this is PWS and is submitted within 15 days of contract/task award. Final CWP submitted within 30 days of receipt of COR comments on the draft.
Develop a Quality Assurance Surveillance Plan (QASP).	QASP follows the template found in Technical Exhibit (E) and is submitted to the COR. Army approval through the COR.	Draft QASP follows the template found in Technical Exhibit (E) and is submitted within 15 days of contract/task award. Final QASP submitted within 30 days of receipt of COR comments on the draft
Successfully implement all aspects of the approved CWP for all pests/sites identified in this PWS. Plan must be followed for scheduled services as well as unscheduled services, as appropriate. All IPM standards must be met: All sites thoroughly inspected before starting control efforts. Report prepared and submitted to COR on conditions conducive to pest infestation. Non chemical pest management operations as a	CWP is followed. Pests are controlled to the standards specified in the CWP IPM outlines.	IPM standards are met 100% of the time for all services for each pest for each site type. CWP is followed 100% of the time for all services for each pest for each site type. Pests are controlled to the standards specified in the CWP IPM outlines 80% of the time for each pest for each site type.

first resort to the maximum extent possible. Judicious use of pesticides where pesticide applications are necessary. Surveillance implemented to monitor pest populations and effectiveness of control measures. Pest management operations recorded and reported in approved format.		
Submission of all required documentation listed in the PWS and summarized in Exhibit (B).	Army approval through COR. 100% of required reports submitted on time in accordance with specifications in Technical Exhibit (B). 100% of required reports submitted contain required information.	Reports submitted "on time" 90% of the time. Reports required to be corrected by the Contractor less than 25% of the time.

4.0 PROJECT MANAGEMENT

The Performance Based Contracting (PBC) approach requires careful coordination of project activities to ensure that all stakeholders are kept informed of the project status, existing or potential problems, and any changes required to prudently manage the project and meet the needs of the Installation's project stakeholders and decision-makers. The Contractor shall be responsible for the following project management activities:

4.1 Contractor Work Plan

The Contractor shall develop and maintain a detailed Contractor's Work Plan (CWP). The CWP, based on the schedule prepared as part of the Contractor proposal, shall specify the schedule, technical approach, and resources required for the planning, execution, and completion of the performance objectives. Contractors may review the installation's historical records of pest activity and abatement actions, survey facilities and grounds, and consult with the IPMC in development of a plan.

The CWP shall address continuous monitoring, pest response and removal procedures, record keeping, warranties, education and communication to installation personnel to prevent nuisance pests and disease vectors in and around specified buildings [Technical Exhibit (A)]. The CWP shall include labels, MSDS sheets, and the planned pesticide use proposal [Technical Exhibit (C)] and comply with all applicable local, State, and Federal regulations.

As part of the CWP, the Contractor shall develop a schedule that fully supports the technical approach and that outlines the due dates and cost expenditure percentages for all milestones and payable deliverables. A payment plan shall be included with the schedule that may allow for partial payments to the Contractor based on successful completion of interim milestones proposed by the Contractor. It is the Army's intent to make all payments after verification of progress in accordance with this schedule. The Contractor shall coordinate activities with the COR to ensure that the proposed project schedule does not conflict with other Contractor activities on site, or interrupt Installation mission activities.

The Contractor shall submit the second draft (first draft is submitted with the Request for Proposal) of the CWP within fifteen (15) days of contract award. The draft CWP and subsequent revisions are subject to Army review and approval, through the COR. The Contractor shall submit the final CWP within 30 days of receipt of COR comments on the draft CWP. A contract payment milestone will be established for when the Army Pest Management Consultant approves the final CWP via COR.

5.0 EXPERTISE AND NECESSARY PERSONNEL

All Contractor personnel shall understand IPM principles and practices and be capable of implementing them. The Contractor shall have the background and experience to be capable of identifying pests and knowledgeable about pest life cycles, habits and the conditions that affect pest populations. Additionally, the Contractor shall have a written IPM policy describing their overall objectives relating to IPM.

5.1 Licensing and Certification

5.1.1 Business License

The Contractor shall possess a business license issued by the State(s) of <<Insert State Name>> to provide pest control services. The Contractor shall provide proof of licensing to the government prior to contract award.

5.1.2 Certification

All Contract personnel employed who will apply or supervise the application of pesticides under this contract shall possess commercial certification by the State of << Insert State Name(s)>> in the appropriate EPA-approved State categories for the work requirements of the contract. This contract work will require the pesticide applicator certification categories listed in Technical Exhibit (D). All Contractor personnel who apply pesticides shall have full commercial certification.

Neither private applicator certification nor registered technician certification are acceptable. Proof of State certification shall be provided to the government prior to contract award.

