Integrated Pest Management Plan
Naval Support Activity South Potomac

Plan Authorization

Prepared by:

Mrs. Shelly Bledsoe
Facilities Support Contract Manager
NSF Indian Head

9/9/11
Mr. Seth Berry
Natural Resources Manager
NSF Indian Head

Dr. Thomas Wray II
Natural Resources Manager
NSF Dahlgren

Reviewed and Approved by:

Ms. Sharon Bartku
Head, Applied Biology Branch
NAVFAC Atlantic

CDR E.R. Hoffman
Officer in Charge
NECE Jacksonville

Mr. George Butler
Installation Pest Management Coordinator
NSF Indian Head

Mr. Richard Allen
Installation Pest Management Coordinator
NSF Dahlgren

Mr. Jeffrey Bossart
Installation Environmental Program Director
NSA South Potomac

HM1 Scott Gervasi
Preventive Medicine Technician
NSF Dahlgren

HM1 Mathew Huddleston
Preventive Medicine Technician
NSF Indian Head

Approved for Implementation by:

CAPT Peter R. Nette
Commanding Officer
NSA South Potomac

INTEGRATED PEST MANAGEMENT PLAN

Naval Support Activity South Potomac

Naval Support Facility Indian Head and Naval Support Facility Dahlgren

2011

Naval Facilities Engineering Command
Atlantic

Integrated Pest Management Plan
Naval Support Activity South Potomac
Dahlgren, Virginia

Plan Authorization

Prepared by:

Mrs. Shelly Bledsoe
Facilities Support Contract Manager
NSF Indian Head

Mr. Seth Berry
Natural Resources Manager
NSF Indian Head

Mr. Thomas Wray
Natural Resources Manager
NSF Dahlgren

***Reviewed and Approved by:**

Ms. Sharon Bartku
Head, Applied Biology
NAVFAC Atlantic

CDR G. B. Schoeler
Officer in Charge
NECE Jacksonville

Mr. George Butler
Installation Pest Management Coordinator
NSF Indian Head

Mr. Richard Allen
Installation Pest Management Coordinator
NSF Dahlgren

Approved for Implementation by:

CAPT Catherine T. Hanft
Commanding Officer
Naval Support Activity South Potomac

*This IPMP was reviewed by all personnel/offices listed in **Appendix (A)**

Naval Support Activity South Potomac
Integrated Pest Management Plan
Annual Review

This table should be completed by the NSF Indian Head and NSF Dahlgren Installation Pest Management Coordinator each fiscal year. See **Section 1.1.6** for Integrated Pest Management Plan maintenance procedures.

Year	Completion Date	Installation Pest Management Coordinator	Date IPMP Approved by the Professional Pest Management Consultant (NAVFAC)
2010			
2011			
2012			
2013			
2014			
2015	**Major IPMP Revision**		

On-Site Pest Management Technical Reviews

Scheduled Date	Installation Pest Management Coordinator	Pest Management Consultant Date Review Completed

Note: In accordance with references (a) and (b), DoD Pest Management Consultants review installation pest management programs on-site at least every 3 years. These on-site reviews will be conducted in conjunction with compliance evaluations and/or Navy Entomology Center of Excellence (NECE) shore station reviews whenever possible.

Table of Contents

EXECUTIVE SUMMARY ES-1

1 INTRODUCTION 1-1

1.1 The Integrated Pest Management Plan 1-1
1.1.1 Scope and Applicability 1-1
1.1.2 Authority 1-1
1.1.3 Purpose and Structure 1-1
1.1.4 IPMP Structure 1-2
1.1.5 Plan Implementation 1-2
1.1.6 Plan Maintenance 1-2
1.1.6.1 Internal Review 1-2
1.1.6.2 Off-site Review 1-2
1.1.6.3 On-site Review 1-3
1.1.6.4 Plan Rewrite 1-3

1.2 Integrated Pest Management 1-3
1.2.1 Federal Regulation and Policy 1-3
1.2.2 IPM Definition 1-3
1.2.3 IPM Program Components 1-4
1.2.3.1 Pesticide Definition 1-5
1.2.4 IPM Action Plan 1-5

1.3 Pest Management Program Overview 1-5
1.3.1 Overview 1-5
1.3.2 Program Requirements 1-6
1.3.2.1 Administration 1-6
1.3.2.2 Operations 1-6

2 PROGRAM ADMINISTRATION 2-1

2.1 Functional Areas, Roles and Responsibilities 2-1
2.1.1 Commanding Officer 2-1
2.1.2 Installation Pest Management Coordinator (IPMC) 2-1
2.1.3 Public Works Department Indian Head 2-2
2.1.3.1 Facilities Engineering Acquisition Division 2-2
2.1.3.1.1 Performance Assessment Representatives 2-2
2.1.3.1.2 Pest Manaagement Contractor 2-3
2.1.3.1.2.1 Pest Management Contractor 2-3
2.1.3.2 Environmental Division 2-3
2.1.3.2.1 Natural Resources 2-3
2.1.4 Naval Health Clinic Indian Head 2-4
2.1.4.1 Director of Public Health Services 2-4
2.1.4.1.1 Preventive Medicine 2-4
2.1.4.1.2 Occupational Health 2-5
2.1.4.1.3 Industrial Hygiene 2-5
2.1.5 U.S. Army, National Capitol District, Veterinary Command Section **Error! Bookmark not defined.**
2.1.6 Navy Exchange (NEX) 2-5
2.1.7 Commissary 2-5
2.1.8 Morale, Welfare and Recreation 2-6

Table of Contents

2.1.9 All Installation Personnel 2-6

2.2 Pesticide Approval 2-7
2.2.1 NSF Indian Head AUL 2-7
2.2.2 NAVFAC Pesticide Approval 2-7

2.3 Records and Reports 2-7

2.4 Training, Certification and Licensing 2-8
2.4.1 Commercial Contract Applicators 2-8
2.4.1.1 Grounds Maintenance 2-9
2.4.1.2 Structural Pest Control (General Pest Control) 2-9
2.4.2 In-House Personnel 2-9
2.4.2.1 Initial Certification 2-9
2.4.2.2 Re-Certification 2-10
2.4.2.3 Aerial Spray Certification (Category 11) 2-10
2.4.3 Pest Management Performance Assessment Representatives 2-10
2.4.4 Installation Pest Management Coordinator 2-10
2.4.5 Pest Management Training Records 2-10
2.4.6 Pest Management Training Schedule 2-11

2.5 Pest Management and Grounds Maintenance Contract Management 2-11
2.5.1 Background 2-11
2.5.2 Contract Requirements 2-11
2.5.2.1 Certified Pesticide Applicators 2-11
2.5.2.2 Pesticide Approval 2-11
2.5.2.3 Pesticide Storage, Mixing and Disposal 2-11
2.5.2.4 Occupied Spaces 2-12
2.5.2.5 Records and Reports 2-12
2.5.2.6 Contractor Vehicles 2-12
2.5.2.7 Personnel Safety 2-12
2.5.2.8 Notification 2-12
2.5.3 Contract Management 2-12
2.5.3.1 Contract Specification Review 2-12
2.5.3.2 Contract Performance Assessment 2-12
2.5.4 Credit Card or Small Purchase Pest Management Contracts 2-13

3 OPERATIONS 3-1

3.1 Current Operations 3-1
3.1.1 PWD Pest Control and Grounds Maintenance 3-1
3.1.2 Inspections 3-1
3.1.2.1 Utility Pole Inspection Program 3-1
3.1.2.2 PMPAR Inspections 3-1
3.1.2.3 Preventive Medicine Inspections 3-1
3.1.2.4 U.S. Army Veterinarian, Medical Food Inspectors 3-2
3.1.3 Forestry Pest Management 3-2
3.1.4 Airfield Clear Zone Management 3-2
3.1.5 Ornamental and Turf Pest Management 3-2
3.1.5.1 Grounds Maintenance 3-2
3.1.5.2 Cedar Point Golf Course 3-2
3.1.5.3 Recreational Fields 3-2

Table of Contents

3.1.6 Aquatic Pest Management 3-2
3.1.7 Right of Way Pest Management 3-2
3.1.7.1 Fence Lines and Transformers 3-3
3.1.7.2 Roadways and Patrol Roads 3-3
3.1.8 Agricultural Pest Management 3-3
3.1.8.1 Agricultural Outleases 3-3
3.1.8.2 Garden Plot Pest Management 3-3
3.1.9 Industrial, Institutional, Structural and Health Related Pest Management 3-3
3.1.9.1 Cockroaches 3-3
3.1.9.2 Ants 3-4
3.1.9.3 Navy Food Concessions 3-4
3.1.9.4 Wildlife and Nuisance Vertebrate Management 3-4
3.1.9.5 Structural Pests 3-4
3.1.9.5.1 Structural Control Program 3-4
3.1.9.5.2 Termite Control 3-4
3.1.9.6 Stored Products Pests 3-5
3.1.9.6.1 Dermestid Beetle 3-5
3.1.10 Public Health Pest Management 3-5
3.1.10.1 Mosquitoes 3-6
3.1.10.2 Ticks 3-6
3.1.10.3 Filth Flies 3-7
3.1.10.4 Rodent Management 3-7
3.1.11 Invasive and Non-Indigenous Species Management 3-8
3.1.11.1 Feral Cats and Dogs 3-8
3.1.12 Public Private Venture Housing 3-8
3.1.13 MWR 3-8
3.1.14 Bird Management 3-8
3.1.14.1 Bird Aircraft Strike Hazard Management 3-8

3.2 Pesticide Management 3-9
3.2.1 Pesticide Selection 3-9
3.2.2 Pesticide Procurement 3-9
3.2.3 Inventories 3-9
3.2.3.1 In-House Pest Management 3-9
3.2.3.2 Contractor Pest Management 3-10
3.2.4 Application 3-10
3.2.4.1 Service Containers 3-10
3.2.4.2 Applicator Equipment 3-10
3.2.4.3 Pesticide Application 3-10
3.2.5 Post-Application Clean Up 3-10
3.2.6 Pesticide Disposal 3-10
3.2.6.1 In-House Pest Management 3-11
3.2.6.1.1 Sprayer Clean-Outs 3-11
3.2.6.1.2 Empty Containers 3-11
3.2.6.1.3 Rinse Water 3-11
3.2.6.1.4 Excess Pesticides 3-11
3.2.6.2 Contractors 3-11
3.2.7 Pesticide Cancellation 3-11

3.3 Pesticide Safety and Security, Storage Facilities, Mixing and Spills 3-12
3.3.1 Operational Procedures 3-12
3.3.1.1 Occupied Spaces 3-12
3.3.1.2 Pest Management in the Child Development Center and Youth Center 3-12

Table of Contents

3.3.1.3 Pest Management in the Branch Clinic 3-12
3.3.1.4 Pest Management Vehicles 3-12
3.3.2 Authorized Pesticide Storage and Mixing Facilities 3-13
3.3.3 Pesticide Storage Requirements 3-13
3.3.4 Pesticide Storage Site Security 3-13
3.3.5 Retail Sale of Pesticides 3-14
3.3.5.1 Locations of Pesticide Sales 3-14
3.3.5.2 Display of Pesticides 3-14
3.3.6 Spill Prevention 3-14
3.3.6.1 In-House Personnel 3-15
3.3.6.2 Contractors 3-15

4 HEALTH AND SAFETY 4-1

4.1 Pesticide Applicator Safety 4-1
4.1.1 Potential Occupational Hazards 4-1
4.1.1.1 Direct Contact Toxic Chemical Exposure 4-1
4.1.1.2 Heat 4-1
4.1.1.3 Noise 4-1
4.1.1.4 Eye Hazards 4-1
4.1.1.5 Communicable Disease 4-1
4.1.1.6 Inhalation Hazards 4-2
4.1.1.7 Electrical and Fire Hazards 4-2
4.1.1.8 Head Impact, Falls, and Sharps Hazards 4-2
4.1.1.9 Exposure to Harmful Animals 4-2
4.1.2 Hazard Abatement 4-2
4.1.2.1 Training and Education 4-2
4.1.2.2 Read the Pesticide Label 4-2
4.1.2.3 Personal Protective Equipment 4-2
4.1.2.4 Medical Surveillance Program 4-3

4.2 Public Safety 4-3
4.2.1 Potential hazards to public 4-3
4.2.1.1 Direct Contact with Pesticides 4-3
4.2.1.2 Injury Due to Animals 4-3
4.2.2 Hazard Abatement 4-3
4.2.2.1 Proper Timing of Pest Control Operations 4-3
4.2.2.2 Prevent Tampering with Animal Traps 4-4
4.2.3 Special Safety Considerations 4-4
4.2.3.1 Medical Treatment Facilities (MTF) 4-4
4.2.3.2 The Child Development Center and Youth Center 4-4
4.2.3.3 Food Service Areas 4-4

5 ENVIRONMENTAL CONSIDERATIONS 5-1

5.1 Managing Environmental Impact 5-1
5.1.1 General Guidance 5-1
5.1.2 Outdoor Use of Pesticides 5-1
5.1.2.1 Rodenticide Use 5-1
5.1.2.2 Preventing Pesticide Drift 5-2
5.1.3 Threatened and Endangered Species 5-2

Table of Contents

5.1.3.1 Endangered Species Protection Bulletins 5-3
5.1.4 Sensitive Habitats 5-3
5.1.5 Bird Management 5-3
5.1.6 Wildlife Management 5-3

5.2 Regulatory Compliance 5-4
5.2.1 Policy 5-4
5.2.2 Pesticide Regulation and Enforcement 5-4
5.2.2.1 Pesticide Regulation 5-4
5.2.2.2 Pesticide Compliance Enforcement 5-4
5.2.3 Laws and Regulations 5-4
5.2.3.1 Primary Pesticide Regulations 5-4
5.2.3.2 The Pesticide Label as Law 5-4
5.2.3.3 Other Regulations 5-5
5.2.4 DoD Measures of Merit 5-5

5.3 Environmental Management System (EMS) and Pest Management/ Pesticides 5-5
5.3.1 What is an EMS? 5-5
5.3.2 Department of Defense Policy 5-6

6 EMERGENCY PEST MANAGEMENT 6-1

6.1 Public Health Emergencies 6-1

6.2 Pest Introduction/Export 6-1

7 PROGRAM RESOURCES 7-1

7.1 Department of Defense 7-1
7.1.1 Armed Forces Pest Management Board 7-1
7.1.2 Naval Facilities Engineering Command (NAVFAC) Atlantic 7-1
7.1.3 Navy Entomology Center of Excellence (NECE) 7-1

8 PEST MANAGEMENT SHEETS 8-1

8.1 Ant Management 8-1

8.2 Bee, Wasp, and Hornet Management 8-2

8.3 Bird Management 8-4

8.4 Cockroach Management 8-5

8.5 Miscellaneous Pest Management 8-6

8.6 Mosquito Management 8-9

8.7 Ornamental Pest Management 8-11

8.8 Rodent Management 8-13

Table of Contents

8.9 Stored Product Pest Management 8-15

8.10 Termite Management 8-16

8.11 Vegetation Management 8-17

8.12 Vertebrate Management 8-18

8.13 Wood Destroying Fungus and Insect Management 8-19

Table of Contents

List of Tables

No.	Description	Pg.
1-1	Comparison of Traditional Pest Control and IPM Methods	1-4

Appendices

Appendix	Content
A	Additional IPMP Approval Signatures
B	Acronyms
C	Relevant Websites
D	IPMP Update Form
E	Professional Pest Management Consultant Contact Information
F	Installation Pest Management Coordinator Appointment Letter
G	Emergency Vector Surveillance and Control Plan
H	AFPMB Technical Guide #45: Storage and Display of Retail Pesticides
I	List of Pesticides Approved for Use at NSA South Potomac
J	Training and Certification Records
K	Pest Management Contract Technical Specifications
L	EBUSOPSOFFINST 4200.1: Department of Navy Policies and Procedures for the Operation and Management of the Government Commercial Purchase Card Program
M	NSA South Potomac Preventive Medicine Monthly/Quarterly Inspection List
N	Gardener Information Sheet (2008)
O	Nuisance Wildlife Control Information
P	Locations of Pesticide Storage and Sales
Q	Integrated Pest Management and Notification of Pesticide Use in a Public or on School Grounds (15.05.02)
R	Migratory Bird Regional Permit Office Contact Information
S	CNO Policy Letter Preventing Feral Cat and Dog Populations on Navy Property

References

a. DoDINST 4150.07; The DoD Pest Management Program:
http://www.afpmb.org/pubs/dir_iNASt/dod4150.7-i.pdf

b. OPNAVINAST 6250.4 (series); Navy Pest Management Programs:
http://doni.daps.dla.mil/OPNAV.aspx

c. OPNAVINAST 5090.1C, Chapter 17: Environmental Readiness Program Manual:
http://doni.daps.dla.mil/OPNAV.aspx

d. State of Maryland Pesticide Law: Department of Agriculture: Title 15, Subtitle 05 Pesticide Use Control
http://www.dsd.state.md.us/comar/idq_files/search.idq

e. DoD 4150.07, Volume 1: Plan for the Certification of Pesticide Applicators:
http://www.afpmb.org/pubs/dir_inst/415007MV1p.pdf

f. DoD 4150.7-M: Department of Defense Pest Management Training and Certification:
http://www.afpmb.org/pubs/dir_iNASt/dod4150.7-m.htm

g. EBUSOPSOFFINAST 4200.1: Department of Navy Policies and Procedures for the Operation and Management of the Government Commercial Purchase Card Program
http://www.acq.osd.mil/dpap/Docs/pcard/DoN_OI_4200-1a.pdf

h. Executive Order 13112 (Invasive Species):
http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=1999_register&docid=99-3184-filed.pdf

i. Endangered Species Act:
http://www.access.gpo.gov/uscode/title16/chapter35.html

j. Migratory Bird Treaty Act:
http://www.law.cornell.edu/uscode/16/ch7.html

k. SECNAVINAST 6210.2A: Quarantine Regulations of the Armed Forces:
http://www-nehc.med.navy.mil/Downloads/prevmed/6210a2.pdf

l. SECNAVINAST 6401.1A: Veterinary Health Services:
http://www.combatindex.com/mil_docs/pdf/secnav/6400/6401-1A.pdf

List of Laws and Regulations

Federal Regulations http://www.epa.gov/epahome/laws.htm

Federal Insecticide, Fungicide, and Rodenticide Act. The primary pesticide law governing the registration, sale, and use of pesticides. It addresses applicator certification requirements, record keeping, and penalties for pesticide misuse.

Resource Conservation and Recovery Act. The Act contains regulations for the disposal of hazardous wastes including pesticide wastes and wastes resulting from the cleanup of pesticide spills.

Food Quality Protection Act. The Act amends the Federal Insecticide, Fungicide, and Rodenticide Act. The Act contains language directly applicable to the DoD Pest Management Program by defining "maintenance applicator" and establishing a requirement for minimum training; defining vector and public health pesticide; defining the term Integrated Pest Management; and requiring Federal agencies to promote IPM through procurement and regulatory policies.

National Environmental Policy Act. The Act requires that Federal agencies utilize a systematic, interdisciplinary approach that will ensure the integrated use of the natural and social sciences and the environmental design arts in planning and in decision making which may have an impact on the environment.

Endangered Species Act. (ESA) provides for the protection of threatened and endangered species of fish, wildlife, and plants and their habitats. The Act requires Federal agencies to ensure that their actions are not likely to jeopardize the continued existence of endangered or threatened species.

Clean Water Act. The Clean Water Act provides for protection of surface waters from contamination by pesticides in wastewater and in land runoff. The Act requires notification of pesticide spills that exceed the established standards.

Migratory Bird Treaty Act. This act protects migratory birds and their nests and eggs from being hunted, captured, purchased, or traded. If an installation uses pesticides to manage bird populations other than starlings, sparrows, and pigeons, it is required to coordinate with the U.S. Fish and Wildlife Service. Contractors must have the appropriate permits when performing work of this nature.

Occupational Safety and Health Act. Establishes safety and health standards to ensure that every worker in the nation enjoys safe and healthful working conditions.

Executive Order 13112 (Invasive Species). The Executive Order was created to prevent the introduction of invasive species and provide for their control and to minimize the economic, ecological, and human health impacts that invasive species cause.

DoD Regulations

DoDINST 4150.07: DoD Pest Management Program. Implements policy, assigns responsibility, and prescribes procedures for the Department of Defense pest management program. Outlines the DoD Measures of Merit. http://www.afpmb.org/pubs/dir_iNASt/dod4150.7-i.pdf

OPNAVINAST 6250.4 (series): Pest Management Programs. Provides Navy and Marine Corps policies and procedures for implementing pest management programs. http://doni.daps.dla.mil/OPNAV.aspx

OPNAVINAST 5090.1 (series), Chapter 13, Pesticide Compliance Ashore. Establishes safety and compliance requirements and policy relative to the legal use of pesticides at Navy shore facilities. http://doni.daps.dla.mil/OPNAV.aspx

State of Maryland and Virginia Regulations

Pesticide regulations in Maryland and Virginia are under the cognizance of the Department of Agriculture. Although the Federal government retains primacy over the Federal Insecticide, Fungicide, and Rodenticide Act, NSA South Potomac should strive to comply with state pesticide laws when practical and applicable. Contractors, however, must comply with all state pesticide laws. Maryland and Virginia pesticide applicator categories equivalent to DoD categories are found at: http://www.mda.state.md.us/plants-pests/pesticide_regulation/index.php and http://www.vdacs.virginia.gov/pesticides/certification.shtml.

Executive Summary

This Integrated Pest Management Plan (IPMP) is a comprehensive document that captures all the pest management and pesticide-related activities conducted at Naval Support Facility Indian Head (NSF Indian Head), Maryland and Naval Support Facility Dahlgren (NSF Dahlgren), Virginia. It provides the regulatory framework in which Naval Support Activity South Potomac (NSA South Potomac) pest management program operates while providing comprehensive information to installation staff and internal and external compliance auditors. The IPMP is the result of data collected through pest management information gathering, on-site observations, interviews with personnel, and document review.

NSF Indian Head is located in southern Maryland in Charles county, 30 miles south of Washington, DC and NSF Dahlgren is in King George County, Virginia, 50 miles south of Washington, DC. Both sites are bordered by the Potomac River and are located within the Chesapeake Bay watershed. Both sites are research and development installations supporting the Navy by providing state of the art technologies to operating forces of the United States Navy. NSA South Potomac supporting and supported commands "provide effective and affordable integrated warfare systems and life cycle support through RDT&E, acquisition, engineering and fleet support." http://www.cnic.navy.mil/SPotomac/index.htm. See **Section 1.1.1** for other sites which are covered under this IPMP.

The focus of this Plan is on safe, environmentally sound, and cost-effective control of pests through Integrated Pest Management (IPM). IPM depends on education, survey of pests, non-chemical and chemical control methods, and individual responsibility for pest prevention. To ensure safe and effective pest management, a sufficient staff of qualified pest management personnel must be maintained. This includes the Installation Pest Management Coordinator (IPMC), pest management operators and Pest Management Performance Assessment Representatives (PMPAR). All personnel shall be trained and certified, as appropriate, in accordance with Department of Defense (DoD) and Navy regulations. The number of personnel supporting the pest management mission at NSA South Potomac should directly correlate to the level of activity and missions on the installation.

This page intentionally left blank

1 Introduction

The Integrated Pest Management Plan

1.1.1 Scope and Applicability

The NSA South Potomac's Integrated Pest Management Plan (IPMP) is a long-range planning and operational tool that establishes the strategy and methods for conducting a safe, effective, and environmentally sound integrated pest management program. The IPMP covers all pest management and pesticide-related activities conducted within all areas of the installation. All areas of NSA South Potomac are included in this IPMP, including NSF Indian Head Stump Neck Annex, NSF Dahlgren Pumpkin Neck and all other associated properties.

1.1.2 Authority

References (a) through **(c)** require that naval installations develop and implement an IPMP. This IPMP fulfills this requirement for NSA South Potomac. In accordance with **references (a)** through **(c)**, the IPMP will detail all aspects of pesticide management including administration, procurement, contract services, storage, disposal, safety, reporting, vehicles, Integrated Pest Management (IPM) and applicable laws and regulations.