6.0 ADDITIONAL REQUIREMENTS

6.1 Vehicles

Vehicles used for pest control operations shall not be used for other purposes in connection with this contract. Vehicles shall be secured at all times to prevent unauthorized access. All pesticides carried on vehicles shall be stored in a locked compartment separate from the cab of the vehicle. Vehicles shall be equipped with a fire extinguisher, emergency wash water, a portable emergency eye wash and a portable spill and decontamination kit. Vehicles shall be marked as required by State <<Insert State Name>> law.

6.2 Equipment

The Contractor shall repair and maintain all equipment in accordance with manufacturer's instructions. Equipment shall be in good operating condition, free of visible deterioration, shall not leak, and shall be calibrated to apply pesticides in accordance with the pesticide product label. Proof of calibration may be requested by the government. Equipment that has failed shall be replaced and/or repaired by the Contractor prior to resuming operations. The Contractor must clearly and plainly mark all pesticide application equipment including rodent bait stations and glue traps with the company's name, a point-of-contact, and phone number. The Contractor shall assume responsibility for all Contractor-owned equipment or other items.

6.3 Pesticides

The Contractor shall procure, handle, store, and apply pesticides in strict accordance with the EPA registered pesticide label. Only certified applicators shall operate pesticide application equipment. All pesticides shall be used in accordance with Federal, << Insert State Name>>, local laws, and installation regulations.
Prior to use, the Contractor shall request approval for all pesticides using the PUP, [Technical Exhibit (C)]. The Contractor shall ensure that all pesticides proposed for use on <<Insert Installation Name>> are EPA registered and registered with the <<Insert State Agency Responsible for Pesticide Registration>>. Approvals may be made and limited to specific pests/sites. During the term of this contract the Contractor shall submit an OCPUR for additional pesticides to the COR for review and approval by the designated DoD-certified Pest Management Consultant. The Contractor shall not deviate from the PUP-listed pesticides without prior approval from the COR. The PUP shall reflect only the currently approved pesticides for application on the installation and updated as additional products are approved and/or other products deleted through an OCPUR approved by the Army Pest Management Consultant via the COR.

The Contractor shall maintain a binder containing labels and MSDSs for all pesticides used, and have it readily available for the COR's inspection at all times.

6.4 Pesticide Storage, Mixing and Disposal

6.4.1 Pesticide Storage

The Contractor shall not store pesticides on Government property. All pesticides shall be stored off Government property, or inside of the secured Contractor vehicle(s). <<Do not alter this section without prior approval from a designated Pest Management Consultant and the installation Environmental office.>>

6.4.2 Pesticide Mixing

The Contractor shall not mix pesticides on Government property. All pesticides must be mixed prior to arrival at the installation.

<<Note to Specification Writer: If you have appropriate mixing facilities located on the installation and if the Environmental Department has approved pesticide mixing on the installation you may use the following wording.>><<The Government will designate a location or locations where pesticides may be mixed on the installation. An air gap must be present between the formulation tank and fill hose during all pesticide mixing operations that use potable water. In addition, there must be a backflow prevention device furnished by the Contractor and installed on all hoses when filling formulation tanks with potable water. If the Contractor mixes pesticide away from a hardstand mixing area they must use a portable mixing pad.

6.4.3 Pesticide Disposal

All pesticides, rinse water, and containers shall be disposed of in accordance with label directions. The Contractor shall dispose of any pesticides, pesticide containers, pesticide residue, pesticide rinse water, or any pesticide contaminated article at an authorized disposal area off of Government property.

6.5 Pesticide Spills

The Contractor shall immediately report all spills of hazardous materials to the Contracting Officer and shall be financially responsible for the clean-up of any spills. Spills shall be managed in accordance with the installation's Spill Contingency and Countermeasure Plan. The Contractor shall have on-hand spill containment equipment and materials necessary to contain spills of pesticides and other pest control materials and supplies that are on the installation.

<<Note to Specification Writer: Consult with the installation environmental and fire department personnel to determine specific installation requirements for Contractor spills of hazardous materials.>>

6.6 Personal Protective Equipment

The Contractor shall provide Personal Protective Equipment (PPE) to each of their pest control applicators. This equipment shall include, at a minimum, the PPE required by the applicable pesticide labels and MSDSs.

6.7 Occupied Spaces

Liquid or aerosol pesticide shall not be applied in occupied spaces when people are present. Dust pesticide formulations shall not be applied in occupied spaces if the dust can be carried by air currents to people. Gel baits, cockroach, rodent and ant bait stations or other pesticide formulations that do not volatize or carry on air currents may be applied in occupied spaces.

7.0 RECORDS AND REPORTS

7.1 Pest Management Records

The Contractor shall prepare, submit, and maintain daily and monthly pest management records and reports for each pest management service provided to include surveillance, non-chemical controls and pesticide applications. The Contractor shall use a COR-approved electronic reporting spreadsheet or other computerized system. Records shall be accurate and complete. Records shall include: the installation name, pesticide common name from the label that was applied, pesticide formulation, EPA Registration Number, target pest, the type of application and final concentration applied, the amount of final spray or dry formulation, date of application, location of the service (building number, apartment number, training area, etc. that accurately identifies the location), the pounds of active ingredient applied, and the pest controller's name and certification number.

All pest management records shall be submitted electronically (via disk or e-mail attachment) to the COR monthly.

Records rejected by the COR due to inadequate or incorrect information shall be corrected and returned to the COR by the Contractor at no additional cost to the Government within 10 business days.

7.2 Reports of Conditions Conducive to Pest Infestation

When the Contractor notices a condition that is promoting or is conducive to pest infestations they shall submit a report describing findings and recommendations to correct these conditions. Conditions may include sanitation problems, improper food storage practices, inadequate exclusion policies, or damaged or missing exclusion devices. The Contractor shall report these deficiencies to the COR within one business day after citing conditions. Report must be legible and can be done electronically or hand-written.

7.3 Termite Warranties

The Contractor shall provide the COR with a five (5) year written warranty against existing and new infestations of subterranean termites for the areas treated. The warranty shall State the chemical concentrations, rates, and methods of application complied in accordance with the EPA label. The warranty period shall commence from the date of acceptance by the COR. Visual sightings of termites, additional damage, new mud tubes, or other signs of living termites within the structure during the warranty period, shall be grounds for re-treatment at the Contractor's expense. The Contractor shall also cover the repair of damage from termite infestations during the warranty period.

8.0 GOVERNMENT FURNISHED FACILITIES, MATERIALS AND SERVICES

The Government will furnish an approved computerized reporting system (a file or program, only).
<<Note to Specification Writer: Define any equipment, facilities and services the Government will provide to the Contractor in connection with this contract to include requirements for maintaining pesticides and mixing areas to Army standards. Include utility services such as water, sewage, electrical, etc.>>

9.0 CONTRACTOR FURNISHED ITEMS

The Contractor shall furnish all labor, supervision, transportation, facilities, equipment, material, and services to perform the requirements of this contract using IPM techniques. Such equipment and use of that equipment shall be subject to the inspection and approval of the COR.

10.0 SECURITY

All Contractor personnel assigned work on the installation shall wear identification badges that include the applicator’s name and color photograph and the Contractor’s company name and address. Vehicles used by the Contractor shall have the name of the Contractor’s company, meet all State laws for identification and placarding, and have lockable storage compartments for storing pesticides. All pesticides shall be secured when not in use.

<<Note to Specification Writer: Include any installation specific requirements such as security clearances and pass regulations here.>>

11.0 QUALITY STANDARDS AND THRESHOLDS

The Contractor shall meet the quality standards established in the approved CWP. The Contractor’s performance will be evaluated based upon the QASP. Failure to meet any of the standards may result in re-performance by the Contractor at no cost to the Government, the Contractor paying the Government the use of another Contractor to perform the work, or cancellation of this contract. Re-performance by the Contractor shall be completed within 1 business day.

12.0 SCHEDULE OF SERVICES

It shall be the Contractor's responsibility to schedule work with the COR. The Contractor shall be responsible for communicating with the COR for every service requested. The purpose of this communication is to coordinate the date and time of the service, permit access to the work site, and relay specific instructions for site preparation or entry.

12.1 Informing Occupants

The Contractor shall inform occupants of the specific day and time (AM or PM) of scheduled work in a reasonable amount of time so that they can make accommodations, when required. At the time of scheduled services, the Contractor shall inform occupants regarding the necessary preparatory procedures that must be performed prior to receiving service, the callback warranty period, and the time when it is safe to return to the facility. The need for preparatory procedures does not apply in cases of emergency or between occupancy services.

12.2 Missed Schedules

If the Contractor fails to meet the scheduled appointments through no fault of the occupants, the Contractor shall provide the service at the convenience of the occupant. The Contractor will report such missed appointments to the COR no later than 0800 the next business day. The Contractor shall make three (3) attempts to accomplish this assigned work within 5 business days of the scheduled service. If the Contractor is unable to accomplish assigned work through no fault of his own, he shall report such unaccomplished scheduled items to the COR, and the Service Order will be cancelled.

12.3 Household and Facility Furnishings and Government Property

The Contractor shall return to their original positions any household or facility furnishings, equipment and other materials or items that are moved by the Contractor during the performance of services. The Contractor shall be responsible for the repair, replacement or other compensation to the Government or any private individual for property damage to include but not limited to furniture, equipment, cultivated plants and grasses as a result of the performance of pest control activities.

13.0 HOURS OF SERVICE

The Contractor shall arrange his work so as to minimize interference with the normal conduct of Government business and shall coordinate services to be performed with the building coordinator. The Contractor shall notify the COR if there are any changes to the work schedule or when it is necessary to perform work that will interfere with Government operations at least one (1) business day in advance.