1.1.3 Purpose and Structure

The NSA South Potomac's pest management mission should be directly derived from the installation mission of supporting the fleet. Therefore the focus of pest management at NSA South Potomac should be as follows:

The prevention of pest interference with operations (NSF Dahlgren specific) through:

- Bird and wildlife management at the airfield,
- Weed control at the airfield, and

The prevention of pest-related health and safety problems through:

- Mosquito surveillance and control,
- Tick surveillance and control,
- Cockroach surveillance in eating areas,
- Rodent surveillance in eating areas, and
- Bee, wasp and hornet surveillance and control.

The protection of government real property and materiel through:

- Termite and other wood-destroying insect surveillance and control, and
- Decay fungi surveillance and control.

The prevention of morale problems through:

- Insect and other pest surveillance and control in eating, working and living areas.

The protection of recreational areas through:

- Turf disease, insect, and weed surveillance and control, and
- Ornamental disease and insect surveillance and control.

The protection of natural resources and ecological quality through:

- The control and eradication of invasive flora and fauna species.

NSA South Potomac will prevent the degradation and preserve the integrity of natural resources while also supporting the military mission and protecting real estate

1.1.4 IPMP Structure

The IPMP is presented in two parts in addition to the appendices:

- **Sections 1-7**: describes responsibilities, requirements, and guidelines for pesticide compliance and pest management operations addressing administrative, regulatory, safety, environmental and other program management elements.
- **Section 8**: presents IPM pest group work sheets [as required by **reference (a)**] which details individual pest control functions.
- **Appendices**: provide supplemental information on relevant topics.

1.1.5 Plan Implementation

The IPMP must be reviewed and approved by installation stakeholders and Naval Facilities Engineering Command (NAVFAC) and Navy Entomology Center of Excellence (NECE) professional pest management consultants (PPMC). The Plan is implemented upon signature of the Installation Commander. The Installation Pest Management Coordinator (IPMC) has the task of implementing, coordinating, and executing the IPMP among each of the functional areas of the installation.

1.1.6 Plan Maintenance

Once the IPMP has been developed and implemented, it must be reviewed annually and updated if necessary. The IPMC is responsible for maintaining the IPMP.

1.1.6.1 Internal Review

An internal review is conducted annually by the IPMC in coordination with the other appropriate pest management points of contacts at NSF Indian Head and NSF Dahlgren. The review should include updating contract information, applicator certifications, pesticides and pest management operations to be used on the installation, and updating pesticide use records. The Naval District Washington (NDW) Internal Assessment Plan (IAP) for the pesticide program should be used to review compliance issues. The form in **Appendix (D)** should be completed and provided to the NAVFAC PPMC for signature.

1.1.6.2 Off-site Review

The IPMC may request a review by the NAVFAC Atlantic PPMC for review of regulatory requirements and reporting and pesticide approval procedures.

1.1.6.3 On-site Review

An on-site review of the entire pest management program, to ensure adherence to this IPMP, shall be performed by the NAVFAC Atlantic PPMC every 36 months. The review may be performed more frequently if extensive problems with the program exist or upon request by the IPMC. Contact information for the NAVFAC Atlantic PPMCs and the NECE PPMCs can be found in **Appendix (E)**.

1.1.6.4 Plan Rewrite

In accordance with **reference (a)**, the IPMP should be rewritten every 5 years to reflect new conditions, including pest management service providers (contractors), personnel, pest management practices, and regulatory changes. It is the responsibility of the IPMC to ensure funding is available for IPMP rewrites.

Integrated Pest Management

1.1.7 Federal Regulation and Policy

United States Code (U.S.C.) states "Federal agencies shall use Integrated Pest Management techniques in carrying out pest management activities and shall promote Integrated Pest Management through procurement and regulatory policies, and other activities." (7 U.S.C. Title 7, Chapter 6, Subchapter II, Sec. 136r-1) It is Department of Defense (DoD) policy to "incorporate sustainable Integrated Pest Management (IPM) philosophy, strategies, and techniques in all aspects of DoD and Component vector control and pest management planning, training, and operations including installation pest management plans and other written guidance to reduce pesticide risk and prevent pollution."

1.1.8 IPM Definition

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" [**reference (a)**]. There are significant differences between IPM and "traditional" pest control methods. **Table 1-1** lists some of the differences.

IPM is based on the principal that control is only required if a population will surpass an economic or aesthetic injury threshold. Thus, the presence of a pest does not always warrant immediate control efforts unless:

- The pest population will impact the mission or cause economic loss,
- The pest population will endanger health and/or welfare and/or impact Navy morale,
- The pest population will become so numerous that they can no longer be tolerated.

When control is necessary, the method for control is chosen and timed to be most effective and least hazardous to non-target organisms and the general environment.

Table 1-1. Comparison of Traditional Pest Control and IPM Methods

	Traditional Pest Control	IPM
Program Strategy	Reactive	Preventive
Responsibility	Pest Control Operators	All Installation Personnel
Customer Education	Minimal	Extensive
Potential Liability	High	Low
Emphasis	Routine pesticide application	Pesticides used when exclusion, sanitation, and other non-chemical methods are inadequate
Inspection and Monitoring	Minimal	Extensive
Pesticide Application Frequency	By schedule	By need
Pesticide Application Location	Area-wide spraying	Spot treatment of areas where pests are found

1.1.9 IPM Program Components

- Surveillance: During surveillance, each building will be evaluated for pest infestations, and conditions that can lead to an infestation such as sanitation, leaks, and foundation cracks. Pest problems will be reported to the trouble desk. Structural and sanitation concerns will be reported to the trouble desk and/or the office manager. Post treatment surveys will determine if treatments have been effective.
- Sanitation: Excellent sanitary conditions will be maintained to aid the control of ants, cockroaches, filth flies, and rodents.
- Physical Controls: Physical controls are procedures that can destroy pests or make the environment unsuitable for their entry, dispersal, survival, or reproduction. These include water management, exclusion, and trapping.
- Pest Proofing: Pest proofing isolates the pest from their harborage, making pesticide applications more effective. Pest proofing generally involves the application of caulking compounds, grouting materials, etc. to suspected or known entrances to harborage sites.
- Direct Mechanical Control: Direct mechanical control involves the removal or destruction of the pests (e.g., weed pulling, line trimmers, etc.).
- Biological Control: Biological controls use one life form to control another. Bacteria, insect disease pathogens, viruses, and nematodes have been successfully used. Sometimes these life forms are formulated as registered pesticides. They have extremely low mammalian toxicity and their use generally constitutes significantly safer use to non-target organisms.
- Chemical Control: The use of pesticides is a part of IPM programs. Minimal use, least toxic chemical, and target specific use are employed. Non-chemical controls

are given a higher priority provided they are effective and within reasonable cost. Chemical controls shall always be based on surveys and past history of pest problems.

1.1.9.1 Pesticide Definition

Per **reference (a)**, pesticides are defined as "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 Environmental Protection Agency (EPA). Also, a substance or mixture of substances used as a plant regulator, defoliant, desiccant, disinfectant, or biocide". Herbicides, rodenticides, and insecticides are all types of pesticides. In this document wherever the term "pesticide" is used, it refers to all pesticides including herbicides. Use of herbicides is regulated in the same manner as all other pesticides.

1.1.10 IPM Action Plan

1. **Identify** pests and possible natural enemies;
2. **Develop plans/strategies**, an integration of treatment methods, that are effective against the pest, least disruptive to natural controls and least hazardous to human health and the environment;
3. **Establish action thresholds**, or the size of the pest population correlated with a threshold, sufficient to warrant treatment. In determining threshold levels, the amount of aesthetic or economic damage that can be tolerated must be correlated with the population size of pests, natural enemies, time in the season, and/or life stage of the pest or host;
4. **Monitor pest population** for regular sampling of pest and natural enemy populations. Monitoring is an ongoing activity;
5. **Control pest** (only if action threshold is exceeded);
6. **Document results**; and
7. **Evaluate/redesign plan** to determine the outcome of treatment actions.

The diversity of responsibilities for managing pests is reflected in **Section 3.1** and the pest management worksheets in **Section 8**.

Pest Management Program Overview

1.1.11 Overview

The majority of structural, grounds maintenance, turf, aquatic, and right-of-way pest management at NSA South Potomac is conducted via contract. Miscellaneous facilities purchase pest management via separate contract; however the IPMC's goal is to bring all supporting and supported commands under the current Public Works Department (PWD) contract.

The Natural Resources Office performs additional pest management, as needed, via contracts for their forestry and invasive species programs. Additionally, the Natural

Resources Office provides guidance to the IPMC and the PWD contractor to manage nuisance vertebrate animals.

In addition, individual personnel including employees and housing tenants/barracks residents are responsible for preventing and reducing pest infestations in their workplace and/or residence through proper sanitation. Individual building managers are not permitted to perform their own pest control. This IPMP applies to all NSA South Potomac organizations and individuals.

1.1.12 Program Requirements

1.1.12.1 Administration

Proper administration of the pest management program ensures accountability and documentation through planning, recordkeeping, reporting, training, pesticide and contract approval and regulatory compliance.

1.1.12.2 Operations

Operations are the day-to-day management of pests through pesticides and non-chemical means. Pest management at NSA South Potomac includes the following categories of operations:

Forestry: Control and management of pests of forest plants, including arthropods and fungi.
Ornamental and turf: Control and management of pests of landscape plants and turf, including arthropods, fungi, and weeds, in landscaping and recreational fields.
Aquatic: Control and management of vegetation drainage ditches, storm water retention ponds, and wastewater treatment ponds. May include aquatic weeds.
Right-of-way: Control and management of vegetation along roadways, railways, and fence lines.
Industrial, Institutional, Structural, and Health-Related: Control and management of pests in and around buildings. Pests may include cockroaches, termites, bees, venomous animals, stored product beetles and moths, rodents, and feral animals.
Public Health: Control and management of human and animal disease vectors, such as mosquitoes.

See **Section 3** for more information on operations.

2 Program Administration

Functional Areas, Roles and Responsibilities

The pest management program is comprised of many functional areas that are responsible for pest and/or pesticide management. Specific aspects of pest management include: 1) administering the pest management program and operations, 2) storing and/or displaying pesticides for sale, 3) mixing and applying pesticides, 4) conducting non-chemical pest management practices, 5) monitoring or inspecting pest prevention or control operations, 6) disposing of pesticides, 7) conducting pest surveillance, and 8) maintaining application equipment. The success of the pest management program depends largely on a clear understanding of the roles and responsibilities for the organizations and personnel involved. The following is a listing of the key organizations and personnel and their duties for the implementation of the IPMP.

2.1.1 Commanding Officer

- Designate an IPMC in writing. The current IPMC appointment letter is included in **Appendix (F)**.
- Develop, implement, and maintain a written IPMP;
- Ensure appropriate funding of pest management programs to provide for effective and safe control of pests based on pest management objectives for the installation;
- Ensure that installation personnel performing pest control receive adequate training, and achieve pest management certification as required;
- Ensure that all pest management operations are conducted safely and have minimal impact on the environment;
- Ensure that contract specifications including the use of pesticides are approved by a NAVFAC PPMC prior to advertisement for bid;
- Ensure that an IPM program, minimizing the use of pesticides, is implemented; and
- Ensure that the installation IPM plan and program are in compliance with all applicable environmental protection statutes.

2.1.2 Installation Pest Management Coordinator (IPMC)

At NSA South Potomac, the IPMC position is held by the Public Works Department (PWD) Pest Management Performance Assessment Representative (PMPAR). NSF Indian Head and NSF Dahlgren have an individual IPMC for each installation. The IPMC is responsible for coordinating all pest management and pesticide-related activities at NSA South Potomac. The IPMC also ensures that the pest management program meets all the administrative and operational requirements. The IPMC should work closely with the Contracting Officer and the Natural Resources Office to ensure that these requirements are met. IPMC responsibilities are:

- Review and approve the IPMP;
- Ensure the IPMP is implemented, reviewed annually, and undergoes a major rewrite every 5 years;
- Coordinate the installation's pest management program;

- Promote IPM in the pest management program to cost-effectively and safely manage pests and to prevent adverse environmental impacts;
- Ensure that all pesticide users report their pest management to NAVFAC for roll-up;
- Ensure current certification and continuing pest management training of pesticide applicators and all PMPARs;
- Receive and compile list of new pesticides and uses and equipment for all installation pesticide users and submit to the NAVFAC PPMC for review and approval;
- Maintain current list of approved pesticides;
- Act as liaison between the NSA South Potomac and NAVFAC Atlantic and state and federal agencies for pest management and pesticide regulatory issues;
- Ensure that the NSA South Potomac (NAVFAC Washington) Contracting Officers submit pest management contract specifications to the NAVFAC Atlantic PPMC for review prior to advertising; and
- Act as the Commanding Officer's (CO's) advisor for pest management issues.

2.1.3 Public Works Department, NAVFAC Washington

2.1.3.1 Facilities Engineering Acquisition Division

2.1.3.1.1 Performance Assessment Representatives

Performance Assessment Representatives monitor contractor performance for pest control and grounds maintenance. Their responsibilities are to:

- Monitor and evaluate the performance of the contract-provided service to ensure that pest control operations are in accordance with DoD and Navy regulations, as well as the contract specifications;
- Coordinate pest management contract specifications prior to bidding with the IPMC for review prior to submittal to the NAVFAC Atlantic PPMC for review and final approval;
- Maintain a copy of each contract on file;
- Monitor contractor personnel to ensure effective and safe pest management practices and identify and document discrepancies and seek corrective action with contractor in accordance with the contract;
- Document and maintain accurate records of all contractors' pesticide applications and report actual pesticide use to the IPMC;
- Note pest situations and seek advice for corrective actions; and
- Maintain liaison with the IPMC and Preventive Medicine.
- The Facilities Engineering Acquisition Division (FEAD; former Resident Officer in Charge of Construction) shall ensure that new buildings and building additions receive termite pre-treatments, as necessary.

All PMPARs shall be delegated the authority (in the contract and in the PMPAR appointment letter) to halt any contract pesticide applications that:

- Endangers or presents a hazard to humans, or animals, or the environment,

- Violates contract specifications, applicable Federal, DoD, or Navy regulations, or
- Violates the pesticide label.

2.1.3.1.2 Pest Management Contractor

- Comply with all federal, DoD, state and Navy pesticide regulations; and
- Ensure that all subcontractors comply with all Federal, DoD, and Navy pesticide regulations.

At NSA South Potomac, the Pest Management contractor is also directly responsible for grounds maintenance. In this capacity, they will:

- Perform grounds maintenance services as specified in the contract;
- Utilize only certified personnel to apply pesticides (including herbicides); and
- Communicate pest management needs, including conditions conducive to pest infestation, to the government PMPAR.

2.1.3.1.2.1 Pest Management Contractor

- Perform pest management services as specified in the contract;
- Comply with all federal, DoD, state, and Navy pesticide regulations; and
- Communicate pest management needs, including conditions conducive to pest infestation, to the government PMPAR

2.1.3.2 Environmental Division

The Environmental Division provides oversight on environmental protection and compliance regarding pest management operations. The Environmental Division:

- Reviews and approves this IPMP;
- Provides environmental oversight of pesticide program;
- Ensures pesticide programs conducted at NSA South Potomac are consistent with DoD and Navy regulations;
- Reviews/approves additions to the Authorized Use List, and
- Coordinates hazardous waste disposal.

2.1.3.2.1 Natural Resources

The Natural Resources Office is responsible for managing natural resources at NSA South Potomac. In this capacity, they are responsible for overseeing the Forestry, Invasive Species and Airfield Clear Zone Management programs. All of these programs involve pest management in some capacity, such as pest surveys (e.g., gypsy moth surveys) or hardwood suppression. The role of the Natural Resources Office is further described in the installation's Integrated Natural Resources Management Plan (INRMP). With respect to pest management, the Natural Resources Manager at NSF Indian Head and NSF Dahlgren are responsible for:

- Providing information on protected species, endangered or threatened species, noxious or invasive species, and environmentally-sensitive sites (e.g., wetlands and streams);

- Restricting the use of pesticides within environmentally-sensitive sites or providing alternatives to chemical control within these sites;
- Ensuring that all Environmental contractors who apply pesticides are properly certified and keep records of all pesticide applications;
- ~~Obtaining necessary permits for the Bird Aircraft Strike Hazard (BASH) program;~~ **Thomas, is this necessary??This needs to stay in for Dahlgren.**
- Providing guidance on the management of nuisance wildlife and coordinate/perform wildlife management operations when necessary; and
- Recommending disposal locations for wildlife carcasses.

2.1.4 Naval Health Clinic South Potomac

2.1.4.1 Director of Public Health Services

2.1.4.1.1 Preventive Medicine

Preventive Medicine Technicians (PMTs) provide guidance for all medically important pest management programs. PMTs are required to hold current DoD pesticide applicator certification in DoD category 8, Public Health. The PMTs conduct sanitation and hygiene inspections of facilities on the installation in accordance with NAVMED P-5010: Manual of Naval Preventive Medicine. Preventive Medicine shall:

- Act as liaison to CO for public health pest management;
- Establish and maintain liaison with IPMC and PMPAR;
- Conduct food service sanitation and habitability inspections at installation facilities;
- Provide technical expertise and guidance for pest management operations involving medically-important pests;
- Conduct surveillance for pests of medical importance, such as cockroaches, mosquitoes, bedbugs, etc. and recommend control measures;
- Recommend locations for mosquito light traps;
- Establish and maintain established liaison with Army Veterinarian;
- Coordinate with Joint Detention Group, Environmental Science Officer (Army), who performs some pest management operations in the camp areas;
- Maintain a record of pest management operations including food handling area surveys, mosquito trap surveys/other disease vector surveys and pest control operations performed. This data should be provided the IPMC to provide station wide IPM coordination and data management; and
- Develop, maintain, and implement an emergency plan for vector-borne disease control during a vector-borne disease outbreak or disaster. A copy of the Emergency Vector Control Plan (EVCP) should be kept in **Appendix (G)**.

2.1.4.1.2 Occupational Health

Occupational Health is responsible for performing all necessary medical surveillance (such as pre-employment and annual physical examinations and blood testing) for pest management personnel.

Industrial Hygiene

Industrial Hygiene (IH) performs surveys to determine if DoD employees (pest management personnel) need to be placed in a medical surveillance program. Additionally, IH performs surveys to determine what Personal Protective Equipment (PPE; including respirators) are necessary for personnel to wear during pest management operations. At NSA South Potomac these surveys are done every 2 years. Additionally, IH reviews all requests to add pesticides to an Authorized Use List (AUL).

2.1.5 Navy Exchange (NEX)

The NEX (Building 323 at NSF Indian Head and Building 109 at NSF Dahlgren) displays and sells household and garden pesticides for retail sale. With respect to pesticide sales, the NEX must:

- Ensure that pesticide sales comply with Armed Forces Pest Management Board (AFPMB) Technical Guide (TG) #45, "Storage and Display of Retail Pesticides" (http://www.afpmb.org/pubs/tims/TG45/ TG45.pdf), **Appendix (H)**; and
- Ensure that store employees are properly trained on the emergency procedures in the event of a pesticide spill.

With respect to food concessions, the NEX must:

- Ensure that proper sanitation is maintained in all food handling facilities;
- Submit any contract specifications (outside of the installation pest management contract) for pest management to the IPMC for technical review prior to submitting the contract for bid; and
- Ensure that all pest management not performed by the installation pest management contractor at NEX facilities is recorded and reported to the IPMC on a monthly basis.

2.1.6 Commissary

The Commissary (Building 902 at NSF Indian Head and Building 118) at NSF Dahlgren- B118) currently does not sell household pesticide items and is solely responsible for food services. If pesticide items are to be sold at the Commissary, the following requirements are to be met:

- Ensure proper sanitation is maintained in the store and storage areas;
- Ensure food items for sale are free from stored product pests;
- Ensure commissary facilities are surveyed and controlled for invading pests;
- Coordinate with the Army Veterinarian (Medical Food Inspector) on pest or sanitation problems;
- Ensure pesticide sales comply with AFPMB TG #45, "Storage and Display of Retail Pesticides" (http://www.afpmb.org/pubs/tims/TG45/TG45.pdf), **Appendix (H)**; and

- Ensure that store employees are properly trained on the emergency procedures in the event of a pesticide spill.

2.1.7 Morale, Welfare and Recreation

MWR provides recreational activities for military and civilian personnel at NSA South Potomac. This includes maintenance of athletic fields, gymnasium and physical fitness center. The golf course at both NSF Indian Head and NSF Dahlgren are no longer in operation and maintenance only consists of mowing and trimming by the grounds maintenance contractor. At NSF Indian Head, MWR oversees the Mix House, Building D-324, and any commercial food concession, catering of events and/or mix bar that take place inside or at the outside Tiki Bar. At NSF Dahlgren, MWR oversees the bowling alley, wood hobby shop, auto hobby shop two ball fields, gym and ITT and B-243. Currently, MWR does not apply pesticide at any of the facilities under their management and all work requests are handled by the IPMC. However, if MWR does begin to handle pesticide related issues the following measures shall be taken to remain compliant:

With respect to the athletic field maintenance MWR must:

- Ensure that all personnel who apply pesticides maintain current certification in the appropriate categories (see **Section 2.4** for more information);
- Ensure that all pesticides are approved, prior to use, by the NAVFAC PPMC;
- Provide copies of pesticide labels and Material Safety Data Sheets (MSDS) to the IPMC;
- Maintain and report records of all pesticide applications in accordance with the requirements outlined in this IPMP;
- Maintain the pesticide storage and mixing facility in accordance with the requirements of this IPMP and installation regulations;
- Obtain adequate supplies of pesticides, pesticide dispersal equipment and PPE, and ensure that equipment is properly maintained;
- Ensure all pesticide applicators practice IPM;
- Ensure landscape cultural management practices that maintain the health of plants and turf to prevent disease and pest infestations; and
- Ensure new plants brought onto the installation for landscaping in recreational areas are not infested with pests or infected with disease.

With respect to MWR food establishments, MWR must:

- Ensure that proper sanitation is maintained in all food handling facilities; and
- Submit any contract specifications (outside of the installation pest management contract) for pest management to the IPMC for technical review prior to submitting the contract for bid.

2.1.8 All Installation Personnel

All installation personnel at NSA South Potomac are responsible for

- Implementing good sanitary and exclusionary practices to prevent pest infestations; and

- Coordinating and cooperating fully with pest management professionals in scheduling pest management operations and preparing the areas for pesticide treatment if necessary.

Pesticide Approval

Only pesticides, as defined in **Section 1.2.3.1**, approved by the EPA shall be used on the installation.

2.1.9 NSA South Potomac Authorized User List (AUL)

The NSA South Potomac hazardous waste management plan is currently being developed and will require any person who would like to purchase a pesticide for use at NSA South Potomac to submit an "Addition to Authorized Use List" form and the MSDS for that pesticide for approval. The requests are reviewed by the respective NSA South Potomac Safety and Environmental Offices. As a part of their review, the respective Environmental Office will ensure that the IPMC reviews the pesticide so that approval can be obtained from NAVFAC Atlantic (see **Section 2.2.2**.) prior to adding the product to the user's AUL.

2.1.10 NAVFAC Pesticide Approval

DoD and Navy regulations require installations to submit a list of all pesticides that will be used during control operations to the cognizant pest management consultant (NAVFAC Atlantic) for review and approval. The purpose of this approval process is to ensure that only registered pesticides that are appropriate and most effective will be properly used on the installation. New pesticides may be added to the NSA South Potomac approved list by requesting approval through the on-line portal https://clients.emainc.com/dcs/pestmanagement/pesticide/logon.asp. Pesticides currently approved for use on the installation are listed in **Appendix (I)**. Proposed pesticides should also be routed through Environmental and Safety, at a minimum.

Note: Pesticides listed on the AFPMB, National Stock List are not "pre-approved". All pesticides must be approved prior to use by the PPMC.