14.0 RESPONSE TIMES FOR SERVICES

14.1 Unscheduled Services

The Contractor shall provide clear and effective procedures for receiving and responding to service calls and task orders during regular working hours. The Contractor shall provide a single local or toll-free telephone number for calling in all such task orders.

14.1.1 Service Call Work

A service call is an unscheduled request for pest control services initiated by designated Government representatives. The Government's work reception center will advise the Contractor by phone of all service call requests received and the classification of each call as either emergency or routine based on the definitions provided below. The government will make available for pick up at their work reception desk a description of the pest problem, date and time received, location, classification and other appropriate information. The Contractor shall turn in a copy of the work authorization form to the Government's work reception desk within 24-hours after the completion of the initial inspection and treatment for each service call.

14.1.2 Emergency Calls

Service calls will be classified as emergency at the discretion of the COR. Generally, emergency calls will consist of pest management operations to control pests that could affect the health or well-being of personnel. The Contractor shall respond immediately and must be on site to provide initial inspection and treatment within 2 hours after receipt of an emergency call. The government will not classify more than <<insert percentage of calls>> of the service calls issued to the Contractor as emergencies. <<Examples of "emergency calls" include live bat(s) found in a living or working area, active wasps/bees nest found in living or working area and snake or skunk found in a living or working area, etc.>>

14.1.3 Routine Calls

The KO will classify all non-emergency service calls as routine. The Contractor shall complete the initial inspection and treatment for each routine service call within two (2) business days after receipt. <<Examples of "routine calls" include cockroaches, silver fish, rodents, etc. found in a building or outside.>>

15.0 QUALITY CONTROL PROGRAM

The Contractor shall establish a complete quality control program to ensure that the requirements of the contract are met. As part of the Contractor's proposal, the Contractor shall describe the procedures they will use to perform quality control. These procedures shall include at least the following items:

15.1 Inspection System

The Contractor's quality control inspection system shall cover all the services Stated in this contract. The purpose of the system is to detect and correct deficiencies in the delivery and quality of services before the level of performance becomes unacceptable and/or the COR identifies deficiencies.

15.2 Checklist

The Contractor shall use a quality control checklist to evaluate contract performance during regularly scheduled and unscheduled inspections. The checklist shall include every building or site serviced by the Contractor as well as every task the Contractor is required to be performed.

15.3 Quality Control File

The Contractor's quality control file shall contain a record of all inspections conducted by the Contractor and any corrective measures taken. The Contractor shall maintain record of all inspections throughout the term of the contract and made available to the COR upon request.

15.4 Quality Report

The Contractor shall provide data to the COR for input to the pest management section of the EQR.

15.5 QASP

Because the Contractor shall develop the technical approach for this PBC, the Contractor shall also develop a draft Quality Assurance Surveillance Plan (QASP). The Contractor shall submit a draft QASP with the proposal using the QASP template provided in Technical Exhibit (E). The Contractor shall submit the final QASP with the CWP. The QASP should highlight key quality assurance activities or events that the COR will use to determine when Army inspections can be conducted to assess progress toward milestones. Activities identified in the QASP should be appropriately coded in the project schedule to allow for planning of QA inspections. The Contractor and COR will agree upon the final QASP and the COR will have the final approval of the QASP. Table 2 (Performance Requirement Summary) summarizes the minimum key elements planned for the QASP. The Contractor and COR will develop the final QASP. The final QASP will be will be based on the final CWP.

16.0 MILESTONES/DELIVERABLES

- Final approved CWP
- Final approved QASP
- Submission of all required documentation summarized in Exhibit (B).

Technical Exhibit A
Contractor Work Plan
Integrated Pest Management Outline
List of Buildings and Sites for Scheduled Services

Building #/Site	Building Type*	Square Feet	Comments **

*Choose one of the following building types:
AHB = Administrative/Housing/Barracks
FHS = Food Handing/Food Storage
SS = Sensitive Site (Hospital, Clinic, CDC, School)
OS = Outdoor Site
WS = Warehouse/Storage Sites
**Provide information on any prohibited practices, environmental concerns or other pertinent information.

Technical Exhibit A
Contractor Work Plan
Integrated Pest Management Outline

Outline #	Installation	Date

Pest	SITE:

*Acceptable Pest Level:
*Time to Achieve Control:
*Time to Maintain Control:

Surveillance

Methods:
Frequency:

Non Chemical Control Techniques

Type	Method
Physical? □	
Mechanical? □	
Cultural?□	
Biological? □	

Chemical Control Techniques

Basis for Treatment
Control Standard
NOTE: Specific pesticides should be listed on the Pesticide Use Proposal and labels and MSDSs should be maintained in a readily available file

Remarks

Sensitive areas:
Prohibited practices:
Environmental concerns:
Additional comments:

Technical Exhibit B
Required Documentation

All documentation/reports shall be submitted to the COR.

Spec Item	Report Title	Quantity	Due Date Frequency
3.0	Quality Assurance Surveillance Plan	1	First draft submitted with proposal. Second draft within 15 days of contract award. Final within 30 days of receipt of COR comments.
3.0	Integrated Pest Management Plan	1	First draft submitted with proposal. Second draft within 15 days of contract award. Final within 30 days of receipt of COR comments
4.1	Contractor's Work Plan	1	First draft submitted with proposal. Second draft within 15 days of contract award. Final within 30 days of receipt of COR comments.
5.1.1	Copy of State Business License	1 per State	With proposal. Copies of renewed licenses shall also be submitted, as necessary.
5.1.2	Copy of State Certification for Contractor Personnel	1 per person	With proposal. Copies of renewed certifications shall also be submitted, as they are renewed.
6.3	Pesticide Use Proposal (PUP)	1, then as required thereafter using OCPUR	With the proposal. Note: Any proposed changes in pesticide usage shall be submitted for COR approval by OCPUR at least 5 business days in advance of pesticide use.
7.1	Pest Management Records	1 per month	Electronically once per month by the 15th of the following month (Example: July data must be submitted by August 15).
7.2	Report of Conditions Conducive to Pest Infestation	As required	Within 1 business day after citing conditions
7.3	Five-year Termite Treatment Warranties	As required	Within 10 business days following the treatment

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Technical Exhibit C
Contractor Pesticide Use Proposal
Electronic Version Available Upon Request

Installation:	Year:	Date:

Pesticide Trade Name	Active ingredient(s) and (% AI)	EPA Registration No.	Formulation	Target Pest(s)	Proposed Pesticide Application Site	Signal Word	Federal or State RUP*?	State reg.?

The electronic version of this form can be found at http://aec.army.mil/usaec/pest/pest-pup.xls
* RUP = Restricted Use Pesticide.

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Technical Exhibit D
Pesticide Applicator Certification Categories

EPA Category*	State Equivalent Category
2: Forest Pest Control	
3: Turf and Ornamental Pest Control	
5: Aquatic Pest Control	
6: Right-of-Way Pest Control	
7: Industrial, Institutional, Structural and Health Related Pest Control	
8: Public Health Pest Control	

*Certification categories are from Section 171.3 of FIFRA; Commercial Standards
<<Note to Specification Writer: Accuracy in this section is essential. Tailoring it to fit the services present in your contract and your State's requirements is essential. You must first determine what categories of pest applicator certification are required to accomplish the work in this contract and then find and input the equivalent State categories. A website, http://aec.army.mil/usaec/pest/pest05.html is available that compares DOD certification categories with the categories of the States. The specification write should consult this site and contact the USAEC Pest Management Consultant when preparing this section. USAEC does not recommend including specialized certifications such as Aerial Application in conventional pest management contract specifications. Aerial application of pesticides and other specialized tasks should be solicited as separate stand alone contracts because of the specialized equipment, personnel and licensing requirements.>>

Technical Exhibit E
Example Quality Assurance Surveillance Plan (QASP)

<<The Specification Writer and the Contractor will edit this template QASP and the Contractor will submit the final QASP to the COR for final comments and concurrence/approval.>>

Introduction

This performance-based Quality Assurance Surveillance Plan (QASP) sets forth the procedures and guidance that the Contract Officer Representative (COR) will use in evaluating the technical performance of the Contractor in accordance with the terms and conditions of the performance work Statement (PWS). The purpose of the QASP is to ensure that performance of specific activities and completion of milestones are accomplished in accordance with all requirements set forth in the PWS. It does not relieve the Contractor from non-performance of any task or deliverable described in the contract but not depicted or described in this document.
This QASP describes the mechanism for documenting noteworthy accomplishments or discrepancies for work performed by the Contractor. The COR will directly use the information generated from COR's surveillance activities in performance discussions with the Contractor. The intent is to ensure that: (1) the Contractor provides pest management services in accordance with performance metrics set forth in the contract documents, (2) the Army receives the quality of services called for in the contract, and (3) the Army only pays for acceptable level of services received.

Roles and Responsibilities of Participating Government Officials

The Contracting Officer (KO): <<List names and outline responsibilities>>
The Contracting Officer's Representative (COR): <<List names and outline responsibilities>>
Pest Management Quality Assurance Evaluator (PMQAE)/Inspector(s): <<List names and outline responsibilities>>
Integrated Pest Management Coordinator (IPMC)
Subject Matter Experts (SME) : <<List names and outline responsibilities>>
Customers: <<List major customers/tenants>>

Key Milestones/Deliverables to be assessed

At a minimum, the government will evaluate the following milestones and associated deliverables in accordance with this QASP:

- Completion of the final Contractor Work Plan (CWP)
- Completion of this QASP
- Successful implementation of the CWP
- Submission of required documentation
- <<Insert other milestones/deliverables>>

Additionally, the Army will evaluate performance on the key quality control activities and events specified by the Contractor through their Quality Control (QC) strategy (see PWS Section 15.0).