Records and Reports

Pest management records (both pesticide applications and non-chemical operations) shall be submitted to the NAVFAC PPMC at least monthly. Individual users or the appropriate government representative will document and report records in an electronic database. The records will include the following data: pesticide trade name and active ingredient, amounts, uses, dates, places of application, and applicators names and certification. Pest surveys and inspections should also be included. Records shall be maintained separately from other files, including contracts files. Records shall be maintained electronically and submitted to the NAVFAC Atlantic PPMC electronically. There are two options. The preferred option is to report all pest management operations through the NAVFAC on-line website portal https://clients.emainc.com/dcs/pestmanagement/pesticidelogon.asp. To obtain a password and instructions for using this site, the IPMC should contact Mr. Steve Holmes at steven.p.holmes@navy.mil or 757-322-8295. Alternatively, pest management records may

be recorded using the NAVFAC-approved spreadsheet. The records are recorded in the spreadsheet and the spreadsheet is e-mailed monthly to the NAVFAC PPMC. A copy of the spreadsheet can be obtained by contacting the NAVFAC PPMC.

The following pest management operations are excluded from the recordkeeping/reporting requirement, per **reference (a)**:

1. Personal use of insect repellent.
2. Application of repellent by deployable units during mass treatment of clothing and tent material.
3. Application of pesticides for personal relief by residents of military housing.
4. Application of pesticides for flea and tick control to pets by pet owners and veterinary services.

Reports will be reviewed by the NAVFAC Atlantic PPMC to provide program oversight to the installation and to generate data for tracking overall Navy pesticide usage. Additionally, records are used to report pounds of active ingredient used for the DoD Measures of Merit (MoMs), per **reference (a)**.

Training, Certification and Licensing

In accordance with **references (a)** through **(c)** and **(e)** all installation pest management personnel who apply or supervise the application of pesticides (including herbicides) shall be trained and certified within two years of employment in accordance with the DoD Plan for the Certification of Pesticide Applicators of Restricted Use Pesticides or an EPA-approved State certification plan. Additionally, professional pest management personnel shall be certified if their duties include:

- Making recommendations for the use of pesticides, applying pesticides, or directly supervising the application of pesticides.
- Conducting demonstrations on the proper use and techniques of pesticide application or the supervision of pesticides.
- Conducting field research that includes using or supervising the use of pesticides.

IPM requires personnel who are properly trained to investigate and diagnose pest problems, select the appropriate pest management method, apply the appropriate pesticide, perform these operations so that they are safe to people and the environment, and educate and advise their customers on pest prevention methods.

2.1.11 Commercial Contract Applicators

Per **references (a)** through **(c)**, contractor employees performing pest management (including herbicide applications) on the installation shall be DoD-certified or certified under the state of Maryland for NSF Indian Head or the state of Virginia for NSF Dahlgren, prior to the beginning of the contract. The contractor shall provide evidence of training and experience in the specific pest control category(s) for services that they provide. This documentation shall be submitted to the IPMC and NAVFAC PPMC for review. Equivalent categories for each state can be found at: http://aec.army.mil/usaec/pest/pest05.html.

2.1.11.1 Grounds Maintenance

To apply pesticides for grounds maintenance or right-of-way weed control on the installation the contractor pesticide applicator must hold a pesticide applicator certificate and license issued by the Maryland Department of Agriculture for NSF Indian Head or by the Virginia Department of Agriculture and Consumer Services for NSF Dahlgren. Applicators must possess certification in all appropriate categories (http://aec.army.mil/usaec/pest/cert-md.html). This requirement applies to all personnel who apply pesticides, including herbicides (i.e., Roundup®).

2.1.11.2 Structural Pest Control (General Pest Control)

Applicators applying pesticides inside and outside buildings to control household or structural pests must hold a pesticide applicator certificate and license issued by the Maryland Department of Agriculture for NSF Indian Head or by the Virginia Department of Agriculture and Consumer Services for NSF Dahlgren. Applicators must possess certification in all appropriate categories (http://aec.army.mil/usaec/pest/cert-md.html).

2.1.12 In-House Personnel

References (a) through **(c)** require that all personnel who apply pesticides be trained and certified. All personnel who apply pesticide as part of their job will be required to obtain and maintain DoD certification. The NAVFAC PPMC can provide guidance on and coordinate DoD certification. Installation personnel may, alternatively or concurrently, obtain state of Maryland or Virginia, dependent on respective NSA South Potomac installation, certification.

Pest controllers hired as trainees should demonstrate a strong aptitude for mathematics and reading and be able to clearly understand English.

2.1.12.1 Initial Certification

1. Complete an approved correspondence course. Sources for approved correspondence courses can be obtained from the NAVFAC PPMC.

2. Attend a four-week (two weeks for grounds maintenance personnel) course presented every March and September at NECE, NAS Jacksonville, Florida. Certification is granted upon successful completion of one of these courses and the endorsement of a NAVFAC PPMC Certifying Official.

3. DoD applicators are usually certified in the following categories:
   Category 2: Forest
   Category 3: Ornamental and Turf
   Category 5: Aquatic
   Category 6: Right-of-Way
   Category 7: Industrial, Institutional, Structural, and Health-Related
   Category 8: Public Health
   Some may also obtain certification in **Category 11**: Aerial Application.

Note: Professional Pest Management Personnel, as defined by **reference (e)**, may obtain core training and certification in specific pest control categories by successfully passing a written examination following completion of either a DoD correspondence course or DoD formal training. This means that personnel who work in pest management and have a college degree in the biological/agricultural sciences can become certified via correspondence (remotely).

2.1.12.2 Re-Certification

Re-certification training is required every three years after initial certification. Re-certification training courses are held at least once each year in various locations and consist of 27 hours of training (18 hours for grounds maintenance personnel). Contact NAVFAC PPMCs for a course schedule or see **Section 2.4.6** for more information.

2.1.12.3 Aerial Spray Certification (Category 11)

Initial certification and recertification in Category 11 is a one-week course conducted by the Air Force Reserve in Vienna, Ohio. Certification is valid for 3 years at which point certified applicators must recertify. Aerial spray certification is not currently necessary for NSA South Potomac operations.

2.1.13 Pest Management Performance Assessment Representatives

PMPARs or others who inspect the performance of contractor provided pest management services (including grounds maintenance, where pesticides are used) must be trained in pest management in accordance with **reference (f)**. NAVFAC Atlantic provides a four-day initial PMPARs training course. The PMPARs should attend refresher training every three years. This is also conducted by NAVFAC Atlantic at least annually in various locations. See **Section 2.4.6** for more information.

2.1.14 Installation Pest Management Coordinator

Reference (a) requires that the Installation Commander formally designate an IPMC. The IPMC has been designated officially and the letter is included in **Appendix (F)**. The IPMC responsibilities are outlined in **Section 2.1.2**.

The IPMC represents NSA South Potomac in pesticide matters and serves as liaison with offices relating to pesticide compliance and pest management matters. Installation Pest Management Coordinator Training, sponsored by NAVFAC Atlantic, shall be completed within one year of being designated to the position. Contact NAVFAC PPMCs for a course schedule or see **Section 2.4.6** for more information. Refresher training is required every 3 years.

2.1.15 Pest Management Training Records

Copies of training records for all NSA South Potomac personnel, including contractors, who have attended pesticide applicator, PMPAR, or IPMC training shall be retained in **Appendix (J)**.

2.1.16 Pest Management Training Schedule

Schedules for all DoD pest management training are maintained at http://www.afpmb.org/pubs/courses/courses.htm. Additionally, personnel may contact the NAVFAC Atlantic PPMC for further information on courses and course schedules.

Pest Management and Grounds Maintenance Contract Management

2.1.17 Background

The application of pesticides by contractors is strictly regulated by DoD and Navy regulations [**references (a)** through **(c)**]. These requirements apply to all pesticide applications including insecticides, herbicides, fungicides, molluscides, etc. to all outdoor areas and all indoor areas. These requirements apply to any size contract (small purchase or facility support contract generated) and services acquired by any other means including government credit cards.

2.1.18 Contract Requirements

Contractors must comply with all DoD and Navy pest management regulations while conducting operations on DoD property. At a minimum the following requirements will be included in all contracts where pesticides are used.

2.1.18.1 Certified Pesticide Applicators

Per **reference (a)** all contract personnel who apply pesticides (which include all herbicides) will hold a valid full "commercial-grade" certification issued by the DoD or the state of Maryland or Virginia, based on the respective installation. All contractor personnel who will apply pesticides shall, prior to the start of work, supply a copy of the certificate(s) to the designated Navy Representative.

2.1.18.2 Pesticide Approval

All pesticides used at NSA South Potomac by contractors will be approved at a minimum by the Contracting Officer, Safety, IH, Environmental, the IPMC, and NAVFAC prior to use. The PMPAR or designated person will route all information on proposed pesticides to the NSA South Potomac IPMC. The IPMC will review and forward information on proposed pesticides to the NAVFAC PPMC for assistance in approving contractor-proposed pesticides. Alternatively, the contractor may submit the request directly through the on-line portal (see **Section 2.2.2**). Contractors will be required to submit copies of both the pesticide label and MSDS for approval before use. The pesticides approved for use by contractors are included in the approved pesticide list in **Appendix (I)**.

2.1.18.3 Pesticide Storage, Mixing and Disposal

Contractors will not be allowed to store pesticides, pesticide containers or rinse water on property. All pesticides shall be carried onto Navy property in ready-to-use form, previously mixed offsite. The only exception to this rule is described in **Section 3.3.2**. Excess pesticide and pesticide containers shall be transported and disposed of off Navy property and the contractor will assume generator status.

2.1.18.4 Occupied Spaces

Contractors will not apply any liquid, aerosol, or dust formulated pesticide in any occupied space(s). For additional information, see **Section 3.3.1.1**.

2.1.18.5 Records and Reports

Contractors will record and report all pest management operations, both chemical and non-chemical in accordance with the requirements in **Section 2.3** of this IPMP. Contractor records will be reviewed by the PMPAR, the IPMC, and the NAVFAC PPMC.

2.1.18.6 Contractor Vehicles

Contractors will be required to comply with the vehicle requirements in **Section 3.3.1.4**.

2.1.18.7 Personnel Safety

Contractors will provide their employees with appropriate PPE and information on the safe handling and application of pesticides.

2.1.18.8 Notification

The PMPAR shall be notified 24 hours prior to any pesticide applications in the clinic and/or the Child Development Center (CDC).

2.1.19 Contract Management

2.1.19.1 Contract Specification Review

To ensure cost-effective pest control and grounds maintenance, contract specifications must be carefully written. The trained PMPAR should provide guidance to the specification writer to ensure contract requirements are described in a manner which enables the Government to objectively assess the contractors' performance. The basis of the contractors' performance is measured by the cessation of damage or reductions in the number of pests counted after the contractor has performed the work. The NAVFAC Atlantic PPMC is required to review the specifications prior to sending the contract out for bid [**reference (a)**]. Every contract that includes pest management operations or pesticide applications will receive professional review and approval before advertisement or procurement of services. Template contract specifications can be found at http://portal.navfac.navy.mil/portal/page?_pageid=875,3957514,875_3957518&_dad=portal&_schema=PORTAL.

NSA South Potomac can request assistance from NAVFAC PPMC when developing technical portions of pest management contracts. Additional guidance on writing contracts can be found in AFPMB TG #39: Guidelines for Preparing DoD Pest Control Contracts using Integrated Pest Management (http://www.afpmb.org/_pubs/tims/tim39.htm). Current technical specifications for the pest control contract at NSA South Potomac are in **Appendix (K)**.

2.1.19.2 Contract Performance Assessment

Pest management and grounds maintenance contracts (involving chemical weed control) must be monitored by a trained PMPAR to ensure compliance with DoD and Navy regulations and primarily contract specifications. Inspections for pests

prior to and after operations should be conducted to ensure efficacy of the services. For pest surveillance techniques, the PMPAR should consult the **Section 3.1 and 8** of this IPMP. Inspection of the contractor during pesticide application, when necessary, should be conducted to ensure safety measures are being taken. The contractor's vehicle and equipment must be made available for inspection when requested.

2.1.20 Credit Card or Small Purchase Pest Management Contracts

All requirements, stated previously, apply to pest control services obtained through the use of government credit cards and small purchase contracts, per **reference (g)** [**Appendix (L)**].

This page intentionally left blank

3 Operations

Current Operations

3.1.1 PWD Pest Control and Grounds Maintenance

Pest control, for the purposes of this plan, is the control of arthropod and vertebrate pests in and around buildings. Sanitation, glue traps, and exclusion are the primary means of non-chemical control in and around structures. Low toxicity insecticidal baits are used effectively for cockroaches and ants. Most pesticide applications involve the application of contact chemicals or those that have short residual efficacy. The majority of pest control at NSA South Potomac is accomplished via the PWD pest control contract. In addition to general pest control, PWD contract pest controllers perform grounds maintenance work (weed control), such as fenceline weed control and weed control in sidewalk and parking lot areas. Customers may place a request for a work order via the trouble desk.

3.1.2 Inspections

Inspections are a key component to IPM and routine inspections provide early detection of pests. All pest control and grounds maintenance personnel shall inspect all sites before performing any pest management operations. Additionally, the PWD pest controller should set a preventive maintenance inspection schedule to include routine pest surveillance.

3.1.2.1 Utility Pole Inspection Program

The PWD Utilities and Energy Management Office maintains all utility poles and lines at NSA South Potomac. Maintenance of the poles and line clearance areas are conducted through a trouble desk ticket via the PWD grounds maintenance contract.

3.1.2.2 PMPAR Inspections

The PWD PMPAR is responsible for inspecting the pest control contractor operations. The PMPAR should investigate trouble calls and follow up after the contractor has initiated control to ensure that contract obligations were fulfilled and the customer is satisfied with services.

3.1.2.3 Preventive Medicine Inspections

Preventive Medicine conducts health and sanitation inspections including surveys for pests and signs of pests at the galley each month. They also inspect the child development center, playgrounds and barracks on a monthly basis. The list of facilities inspected on a monthly or quarterly basis is included as **Appendix (M)**.

3.1.2.4 U.S. Army Veterinarian, Medical Food Inspectors

Does not apply to NSA South Potomac

3.1.3 Forestry Pest Management

The forestry program at NAS PAX is managed by the Natural Resources Office. This program includes chemical hardwood suppression and chemical girdling, as needed. Additionally, aerial surveys for gypsy moth (*Lymantria dispar*) are conducted annually by the United States Department of Agriculture Forest Service at NSF Indian Head.

3.1.4 Airfield Clear Zone Management

Vegetation management for this program is managed by the Natural Resources Office. This program includes stump treatments (to prevent re-growth) and general broadleaf weed control in airfield clear zone areas. This program does not apply to NSF Indian Head, however, NSF Dahlgren has an airfield that is maintained.

3.1.5 Ornamental and Turf Pest Management

3.1.5.1 Grounds Maintenance

The grounds maintenance contractor performs very little ornamental and turf pest management at NSA South Potomac. Only plantings in "prestige" areas receive turf and ornamental pest management on a service call basis.

3.1.5.2 NSA South Potomac Golf Courses

The golf courses at NSF Indian Head and NSF Dahlgren are no longer in operation and management of golf courses no longer applies to NSA South Potomac.

3.1.5.3 Recreational Fields

Very little broadleaf weed control is performed on recreational fields, such as baseball fields. Some weed control is performed on the running track, as needed.

3.1.6 Aquatic Pest Management

Aquatic weed control is not normally performed at NSA South Potomac and would be managed by the Natural Resources Office.

3.1.7 Right of Way Pest Management

This category of pest management at NSA South Potomac is accomplished jointly by the pest control contractor and the grounds maintenance contractor, depending on the size of the job. These contractors use various herbicides to control unwanted vegetation in right of ways, such as fencelines, roadways, utilities, etc. Herbicides are used to control weeds along cracks in sidewalks and asphalt parking areas, along fence lines, around buildings, and along ditch banks. Various cultural and chemical controls can and should also be used to deal with these and other weed control problems. Guidance on the use of available control techniques may be obtained from the Long Term Land Management Plan provided by NAVFAC Atlantic Applied Biology.

3.1.7.1 Fence Lines and Transformers

Maintenance of fencelines and transformers at NSA South Potomac is one of the primary weed management activities. This work is accomplished by the PWD grounds maintenance contractor.

3.1.7.2 Roadways and Patrol Roads

The PWD grounds maintenance contractor uses herbicides to maintain sidewalks, parking lots, patrol roads and other areas as necessary with herbicides.

3.1.8 Agricultural Pest Management

3.1.8.1 Agricultural Outleases

Does not apply to NSA South Potomac.

3.1.8.2 Garden Plot Pest Management

Does not apply to NSA South Potomac.

3.1.9 Industrial, Institutional, Structural and Health Related Pest Management

This category of pest management covers cockroaches, ants, structural pests (e.g., termites) and other miscellaneous indoor/outdoor pests. Sanitation, glue traps and exclusion are the primary means of non-chemical control and around structures. Low toxicity insecticidal baits are used effectively for cockroaches and ants. Most pesticide applications involve the application of contact chemicals or those that have short residual efficacy.

3.1.9.1 Cockroaches

Cockroaches, primarily German and American cockroaches, are occasionally problematic in some NSA South Potomac food facilities. The general adaptability of the German cockroach makes it the single most important pest problem in installation food service areas. An integrated approach of using both preventive and corrective techniques is the only practical means of controlling this pest.

Preventive control measures including inspection (including placing glue traps), interior and exterior facility sanitation and exclusion methods such as closing harborage areas by caulking or other modifications reduce the chances for pest survival by limiting needed food, water, and shelter. In food service buildings, services are performed on a scheduled basis. Service includes inspection, recommendations on pest proofing and sanitation and chemical control, if needed. Other areas are handled on a service call basis. Baits should be the primary chemical control. When non-bait pesticides are used in food handling areas, the application shall be confined to crack and crevice placement when using residual aerosol or dust formulations. Insect Growth Regulators can be used to complement other control measures. Self-contained light traps may also be utilized in these areas.

3.1.9.2 Ants

Ants are a mostly seasonal problem throughout the installation, both in food handling buildings as well as office spaces, barracks and housing. Preventive control measures including inspection, interior and exterior facility sanitation and exclusion methods such as closing harborage areas by caulking or other modifications, reduce the chances for pest survival by limiting needed food, water, and shelter. In buildings that are most susceptible to pest infestation, services are performed on a scheduled basis. Service includes inspection, recommendations on pest proofing and sanitation and chemical control, if needed. Buildings where there is no food and where problems occur only occasionally such as shops and storage buildings, are handled on a service call basis. Baits should be the primary chemical control. When non-bait pesticides are used in food handling areas, the application shall be confined to crack and crevice placement when using residual aerosol or dust formulations. Insect Growth Regulators can be used to complement other control measures. Self-contained light traps may also be utilized in these areas.

3.1.9.3 Navy Food Concessions

There are many food concessions located at NSA South Potomac. These locations are listed in **Appendix (M)**, and are inspected monthly by Preventive Medicine and will be serviced monthly by the PWD contract pest controllers. A NSA South Potomac goal will be to ensure that all food concessions are serviced by the PWD contract. If any food concession manager chooses to contract for pest management services separately, they are subject to all of the requirements outlined in **Section 2.5.2.**

3.1.9.4 Wildlife and Nuisance Vertebrate Management

Wildlife management at NSA South Potomac is primarily the responsibility of the pest control contractor with support and/or guidance from the Natural Resources Office. More information on the management of nuisance wildlife can be found in **Appendix (O)**, as well as **Section 8.12**.

3.1.9.5 Structural Pests

Structural pests that have an impact on the NSA South Potomac operations include termites and wood destroying fungi.

3.1.9.5.1 Structural Control Program

A well managed structural pest control program includes inspection, prevention, and chemical treatments when needed. All susceptible structures that contain wood or with wooden structural members should be inspected on an annual basis. Detailed records of annual structural pest inspections and subsequent treatments should be maintained. Records should note when a building was inspected, the location of any infestation found, and the description of any treatment performed.

3.1.9.5.2 Termite Control

Various control techniques including: 1) the use of construction practices that protect wood from attack; 2) controlling moisture through proper drainage and ventilation; 3) the use of termiticides for barrier treatment of soil and

hollow masonry units of buildings and 4) the use of treated wood, are part of an integrated approach to structural pest control. The major structural pest at this activity is the subterranean termite. Termite specimens should be submitted to NAVFAC Atlantic applied Biology (Code EV51) for species identification and determination of corrective control actions. Corrective chemical treatments should be performed when termites are found actively damaging wood. Control operations should be based on annual inspections of buildings and reports of termite swarming from building occupants. Top priority is given to preventive control treatments, such as preconstruction termite soil treatments and the use of treated wood to protect wood from attack. After treatments have been performed, care must be taken to prevent disruption of the treated soil barrier when soil within one foot of the foundation is moved by gardening activity or covered when raised flower beds are installed against a building. Disturbance of treated soil within one food of the foundation cannot be allowed. Raised beds must be four-sided (i.e. not using the foundation as one side) and soil within one foot of the foundation can not be cultivated for planting.

3.1.9.6 Stored Products Pests

Food items located in dining facilities, in installation kitchens or in food storage facilities may become infested by stored food product pests. Most susceptible items are moved and consumed before infestations occur. Infested foodstuffs are condemned or discarded, when necessary. Stored product pests should be monitored in accordance with the AFPMB's TG #27, Stored-Product Pest Monitoring Methods. http://www.afpmb.org/pubs/tims/tg27/tg27.pdf. The bulk of food items are stored at the Commissary and NEX (Building 323 at NSF Indian Head and Building 109 at NSF Dahlgren).

3.1.9.6.1 Dermestid Beetle

If the dermestid beetle *Trogoderma* is found in a commodity, the whole lot of food must be condemned. The pointed hairs on the larvae will cause digestive problems if the contaminated food is eaten. An accurate identification of *Trogoderma* is required to condemn the lot. For the most part, sanitation (keeping storage areas clean) and stock rotation minimize or prevent pest infestation. If an infestation is found, the most effective way to control *Trogoderma* is through deep cleaning, vacuuming and discarding or segregating the infested product while surveying adjacent areas. Ultra Low Volume (ULV) space treatments and residual sprays are used to stop movement of an infestation to clean stock within the food storage areas of the food handling areas. A pheromone trapping program should be implemented to provide surveillance for dermestid beetle infestation.

3.1.10 Public Health Pest Management

Mosquitoes (primarily *Culex pipiens* and *Aedes albopictus*), ticks, and filth flies constitute the most important insect groups from the standpoint of disease transmission. Operations directed at controlling potential disease vectors must be based on a thorough knowledge of the target pest. Survey operations are essential in determining the species

present, the population level involved, and the potential hazard of disease transmission. Surveys also serve as a valuable tool in evaluating control operations

3.1.10.1 Mosquitoes

Surveillance for mosquitoes of medical significance is the responsibility of Preventive Medicine. Preventive Medicine activities should include 1) identifying and mapping larval habitats and 2) monitoring adult activity. Both activities provide useful information in a proactive surveillance program. Surveillance for larval mosquitoes in the drainage ditches, culverts, and impoundments is essential to maintaining mosquito control at NSA South Potomac. Mapping and monitoring larval habitats gives early estimates of future adult densities and, under some conditions, provides the information necessary to eliminate mosquitoes at the source. Light traps can be used to locate larval habitat. A high proportion of males in a light trap usually indicate a nearby larval breeding site (CDC, Guidelines for Arbovirus Surveillance Programs in the US, April 1993). If male count numbers are proportionally high, a survey of the area should be done to locate possible breeding sites. Surveys include the collection and identification of adult mosquitoes and are performed using CDC traps. Mosquitoes are collected by the PWD pest control contractor and identified by Preventive Medicine Technicians. Entomologists with the NECE Jacksonville are responsible for providing professional guidance, recommendations, and on-site assistance on all technical matters relating to disease vectors and other medically important pests.

Larviciding is the most effective way to control mosquitoes. The locations are determined on an as needed basis. Larvicides should be applied when results of mosquito dip counts exceed three larvae per dip. There is a very small window available to treat successfully for control of larvae. To decrease the amount of standing water it is important to have a drainage system allowing proper runoff of rain water from roadways. The ditches should be maintained free of weed growth. This increases water flow in the ditch allowing access of natural mosquito predators.