Performance Measures and Standards of Performance

The government will evaluate the Contractor's performance by assessing the key milestones/deliverables described above according to two standards: quality and timeliness.

For each of these performance standards, the COR will assign one of the following ratings: “exceptional”, “very good”, “satisfactory”, “marginal” or “unsatisfactory”.

Exceptional (5) Performance meets contract requirements and significantly exceeds contract requirements to the Government's benefit. For example, the Contractor implemented innovative or business process reengineering techniques, which resulted in added value to the Government. The contractual performance of the element or sub-element being assessed was accomplished with few minor problems for which corrective actions taken by the Contractor were highly effective.

Very Good (4) Performance meets contractual requirements and exceeds some to the Government's benefit. The Contractor’s performance of the element or sub-element being assessed was accomplished with some minor problems for which corrective actions taken by the Contractor were effective.

Satisfactory (3) Performance meets contractual requirements. The Contractor’s performance of the element or sub-element contains some minor problems for which proposed corrective actions taken by the Contractor appear satisfactory, or completed corrective actions were satisfactory.

Marginal (2) Performance does not meet some contractual requirements. The Contractor’s performance of the element or sub-element being assessed reflects a serious problem for which the Contractor has submitted minimal corrective actions, if any. The Contractor’s proposed actions appear only marginally effective or were not fully implemented.

Unsatisfactory (1) Performance does not meet contractual requirements and recovery is not likely in a timely or cost effective manner. The Contractor’s performance of the element or sub-element contains serious problem(s) for which the Contractor's corrective actions appear or were ineffective.

Performance Standard	Exceptional Performance	Very Good Performance	Satisfactory Performance	Marginal Performance	Unsatisfactory Performance
Quality	Contractor significantly exceeds the requirements in the PWS to the government’s benefit.	Contractor exceeds some of the requirements in the PWS to the government’s benefit.	Contractor meets the requirements in the PWS.	Contractor does not meet some of the requirements of the PWS.	Contractor does not meet the requirements of the PWS and recovery is not likely
Timeliness	Contractor achieves a milestone significantly ahead of the	Contractor achieves a milestone ahead of the schedule	Contractor achieves a milestone on the schedule	Contractor achieves a milestone behind the schedule	Contractor achieves a milestone significantly behind the

	schedule outlined in the PWS.	outlined in the PWS.	outlined in the PWS.	outlined in the PWS.	schedule outlined in the PWS and recovery is not likely.

If a milestone/deliverable is rated as being of marginal or unsatisfactory quality at the time that the deadline for the milestone/deliverable expires, the milestone/deliverable will automatically receive a marginal/unsatisfactory rating for timeliness. At no point will a milestone/deliverable receive a very good or exceptional rating for timeliness if it is rated as marginal/unsatisfactory quality. Overall very good/exceptional performance on a milestone/deliverable requires ratings of satisfactory, very good or exceptional for both the quality and timeliness standards.

Surveillance Methods for QASP Administration

The COR will use the surveillance methods listed below will be used in the administration of this QASP.

100% Inspection

At the completion of all key milestones and deliverables, the COR will evaluate performance through 100% inspection. The COR will document performance for each completed milestone/deliverable prior to payment.

Planned Sampling

At the COR's discretion, planned sampling may be used to evaluate progress toward key milestones and deliverables. The COR may complete an inspection if she/he believes that deficiencies exist that must be addressed prior to milestone/deliverable completion. While corrective action or re-performance will be required if necessary, the Contractor will not be financially penalized for unacceptable performance recorded in periodic progress reports, provided that final performance evaluation of the milestone/deliverable is deemed "satisfactory", at a minimum.

Customer Feedback

The COR will obtain additional feedback through random customer complaints. To be considered valid, customer complaints must set forth clearly and in writing the detailed nature of the complaint, must be signed, and must be forwarded to the KO. The KO will maintain a summary log of all formally received customer complaints as well as a copy of each complaint in a documentation file.

Table 2 summarizes the minimum key elements planned for the QASP. The final QASP will be developed with the COR and the Contractor and will be based on the final CWP.

Table 2: Performance Requirements Summary

Performance Objective	Performance Standard	Acceptable Level of Performance	Methods of Surveillance	Standard(s) of Performance
The Contractor develops approved Contractor Work Plan (CWP) to include an IPM Plan. • Templates for developing the IPM plan are included in Technical Exhibit (A) - *electronic files provided upon request* • Complete one IPM Outline for each pest for each site type [Technical Exhibit (A)].	CWP includes information required in section 4.1 and Technical Exhibit (A) of the PWS; the Contractor submits CWP to the COR. Plan complies with Federal, State and industry best management practice standards. Obtain Army Pest Management approval through the COR.	Draft CWP includes 100% of the information required in section 4.1 of the PWS; submit draft CWP within 15 days of contract/task award. Submit final CWP within 30 days of receipt of COR comments on the draft.	100% Inspection	Quality Timeliness
Develop a Quality Assurance Surveillance Plan (QASP).	QASP follows the template found in the PWS Technical Exhibit (E) and is submitted to the COR. Obtain Army Pest Management approval	Draft QASP follows the template found in the PWS Technical Exhibit (E); submit within 15 days of contract/task award. Submit final QASP submitted	100 % Inspection	Quality Timeliness

	through the COR.	within 30 days of receipt of COR comments on the draft.		
Successfully implement all aspects of the approved CWP for all pests/sites identified in this PWS. The Contractor shall follow the plan for scheduled services as well as unscheduled services, as appropriate. IPM standards are met: All sites thoroughly inspected before starting Report prepared and submitted on conditions conducive to pest infestation. Non chemical pest management operations used as a first resort to the maximum extent possible.	Contractor follows CWP. Contractor controls pests to the standards specified in the	Contractor meets IPM standards are met 100% of the time for all services. Contractor follows CWP 100% of the time for all services. Contractor controls pests are controlled to the standards specified in the CWP IPM outlines 80% of the time.	Planned Sampling Customer Feedback 100% Inspection (for termite treatments only)	Quality Timeliness

Judicious use of pesticides where necessary. Surveillance implemented to monitor pest population and effectiveness of control measures. Pest management operations recorded and reported in approved format.				
Submission of all required documentation listed in the PWS and summarized in Exhibit (B).	Obtain Army Pest Management approval through COR. 100% of required reports submitted on time in accordance with specifications in Technical Exhibit (B). 100% of required reports submitted contain required information.	Contractor submits reports "on time" 90% of the time. Contractor needs to correct reports less than 25% of the time.	Planned Sampling	Quality Timeliness

Surveillance Documentation
The COR will use a performance evaluation form to record evaluation of the Contractor's performance for each milestone and deliverable in accordance with the methodology described in

Table 1 (Performance Standards). The COR must substantiate, through narratives in the form, all "exceptional", "very good", "marginal" and "unsatisfactory" ratings.
The government expects Contractor performance at the "satisfactory" level. At a minimum, the evaluation form will indicate actual and scheduled delivery times and number of reviews required to achieve the final product.

The COR will forward copies of all completed performance evaluation forms to the KO and Contractor within one week of performing the inspection. When a milestone/deliverable receives an overall "marginal" or "unsatisfactory" rating, the Contractor will explain, within 15 days, in writing to the COR why performance was unacceptable, how performance will be returned to acceptable levels, and how recurrence of the problem will be prevented in the future.

The KO will review each performance evaluation form prepared by the COR. When appropriate, the KO may investigate further to determine if all the facts and circumstances surrounding the event were considered in the COR opinions outlined on the form. The KO will immediately discuss any unacceptable rating with the Contractor to assure that corrective action is promptly initiated.

At the end of every year, the COR will prepare a written report for the KO summarizing the overall results of his/her surveillance of the Contractor's performance during the previous 12 months. This report will become part of the formal QA documentation.

The COR will maintain a complete QA file. This file will contain copies of all performance evaluation forms and any other related documentation. The COR will forward these records to the KO at termination or completion of the contract.

Payment and Corrective Action
The government will provide full payment for a milestone/deliverable upon verification of overall "satisfactory" or better performance, as rated on quality and timeliness. This verification will be recorded in a performance evaluation form submitted to the KO specifying overall

Contractor performance as either "satisfactory", "very good" or "exceptional" for the milestone/deliverable.

If a milestone/deliverable receives a "marginal" or "unsatisfactory" rating, re-performance is required until the milestone/deliverable receives a "satisfactory" rating. This re-performance is required regardless of cost or schedule constraints that may result from the "marginal" or "unsatisfactory" performance, unless the KO has opted to terminate the contract.