The PWD pest control contractor performs all ULV pesticide applications for mosquitoes. When female adult mosquito counts from CDC traps exceed 20 females per night in one trap, ULV insecticide treatments are initiated. ULV treatments must be made during peak mosquito activity when weather conditions are optimum. Therefore, ULV operations will be conducted in the early morning hours before the sun warms the ground, or in the evening after the ground has cooled. Also, application of residual insecticides labeled for mosquito control to relatively small areas near the source of the mosquitoes has been shown to be highly effective.

3.1.10.2 Ticks

The primary tick vectors in Maryland are the “deer tick” (*Ixodes scapularis*) and the “lone star tick” (*Amblyomma americanum*). Deer ticks can transmit the agents that cause Lyme disease, anaplasmosis, and human babesiosis. Lone star ticks are capable of transmitting the agents that cause ehrlichiosis. Surveys should be done to determine tick populations and determine where to focus control efforts.

Options such as the 4-Poster Deer Treatment Bait Station can be used to reduce tick populations overall (http://www.aldf.com/FourPosterDeerTreatmentBaitStation.htm). Generally, widespread applications of residual pesticides for tick control are not effective long term. Habitat modification, especially in improved and semi-improved areas, such as cutting back vegetation and keeping turf as short as possible, can also help to reduce tick populations. Reduction of deer herd populations can also help to control tick populations by impacting life cycle requirements.

3.1.10.3 Filth Flies

Filth flies (houseflies, blow flies, flesh flies, bottle flies, etc.) can be a problem at NSA South Potomac especially during warmer months and if high sanitation levels are not maintained. Timely disposal of garbage and routine cleaning of garbage cans (twice a week) and dumpsters helps to minimize the problem. Garbage cans and dumpsters should be placed on concrete pads at least 100 feet from facilities (or farther if recommended by Preventive Medicine) to reduce breeding under and around the containers and to minimize access to the facilities. Continuous monitoring of sanitation conditions in and around food service areas helps assure that significant fly breeding will not occur.

The choice of fly control techniques must be based on an on-site evaluation of the problem. Pest control personnel inspect areas where garbage is handled and treat these locations with approved insecticides when flies exceed control limits. Preventive Medicine personnel also inspect these areas and report significant findings to appropriate people for corrective action. Exclusion devices such as screens and air curtains help prevent the entrance of flying insects into buildings when installed and properly maintained. Aerosol insecticide treatments are provided when adult flies become a problem in indoor spaces. Light trap devices are also helpful for filth fly control in food handling areas, but only when they are placed inside of the building. Use only non-contaminating light traps with some way of containing the dead insects. For more information on this, see the AFPMB's TG #29, Integrated Pest Management In and Around Buildings, http://www.afpmb.org/pubs/tims/TG29/TG29.pdf. Baits such as Quick Strike™ provide effective control while utilizing the least toxic compound, the goal of a good IPM program.

3.1.10.4 Rodent Management

Rodent control work is an ongoing program to eliminate the causes of rodent infestations. Major emphasis is placed on the removal of available food supplies by cleaning up trash and removing vegetation, and exclusion by closing entry holes. Mechanical traps (snap traps, glue traps, etc.) are the preferred method for reducing rodent populations and the only acceptable method of control for sensitive sites, such as food handling areas. Anticoagulant bait materials can also be used, in certain instances, to provide another control option. Tamper-proof bait stations must be used for all rodent baits.

3.1.11 Invasive and Non-Indigenous Species Management

Executive Order 13112 [**reference (h)**] is implemented at DoD installations through **reference (a)**, which requires that installations prevent, detect and monitor invasive species. NSA South Potomac manages invasive species in accordance with the INRMP and should use integrated pest management techniques to manage these pests. Any pesticide applications made for invasive species control must be performed by properly certified applicators. More information on invasive species can be found in the installation INRMP.

3.1.11.1 Feral Cats and Dogs

Feral animals are a common problem on Naval installations. Feral cats and dogs are susceptible to and can carry disease, damage natural habitats, harm protected wild animals, become a vehicle strike hazard, and attack and injure personnel. The elimination of available food by keeping garbage cans and dumpsters sealed will decrease to appeal of the area to the feral animals. Elimination of possible shelter locations is also a good means of control. The respective NSA South Potomac Natural Resources Office is responsible for controlling feral or free-roaming cats and dogs when notified of issues or the presence of animals. At NSF Indian Head, all feral animals and common household pets shall be trapped and delivered to the Charles County Animal Control Warden or the Tri-County Animal Shelter for proper handling. At NSF Dahlgren, all feral animals and common household pets shall be trapped and delivered to the King George animal control warden or local SPCA personal. For more information see **Section 8.12, Appendix (O)** and the AFPMB's Technical Guide 37, Guidelines for Reducing Feral/Stray Cat Populations on Military Installations in the United States, http://www.afpmb.org/ pubs/tims/tim37.htm.

3.1.12 Public Private Venture Housing

Housing areas at NSA South Potomac are under a Public Private Venture (PPV) partnership. The PPV partner is responsible for providing the pest management services and responsible for upholding the agreements set forth in the grounds lease. The contractors providing services in these areas must follow all state and local laws. Currently, PPV Housing provides records of pesticide applications to the IPMC and enters the information in the NAVFAC online pesticide reporting website.

3.1.13 MWR

NSA South Potomac MWR currently does not apply pesticides at either NSF Indian Head or NSF Dahlgren. All requirements are handled through the IPMC.

3.1.14 Bird Management

Does not apply to NSA South Potomac.

3.1.14.1 Bird Aircraft Strike Hazard Management

Does not apply to NSA South Potomac.

Pesticide Management

Proper management of pesticides [as defined in **reference (a)**] will ensure a safe and cost-effective pest management program. Management of pesticides includes the proper selection of pesticides, pesticide approval (**Section 2.2**), procurement, storage, mixing, use of pesticide application equipment, and clean up. The pesticide label provides most of the information needed to manage pesticide use and must be affixed to the original container at all times.

3.1.15 Pesticide Selection

The following criteria should be used when selecting a pesticide:

- **Determine the need for a pesticide.** Is a chemical pesticide necessary? In some situations non-chemical control methods may be more effective or less costly and time-consuming in the long term. Will exclusion or habitat elimination take care of the problem?
- **Choose a pesticide with a low toxicity.** Can the pest be sufficiently controlled with a pesticide that has a low toxicity to people and/or other non-target organisms?
- **Choose pesticides and pesticide formulations with minimal environmental impact.** Avoid using "Restricted Use" pesticides if possible. The environmental impact of pesticide spills is reduced when using a granular pesticide formulation rather than a liquid. In some instances, attractant bait stations can be used instead of broadcast application of a pesticide.
- **Choose pesticides that provide a long-term or sustainable solution.** Example: Contact insecticides applied to ant trails will only temporarily halt the infestation, while bait can kill the entire colony including the queen eliminating that particular nest as a source of infestation.

3.1.16 Pesticide Procurement

No pesticides are procured at NSA South Potomac.

3.1.17 Inventories

Currently, pesticides are not stored at NSA South Potomac. However, if storage becomes necessary then the following measures shall be met to remain compliant. Pesticide inventories will include chemical names, EPA registration numbers (if applicable), and quantities on hand. These inventories will be updated at least every six (6) months and will be routed through the IPMC.

3.1.17.1 In-House Pest Management

Currently, this does not apply to NSA South Potomac, however, if implemented the following measures will be taken to remain compliant. Labels and MSDS for all pesticides stored and approved for application at NSA South Potomac will be maintained by the IPMC. The IPMC will provide copies of labels and MSDSs for all pesticides stored at NSA South Potomac to the Fire Department and other necessary personnel. There is currently one government certified pest controller at NSA Dahlgren.

3.1.17.2 Contractor Pest Management

The PMPARs will keep copies of all pesticide labels and MSDS used by contractors. Additionally, the IPMC should be provided with copies.

3.1.18 Application

3.1.18.1 Service Containers

Containers other than the original pesticide container that is used for transporting pesticides to the job site must have a copy of the label attached. Service containers used for the application of a pesticide must have the following information, in addition to the pesticide label, on a tag attached to the container: name of party responsible for the container, the identity of the chemical in the container, and signal word of the chemical.

3.1.18.2 Applicator Equipment

Proper equipment selection and maintenance is vital to the safe application of pesticides. Only pest control equipment that is in good repair and safe to operate shall be used by all pest management applicators. The equipment should be in good condition, free from corrosion, clean and free from leaks and properly calibrated. Equipment should be labeled "Danger – Pesticides". The PMPAR shall inspect equipment used by contract applicators. Applicators shall also ensure that they use suitable equipment to ensure proper application of pesticides.

3.1.18.3 Pesticide Application

All pesticides must be applied in accordance with Federal label directions. Application of pesticides is timed to ensure contact with and maximum kill of the pest and to prevent use under adverse weather conditions that can cause drift of the chemical outside the target area. See **Section 5.1.2.2** for more information on timing and drift prevention.

3.1.19 Post-Application Clean Up

All pest control equipment shall be properly cleaned. Equipment and empty containers shall be triple rinsed at the application site prior to storage or disposal.

Contractors will not be allowed to dispose of excess pesticide, used containers, or residues on the installation per contract specifications; they must conduct all cleaning at designated facilities off-site and dispose of rinsate in accordance with label directions by application to a registered site or by using the rinsate as make-up water for the next application.

Rinsed pesticide containers should be cut up and disposed of in the sanitary landfill or recycled if laws allow. Contractors are not allowed to dispose of excess pesticide, used containers, or residues on the NSA South Potomac property; they must conduct all cleaning at an appropriate site off base.

3.1.20 Pesticide Disposal

The need for disposal of excess dilute pesticides should be minimized by careful estimation of the amounts required. Application in accordance with the pesticide label

is the preferred method of "disposing" of dilute pesticides. The Contractor will coordinate, via the PMPAR, with Environmental to dispose of excess pesticides or other materials contaminated with pesticides.

3.1.20.1 In-House Pest Management

The need for disposal of excess dilute pesticides should be minimized by careful estimation of the amounts required. Application in accordance with the pesticide label is the preferred method of "disposing" of dilute pesticides. To dispose of excess pesticides contact the installation hazardous waste coordinator.

3.1.20.1.1 Sprayer Clean-Outs

When cleaned, spray equipment will be triple rinsed using 10% of the tank capacity divided into three doses. The rinse material will be sprayed on the application site when possible or held in a storage tank located in the AV141 complex. The rinse water is used for future applications.

3.1.20.1.2 Empty Containers

Reference (c) requires that pesticide wastes be disposed of in accordance with 40 Code of Federal Regulations (CFR) 262: EPA Regulations for Hazardous Waste Generators. The disposal of pesticides, their containers, and related wastes is strictly regulated. Empty liquid pesticide containers will be triple rinsed with 10% of the container's capacity divided into three doses. Disposal of empty containers will be coordinated with the Environmental Division. EMPTY CONTAINERS WILL NOT BE REUSED. Rinsed pesticide containers should be cut up and disposed of properly or recycled if possible.

3.1.20.1.3 Rinse Water

Water from rinsing out equipment will be used immediately when possible. Wastewater formulations that contain pesticides shall not be discharged into any storm or sanitary sewer system.

3.1.20.1.4 Excess Pesticides

Disposal or redistribution of excess pesticides shall be coordinated with the Environmental Office. The Environmental Office will determine whether the pesticide can be redistributed or needs to be disposed of. A clear and clean copy of the label and the MSDS should be provided when disposing of a pesticide. Excess pesticides shall never be disposed in any storm or sanitary sewer system.

3.1.20.2 Contractors

Contractors will be required to dispose of all pesticides, pesticide containers, traps, personal protective equipment, etc. off of NSA South Potomac. The contractor(s) will not be permitted to wash or rinse application equipment anywhere on the installation.

3.1.21 Pesticide Cancellation

In recent years several common organophosphate and carbamate pesticide registrations have been cancelled or restricted. The EPA continues to evaluate pesticides for re-registration and it is expected that more pesticides will either be cancelled or have their

uses restricted. For information on the EPA process of canceling pesticides, visit: http://www.epa.gov/pesticides/regulating/cancellatioNAS.htm. The NAVFAC PPMC will provide information about cancelled pesticides when that information becomes available.

Pesticide Safety and Security, Storage Facilities, Mixing and Spills

3.1.22 Operational Procedures

3.1.22.1 Occupied Spaces

Reference (c) prohibits the application of liquid, aerosol, or dust formulated pesticide in any occupied space(s). Occupied spaces are rooms with any occupants. No liquid (including soluble concentrates, wettable powders, emulsifiable concentrates, and microencapsulated particles), aerosol, granular, or dust formulation pesticides shall be applied in any occupied space(s). Gel baits or bait stations and traps may be applied in occupied spaces.

3.1.22.2 Pest Management in the Child Development Center and Youth Center

Pesticide applications at the NSF Indian Head CDC, Building 1901, and the Youth Center (YC), Building 441, shall be scheduled when children are not present. Pesticide applications at the NSF Dahlgren CDC, Building 470, 212 and Building 437T , shall also be scheduled when children are not present. Pesticides, including bait stations, will be placed only in areas that are inaccessible to children. Liquid pesticides applied as crack and crevice treatment will be used only for persistent problems and allowed to dry and air out for at least 12 hours before children are allowed to enter treated spaces (longer if specified by the pesticide label). Liquid applications will be limited to Friday nights (or when children will not return for more than 24 hours), if possible. Baseboard spraying will not be allowed. For more information see **Section 4.2.3.2**.

3.1.22.3 Pest Management in the Branch Clinic

Pest management operations in this sensitive environment will be conducted with minimal interference to normal operations of the facility. The primary methods of pest control shall be sanitation and exclusion. Baits should be used to the maximum extent practicable. Guidance for pest management operations in medical treatment facilities can be found in AFPMB TG #20 http://www.afpmb.org/pubs/tims/TG20/TG20.htm.

3.1.22.4 Pest Management Vehicles

Vehicles used to transport pesticides shall be equipped with a fire extinguisher and a spill and decontamination kit, capable of handling the maximum amount of pesticide transported at any given time. All pesticides carried on the vehicles shall be secured in locked compartments at all times. Vehicles shall not be left unattended at any time unless properly locked and secured. Vehicles will be clearly identified as a pest control vehicle and shall be maintained with a clean and orderly appearance, free from observable pesticide spills, residues, or build-up. Pesticides shall not be transported in the cab or occupied part of any vehicle;

they shall always be carried in a separate compartment from the occupied cab. These requirements apply to both in-house personnel and contractors.

3.1.23 Authorized Pesticide Storage and Mixing Facilities

There are no authorized pesticide storage or mixing facilities at NSA South Potomac. Any proposed pesticide storage sites must be approved in advance by the IPMC and the Environmental Office.

3.1.24 Pesticide Storage Requirements

All new pesticide storage facilities shall comply with the requirements of TG #17 (http://www.afpmb.org/pubs/tims/tim17.htm) with regard to design and construction. The NAVFAC Atlantic PPMC will be consulted during the design phase of new pesticide storage facilities to ensure that the latest requirements are included. At a minimum, all existing facilities shall meet the following standards:

- An active ventilation system that provides a minimum of six air changes per hour;
- Backflow prevention on all water sources used for mixing/filling;
- No floor drains and a surrounding berm that provides containment of any pesticide spills;
- Warning signals; and
- Surrounded by climb-proof fence and access is only through doors with locks.

3.1.25 Pesticide Storage Site Security

NSA South Potomac shall ensure security of pesticides and pest control equipment if a pesticide storage site is approved at the activity. The use of chemical and biological agents as terrorist weapons is an increasing possibility. Pesticide application equipment, primarily foggers, ULV applicators and mist generators, may be used to disseminate both chemical and biological agents.

The following considerations, if a pesticide storage site is established at NSA South Potomac, should be used to review security procedures to ensure that pesticides and equipment are not used for purposes other than for what they are intended.

- Secure buildings, storage areas, and surrounding property.
- Secure pesticide application equipment and vehicles.
- Ensure only authorized personnel enter pesticide and application equipment storage areas.
- Implement/maintain hiring procedures that include background checks.
- Pesticide and equipment inventory should be managed to limit the amount of hazardous pesticides on site and to deter theft of chemicals and equipment.

AFPMB TG 7, Installation Pesticide Security (http://www.afpmb.org/pubs/tims/TG7/tg7.pdf), emphasizes the need to adhere to the above precautions. For more information on this topic, go to http://www.epa.gov/pesticides/citizeNAS/pest_secu_alert.htm.

3.1.26 Retail Sale of Pesticides

3.1.26.1 Locations of Pesticide Sales

Limited pesticides for personal residential use by DoD personnel and their dependents are sold at the NEX (Building 323 at NSF Indian Head and Building 109 at NSF Dahlgren). Retail locations are depicted in the maps in **Appendix (P)**.

3.1.26.2 Display of Pesticides

The U.S. Food Code Chapter 7 (7-201.11) states that poisonous or toxic pesticides "shall be stored so they can not contaminate food, equipment, utensils, linens, and single-service and single-use articles." This can be accomplished by 1) "Separating the poisonous or toxic materials by spacing or partitioning;" and 2) "Locating the poisonous or toxic materials in an area that is not above food, equipment, utensils, linens, and single-service or single-use articles." Pesticide containers "shall bear a legible manufacturer's label" (Food Code (7-101.11). The following restrictions apply to pesticides displayed for retail sale:

- No Category I pesticide products marked "Danger, Poison" on the label shall be procured, displayed or sold for retail sale [**reference (b)**].
- Pesticides sold in retail stores will only be used for personal use in NSA South Potomac housing. They will not be used by uncertified personnel in workspaces or on other DoD property.

More information on the retail sale of pesticides can be found in the AFPMB's Technical Guide 45: Storage and Display of Retail Pesticides (http://www.afpmb.org/pubs/tims/TG45/TG45.pdf).

3.1.27 Spill Prevention

No pesticide storage facilities are authorized at NSA South Potomac. Installation spill prevention guidelines shall be followed. The following measures will be taken to prevent pesticide spills:

- Site-specific spill contingency plans.
- All hazardous materials spills, regardless of amount, will be reported at NSF Indian Head by calling 301-744-4333 and the NSF Indian Head Hazardous Waste Manager at 301-744-2268. At NSF Dahlgren, all hazardous materials spills will be reported by calling 540-653-8726 and the Emergency Operations Center 540-653-7980
- Spill kits will be maintained on vehicles.
- Pest management personnel will be trained on spill response procedures as part of their initial pest management certification and recertification training.
- NEX employees will be trained on what to do in the event of a pesticide spill.
- All pesticide applicators shall be familiar with the installation spill contingency plan and applicable instructions.

DoD pesticide applicators are trained on spill response procedures as part of their initial DoD pest management certification/licensing training. Further information on preventing and controlling pesticide spills is contained in the AFPMB TG #15: Pesticide Spill Prevention and Management (http://www.afpmb.org/pubs/tims/tim15.pdf).

3.1.27.1 In-House Personnel

Spill kits shall be kept on hand at all times while pesticides are being mixed and applied.

3.1.27.2 Contractors

Contractors will be required to keep appropriate pesticide spill kits on their vehicle(s) at all times. Spill procedures will be clearly communicated to the contractor via the contract language and the PMPARs. It is the contractor's responsibility to report all pesticide spills.

.

4 Health and Safety

Pesticide Applicator Safety

To ensure the safe use of pesticides, all personnel shall handle and apply pesticides in accordance with the product's label directions and AFPMB Technical Guides concerning safety [**reference (b)**].

4.1.1 Potential Occupational Hazards

The following hazards may be encountered by pesticide applicators. They may also be encountered by PMPARs who may be exposed while inspecting pest management operations. Occupational Safety and Health guidance is found in the Office of the Chief of Naval Operations Instruction (OPNAVINAST) 5100.23E Chapter 1: The Navy Occupational Safety and Health Program Manual.

4.1.1.1 Direct Contact Toxic Chemical Exposure

Many pesticides are harmful to humans. The three routes of exposure to applicators are dermal, inhalation and ingestion. For applicators the most common route of exposure is dermal; frequently due to not wearing the appropriate personal protective equipment. The severity of the harmful effects is determined by duration of exposure and toxicity of the chemical. The effects can be acute (rapid onset due to high dosage, high toxicity) or chronic (slow or delayed onset; due to long term exposure to low dosage, low toxicity chemicals). The highest risk for severe chemical exposure occurs during pouring and mixing of concentrated pesticide.

4.1.1.2 Heat

Working in un-insulated spaces, such as attics, or confined spaces and the use of protective equipment such as respirator, goggles, gloves, and coveralls increases the risk of heat injury in warm climates.

4.1.1.3 Noise

Some pesticide application equipment use gas powered air compressors or pumps that can be a hearing hazard. Powered backpack sprayers are particularly hazardous. The use of approved personal protective equipment such as ear plugs and ear muffs may mitigate the hazards created by this type of equipment. The use of approved personal protective equipment such as goggles or face shields may mitigate these hazards.

4.1.1.4 Eye Hazards

Eye hazards may result from chemical splashed into the eyes causing corrosive, toxic, or impact injury. Highest risk occurs during pesticide pouring, mixing, and application. Injury may also occur during equipment cleaning.

4.1.1.5 Communicable Disease

Pest management operators may be exposed to pathogens when handling animals during trapping operations or animal carcasses. Many nuisance animals can carry and transmit rabies, such as dogs, cats, bats, skunks, raccoons, etc.

4.1.1.6 Inhalation Hazards

Many pesticides release hazardous vapors and are particularly hazardous in enclosed spaces. Personnel may be exposed during mixing, application, and cleaning. Bird feces, such as pigeon droppings, can be a histoplasmosis risk. The use of approved personal protective equipment such as a respirator or Self-Contained Breathing Apparatus (SCBA) may mitigate these hazards

4.1.1.7 Electrical and Fire Hazards

Spot and crack and crevice applications may require application of a pesticide to areas near motors of refrigerators, compressors and other machinery where it can become an electrical shock hazard. They may also be applied to areas near pilot lights resulting in an explosion and/or fire hazard.

4.1.1.8 Head Impact, Falls, and Sharps Hazards

Surveys and pest control procedures may be done in attics, crawl spaces, basements and other areas with low overheads where head impact hazards exist. Some pest control operations may involve climbing ladders or walking on roofs or other elevated surfaces. Some devices used for bird roosting exclusion and rodent control have sharp edges and can cause cuts, puncture wounds, and abrasions.

4.1.1.9 Exposure to Harmful Animals

Venomous animals such as bees and wasps are potential hazards when attempting to control them. Some of these are very dangerous to those who are allergic. Feral dogs, cats, and other large pest animals can inflict serious wounds.

4.1.2 Hazard Abatement

4.1.2.1 Training and Education

Pesticide safety is a core requirement for DoD pesticide applicator certification and licensing programs. Topics included in the DoD training are listed in **reference (e)**. Safety topics are also given during recertification courses. See **Section 2.4** for specific training information. Information on pesticides and other hazardous materials are communicated through chemical MSDSs and by the PMPARs/IPMC and contractors.

4.1.2.2 Read the Pesticide Label

The pesticide label provides directions for mixing, applying, and disposing of pesticides safely. It also includes a list of hazards to humans and first aid treatment. It may also include a list of personal protective equipment that must be worn and user safety recommendations. The label should always be read completely and thoroughly by the applicator before purchasing and before using a pesticide. The label is a legal document mandated by the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA). Any use of a pesticide that is inconsistent with the label is illegal.

4.1.2.3 Personal Protective Equipment

PPE should always be used when applying pesticides. The type and level of protection needed is determined by the toxicity, formulation, and method of application of the pesticide. The pesticide label provides requirements for PPE use. PPE must be appropriate for the type and application of the pesticide being

used. At a minimum each applicator should have chemical proof gloves, non-vented goggles, air purifying respirator with extra organic vapor cartridges, boots, and coveralls. It is the applicator's responsibility to maintain the PPE. PPE should also be readily available for other hazards: hard hats, bee suits, heavy canvas gloves, face shield, high efficiency particulate air (HEPA) respirator cartridges, etc. The annual pest management budget (contractor) should include the cost for replacement of PPE due to normal wear and tear.

4.1.2.4 Medical Surveillance Program

DoD pesticide applicators are required to be in a medical surveillance program depending on their hazard exposure. Medical surveillance is conducted by Occupational Health in accordance with Navy procedures. Occupational Health shall provide rabies prophylaxis to all personnel who handle animals that are potential rabies carriers (including Natural Resources personnel).

Public Safety

4.1.3 Potential Hazards to Public

4.1.3.1 Direct Contact with Pesticides

Pesticide exposure can occur through dermal (skin) contact with a pesticide on a surface, inhalation of vapors, or ingestion of pesticide contaminated food or eating utensils. This type of exposure can occur if pesticide applications are done while unprotected building occupants are present, occupants are allowed entry into buildings before the pesticide has dried, or food and food preparation and serving equipment were not properly protected or cleaned after application.

4.1.3.2 Injury Due to Animals

The use of an inappropriate pesticide may cause collateral injury due to an insufficient "knockdown" of the target pest. This can occur with bees and wasps. Some insecticides do not knockdown the insects rapidly and may actually excite them causing them to become more aggressively defensive in behavior. Unprotected persons, even those not in the immediate area, may become the target of their aggression. Injury can also occur when persons get too close to or try to release a trapped animal or try to capture feral animals without appropriate training and tools.

4.1.4 Hazard Abatement

4.1.4.1 Proper Timing of Pest Control Operations

Most indoor application of pesticides should be conducted when building occupants are not present (see **Section 3.3.1.1**). An exception to this is the application of pesticide gels/baits. The building occupants must remain out of the building to allow the liquid pesticide to dry. Some pesticide labels are specific about re-entry times (time after application that occupants are allowed back into the treated building). Certain operations, such as bee and wasp control or removal are best conducted after the area has been cleared of unprotected persons.

4.1.4.2 Prevent Tampering with Animal Traps

Caged animals can be very aggressive. Traps should be placed in areas where they will not be tampered with by humans or pets. Warning signs should be placed on the traps and area occupants should be warned of the injury risks. The IPMC shall prohibit installation personnel from interfering with trapping operations in any way and notify building managers to extend this request to all personnel.

4.1.5 Special Safety Considerations

4.1.5.1 Medical Treatment Facilities (MTF)

Persons undergoing medical treatment may be highly sensitive to pesticides and pesticide odors in the environment. Additionally, medical equipment and supplies may be contaminated during pesticide applications. Alternative IPM methods must be considered prior to using pesticides in medical treatment areas (e.g., the Branch Clinic). If pesticides must be used, then only crack and crevice treatments with low toxicity pesticides or enclosed baits can be used. Application of any liquid or dust formulation must only be done when the area is unoccupied. Guidelines for pest management in MTFs are found in AFPMB TG # 20: Pest Management Operations in Medical Treatment Facilities (http://www.afpmb.org/ pubs/tims/ tim20.htm).

4.1.5.2 The Child Development Center and Youth Center

On 1 August 2007, a proposed bill "H.R. 3290: School Environmental Protection Act of 2007" was referred to the House Committee on Agriculture. This bill would amend FIFRA to require local educational agencies and schools to implement integrated pest management systems to minimize the use of pesticides in schools and to provide parents, guardians, and employees with notice of the use of pesticides in schools, and for other purposes. Maryland's Integrated Pest Management and Notification of Pesticide Use in a Public School Building or on School Grounds [**Appendix (Q)**] outlines the requirements for pest management K-12 schools. Virginia Department Of Enviromental Quality. Although this law does not apply directly to CDCs or YCs, the NSF Indian Head and NSF Dahlgren CDC and YC should strive to meet the requirements of the law.

4.1.5.3 Food Service Areas

Pesticide use in food service areas should be limited to baits and low-toxicity pesticides applied to cracks and crevices. The area should be properly prepared for treatment by putting away utensils and equipment and covering food preparation services. After treatment the area should be thoroughly cleaned to prevent contamination.

5 Environmental Considerations

Managing Environmental Impact

The NSA South Potomac Environmental Office should ensure that procedures are in place to reduce the impact of pest management practices on vulnerable natural resource assets.

5.1.1 General Guidance

The following IPM methods may be utilized to minimize the impact of pest management operations on the environment:

- Use of non-chemical methods, such as ditch clearing (e.g. vegetation maintenance and debris removal) to reduce mosquito breeding habitat and minimize pesticide use;
- A comprehensive pest surveillance program that uses mapping to identify pest infestations and breeding areas and pinpoint pesticide applications;
- Investigate uses of biological control methods or enhancement of native predators to control pests, where possible;
- Establishment of native plant landscapes to encourage beneficial insects and/or other arthropods and natural predators;
- Encourage grounds maintenance contractors to plant native plants;
- Use non-chemical control methods for weeds including mechanical removal and elimination of plants by steam or hot water;
- Use of less toxic and target pest specific pesticides;
- Precision targeting of pesticide applications to put the pesticide where the pest is located;
- Education/outreach to emphasize public area sanitation.

5.1.2 Outdoor Use of Pesticides

Careful consideration of all habitats will be standard procedure before pest management operations are conducted outdoors. Generally, to protect habitats, measures to minimize pesticide drift and prevent pesticide runoff will be implemented whenever outdoor pesticide applications are conducted.

5.1.2.1 Rodenticide Use

The use of rodenticides outdoors will be limited to multi-dose anticoagulants. Additionally bait stations must be:

- Securely anchored;
- Made from a high strength material that can withstand being stepped upon,
- Locked so that they can not be opened without tools; and
- Have the bait securely fastened (inside the bait box) so that an interested person could not extract it from the box with exterior manipulation or box inversion.

5.1.2.2 Preventing Pesticide Drift

Pesticide drift occurs when a pesticide leaves the target area and affects unprotected persons or other non-target organisms. A drift can occur during routine application of a pesticide or from a spill. The most common form of drift is when winds can carry the pesticide off the target site. Pesticide applications that involve highly volatile chemicals or small pesticide droplets, such as fogging or ULV application, or dusts are most susceptible to drift. Pesticide drift from target areas to areas where humans, animals, and plants can be affected can be reduced through the following means (adapted from University of Nebraska publication G90-1001-A).

- Select low or nonvolatile pesticides.
- Read and follow the pesticide label. Apply a pesticide only if an application is warranted.
- Use spray additives that decrease drift within label guidelines. This will increase the droplet sizes and pesticide effectiveness.
- Use larger spray nozzle orifice sizes. This will give larger droplets and will increase the number of tank refills, but will improve coverage and effectiveness.
- Avoid high pressure. High pressure creates finer droplets; 45 pounds per square inch (psi) should be considered maximum for conventional broadcast spraying.
- Use drift-reduction nozzles. They will produce larger droplets when operated at low pressures.
- Use wide-angle nozzles, low boom heights, and keep the boom stable.
- Drift is minimal when wind velocity is less than 10 miles per hour (mph). Do not spray when wind is greater or blowing towards sensitive areas, dwellings, or water sources.
- Use shielded spray booms. When banding, use shroud covers to keep chemical from drifting.

5.1.3 Threatened and Endangered Species

Section 7(a) of the Endangered Species Act (ESA) [**reference (i)**], as amended, requires federal agencies to evaluate their actions with respect to any species that is proposed or listed as endangered or threatened and with respect to its critical habitat. Regulations implementing this interagency cooperation are implemented as 50 CFR part 402.

A comprehensive list of federally endangered and threatened species identified by the U.S. Fish and Wildlife Service (USF&WS) can be found at http://www.fws.gov/endangered/species/us-species.html. A list of the state endangered and threatened species found in Maryland and Virginia can be found at http://www.dnr.state.md.us/wildlife/Plants_Wildlife/espaa.asp and http://www.dgif.virginia.gov/wildlife/. The NSF Indian Head and NSF Dahlgren INRMPs provide more details about specific species known to occur or expected to occur at each installation. Information on important species/habitats shall be clearly

communicated to the PWD pest control contractor and grounds maintenance contractor via the appropriate channels.

5.1.3.1 Endangered Species Protection Bulletins

Endangered Species Protection Bulletins are a part of EPA's Endangered Species Protection Program. Bulletins set forth geographically specific pesticide use limitations for the protection of endangered or threatened species and their designated critical habitat. If a pesticide label specifically directs the applicator to the Endangered Species Protection Bulletin website, then the application is required to follow the pesticide use limitations found in the Bulletin for your county, pesticide active ingredient, and application month. EPA's Bulletins contain the following information:

- Map of the county to which it applies
- Description of the species being protected
- Pesticide(s) of concern
- Pesticide use limitations
- Month for which the Bulletin is valid

Note: The term "county" refers to counties, parishes, and municipalities found within the U.S. and its territories.

More information on this program and access to the Bulletins Live! System can be found at http://epa.gov/espp/bulletins.htm.

5.1.4 Sensitive Habitats

Sensitive habitats are described in the respective installation INRMPs. The NSF Indian Head and NSF Dahlgren IPMCs, working with the guidance of the respective installation Natural Resources Office, are responsible for knowing the boundaries and restrictions of sensitive habitat(s) on their respective site and communicating this information to the PWD pest control and grounds maintenance contractors. Applications of pesticides to environmentally sensitive sites (such as drainage canals, wetlands, streams, etc.) or around these areas should be carefully planned. The respective Natural Resources Office has the authority to restrict and/or prevent pesticide application within these areas based on alternative methods of control or lack of need to do so. Strict adherence to both the pesticide label and any clearances described in the INRMPs (whichever is more stringent) are required.

5.1.5 Bird Management

NSA South Potomac employees shall make every effort to prevent adversely affecting birds (and their habitat) as per **reference (j)**; however, if necessary, government personnel or contractors may perform bird control operations after obtaining the necessary permits. The contact information for the regional migratory bird permit office is included in **Appendix (R)**.

5.1.6 Wildlife Management

Wildlife management, such as control of groundhogs, is discussed further in **Section 3.1.9.4** and **Section 8.12**.

Regulatory Compliance

5.1.7 Policy

DoD policy is in place to ensure DoD pest management programs achieve, maintain, and monitor compliance with all applicable Executive Orders and applicable Federal regulatory requirements.

5.1.8 Pesticide Regulation and Enforcement

5.1.8.1 Pesticide Regulation

The EPA has the primary authority to regulate pesticides in the U.S. The EPA delegates pesticide enforcement authority to states and the DoD, as a 51st state. **Reference (b)** requires Navy installations to comply with laws and regulations concerning pesticide storage, application, disposal of hazardous wastes, and transport of hazardous materials and substances. Pesticide use at NSA South Potomac is primarily regulated by **references (a)** through **(d)**.

5.1.8.2 Pesticide Compliance Enforcement

The responsibility for compliance and enforcement lies with the installation CO. As the CO's pest management advisors, the NSF Indian Head and NSF Dahlgren IPMCs shall be familiar with federal, DoD and Navy regulations and together with the PMPAR(s) ensure that all contractors conduct operations in compliance with these regulations. The IPMCs are responsible for making sure that PPV Housing maintenance personnel comply with regulatory requirements.

The NAVFAC Atlantic PPMC shall provide the NSF Indian Head and NSF Dahlgren IPMCs with assistance with compliance and enforcement issues and clarification of regulations. NAVFAC Atlantic is not a regulatory agency, but upon request will conduct external assessments of environmental programs including pesticide compliance. These assessments identify compliance deficiencies and perform root cause analysis of these deficiencies.

5.1.9 Laws and Regulations

5.1.9.1 Primary Pesticide Regulations

- Federal: U.S. CFR at 40 CFR 152-180.
- DoD 4150.07
- Navy: OPNAVINST 6250.4 (series): Pest Management Programs; and OPNAV 5090.1 (series)
- STATE: State of Maryland, Maryland Pesticide Use Control 15.05.01.00, http://www.dsd.state.md.us/comar/idq_files/search.idq.
- STATE: State of Virginia, Virginia Pesticide Control 3.2.39, http://leg1.state.va.us/cgi-bin/legp504.exe?000+cod+TOC0302000003900000000000.

5.1.9.2 The Pesticide Label as Law

The primary source of pesticide regulations for the pesticide applicator is found on the pesticide label in accordance with 40 CFR 156. The state of Maryland may

add supplementary labels, which are regulations that must be complied with in the State. It is a violation of federal and/or state law to use a pesticide in a manner inconsistent with the label. It is important to note, however, that other regulations or laws may restrict pesticide applications more than the pesticide label itself. For example, the pesticide label may allow application of an herbicide to unimproved grounds, but if those grounds are within an endangered or threatened species habitat, then pesticide use may be restricted under the ESA (see **Section 5.1.3** for more information). Pesticide applicators should be aware of environmentally sensitive areas before beginning any new pesticide application and should consult with the NSF Indian Head or NSF Dahlgren Natural Resources Office. For more on the pesticide label, see http://www.epa.gov/pesticides/label/.

5.1.9.3 Other Regulations

Other applicable directives, laws, and regulations concerning pesticide applications and pest management operations are listed and described on pages iv-v of this document.

5.1.10 DoD Measures of Merit

Reference (a) requires the Navy to contribute to the achievement of three DoD MoMs. Although these are overall DoD goals, NSA South Potomac should strive to achieve all three of these MoMs:

1. **IPM Planning:** Through the end of Fiscal Year (FY) 2011, 100 percent (%) of DoD installations will maintain IPM plans that are technically reviewed and approved by a DoD certified pest management consultant and annually updated by the installation pest management coordinator. See **Section 1.1.6** for more information.
2. **Pesticide Use Reduction**: Through the end of FY2011, DoD will maintain the achieved reduction in annual pesticide use on DoD installations. This reduction goal is set at an average of the FY2002 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.
3. **Pesticide Applicator Certification**: Through the end of FY2011, 100% of DoD's pesticide applicators will be certified. Direct hire employees, certified in accordance with the DoD Plan for the Certification of Pesticide Applicators, **reference (e)**, have a maximum of 2 years to become certified after initial employment. Contracted employees shall have appropriate DoD or State certification in the appropriate categories at the time the contract is let.

Environmental Management System (EMS) and Pest Management/ Pesticides

Naval District Washington has a regional EMS per Executive Order 13148 and this IPMP is part of that EMS.

5.1.11 What is an EMS?

"An EMS is a systematic approach to ensuring that environmental activities of an organization are well managed and continuously improving… Under the EMS,

environmental management is integrated into the overall way of doing business. Environmental requirements are incorporated into operational and management decisions through cross-functional coordination and integrated planning."

Findings related to activities executed through this IPMP shall be recorded and entered into the EMS. Corrective actions shall be identified and entered as well.

5.1.12 Department of Defense Policy

Executive Order 13148 requires all Federal agencies to ensure "that all necessary actions are taken to integrate environmental accountability into agency day-to-day decision making and long-term planning processes, across all agency missions, activities, and functions." DoD policy states that "DoD Components shall adopt an environmental management system and work to integrate it in all core business areas."

6 Emergency Pest Management

Public Health Emergencies

Pests become a public health emergency when the numbers of pests increase and/or are found to carry human disease pathogens. A public health emergency, requiring pest management action, may be declared as a result of several situations:

- Natural disaster – This includes hurricanes and floods. Usually pest problems do not develop immediately but may result from accumulation of standing water, increased amounts of refuse, collapse of local infrastructure (i.e. lack of garbage pick up), and/or decaying human and animal bodies. The potential consequences are disease outbreaks, especially food-borne illnesses.
- Vector-borne or zoonotic disease as indicated by the following:
  - Reports of human cases –When human cases are found, the IPMC and PMPAR should be notified to ensure proper control efforts are initiated.
  - Detection of infected mosquitoes or sentinel animals – Preventive Medicine monitors mosquito mosquito-borne diseases, such as West Nile Virus. This surveillance program is an early warning system that indicates when vector control should be initiated or increased to prevent human disease.

Preventive Medicine should maintain a current Emergency Vector Control Plan [**Appendix (G)**] which outlines the responsibilities and procedures in the case of a public health emergency due to vectors (mosquitoes, etc.).

Pest Introduction/Export

U.S. Military installations, like NSA South Potomac, can be a conduit for the introduction of agricultural pests due to the movement of military equipment and personnel in and out of the U.S. The military's role in preventing introduction of these pests is described in **reference (k)**. Introduced pests can cause major problems, affecting agriculture, forestry, ornamental plantings and sensitive vegetation or animals. Movement of insects or other pests in or out of NSA South Potomac is of great concern. NSA South Potomac residents should be educated on the importance of not bringing plant materials or animals to/from NSA South Potomac without proper approval.

Agricultural emergencies are the result of the introduction of insects or other animals that can cause extensive damage to agriculture or forestry. Examples include the emerald ash borer (*Agrilus planipennis*) and the gypsy moth (*Lymantria dispar*). Military installations can be a conduit for the introduction of these pests due to the movement of military equipment and personnel in and out of the State and the Country. The military's role in preventing introduction of these pests is described in **reference (k)**. Inspections to prevent importation of pests are normally conducted at the port of debarkation in the foreign country.

The Maryland Department of Agriculture is responsible for detecting, intercepting, and controlling pests that threaten Maryland's native and commercially grown plants and

agricultural resources. Information on plant pest control regulations in Maryland and Virginia can be found respectively at: http://www.dsd.state.md.us/comar/idq_files/search.idq and http://www.dcr.virginia.gov/natural_heritage/vaisc/laws.htm. Information on preventing emerald ash borer infestations in Maryland can be found at: http://www.emeraldashborer.info/ marylandinfo.cfm.

7 Program Resources

The NSA South Potomac has access to the following support agencies and organizations for pest management assistance. More detailed contact information is located in **Appendix (E)**.

Department of Defense

7.1.1 Armed Forces Pest Management Board

The Armed Forces Pest Management Board is a Directorate in the Office of the Deputy Under Secretary of Defense for Installation and Environment (DUSD[I&E]). The AFPMB recommends policy, provides guidance, and coordinates the exchange of information on all matters related to pest management throughout the DoD. Their website is: http://www.afpmb.org

7.1.2 Naval Facilities Engineering Command (NAVFAC) Atlantic

NAVFAC Atlantic Applied Biology is staffed by five full-time civilian DoD entomologists and one intern. All are certified in DoD pesticide applicator categories 3, 5, 6, 7, 8 and 11. These personnel are assigned the following responsibilities:

- Review and approve the IPMP in accordance with DoD and Navy policy;
- Provide technical assistance to the IPMC, environmental manager, safety officer, medical officer and other regional and installation personnel regarding pest management and pesticide regulatory compliance;
- Review and approve or reject pesticides and equipment to be used on the installation;
- Conduct on-site program reviews and environmental compliance program external assessments to ensure compliance with the regulations and the IPMP; and
- Compile and report actual pesticide use and pest management operations to appropriate DoD agencies.

Consultation includes IPM recommendations and pest identification. They are also the point of contact for pesticide regulations and compliance. They can be contracted on a reimbursable basis to write or re-write IPMPs. Pest management training and certification for DoD personnel are provided annually by NAVFAC PPMCs.

7.1.3 Navy Entomology Center of Excellence (NECE)

NECE is staffed by full-time active duty U.S. Navy entomologists and civilian personnel. The entomologists are certified in DoD pesticide applicator categories 3, 5, 6, 7, 8, and 11 and are assigned the following responsibilities.

- Act as Navy Bureau of Medicine (BUMED) Professional Pest Management Consultant to provide BUMED review and approval of the IPMP;
- Provide technical assistance to the Installation on the surveillance and control of vectors on the installation;
- Provide vector-borne disease risk assessments and disease prevention recommendations when requested;
- Provide contingency pest management in the event of a disaster or disease outbreak;

- Provide technical assistance to the Naval Hospital on the surveillance and control of vectors and vector-borne diseases on installation;
- Provide vector-borne disease risk assessments and disease prevention recommendations when requested;
- Provide disease vector management consultation and identification services for installation medical departments. They can also provide assistance in vector-borne disease risk assessment and prevention.

8 Pest Management Sheets

Ant Management

ANT MANAGEMENT (Nuisance Ants)	
RECOMMENDED SURVEILLANCE	
Techniques:	• Visual inspections. • Customer complaints. • Sticky trap surveys can be used to confirm infestation and identify the ant species.
Action Threshold:	• 3 or more per room per survey. • Any ants observed in hospital/clinic.
PESTICIDE ALTERNATIVES	
• Inspection prior to initiating control measures; observe where ants are entering buildings and where they are going. • Sanitation remove food sources that attract pests; keep outdoor areas free from trash and garbage. Repair water leaks. • Exclusion seal openings in building where ants are entering; tighten door and window frames. • Mechanical control use wet cloth to wipe up ants; vacuum ant trails. • Remove plants attractive to ants and/or aphids, trim trees and shrubs touching buildings, reduce moisture.	
PESTICIDE USE	
• **Indoors:** Bait stations and gel bait formulations shall be the primary chemical control tool used. Liquid pesticides shall only be applied indoors in emergency situations. • **Outdoor Perimeter Treatments:** Perimeter liquid treatments may be performed for ants that nest outside and forage inside. Granular baits or residual sprays may be applied as a perimeter treatment in a three-foot wide band and (as applicable) one to three feet up exterior foundation walls. *All pesticide applications shall be in strict accordance with the pesticide label.*	
Safety Precautions	• Residual treatment will not be made to exposed food products, food containers, on counter tops, or on any surface where food may be stored. • Liquid or aerosol pesticides will not be applied in occupied spaces.
Notes	• There are many species of ants. It is imperative that the ant species is positively identified and that nesting/foraging sites are located. Additionally, in order to properly select a pesticide product it is important to know what the ant is foraging for (protein, sugar, fat, etc.). Ascertaining this information prior to implementing control measures will help to ensure effective and efficient control.

Bee, Wasp, and Hornet Management

BEES, WASP, & HORNET MANAGEMENT	
RECOMMENDED SURVEILLANCE	
Techniques:	• Visual inspections. • Customer complaints.
Action Threshold:	• All infestations shall be investigated. Honeybees shall be relocated whenever possible.
PESTICIDE ALTERNATIVES	

- Honey beehives shall not be treated with pesticides, burned or harmed in any way. Local beekeepers shall be contacted to remove the hive. Contact the St. Mary's County extension office for a list of beekeepers in the nearby area.
- Screens and other exclusion devices All areas where venomous arthropods may gain entry to structures. Certain construction features found in buildings are conducive to wasp infestations. Improperly installed or insufficiently caulked drip caps, window and doorframes, or ventilators may also allow the entry of wasps or bees into buildings or wall voids. Permanent closure of all openings after elimination of the infestation is the only permanent method to prevent re-infestation. This type of control may be effective for wasp problems at the air traffic control tower.
- Trapping Install traps at perimeters of outdoor areas to kill stinging arthropods before they enter into areas where people congregate such as picnic grounds, athletic fields, yards, or play areas. These traps are most effective for yellow jacket wasps.
- Sanitation Food source removal (put lids on soda cups, eliminate food sources). Clean up all soda/juice drips in and around drink machines. Trash cans should be emptied and cleaned frequently and fitted with tight lids. Dumpsters should be closed at all times.
- Nest removal The nest of venomous arthropods (except honeybees) shall be removed and destroyed whenever observed. Large, well established nests should be controlled in the early morning or in the late evening when temperatures are cooler, most individuals are in the nest, and the colony is least active.

BEES, WASP, & HORNET MANAGEMENT
PESTICIDE USE
• "Jet" style wasp freeze sprays may be used when appropriate for quick knockdown of individuals in a small nest. Dust formulations should be used for larger nests in the ground, building voids, or aerial nests. • ULV foggers may be useful in providing a quick knockdown of adults. The nests should then be removed or treated with a pesticide if necessary. • Unprotected personnel should never be present during treatments. All pest control personnel should wear protective clothing such as bee veils, log sleeve shirts, hats. Spraying pesticides into nests may agitate wasps, bees, or hornets into a stinging frenzy. During treatment the person performing the application should not be in a precarious position or one that precludes retreat from a venomous arthropod attack such as on a roof of ladder. • Outside entrances to bee, hornet, or wasp nests in walls should not be sealed off until all venomous arthropods have been killed or flushed out of the wall. • Wasp and bee control should not be attempted in occupied spaces or dwellings. *All pesticide applications shall be in strict accordance with the pesticide label.*

Bird Management

BIRD MANAGEMENT	
RECOMMENDED SURVEILLANCE	
Techniques:	• Visual inspections. • Customer complaints.
Action Threshold:	• Threshold is dependent upon factors such as the transitory nature of species, the type of nuisance, and the legal status of the species. The only bird species that may be controlled without a permit are pigeons (*Columbia livia*), English sparrows (*Passer domesticus*), and European starlings (*Sturnus vulgaris*). Other species will require a permit to control. Permits can be obtained from local US Fish and Wildlife service offices.