QUALITY ASSURANCE MONITORING FORM

Date: _____

Work Task (Milestone/Activity): _____

Survey Period: _____

Method of Surveillance:

Evaluation of Contractor's Performance: _____

Corrective Action Required: Yes No

Narrative Discussion of Contractor's Performance During Survey Period:

CORRECTIVE ACTION FORM FOR QASP

1) Date: _____

2) Work Task (Milestone/Activity): _____

3) Survey Period:_____

4) Description of the Failure/Deficiency that Precipitated the Corrective Action:

5) Description of the Criterion that the Failure/Deficiency was Evaluated Against:

_____

_____

6) Personnel Involved in the Identification of the Failure/Deficiency, Determination of the Appropriate Corrective Action, Approval of the Corrective Action, and Implementation of the Corrective Action: :

_____

7) Description of the Corrective Action that was Required:

_____

_____

8) Date/Time of Implementation of the Corrective Action:

_____

9) Follow Up Information to Prevent Recurrence of Failure/ Deficiency (i.e., Need For Revision of Procedures or Specifications):

_____

_____

10) Personnel Responsible for Follow-Up Work:

_____

11) Planned Date for Follow Up Surveillance:

12) Other Notes:

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APPENDIX 7
AERIAL SPRAY STATEMENT OF NEED (ASSON)

EXAMPLE

Aerial Spray Statement of Need (ASSON)
For
White Sands Missile Range (WSMR)

Preparer Identification

Cristina Rodden, IMWS-PWE-ES, Wildlife Biologist, White Sands Missile Range, NM 88002, Phone No: 575-678-4438, Email:cristina.l.rodden.civ@mail.mil.

Application Area(s)

Salt cedar is an introduced plant species with no natural enemies in the United States and spreading throughout the southwestern United States at a rapid rate. The spread of salt cedar on

WSMR crowds out native plant species, disrupts native habitat function, uses excessive groundwater resources and may alter spring flow.

Over time, as leaf litter accumulates under salt cedar plants, the surface can become highly saline, thus impeding future colonization by many native plant species. Without treatment and control, salt cedar will continue to spread on WSMR.

Salt cedar (Tamarix chinensis ramosissima) occurs throughout the installation along roads, drainages, ephemeral washes, and earthen stock tanks. The spread of salt cedar provides an unnatural harbor for Oryx who activities especially near roads generate dangerous driving conditions. Salt cedar is spreading to launch complexes disrupting military activities.

WSMR has over 5,000 acres subject to infestation by this invasive pest species that will control. Currently, 100 acres in the Stallion Range Basin in the Northern Range of WSMR is targeted, at this time for control by aerial dispersal means.

Failure to control this highly invasive vegetation species will have adverse impacts on training and maneuver areas throughout WSMR and mission accomplishment.

Justification for Conducting Aerial Applications

The salt cedar in these areas has become so abundant and large that using ground removal methods would be extremely labor intensive, time consuming and expensive. In addition, the aerial treatment method eliminates potential damage to cultural resources which ground methods could cause.

Aerial herbicide application provides us with a management tool to treat large monotypic stands of salt cedar in a short amount of time. Control of salt cedar by burning, mechanical, flooding or ground application of herbicides is not cost effective for these large monotypic stands of salt cedar. Manpower required to employ alternative control measures is not available, too costly and labor intensive.

Due to the unpredictable military training missions at WSMR, aerial application of herbicides is the only practical method to control of undesirable vegetation over large areas when unmanageable by ground control techniques.

Environmental (Natural or Cultural Resources) Restrictions

Controlling salt cedar on WSMR will ensure WSMR complies with the Federal Noxious Weed Act of 1974 and Invasive Species Executive Order 13112. In addition this effort will support interagency invasive species management efforts currently being performed on adjacent Federal, public and private lands.

WSMR Integrated Natural Resources Management Plan implementing the Sikes Act is the proponent for maintaining sound multiple use natural resources programs to include forestry, wildlife management, erosion control, and protection of endangered species. Control of this invasive plant species will enhance WSMR's natural management areas, allowing native vegetation to reestablish, in turn, restoring ecosystems.

Pre-aerial application coordination with Range Scheduling and Directorate of Emergency Services ensures no human activities will occur during the aerial treatment.

Herbicides that are labeled for both aquatic and terrestrial sites will be used as some of the treatment sites include earthen tanks, drainage washes and ephemeral washes that can contain water during the application. All of the potential water sites do not qualify as Waters of the US, so a Pesticide NPDES Permit or reporting will not be required.

Aerial application will only be used in areas with monotypic stands of salt cedar to ensure impacts to non-target, native vegetation are minimal.

NEPA Documentation

WSMR accomplished an Environmental Assessment in August 2011 that evaluated the impacts of aerially-applied pesticides to control salt cedar. The EA analysis resulted in a signed Finding of No Significant Impact decision document.

WSMR's current INRMP addresses the control of salt cedar in limited areas only. We are in the process of writing a new INRMP/INCRMP this year and plan to address all pesticide operations to include aerial-applied pesticides that could impact natural or cultural resources.

Installation Pest Management Coordinator Validation

___X___ Concur _____ NonConcur

_Cristina Rodden_____ ___15 Aug 2012_
Cristina Rodden Date
Integrated Pest Management Coordinator

Pest Management Consultant Validation Approval

___X____ Approved _____Disapproved
_John A. Wildie_____ ___15 Aug 2012_
John A. Wildie, Date
Entomologist,
Aerial-Certified Pest Management Consultant
Army Environmental Command