PESTICIDE ALTERNATIVES

- Bird Proofing Structures using netting, flashing, and other physical repellents in sites where birds may enter buildings or nest. A list of companies that provide bird-proofing products may be obtained by contacting the NAVFAC Atlantic PPMC. Bird proofing is the only permanent solution to bird infestations in buildings. Efforts to identify entry points and adapt bird-proofing methods will be a continuing part of the bird management program.
- Review Building Plans for all construction or renovations so that bird proofing is incorporated in design.
- Trapping where birds enter and nest.
- Shooting (using a pellet gun) in warehouses, the airfield/hangers and industrial facilities.
- Food Source Reduction (outdoors) A “no feeding” instruction should be put in place by the CO and enforced.
- Food Source Removal cover trash cans/dumpsters, cover dumps, limit vegetation which attract birds.
- Harassing birds using cannons, pyrotechnics, bioacoustics, driving vehicles and/or use of a dog. These are approved methods under the depredation permit.
- Birds that create health hazards due to dropping accumulations or whose droppings are damaging material shall be managed.
- Electromagnetic or ultrasonic exclusion or control devices shall not be purchased because they are not effective and are prohibited by **reference (a)**.

Note: Any bird management that involves species other than pigeons, starlings and English sparrows must be coordinated with Natural Resources.

PESTICIDE USE

- Avicides will not normally be used for bird management.
- Repellents that are sticky or give birds a "hot foot" reaction may be used in limited areas.

Cockroach Management

COCKROACH MANAGEMENT	
RECOMMENDED SURVEILLANCE	
Techniques:	• Visual inspections using flashlights and flushing agents. • Customer complaints. • Sticky trap surveys can be used to confirm infestation \ Identify the species.
Action Threshold:	• 2 or more of any stage or 1 or more egg capsules (either loose or attached to a female) per survey per room. • Any cockroaches in the hospital/clinic areas.

PESTICIDE ALTERNATIVES

- Inspections before initiating control operations; use sticky traps to quantify population to be controlled and use to determine effectiveness of control by doing pre- and post treatment surveys; use a pyrethroid flushing agent or a mirror and flashlight to check cracks and crevices for harborage.
- Sanitation in food handling facilities, coffee messes; empty and clean trash cans daily. In areas where trash pick-up is less than daily, designate one trashcan for food waste and instruct personnel not to put food in their personal trash cans. Keep used cooking oil away from buildings. Consult with Preventive Medicine for appropriate distances.
- Exclusion seal cracks and crevices where cockroaches may enter using caulk; keep lids on trash cans; close gaps in door ways and around windows.
- Mechanical pest pickup by specially designed vacuum cleaners.
- Water removal by repairing all leaking pipes; empty drip pans used to collect condensation below refrigerators; remove all standing water in food preparation areas.
- The Preventive Medicine personnel shall be notified of persistent cockroach problems, especially in food areas, to determine if sanitation may be deficient.

PESTICIDE USE

- Cockroach bait stations and gel formulations (non-repellent pesticides) shall be the primary method of control. Liquid sprays or dusts are restricted to spot treatments only (2’ x 2’) or crack and crevice application. Liquid applications should normally be tank mixed with an insect growth regulator. Non-residual flushing agents may be used for surveys. Emphasis should be paid to known or suspected harborages, feeding sites, or passageways such as utility lines, pipe chases, drain line access ways, under and behind baseboards, and behind cabinets.
- Residual treatment will not be made to exposed food products, food containers, on counter tops, or on any surface where food may be stored. Liquid or aerosol pesticides will not be applied in occupied spaces.

All pesticide applications shall be in strict accordance with the pesticide label.

Miscellaneous Pest Management

SPIDERS, FLEAS, & MISCELLANEOUS ARTHROPOD MANAGEMENT including centipedes, millipedes, beetles, filth flies, fruit flies	
RECOMMENDED SURVEILLANCE	
Techniques:	• Visual inspections. • Customer complaints. • Sticky trap surveys can be used to confirm infestation \ Identify pest species.
Action Threshold:	• Fleas: 1 or more per area. • Filth flies/fruit flies/drain flies (food handling areas): 1 or more per building. • Filth flies (other areas): 4 or more per building. • Spiders: 1 or more per building depending on species. • Other pests: depends upon species, contact NAVFAC Atlantic for details • Any pest activity in the hospital/clinic areas shall be addressed immediately.

PESTICIDE ALTERNATIVES

- Sanitation by removing food sources that attracts pests; keep outdoor areas free from trash and garbage. Dumpsters should be kept away from buildings in accordance with Preventive Medicine requirements.
- Outdoor Clear Area Barrier. Establish and maintain a vegetation free "clear area" approximately 24" wide (sometimes filled with pea gravel or coarse sand) around foundations of structures to inhibit mite/nuisance invader movement to structures and facilitate barrier treatments.
- Outdoor Vegetation Management. Trim back vegetation so branches do not contact structures.

SPIDERS, SOLITARY PESTS:

- Pest pickup by specially designed vacuum cleaners

FILTH FLIES:

- Installing screens on windows and doors
- Electrified grids (indoors only) or sticky light trap devices
- Sticky Tape/traps
- The use of outdoor flying insect electrocuting devices is prohibited.

Fly control is best achieved through the maintenance of a high level of sanitation. Garbage cans will be lined with plastic bags, covered when not in actual use, and cleaned regularly to prevent the buildup of fly breeding media. All garbage placed in dumpsters will be in plastic bags. All doors on the dumpsters will remain closed to prevent the entry of adult flies. Dumpsters should be emptied at least once a week and should be steam cleaned every week during the summer.

SPIDERS, FLEAS, & MISCELLANEOUS ARTHROPOD MANAGEMENT

including centipedes, millipedes, beetles, filth flies, fruit flies

PESTICIDE ALTERNATIVES

FRUIT FLIES

- Monitor fruit flies using sticky traps
- Locate and eliminate breeding sites. Use of drain gels to eliminate organic material, is a preferred management technique.

DRAIN FLIES

- Find breeding site. Places to check include: slimy drains, sewer leaks or backup, dirty garbage cans, saucers under potted plants, birth baths or feeders, clogged roof gutters, clogged storm drains, air conditioners, cooling towers, moist compost, rain barrels, and septic tanks.
- Clean drains with over-the-counter cleaners (specifically formulas that biodegrade organic matter) and hot water. If this is not successful the drain may need to be cleaned with a stiff brush to remove the gelatinous film.

FLEAS:

- Thoroughly vacuum carpets using a vacuum with a beater-bar brush before treating indoors; dispose of vacuum cleaner bags outside the building immediately.
- Pest proof areas where vertebrate hosts may gain entry to buildings.
- Exclude feral vertebrate animals from entry to buildings, crawl spaces, heating plants, or other areas as animals can harbor fleas and cause original and re-infestation problems.
- Flea infestations may require pesticide applications to significant portions of office and living areas. Precautions must be taken to reduce pesticide exposure. Occupant(s) must be made aware of post treatment re-entry times. Building occupants' cooperation in preparing spaces for treatment and completing post treatment cleanup is essential.
- Flea infestations are normally associated with the presence of a vertebrate host. Identification of the host animal and the source of the infestation are essential. Good housekeeping practices and vacuuming carpets and furniture will help reduce organic material on which flea larvae feed

Note: At NSA South Potomac flea infestations should be rare because these type of infestations normally occur in housing and housing is managed separately.

BED BUGS

- Perform a detailed inspection of the potentially infested dwelling, including positive identification of bed bugs.
- Bed bugs can be vacuumed but the eggs are hard to remove. A HEPA vacuum is recommended. Bed bugs can also be removed using sticky tape and hand picking.
- Heat, cold and steam are possible non-chemical management techniques.
- For more detailed information on bed bug control consult AFPMB TG 44: Bed Bugs – Importance, Biology and Control Strategies (http://www.afpmb.org/pubs/tims/TG44/TG44.htm). This guide provides the most current information on bed bug control.

SPIDERS, FLEAS, & MISCELLANEOUS ARTHROPOD MANAGEMENT including centipedes, millipedes, beetles, filth flies, fruit flies	
PESTICIDE USE	
• Outdoor Perimeter Treatments: Apply pesticides in a band up to 20" wide around the structure and up the foundation wall to a height of 3" or more). Ensure that all windows are closed during application and that all ventilation inlets are shut or systems turned off. Wettable powders, granular, or waterproof dust formulations are generally good choices for exterior treatments. • Fly Control: Residual insecticides may be applied to dumpsters. Chemical control measures indoors should be used only as a remedial action. Pesticide application for fly control should be followed up by a Preventive Medicine Technician survey with recommended actions to exclude flies from food service areas. • Spider Control: Spiders, webs, and egg cases should be removed manually, primarily by vacuuming. Pesticides are normally not necessary although the use of dusts, particularly boric acid, inside wall voids can be effective. • Fruit And Drain Fly Control**:** Pyrethroids can be used to kill large numbers of adult flies, but only elimination of breeding sites will provide control. • Bed Bug Control: When using pesticides residual application of a suitable pesticide is the most practically effective form of control. Synergized pyrethrins are suggested as the pesticide of choice. *All pesticide applications shall be in strict accordance with the pesticide label.*	
Safety Precautions	• Residual treatment will not be made to exposed food products, food containers, counter tops, or any surface where food may be stored. Liquid or aerosol pesticides will not be applied in occupied spaces.

Mosquito Management

MOSQUITO MANAGEMENT	
RECOMMENDED SURVEILLANCE	

Techniques:	• Mosquito larval surveys (dipping technique).
	  • Larval surveys as needed.
	  • Preventive Medicine performs some larval surveillance
	• Mosquito adult surveys (light traps).
	  • 5 traps put out 1x/week.
	  • PWD contractor collects mosquitoes, Preventive Medicine identifies them.
	• Customer complaints.

Action Threshold:	• Adults: 20 females per trap per night • Adults: 1 female of the species (which has been identified as carrying disease) in any light trap. • Larvae: 3 per dip (based on averaging 10 dips). • Disease Emergencies declared by Preventive Medicine in consultation with NECE/ Navy and Marine Corps Public Heath Center (NMCPHC). • Verified customer complaints. • Action thresholds can be changed on advice of NECE representative.
Method Of Dispersal	• Larval Mosquitoes. Larval mosquito management shall be performed at common breeding sites near transient water such as lowland stagnant pools, building roof tops, stored tires, and rain gutters. Preventive Medicine recommends control when necessary. • Adult Mosquitoes. ULV pesticide applications shall be timed to the preferred feeding time of the mosquito species requiring control.

MOSQUITO MANAGEMENT	
PESTICIDE ALTERNATIVES	
Exclusion from Buildings	• Screen doors/windows, door sweeps

Larval Habitat Management	• Manage ditches, storm water runoff basins etc.: Ensure that water flow is continuous or eliminate standing water.
	• Eliminating or altering breeding sources will be a priority. Breeding source reduction provides a long-term solution and can greatly reduce the need for pesticide applications. Examples of techniques are:
	  • filling and grading road beds and construction sites to prevent water from pooling
	  • clearing or shaping the margins of retention basins to eliminate vegetation and marshy borders.
	  • cleaning drainage ditches to promote water flow (removal of vegetation).
	  • cleaning out gutters and clogged downspouts.
	  • covering, upending, puncturing, or draining artificial containers such as drums, barrels, and tires (special attention should be paid to the recycling centers and solid waste transfer areas).

PESTICIDE USE	
• Larval Mosquitoes: Larval mosquito control should be performed at common breeding sites near transient water such as lowland stagnant pools, building roof tops, catch basins, and in some temporary pools and artificial containers. Temporary and permanent mosquito breeding sites that cannot be eliminated should be treated with a larvicide. • Adult Mosquitoes: ULV application using an EPA registered pesticide shall be the primary control action. ULV applications shall not be performed when weather conditions are not favorable (in accordance with the pesticide label) It may be necessary to perform barrier applications or resting site applications. Preventive Medicine shall provide guidance regarding adult mosquito control operations including recommending areas to be treated, and when to commence operations. • Mosquito-borne diseases, such as West Nile virus is a potential threat at NSA South Potomac. Careful monitoring should be done to check for dengue. NMCPHC is the designated lead Navy agency for arthropod-borne disease at NSA South Potomac. • ULV equipment shall be properly calibrated and shall be capable of generating particle sizes specified on the pesticide label. Droplet calibrations shall be performed in accordance with the manufacturers directions *All pesticide applications shall be in strict accordance with the pesticide label.*	

ORNAMENTAL PLANTINGS PEST MANAGEMENT Aphids, scales, etc.	
RECOMMENDED SURVEILLANCE	
Area	**Frequency**
high value trees	• Monthly throughout the year.
shrubbery and ornamentals	• Monthly throughout the year.
undeveloped or natural areas at all sites	• Customer complaints.
Techniques:	• Visual inspections. • Customer complaints. • Pheromone traps. • Sweep netting. Annual gypsy moth surveys are conducted.
Action Threshold:	• Thresholds vary based upon pest, host and time of year.

PESTICIDE ALTERNATIVES

- Water and fertilize to generally improve the overall vigor of trees and ornamentals
- Use resistant or stress tolerant varieties of ornamentals or tree. Use of resistant, native varieties shall be standard operating procedure
- Pruning/cutting back to remove infected parts of plants that may increase potential for insect or disease attack
- Hand picking of arthropod pests when economical
- Use of water or soap sprays for arthropod pests
- Pheromone Traps
- Removal of infested trees

PESTICIDE USE

- Pesticide use shall be based on surveys. Method of dispersal shall be as appropriate for the pest species and site involved.
- Ensure pesticides selected take into consideration the presence of on-target organisms, humans, animals, waterways, and wetland areas.
- Use products such as Safer® insecticidal soaps where possible.

All pesticide applications shall be in strict accordance with the pesticide label.

COMMENTS

- Arthropod Pests. Many leaf chewing or sap-sucking arthropods may become pests. Non-chemical control methods will be applied whenever possible.

ORNAMENTAL PLANTINGS PEST MANAGEMENT Aphids, scales, whiteflies
COMMENTS
• Diseases of Ornamental Plants. A variety of diseases may injure or kill ornamental plants. Disease prevention is achieved primarily through cultural practices such as irrigation, fertilization, removal of dead branches, and disposal of leaf litter. Preventative applications of fungicides and antibiotics should be limited to high-risk plantings or plantings previously affected by disease. Curative treatments should be applied based on survey results.

Rodent Management

RODENT MANAGEMENT Norway rat, house mouse, deer mouse	
RECOMMENDED SURVEILLANCE	
Techniques:	• Visual inspections using flashlights; signals include burrows, rub marks, fecal droppings, runways, gnaw marks, commodity destruction, or tracks. • Traps (snap and glue boards). • Customer complaints. Note: Surveillance should be increased as temperatures begin to drop in the fall.
Action Threshold:	• Sighting of any sign of rodents is cause for control efforts.
PESTICIDE ALTERNATIVES	

- Proper sanitation and rodent proofing are the primary control measures to be used; use of snap traps and glue boards are secondary. Pesticides should only be used after non-chemical techniques have been performed. Thorough cleaning should be performed at the end of each day in kitchens, dishwashing areas, eating areas, heads, food storage areas, and trash collection areas. Trashcans should be covered tightly and emptied daily. All garbage placed in dumpsters should be in secured plastic bags. Dumpsters should be kept closed at all times and the drains should be rodent-proofed. Waste cooking oil should be covered and moved away from the building in accordance with Preventive Medicine recommendations.
- Seed for use on the golf course should be stored in sealed metal containers.
- Pest Proofing by sealing holes, crevices, and pipe chases, etc. Ensure that loading dock doors have proper weather stripping and potential entrances, such as doors, unscreened windows, loading dock etc. are closed. Rodent proofing should be accomplished whenever feasible. Twenty-four gauge galvanized sheet steel should be installed around doors so that gaps larger that ¼”will be sealed. Wood, rubber, aluminum, or lead should not be used because rodents can gnaw through these materials.
- Water Source Reduction. Any sources of water in/around buildings shall be eliminated. Typical sources include but are not limited to roof leaks and broken pipes.
- Trapping using snap traps, glue boards or other mechanical traps. Traps should be serviced daily in areas of known rodent activity. Once the rodent population has been reduced, traps should be serviced at least twice a week. Immigration of rodents from undeveloped areas may necessitate perimeter-baiting programs.
- Preventive Medicine shall be notified of ongoing programs to determine if infestation is due to insufficient sanitation.

RODENT MANAGEMENT Norway rat, house mouse, deer mouse
PESTICIDE USE
• Pelletized or loose bait formulations should not be used because of the potential for bait relocation. Only rodent baits in parafinized bait blocks that can be secured with a rod or hook to a tamper resistant bait station should be used. Rodent baits will only be secured in distinctly marked, tamper resistant bait stations, inaccessible to children, pets, or non-target wildlife. Treated burrows shall be sealed immediately after treatment. Reopened burrows shall be retreated and resealed until all rodent activity ceases. • Rodent baits must be fresh and acceptable. Old baits, tainted with odors shall not be used. Pest controllers who smoke should wear disposable latex gloves when handling mouse baits, as tobacco odors may repel mice. • Rodent baits containing rodenticide(s) shall not be used in clinics or in areas where food is served or prepared. Special care shall be taken where children, wildlife, domestic animals, or other non-target organisms may gain access. *All pesticide applications shall be made in strict accordance with the pesticide label.*

Stored Product Pest Management

STORED PRODUCT PEST MANAGEMENT	
RECOMMENDED SURVEILLANCE	
Techniques:	• Visual inspections. • Pheromone traps.
Action Thresholds:	• Thresholds will vary based on the pest and where it is found. Coordinate with U.S. Army Veterinarian.

PESTICIDE ALTERNATIVES

- Inspection. Samples of infestable materials should be inspected as they are received prior to storage. The U.S. Army Medical Food Inspectors are responsible for inspections. Ongoing surveillance should be accomplished using pheromone traps.
- Sanitation. Spilled product should be appropriately cleaned and areas kept free from trash and garbage. No open water sources should be available indoors. Repair broken pipes and patch leaky roofs.
- Exclusion to minimize the number of openings on building where pests may be able to enter, maintain tight door and window frames.
- Commodity Destruction. Infested goods should be immediately destroyed or treated. Infestable goods in the proximity should be inspected for pests.
- Proper Storage Practices. All infestable materials should be stored off the deck with 18-inch aisles between stacks.

Consult with the U.S. Army Veterinarian for all Stored Product Pest actions

PESTICIDE USE

- Residual Pesticides. Residual treatments may be used to control exposed adult and immature stages of active infestations of stored product pests.
- Residual pesticides will never be applied directly to any foods.

All pesticide applications shall be in strict accordance with the pesticide label.

Termite Management

TERMITE MANAGEMENT	
RECOMMENDED SURVEILLANCE	
Techniques:	• Visually inspect buildings annually or following termite swarms
Action Threshold:	• Any sign of termite damage

PESTICIDE ALTERNATIVES

Subterranean

- Reduce the moisture content of wood by fixing rain gutters, ensuring adequate ventilation in crawlspaces, installing moisture barriers between soil and wood, ensuring that rain water is directed away from foundations.
- Inspection. Inspect all lumber, especially second hand lumber, for termite infestation prior to construction. Inspect wooden shipping crates particularly those that arrive from tropical and subtropical region prior to storage.
- Eliminate Soil-wood Contact. Construct/install concrete or permanent polymer barriers between soil and wood.
- Exclusion. Screen windows to prevent winged termites from entering buildings and establishing colonies.
- Reduce food source near structures. Do not stack wood within 10 feet of foundation walls.
- Landscape plants and irrigation should not be placed within two feet of the foundation wall.

PESTICIDE USE

Subterranean Termites

- Termiticides used for ground treatments in and around buildings shall be a non-repellant termiticide. The termiticide diluent shall not include any other pesticide residues or rinse water.
- For termite treatments ONLY, the highest labeled rate shall always be used. The application shall establish a continuous soil treatment barrier or if a bait product, be used in complete accordance with manufacturer's recommendations. At the time of soil treatment application, the soil shall be in a condition with low moisture content to allow uniform distribution of the treatment solution throughout the soil. Termiticides shall not be applied during or immediately following heavy rains, or when conditions will cause runoff and create an environmental hazard.
- For pre-construction termite treatments, the Unified Facilities Guide Specifications (UFGS) shall be followed.

Note: NSA South Potomac is located in United States Department of Agriculture (USDA) Forest Service relative hazard zone “Moderate to Heavy”.

All pesticide applications shall be in strict accordance with the pesticide label.

Vegetation Management

PEST VEGETATION MANAGEMENT Broad leaf weeds and grasses	
RECOMMENDED SURVEILLANCE	
Facility	**Frequency**
All areas desired to be weed free (fence lines, parking lots, runway etc.)	• Quarterly.
Area know to harbor noxious weeds	• Monthly.
Techniques:	• Visual Inspection. • Complaints from fire department about fire hazard. • Complaints from security about limited visibility near fence line. • Complaints about noxious weeds.
Action Thresholds:	• Action thresholds vary according to species of weed, the importance of the site, and the concern
PESTICIDE ALTERNATIVES	
• Land management. Seed/plant desirable growing grasses, plants, or ground cover: Applicable to semi-improved or non-improved sites: ditch banks, fence lines, rights-of-way. • Repeated mechanical removal: Mow, line trim, hand pull as needed to maintain plant height.	
PESTICIDE USE	
• Herbicides may only be applied by a commercial certified applicator. All contractors (including grounds maintenance) shall be certified to apply herbicides. • Applications should not be made within 48 hours of expecting rain unless recommended by the label. • A water-safe (non-surfactant) type of herbicide shall be used in any areas where herbicide applications are needed near water. *All pesticide applications shall be in strict accordance with the pesticide label.*	

Vertebrate Management

VERTEBRATE MANAGEMENT (For birds see **Section 8.3**)	
RECOMMENDED SURVEILLANCE	
Techniques:	• Visual inspections around known harborage areas. • Customer complaints.
Action threshold:	• Any wild/feral animals capable of transmitting rabies or behaving aggressively shall be managed. • Any animal (capable of carrying rabies) that has bitten or scratched someone shall be managed and analyzed for rabies. • Nuisance vertebrates (animals that normally do not transmit rabies) shall be managed if they are destroying government property, are considered a nuisance, or are fouling areas with their urine or feces. • Nuisance vertebrates should be controlled if they adversely impact the mission.

CONTROL NOTES

Responsibilities

Vertebrate management at NSA South Potomac is a joint effort between PWD contract pest control, the Natural Resources Office. The guidelines outlined in **Appendix (O)** shall be followed.

General

Vegetation should be managed to reduce harborage areas for cats and nuisance wildlife. Environmental should be consulted regarding vegetation management operations.

Cats

- NSA South Potomac will follow **reference (l)** with respect to cat and dog management.
- As per CNO ltr N456M/1U595820 dtd 10 Jan 2002 [**Appendix (S)**], free-roaming dogs and cats shall not be allowed on Navy property. Feral populations shall be eliminated in the most humane method possible. Trap neuter release programs shall not be instituted as there is no evidence that such programs can effectively mange feral animal populations. Domestic animals shall not be allowed to run freely on NSA South Potomac property and must be registered and microchipped.

Miscellaneous Vertebrates

- Use non-lethal trapping whenever possible.
- Natural Resources will determine the most suitable location to dispose of wildlife carcasses.
- Personnel must be informed not to feed stray animals.
- Pesticides should not be used for management of vertebrate pests.
- All personnel who may be involved with the handling of wild animals can be exposed to the rabies virus during the normal course of their duties shall be vaccinated against rabies. Occupational Health shall determine which government personnel, including pesticide applicators and natural resources personnel, should be inoculated against rabies.

Wood Destroying Fungus and Insect Management

WOOD DESTROYING FUNGUS AND ARTHROPOD MANAGEMENT Includes wood decay fungi, powder post beetles (Lyctids and Bostrichids), Anobiids (furniture and deathwatch beetles), and old house borers	
RECOMMENDED SURVEILLANCE	
Techniques:	• Should be conducted concurrent with termite service or as directed by customer complaints. • Visual inspections using flashlights, wood probing tool, and a sounding tool. • Auditory inspections using high gain listening device. • Boroscope inspections. • Customer complaints (swarmers).
Action Thresholds:	• Detection of any signals of wood decay caused by non-termite structural pests is cause for treatment except if the pest can complete its life cycle without further infestation.
PESTICIDE ALTERNATIVES	
Reduce moisture content of wood	• Fix rain gutters, ensure adequate ventilation in crawlspaces, install moisture barriers between soil and wood. • Paint, varnish, or put wood sealer on wood • Remove and replace damaged wood
Eliminate soil-wood contact.	• Construct/install concrete or permanent polymer barriers between soil and wood
Allow pest to complete life cycle	• If beetle species does not re-infest seasoned lumber, and beetle infestation is small allow pest to complete life cycle.
Re-grade soil for water runoff	• Along building foundations where water collects
Inspection	• Inspect all lumber, especially second hand lumber, for infestation prior to construction.
COMMENTS	
• Inspection/treatment programs are cost effective. If coupled with an in-place reinforcement program, significant savings will result. • Boric acid treatments can be made to exposed wood, although this will not guarantee control.	

This page intentionally left blank

INTEGRATED PEST MANAGEMENT PLAN

MARINE BARRACKS WASHINGTON, DC

SEPTEMBER 2014

PREPARED BY

Naval Facilities Engineering Command
NAVFAC ATLANTIC

THIS PAGE IS INTENTIONALLY BLANK.

Marine Barracks Washington, D.C.
Integrated Pest Management Plan
Approval and Implementation

Prepared by:

- Dr. Denise DeBusk, Applied Biology, Naval Facilities Engineering Command, Atlantic, Code EV51, 6506 Hampton Boulevard, Norfolk, VA 23508

Technical and Administrative Approval:
Approved and signed in accordance with DODI 4150.07

Mr. John Jones Integrated Pest Management Coordinator	Date
Mr. George Stark Director of Safety and Environmental Health	Date
Mr. Dennis Martin Natural/Cultural Resources Manager	Date
LT Peter Deiuliis Public Works Officer	Date
LCDR Jason Gordon Preventive Medicine Department Branch Health Clinic	Date

Approved for Implementation:

Col Benjamin Watson Commanding Officer	Date

THIS PAGE IS INTENTIONALLY BLANK.

Marine Barracks Washington, D.C.
Integrated Pest Management Plan
Technical Review

The Integrated Pest Management Plan has been reviewed in accordance with DODI 4150.07, DOD Pest Management Programs.

_____Date: _____

Ms. Sabra Scheffel
Applied Biology Branch Head
NAVFAC, Atlantic
Norfolk, VA

_____Date: _____

CAPT Eric Hoffman
MSC, USN
OIC, NECE
Naval Air Station Jacksonville
Jacksonville, FL

THIS PAGE IS INTENTIONALLY BLANK.

Integrated Pest Management Plan Annual Review

Year	Completion Date	Integrated Pest Management Coordinator	Copies of changes to the Pest Management Consultant (Annual) Date Completed
15			
16			
17			
18			
19	Rewrite		

Scheduled On-Site Pest Management Technical Review

Scheduled Date	Integrated Pest Management Coordinator	Pest Management Consultant Date Review Completed

Note: Technical Reviews should be scheduled approximately 3 years apart and in conjunction with an EMS review if possible.

THIS PAGE IS INTENTIONALLY BLANK.

Contents

Executive Summary EX-1

Chapter 1—Introduction 1-1

1.1 Installation Background 1-1
1.1.1 Mission 1-1
1.1.2 Location and Facilities 1-1

1.2 The Integrated Pest Management Plan 1-2
1.2.1 Scope 1-2
1.2.2 Authority 1-2
1.2.3 Department of Defense Measures of Merit 1-2
1.2.4 Using the Integrated Pest Management Plan 1-3
1.2.4.1 Core 1-3
1.2.4.2 Appendixes 1-4
1.2.5 Integrated Pest Management Plan Implementation 1-4
1.2.6 Integrated Pest Management Plan Maintenance 1-5
1.2.6.1 Internal Review 1-5
1.2.6.2 Off-site Review 1-5
1.2.6.3 On-site Review 1-5
1.2.6.4 Integrated Pest Management Plan Rewrite 1-5

1.3 Pest Management Program Overview 1-5
1.3.1 Overview 1-5
1.3.2 Pest Management Objectives 1-6
1.3.3 Program Requirements 1-7
1.3.3.1 Administration 1-7
1.3.3.2 Operations 1-7

Chapter 2—Program Administration 2-1

2.1 Roles and Responsibilities 2-1
2.1.1 Marine Corps Headquarters 2-1
2.1.2 Installation Commanding Officer 2-1
2.1.3 Integrated Pest Management Coordinator 2-1
2.1.4 S-4/Logistics, Maintenance Division 2-2
2.1.5 Washington Navy Yard Naval Branch Health Clinic, Preventive Medicine 2-3
2.1.6 Contract Pest Management Service Providers 2-3
2.1.7 Building Occupants and Barracks/Housing Residents 2-3

2.2 Pesticide Approval 2-4

2.3 Records and Reporting 2-4
2.3.1 Pest Management Record Keeping 2-4
2.3.2 Maintaining Pest Management Operations Records 2-5
2.3.3 Pest Management Service Provider Reporting Procedures 2-5
2.3.3.1 NAVFAC Online Pesticide Reporting System 2-5
2.3.3.2 Pest Management Record Spreadsheet 2-5

2.4 Training, Certification, and Licensing 2-5
2.4.1 General Requirements 2-5
2.4.2 Verification of Qualifications 2-6
2.4.3 Requirements for Commercial Contract Applicators 2-6
2.4.6 Requirements for Performance Assessment Representatives 2-7

2.4.7 Requirements for Integrated Pest Management Coordinators and Environmental Personnel 2-7

2.5 Pest Management Contracting 2-7
2.5.1 Current Pest Management Contracts 2-7
2.5.1.1 Naval Facilities Engineering Command Washington Pest Control Contracts 2-7
2.5.1.2 Naval Facilities Engineering Command Washington Grounds Maintenance Contract 2-7
2.5.2 Contract Specifications and Review 2-8
2.5.3 Government Representatives 2-8
2.5.4 Contract Requirements 2-8
2.5.5 Contract Performance Assessment 2-9

Chapter 3—Operations 3-1

3.1 Integrated Pest Management 3-1
3.1.1 Federal Regulation and Policy 3-1
3.1.2 What is Integrated Pest Management? 3-1
3.1.3 Integrated Pest Management Compliance 3-3
3.1.4 Integrated Pest Management Sheets 3-3

3.2 Current Pest Management Operations 3-3
3.2.1 Inspections 3-3
3.2.2 General Household and Nuisance Pests 3-3
3.2.2.1 Cockroaches 3-3
3.2.2.2 Control Measures 3-4
3.2.3 Grounds Maintenance 3-4
3.2.3.1 Turf and Ornamental Pests 3-4
3.2.3.2 Weed Control 3-4
3.2.4 Structural Pests 3-5
3.2.4.1 Structural Control Program 3-5
3.2.4.2 Termite Control 3-5
3.2.4.3 Administration of Termite Treatment Contracts and Warrantees 3-6
3.2.5 Stored Products Pests 3-6
3.2.5.1 Dermestid Beetle 3-6
3.2.5.2 Meal, Ready to Eat Stores 3-6
3.2.6 Health Related Pests 3-6
3.2.6.1 Mosquito Management 3-7
3.2.6.1.1 Mosquito Surveillance 3-7
3.2.6.1.2 Mosquito Control 3-8
3.3.6.2 Filth Fly Management 3-8
3.2.6.3 Bed Bug Management 3-8
3.3.6.4 Rodent Management 3-9
3.2.7 Self-Help Pest Management 3-9
3.2.8 Prohibited Operations and Devices 3-10
3.2.8.1 Application of liquid and dust formulations in occupied spaces 3-10
3.2.8.2 Preventive or Scheduled Pesticide Treatments 3-10
3.2.8.3 Paints and Coatings Containing Pesticides and Other Biocides 3-10
3.2.8.4 Electrically-Operated Devices 3-10

3.3 Regulatory Compliance 3-10
3.3.1 Policy 3-10
3.3.2 Pesticide Regulation and Enforcement 3-11
3.3.2.1 Pesticide Regulation 3-11
3.3.2.2 Enforcement 3-11
3.3.3 Laws and Regulations 3-11
3.3.3.1 Primary Pesticide Regulations 3-11
3.3.3.2 The Pesticide Label 3-12
3.3.3.3 Other Regulations 3-12

3.4 Pesticide Management ... 3-12
3.4.1 Pesticide Selection ... 3-12
3.4.2 Pesticide Procurement ... 3-12
3.4.3 Pesticide Storage ... 3-13
3.4.4 Mixing ... 3-13
3.4.5 Application ... 3-13
3.4.5.1 Service containers ... 3-13
3.4.5.2 Equipment ... 3-13
3.4.5.3 Pesticide Application ... 3-13
3.4.6 Post-application Clean Up ... 3-13

3.5 Minimum Risk Pesticides ... 3-13

3.6 Canceled Pesticides ... 3-14

Chapter 4—Health and Safety ... 4-1

4.1 Pesticide Applicator Safety ... 4-1
4.1.1 Potential Occupational Hazards ... 4-1
4.1.1.1 Direct Contact Toxic Chemical Exposure ... 4-1
4.1.1.2 Heat ... 4-1
4.1.1.3 Noise ... 4-1
4.1.1.4 Eye Hazards ... 4-1
4.1.1.5 Infectious Zoonotic Disease ... 4-2
4.1.1.6 Inhalation Hazards ... 4-2
4.1.1.7 Electrical and Fire Hazards ... 4-2
4.1.1.8 Head Impact and Sharps Hazards ... 4-2
4.1.1.9 Trip and Fall Hazards ... 4-2
4.1.1.10 Exposure to Harmful Animals ... 4-2
4.1.2 Hazard Abatement ... 4-2
4.1.2.1 Operational Risk Management ... 4-2
4.1.2.2 Training and education ... 4-3
4.1.2.3 Read the Pesticide Label ... 4-3
4.1.2.4 Personal Protective Equipment ... 4-3
4.1.2.5 Pest Control Vehicle Safety Devices ... 4-4
4.1.2.6 Pesticides and Equipment ... 4-4
4.1.2.7 Protection from Infectious Zoonotic Diseases ... 4-4
4.1.2.8 Hazard Communication ... 4-5

4.2 Public Safety ... 4-5
4.2.1 Potential Hazards to Public ... 4-5
4.2.1.1 Direct Contact with Pesticides ... 4-5
4.2.1.2 Pesticide Drift ... 4-5
4.2.1.3 Contact with Contaminated Water ... 4-5
4.2.1.4 Injury Due to Animals ... 4-5
4.2.2 Hazard Abatement ... 4-6
4.2.2.1 Proper Timing of Pest Control Operations ... 4-6
4.2.2.2 Preventing Pesticide Drift ... 4-6
4.2.2.3 Prevent Tampering with Animal Traps ... 4-6
4.2.3 Special Safety Considerations ... 4-7
4.2.3.1 Barracks and Commandant Houses ... 4-7
4.2.3.2 Food Service Areas ... 4-7
4.2.4 Specific State Laws ... 4-7

4.3 Pest Control Accidents ... 4-7
4.3.1 First Aid ... 4-7
4.3.2 Medical Emergencies ... 4-7

Chapter 5—Environmental Considerations ... 5-1

5.1 Environmental Management System for Pesticides 5-1
5.1.1 Department of Defense Policy 5-1
5.1.2 Definition of Environmental Management System 5-1
5.1.3 Conformance of the Pest Management Program to an Environmental Management System . 5-1
5.1.3.1 Policy 5-1
5.1.3.2 Planning 5-2
5.1.3.3 Implementation 5-2
5.1.3.4 Checking and Corrective Action 5-2
5.1.3.5 Management Review 5-3
5.1.3.6 EMS Definitions 5-3
5.1.3.7 Environmental Impact Log 5-3

5.2 Vulnerable Assets 5-4
5.2.1 Mission 5-4
5.2.2 Human health and safety 5-4
5.2.3 Environmental Resources 5-5
5.2.4 Natural and Cultural Resources 5-5
5.2.4.1 Natural Resource 5-5
5.2.4.2 Cultural Resources 5-5
5.2.5 Public Perception 5-5

5.3 Environmental Considerations on the Pesticide Label 5-5

5.4 Managing Environmental Impact 5-5
5.4.1 Pesticide Pollution 5-6
5.4.1.1 Synthetic Pyrethroids 5-6
5.4.1.2 Bee Protection from Pesticides 5-6
5.4.1.3 Pollution Prevention 5-6
5.4.2 Spill Prevention and Management 5-7
5.4.3 Hazardous Materials and Hazardous Waste Management 5-7

Chapter 6—Emergency Pest Management 6-1

6.1 Public Health Emergencies 6-1
6.1.1 Natural or Manmade Disaster 6-1
6.1.2 Vector-borne or Zoonotic Disease 6-1
6.1.3 Animal Attack 6-1

6.2 Agricultural Emergencies 6-2

6.3 Emergency Pest Management Resources 6-2

Chapter 7—Program Resources 1

7.1 Naval Facilities Engineering Command, Atlantic, Applied Biology, Code EV51, Norfolk, Virginia 7-1

7.2 Navy Entomology Center of Excellence 7-1

7.3 Navy Environmental and Preventive Medicine Unit TWO 7-2

7.4 United States Army Public Health Command Region-North 7-2

7.5 District of Columbia Department of the Environment 7-3

7.6 University of the District of Columbia Cooperative Extension Service 7-3

7.7 District of Columbia Department of Health, Center for Policy, Planning, and Evaluation Division of Epidemiology-Disease Surveillance and Health 7-3

Chapter 8—Integrated Pest Management Sheets 8-1

American Cockroaches 8-3

Nuisance Ants 8-7
Bats 8-11
Bed Bugs 8-15
Nuisance Birds 8-21
Feral Cats 8-27
Cockroaches in Food Preparation Areas 8-29
Drain Flies 8-33
Filth Flies 8-37
Fleas In and Around Buildings 8-43
Fruit Flies 8-47
Mites 8-49
Adult Mosquito Control 8-53
Larval Mosquitoes in Manmade Structures and Containers 8-57
Larval Mosquitoes in Permanent and Semi-Permanent Water Sources 8-61
Ornamental Plant Pests 8-65
Raccoons 8-71
Rodents 8-73
Snails and Slugs 8-79
Spiders 8-81
Stinging Insects 8-85
Stored Product Pests in Food Storage Areas 8-89
Subterranean Termites 8-93
Terrestrial Weeds 8-97
Weeds in Right-of-Ways 8-101
References REF-1
Glossary GLOSS-1
List of Acronyms and Abbreviations LOAA-1
Appendix A—Maps A-1
Appendix B—Points of Contact B-1
Appendix C—Program Review C-1
Appendix D—Pesticide Authorization Use List D-1
Appendix E—Applicator Certification & IPMC Appointment Letter E-1
Appendix F—Laws//Regulations/Policies F-1
Appendix G—Pest Operations G-1
Appendix H—Environmental H-1
Appendix I—Medical I-1

List of Tables

Table 1-1. Pest management administrative program requirements. 1-8
Table 1-2. Pest management operations program requirements. 1-9
Table 2-1. Pesticide applicator certification/licensing requirements in Washington, D.C. 2-6
Table 3-1. Comparison of traditional pest control and integrated pest management methods 3-2
Table 5-1. Environmental impact log. 5-4

List of Figures

Figure 1-1. The Marine Corps Bugle Corps plays in ceremonies as part of the mission. 1-1
Figure 1-2. Marines entering the annex on 7th and L Street. 1-2
Figure 3-1. Selective weed control is conducted in the parade field to keep it maintained. 3-5
Figure 3-2. Gravid traps are used to survey mosquitoes used for West Nile Virus testing. 3-7

EXECUTIVE SUMMARY

This Integrated Pest Management Plan provides a comprehensive, long-range document that captures all of the pest management operations and pesticide-related activities conducted at Marine Barracks Washington, DC. It incorporates pest management practices and the local, state, federal, and Department of Defense regulations, and conforms to the requirements of Department of Defense Instruction 4150.07, DOD Pest Management Program, and Marine Corps Order Plan 5090.2A, Environmental Compliance and Protection Manual, Chapter 14—Pesticide Pollution Prevention. It supplies comprehensive information about the pest management program to installation staff and internal and external compliance auditors.

The Naval Facilities Engineering Command, Atlantic's Applied Biology Center prepared this plan using information obtained through pest management data collection, on-site observations, installation personnel interviews, and document reviews.

The main goal of the various pest control functions is to support the mission of Marine Barracks Washington, DC. Commercial contract pest control operators currently provide all of the pest control services for the Marine barracks. Pest control services are needed at Marine Barracks Washington, DC to:

1. Provide services that will prolong the life of the structures through subterranean termite and nuisance pest control

2. Provide nuisance pest control to all buildings and outdoor areas to ensure a good working and living environment

3. Control weed and insect pests in all recreational and lawn areas to maintain aesthetics and provide recreational facilities to personnel

4. Provide control of mosquitoes, flies, and other potential disease vectors to ensure the comfort and well-being of all personnel

5. Provide vertebrate pest control, including rodent control, to all areas.

For the current level of work to be accomplished, a sufficient staff of qualified applicators must be maintained. Contract personnel must meet state certification requirements as specified by the contract. Pest management performance assessment representatives must successfully take an initial pest management performance assessment representatives course. To maintain their certification, the pest management performance assessment representatives must successfully pass a Department of Defense refresher course every three years.

This plan focuses on safe, environmentally-sound, and cost-effective control of pests through integrated pest management. Integrated pest management depends on education, proper surveillance, and identification of pests, non-chemical and chemical control methods, and individual responsibility for pest prevention.

THIS PAGE IS INTENTIONALLY BLANK

CHAPTER 1

Introduction

1.1 INSTALLATION BACKGROUND

1.1.1 Mission

Marine Barracks Washington, D.C. (MARBKS), also known as "8th & I," supports the ceremonial and security missions in the nation's capital. The main goal of the various pest control functions is to support this mission.

Figure 1-1. The Marine Corps Bugle Corps plays in ceremonies as part of the mission.

1.1.2 Location and Facilities

The main post of MARBKS is located near the Washington Navy Yard on the corners of 8th and I streets in southeast Washington, D.C. An annex is located on 7th St SE and L St SE. A map of the buildings is in appendix A. Marine Corps Barracks Washington, D.C. is home to many nationally-recognized units, including the Marine Corps Silent Drill Platoon, the Marine Drum and Bugle Corps, the Marine Band, the official Marine Corps Color Guard, and the Marine Corps Body Bearers. It is also the site of the Home of the Commandants, which, along with the barracks, is a registered national historic landmark.

Figure 1-2. Marines entering the annex on 7th and L Street.

1.2 THE INTEGRATED PEST MANAGEMENT PLAN

1.2.1 Scope

The MARBKS Integrated Pest Management Plan (IPMP) is a long-range, comprehensive planning and operational document that establishes the strategy and methods for conducting a safe, effective, and environmentally-sound integrated pest management program. The IPMP covers all pest management and pesticide-related activities conducted by civilian and military Department of Defense (DOD) personnel and commercial contractors within all functional areas of MARBKS. Acronyms and abbreviations used in this document are listed at the end.

1.2.2 Authority

Department of Defense Instruction (DODI) 4150.07, DOD Pest Management Program, and Marine Corps Order Plan (MCO P) 5090.2A, Environmental Compliance and Protection Manual, Chapter 14—Pesticide Pollution Prevention, require that all Marine Corps installations develop and implement an IPMP in accordance with the guidelines. The IPMP will detail all aspects of pesticide management including administration, procurement, contract services, storage, disposal, safety, reporting, vehicles, integrated pest management (IPM), and applicable laws and regulations.

1.2.3 Department of Defense Measures of Merit

This plan provides the framework for MARBKS to meet the DOD's annual goals or measures of merit (MoMs). As established in DODI 4150.07 and updated by the Armed Forces Pest Management Board, the MoMs are:

1. Measure of Merit 1: All DOD installations will maintain installation Pest Management Plans that have been reviewed and approved by a DOD-certified Pest Management Consultant and annually updated by the installation pest management coordinator.

   The MARBKS helps meet this goal by the implementation (by the commanding officer's signature) of this plan.

2. Measure of Merit 2: All DOD installations will adhere to the principals of integrated pest management and the DOD will maintain the goal of minimizing annual pesticide use by both government and contractor pesticide applicators on its installations. This goal is set at 425,000 lbs of active ingredient, the DOD's average annual usage for Fiscal Years 2007–2009 and an overall 52 percent reduction from the original fiscal year 1993 baseline.

   The MARBKS provides data for this MoM through the reporting requirement (section 2.3).

3. Measure of Merit 3: All DOD pesticide applicators will be certified. All contracted employees shall have appropriate U.S. state or host-nation pesticide applicator certification in the appropriate categories at the time the contract is let.

   The MARBKS ensures proper certification of all applicators through regular verifications and maintains a list of certifications in appendix E of this plan. See section 2.4 for training and certification requirements.

1.2.4 Using the Integrated Pest Management Plan

The IPMP provides a comprehensive overview of the pest management and pesticide-related operations on the MARBKS. It can be used as a reference by all installation personnel and can be provided to external pesticide regulators. The IPMP is divided into the core plan and appendixes.

1.2.4.1 Core

Chapter 1—Introduction. Provides an overview of the installation pest management program, its objectives, and its requirements.

Chapter 2—Administration. Describes the organization of the pest management program and identifies the staffing and their roles and responsibilities. This section also lists and describes the primary DOD requirements for DOD and contract pest management service providers.

Chapter 3—Operations. Provides detailed descriptions of integrated pest management practices on the installation and the management of pesticides. Compliance requirements for all the operational practices are provided.

Chapter 4—Health and Safety. Describes the potential health hazards for the pesticide applicators as well as the public due to pest management operations on the installation. Hazard abatement practices and medical emergencies are also discussed.

Chapter 5—Environmental Considerations. Describes the pest management program within the framework of Environmental Management Systems (EMS) including a description of possible hazards to the environment from chemical and non-chemical practices.

Chapter 6—Emergency Pest Management. Provides a description of and resources in the event of public health or agricultural pest management emergencies.

Chapter 7—Resources. A list of Department of the Navy (DON) and local resources for pest management issues.

Chapter 8—Integrated Pest Management Sheets. Provides information on target pests that may occur on MARBKS, survey techniques for those pests, non-chemical and chemical control methods, and contractor work considerations.

REF—References. Provides links to regulations, technical guides, and documents listed in the plan.

GLOSS—Glossary. Provides definitions to common pest management terms and positions.

LOAA—List of Acronyms and Abbreviations. Spells out acronyms and abbreviations.

1.2.4.2 Appendixes

The contents of the appendixes are designed to be modified depending on the needs of the pest management service provider (PMSP) or stakeholder that possesses the IPMP. Some of the contents are included in the binder while others are in electronic format on the supplemental CD-ROM.

Appendix A—Includes the MARBKS location maps and space for installation maps.

Appendix B—Contains a list of installation points of contact for pest management.

Appendix C—Provides space for copies of pest management program reviews and compliance inspection reports. DOD and state compliance checklists and IPMP update forms are also included.

Appendix D—Includes the approved pesticides list for the installation. Pesticide labels and safety data sheets (SDSs) can be added to this appendix.

Appendix E—Lists the current applicator certification numbers and categories. Space is provided for additional applicator licenses and certifications and training records.

Appendix F—Provides a list of federal laws, state regulations, DOD instructions, and installation instructions/orders related to pest management. Copies of DODI 4150.07, MCO P5090.2A, Chapter 14, and OPNAVINST 6250.4C are included on the CD. Other regulatory and policy documents related to the installation program are also included on the CD.

Appendix G—Provides space for any installation-specific operation documents. General program operation information is also included.

AppendixH—Contains installation-specific EMS documents. Installation environmental plans or excerpts of plans that pertain to pesticides and pest management are included as well.

Appendix I—Contains the installation Emergency Vector-borne Disease Control Plan and other documents related to vector surveillance and control.

1.2.5 Integrated Pest Management Plan Implementation

The IPMP must be reviewed and approved by installation stakeholders and professional pest management consultants (PPMCs) from the Naval Facilities Engineering Command, Atlantic (NAVFACLANT) and the Navy Bureau of Medicine and Surgery (BUMED). The IPMP is implemented upon signature of the installation commanding officer. The integrated pest management coordinator (IPMC) has the task of

implementing, coordinating, and executing the IPMP among each of the functional areas of the installation.

1.2.6 Integrated Pest Management Plan Maintenance

Once the IPMP has been developed and implemented, it must be reviewed annually and updated as necessary. The installation IPMC is responsible for maintaining the IPMP.

1.2.6.1 Internal Review

An internal review is conducted annually by the IPMC in coordination with the PMSPs and other functional area points of contact (POCs). The review should include updating contract information, applicator certifications, pesticides, and pest management operations to be used on the installation, and updating pesticide use records. An Internal Assessment Plan (IAP) for the pesticide program should be used by the IPMC as a tool to review compliance issues during the internal review. A sample IAP and other compliance self-assessments can be found in appendix C.

1.2.6.2 Off-site Review

The IPMC may request a review by a NAVFACLANT Applied Biology PPMC for review of regulatory requirements, reporting, and pesticide approval procedures.

1.2.6.3 On-site Review

An on-site review of the entire pest management program shall be performed by the NAVFACLANT Applied Biology PPMC every 3 years to ensure compliance with the IPMP. The review may be performed more frequently if extensive program problems exist.

1.2.6.4 Integrated Pest Management Plan Rewrite

The IPMP should be rewritten every five years to reflect new contracts, personnel, pest management practices, and regulatory changes.

1.3 PEST MANAGEMENT PROGRAM OVERVIEW

1.3.1 Overview

The pest management program is summarized below:

1. An employee in the S-4/Logistics, Maintenance Division is designated as the integrated pest management coordinator, as well as the pest management performance assessment representative (PMPAR).

2. Alexandria Pest Control, a subcontractor under Marathon, provides general pest control services at the main post through a regional contract with NAVFAC Washington. This includes larval and adult mosquito control.

3. Western Pest Services, a subcontractor under EMCOR, provides general pest control services at the annex through a regional contract with NAVFAC Washington.

4. Ruppert Landscape, a subcontractor under Diversified Service Contracting, performs grounds and landscape maintenance under a regional contract through NAVFAC Washington. If pesticides are needed, Ruppert Landscape contracts with TruGreen Lawncare to apply the pesticides.

5. The installation Preventive Medicine Department, located at the Washington Navy Yard Branch Health Clinic, performs food service sanitation and facilities habitability inspections and oversees programs to prevent vector-borne and other infectious diseases.

In addition to the PMSPs, individual personnel including employees and housing tenants have a responsibility for preventing and reducing pest infestations in their workplace and/or berthing/residence areas. This IPMP encompasses all of the activities of the PMSPs and individuals.

1.3.2 Pest Management Objectives

The MARBKS pest management mission should be directly derived from the installation mission; therefore, the focus of pest management at the MARBKS should be as follows:

1. The prevention of pest interference with the mission through:

    a. Mosquito surveillance and control

    b. Bed bug control in the barracks.

2. The prevention of pest-related health and safety problems through:

    a. Cockroach surveillance in eating areas

    b. Rodent surveillance in eating areas

    c. Bee, wasp, and hornet surveillance and control.

3. The protection of government real property and materiel through:

    a. Termite and other wood-destroying insect surveillance and control

    b. Decay fungi surveillance and control.

4. The protection of recreational areas through:

    a. Turf disease, insect, and weed surveillance and control

    b. Ornamental disease and insect surveillance and control.

5. The prevention of morale problems through insect and other pest surveillance and control in eating, working, and living areas.

1.3.3 Program Requirements

1.3.3.1 Administration

Proper administration of the pest management program ensures accountability and documentation through planning, record keeping, reporting, training, pesticide and contract approval, and regulatory compliance. Table 1-1 outlines the pest management administrative program requirements.

1.3.3.2 Operations

Operations are the day-to-day management of pests through pesticides and non-chemical means. Each of these operations must meet various requirements that are listed and described in table 1-2. Pest management on the MARBKS includes the following categories of operations:

1. Ornamental and turf–Control and management of pests of landscape plants and turf, including arthropods, fungi, and weeds.

2. Industrial, institutional, structural, and health-related–Control and management of pests in and around buildings. Pests may include cockroaches, termites, bees, venomous animals, stored product insects, rodents, and feral animals.

3. Public health pests–Surveillance, control and management of human and animal disease vectors such as rodents, mosquitoes, flies, and fleas.

4. Nuisance pests–Control of insect pests that are a nuisance or annoyance to base personnel, but do not present a health risk.

5. Vertebrates–Control of animals that infest food and material storage.

Requirement	Description	Reference	Responsibility	Locator
PLANNING	Review and revise the Integrated Pest Management Plan annually.	• DODI 4150.07	IPMC	Section 1.2
RECORDING	Record all pest management operations conducted on the installation after each operation.	• MCO P5090.2A • DODI 4150.07 • 7 C.F.R.§110*	All pesticide applicators	Section 2.3.1
MAINTAINING	Maintain records of all pest management operations conducted on the installation on-site indefinitely	• DODI 4150.07 • 7 C.F.R. §110*	IPMC in coordination with PMPARs	Section 2.3.2
REPORTING	Compile and report all pest management operations to NAVFACLANT Applied Biology monthly.	• MCO P5090.2A • DODI 4150.07 • 7 C.F.R.§110*	IPMC in coordination with PMPARs	Section 2.3.3
PESTICIDE APPLICATOR QUALIFICATION	Ensure that all personnel applying pesticides on installations have current state commercial applicator certification.	• MCO P5090.2A • DODI 4150.07 • 40 C.F.R.§171*	IPMC in coordination with PMPARs Preventive Medicine (PREVMED)	Section 2.4
COMPLIANCE	Ensure that all program elements are in compliance with all Federal regulations. The installation is also required to comply with county and state regulations.	• MCO P5090.2A • DODI 4150.07	IPMC in coordination with PMPARs	Section 3.3
PESTICIDE APPROVAL	Compile and submit a list of new pesticides to NAVFACLANT Applied Biology for approval for use on the installation.	• MCO P5090.2A • DODI 4150.07	IPMC in coordination with PMPARs	Section 2.2
CONTRACT REVIEW	Review pest management contract specifications for compliance with the Integrated Pest Management Plan and submit to NAVFACLANT Applied Biology for final review and approval prior to advertising.	• MCO P5090.2A • DODI 4150.07	Facilities Support Contracts PMPARs	Section 2.5
* (applies to restricted-use pesticides only)				

Table 1-1. Pest management administrative program requirements.

Requirement	Description	Reference	Responsibility	Locator
INTEGRATED PEST MANAGEMENT	"Federal agencies shall use Integrated Pest Management techniques in carrying out pest management activities and shall promote Integrated Pest Management through procurement and regulatory policies, and other activities."	• MCO P5090.2A • 7 U.S.C.§136r-1	IPMC Pesticide applicators	Section 3.1.1
CONTAINERS	All containers used to store or transport a pesticide must have the original or copy of the original label attached. Service containers must have a written or typed label attached identifying: the person responsible for the container, the name of chemical, and the signal word.	• DODI 4150.07 • 40 C.F.R.§156	Pesticide applicators	Section 3.3.3
VEHICLES	Applicators must carry pesticide spill kits and properly secure pesticides and pesticide application equipment when vehicle is not in use.	• AFPMB TG 15	Pesticide applicators Vehicle operators	Section 3.4.3.5
APPLICATION	Only registered pesticides will be used. Applicators must apply pesticides in a manner that ensures safety and protects the environment. A copy of the pesticide label shall be available at the application site.	• DODI 4150.07 • 40 C.F.R.§166	Pesticide applicators	Section 3.4.5
CLEANING AND DISPOSAL	Equipment shall be cleaned to prevent health and environmental hazards due to chemical residues. Prevent water from container and equipment rinsing from entering storm drains and water bodies. Dispose of empty containers properly.	• MCO P5090.2A • 40 C.F.R.§165	Pesticide applicators	Section 3.4.6
SPILL PREVENTION	Spill kits should be maintained on pest control vehicles. Pest management personnel should be familiar with the installation spill contingency plan.	• AFPMB TG 15 • 40 C.F.R.§300	Pesticide applicators	Section 5.4.4

Table 1-2. Pest management operations program requirements.

THIS PAGE IS INTENTIONALLY BLANK

CHAPTER 2

Program Administration

2.1 ROLES AND RESPONSIBILITIES

The success of the pest management program depends largely on a clear understanding of the roles and responsibilities for the organizations and personnel involved. The following is a listing of the key organizations and personnel and their duties as presented in DOD guidance documents for the implementation of the IPMP.

2.1.1 Marine Corps Headquarters

Ensure that adequate funding is available for the commanding officers to properly support their pest management programs.

2.1.2 Installation Commanding Officer

The installation commanding officer (ICO) is responsible for the compliance and enforcement of the pest management program.

1. Designate an integrated pest management coordinator in writing
2. Implement and support the IPMP
3. Ensure that all pest management operations are conducted safely and have minimal impact on the environment
4. Ensure that an IPM program, minimizing the use of pesticides, is implemented
5. Ensure that the IPM plan and program are in compliance with all applicable environmental protection statutes.

2.1.3 Integrated Pest Management Coordinator

The MARBKS IPMC is an employee in the S-4/Logistics, Maintenance Division and also serves as the PMPAR. The IPMC is designated by the ICO in writing to coordinate all installation pest management activities.

1. Coordinate the MARBKS pest management program including implementation, maintenance, and annual update of the IPMP
2. Coordinate rewrite of the IPMP every five years
3. Promote IPM in the pest management program to cost-effectively and safely manage pests and to prevent adverse environmental impact

4. Coordinate reporting of pest management records to NAVFACLANT Applied Biology

5. Ensure current certification and continuing pest management training of pesticide applicators and PMPARs

6. Maintain current list of approved pesticides

7. Receive and compile lists of new pesticides and uses from all pest management service providers on MARBKS and submit to NAVFACLANT Applied Biology for review and approval

8. Act as liaison between MARBKS and NAVFACLANT Applied Biology and local, state, and federal agencies for pest management and pesticide regulatory issues

9. Ensure that the NAVFAC Washington contracting officers submit pest management contract specifications to the NAVFACLANT Applied Biology PPMC for review prior to advertising

10. Ensure effective coordination with the Washington Navy Yard Branch Health Clinic preventive medicine department on all activities related to surveillance and control operations related to medically-important pests

11. Act as the commanding officer's advisor for pest management issues.

2.1.4 S-4/Logistics, Maintenance Division

The S-4 Maintenance Division prepares, manages, and assesses pest control and grounds maintenance contracts. The PMPAR monitors and evaluates the performance of contracted PMSPs to ensure that pest control measures are properly applied. The division also provides oversight on environmental protection and compliance regarding pest management operations.

1. Maintain a copy of each contract on file

2. Monitor pest management contractors ensuring effective and safe application of pest management practices, and identify and document discrepancies and seek corrective action with contractor in accordance with the contract

3. Conduct environmental review of new pest management projects and pesticides that may have an adverse impact on the environment

4. Ensure that internal compliance assessments of the pest management program are conducted

5. Ensure that the contractors record all pest management activities and submit reports including actual pesticide use through the NAVFAC Online Pesticide Reporting System (NOPRS) or to the IPMC.

6. Provide technical review of the IPMP.

All PMPARs shall be delegated the authority (in the contract and in the PMPAR appointment letter) to halt any contract pesticide applications that:

1. Endanger or present a hazard to humans, animals, or the environment

2. Violate contract specifications, or applicable federal, state, DOD, or Navy laws/regulations

3. Violate the pesticide label.

2.1.5 Washington Navy Yard Naval Branch Health Clinic, Preventive Medicine

The Branch Health Clinic Preventive Medicine Department provides public health support to the MARBKS in accordance with Navy Medical (Command) (NAVMED) P-5010, Manual of Naval Preventive Medicine.

1. Act as advisor and liaison to the ICO for public health pest prevention and management

2. Conduct surveys for pests of medical importance, such as cockroaches, mosquitoes, bed bugs, etc., through habitability and food service sanitation inspections

3. Establish and maintain liaison with local health agencies as they pertain to vector management and vector-borne and zoonotic disease prevention

4. Maintain current certification as DOD category 8 (public health) pesticide applicator

5. Develop and maintain an emergency plan for vector and pest control during a vector-borne disease outbreak or disaster

6. Provide technical review of the IPMP.

2.1.6 Contract Pest Management Service Providers

Commercial contractors provide pest control and grounds maintenance services to the MARBKS and to non-appropriated fund activities. Contract PMSPs at the MARBKS are required to be certified as pesticide applicators by the District of Columbia.

1. Conduct pest management operations in accordance with the contract specifications, lease agreements, or the IPMP and in compliance with federal and District of Columbia laws and regulations

2. Submit a list of pesticides proposed for use on the installation to their government representative

3. Communicate all pest management issues and requirements via the government representative

4. Submit daily management operation records to the government representative or through NOPRS.

2.1.7 Building Occupants and Barracks/Housing Residents

All installation personnel have the responsibility to:

1. Apply good sanitary and pest exclusionary practices to prevent pest infestations

2. If permitted for personal use, apply pesticides in accordance with the pesticide label

3. Coordinate and cooperate fully with PMSPs in scheduling pest management and preparing the areas for pesticide treatment if necessary.

2.2 PESTICIDE APPROVAL

Only pesticides approved by both the Environmental Protection Agency (EPA) and the District of Columbia shall be used. Additionally, DOD and Marine Corps directives require installations to submit a list of all pesticides that will be used during control operations to the cognizant NAVFACLANT PPMC for review and approval (MCO P5090.2A, paragraph 14206). The purpose of this approval process is to ensure that only registered pesticides which are safe, effective, and appropriate for the site will be used on the installation. Requests for pesticide approval will be submitted to the NAVFACLANT PPMC via the installation IPMC using the NOPRS (section 2.4.3.1) or the Pesticide Proposal Form (appendix D). Once a pesticide is approved, it may be used on-site as per the label directions. New pesticides may also be added to the list and submitted for approval as needed. The list should be reviewed and updated annually by the IPMC as part of the IPMP maintenance. Pesticides currently approved for use on the installation are listed in appendix D.

The IPMC shall maintain a hard copy or electronic version of the manufacturer's label and SDS for each pesticide on the pesticide authorized use list (PAUL). The PMPARs or the PMSPs should also maintain copies. Pesticide labels and their registration status can be found on the EPA's National Pesticide Information Retrieval System, http://ppis.ceris.purdue.edu/.

2.3 RECORDS AND REPORTING

All shore installations and units performing pest control operations shall maintain daily records of pesticide applications and submit reports of pest management operations monthly to the cognizant PPMC (MCO P5090.2A, paragraph 14209).

2.3.1 Pest Management Record Keeping

All PMSPs shall record pest management operations daily. Records shall include all pest management operations including surveys and non-chemical control operations performed on the installation by commercial contractors as well as work performed by DOD pest management personnel. The records will include the following information: date of application, location and site, type of operation, target pest, amount of area treated, name of applicator, pesticide information (trade name, active ingredient, and formulation), amount of pesticide applied, and calculated pounds of active ingredient applied. The following operations are excluded from the record keeping requirement:

1. Personal use of insect repellent
2. Application of repellent by deployable units during mass treatment of clothing and tentage
3. Application of pesticides for personal relief by residents of military housing
4. Application of pesticides for flea and tick control to pets by pet owners and veterinary services
5. Use of disinfectants by janitorial staff and various other organizations on the station (e.g. Health Clinic, food services, gym, etc.).

Records shall be submitted to the IPMC monthly by either the NAVFAC Online Pesticide Reporting System (section 2.3.3.1) or the electronic Pest Management Record Spreadsheet (section 2.3.3.2).

2.3.2 Maintaining Pest Management Operations Records

The MARBKS must archive complete daily pest management operation records on-site indefinitely. Pesticide applications for each building, structure, or outdoor site must be accounted for. Past hardcopy records must be archived so as to prevent them from being destroyed. Electronic records shall be stored to prevent destruction or loss; back-up copies are recommended. All records reported to NAVFACLANT will be stored and may be used as a back-up. Downloading of records from NOPRS and maintaining them on-site is highly recommended.

2.3.3 Pest Management Service Provider Reporting Procedures

Two methods of reporting are available. Reports will be reviewed by the IPMC and the NAVFACLANT PPMC to provide program oversight to the installation and to generate data for tracking overall DON/MC pesticide usage.

2.3.3.1 NAVFAC Online Pesticide Reporting System

All MARBKS PMSPs that have internet access should use NOPRS to record, report, and manage pesticide and pest management records. This system is preferred to other methods because it eliminates the need to send hardcopy or electronic records to the IPMC and then to the PPMC. The records are entered directly into a central database that can be accessed by the PPMC and the IPMC and downloaded into a spreadsheet. The only computer requirement is reliable internet access. Integrated pest management coordinators that wish to use this on their installation must contact the NAVFACLANT PPMC to establish a supervisor account. Pest management service provider applicators can then contact the IPMC to request an applicator account. The NOPRS Web site is at:
https://clients.emainc.com/PestManagementNET/PesticideLogon.aspx

2.3.3.2 Pest Management Record Spreadsheet

An alternate method for record keeping and reporting is the Pest Management Record Spreadsheet (PMRS). The PMRS template is a Microsoft Excel file. A copy of the spreadsheet can be obtained by contacting the NAVFAC PPMC. Using the PMRS requires the following minimum computer hardware and software:

1. Computer capable of running Microsoft Office software

2. CD drive or e-mail capability in order to transfer files.

The PMRS does not require Navy and Marine Corps Intranet (NMCI) approval since it runs on an NMCI-approved program. The user should have basic knowledge of Microsoft Excel, e-mail, and computer file management. The completed PMRS should be sent to the IPMC. The IPMC shall submit the PMRS monthly to the NAVFACLANT PPMC.

2.4 TRAINING, CERTIFICATION, AND LICENSING

2.4.1 General Requirements

Integrated pest management requires personnel who are properly trained to investigate and diagnose pest problems, select the appropriate pest management method, apply the appropriate pesticide, perform these operations so that they are safe to humans and the environment, and educate and advise their customers on pest prevention methods. All installation pest management personnel who apply or supervise the

application of pesticides shall be trained and certified within two years of employment in accordance with the DOD plan for the certification of pesticide applicators, or an EPA-approved state certification plan (MCO P5090.2A, appendix F-2). Additionally, professional pest management personnel shall be certified if their duties include:

1. Making recommendations for the use of pesticides, applying pesticides, or directly supervising the application of pesticides

2. Conducting demonstrations on the proper use and techniques of pesticide application or the supervision of pesticides

3. Conducting field research that includes using or supervising the use of pesticides.

An exception to the standard training and certification requirements are those individuals approved by the IPMC to apply ready-to-use pesticides as part of the self-help program.

2.4.2 Verification of Qualifications

Copies of contractor state certifications shall be obtained from all PMSP personnel applying pesticides on the MARBKS. Verification of IPMC and PMPAR accreditation can be obtained from the NAVFACLANT PPMC. A list of applicators and their certification numbers is found in appendix E.

2.4.3 Requirements for Commercial Contract Applicators

"Contractor employees performing pest management work on a DOD installation shall be certified prior to the beginning of the contract under a State plan accepted in the State in which the work is performed. Additionally, the contractor shall provide evidence of training and experience equivalent to that determined by the Military Services as necessary to satisfy the performance requirements for the particular pest management function to be contracted" (DODI 4150.07, paragraph E4.4.2.2). Applicators must possess certification in all appropriate categories. Specific requirements are listed in table 2-1. The District of Columbia accepts reciprocity from the following states: Maryland, Virginia, Delaware, West Virginia, Pennsylvania, and New Jersey.

District of Columbia	
Grounds maintenance	Must be a Pesticide Applicator (not a registered employee) certified by the District Department of the Environment, Toxic Substance Division in Category 3, Ornamental and Turf Pest Control and subcategories (a) Exterior Ornamental Plants and (b) Lawns and Turf, and Category 6, Right-of-Way Pest Control, depending on the contract.
Structural pest control	Must be a Pesticide Applicator (not a registered employee) certified by the District Department of the Environment, Toxic Substance Division in Category 7 and subcategories (a) General, (b) Wood-destroying Organisms, (c) Bird Control, and (e) Rodent Control, depending on the contract.
Public health pest control	Must be a Pesticide Applicator (not a registered employee) certified by the District Department of the Environment, Toxic Substance Division in Category 8, Public Health Pest Control.
Licensing Web site	http://green.dc.gov/service/get-certified-pesticide-applicator

Table 2-1. Pesticide applicator certification/licensing requirements in Washington, D.C.

2.4.6 Requirements for Performance Assessment Representatives

Pest management performance assessment representatives assess the performance of contractors in the performance-based acquisition (contracting) program. The MARBKS is required to train personnel who provide performance assessment for commercial pest control services or grounds maintenance services as PMPARs and send them to refresher training every three years (MCO P5090.2A, appendix F-2). Navy Facilities Engineering Command, Atlantic provides initial and refresher PMPAR training annually. Performance assessment representatives may attend the DOD pesticide applicator recertification course for refresher training. The training schedule is available at the Armed Forces Pest Management (AFPMB) Web site at: http://www.afpmb.org/content/training-and-certification.

2.4.7 Requirements for Integrated Pest Management Coordinators and Environmental Personnel

"The IPMC shall have the educational background, technical knowledge, and management skills to implement and oversee the pest management program" (DODI 4150.07, paragraph E4.4.1). New IPMCs are required to receive training on the administrative and operational requirements of installation pest management. Environmental personnel who have compliance oversight of pesticides on the installation should also receive training. The initial PMPAR and IPMC course provides the necessary training. Navy Facilities Engineering Command conducts this course annually. If the IPMC will be applying pesticides or recommending pesticide applications, they must be certified as a DOD pesticide applicator. The training schedule is available at the AFPMB Web site at: http://www.afpmb.org/content/training-and-certification#pestapprecert.

2.5 PEST MANAGEMENT CONTRACTING

Contracts requiring the use of pesticides must be reviewed and approved by NAVFACLANT Applied Biology. This includes contracts issued by non-appropriated activities and tenant commands on the installation. Pest control contracts are required to be monitored by a trained PMPAR (MCO P5090.2A, paragraph 14209).

2.5.1 Current Pest Management Contracts

2.5.1.1 Naval Facilities Engineering Command Washington Pest Control Contracts

The MARBKS has two pest management contracts in place under the regional base operations services (RBOS) contract through NAVFAC Washington. At the main post, Alexandria Pest Control provides the pest management services under Marathon (primary contractor). At the annex, Western Pest Services currently provides the pest management services under EMCOR. Both contracts cover general indoor and outdoor pest management for invertebrate and vertebrate pests.

2.5.1.2 Naval Facilities Engineering Command Washington Grounds Maintenance Contract

Grounds maintenance at the MARBKS is accomplished through Ruppert Nursery via Diversified Service Contracting. Ruppert Nursery subcontracts the pesticide applications to TruGreen Lawncare. Grounds maintenance work includes the use of pesticides to control weeds, insects, and diseases in turf and ornamentals at the parade fields, landscaped areas, and the commandant houses.

2.5.2 Contract Specifications and Review

Pest management contract specifications must be written to ensure effectiveness, safety, and regulatory compliance. The Facilities Support Contract/Base Operation Support (FSC/BOS) performance-based contract template for pest control (sub-annex 1503020) and grounds maintenance (sub-annex 1503050) is available from NAVFACLANT or on the NAVFAC Portal (requires login) at: https://portal.navfac.navy.mil/portal/page/portal/pw/fsc/template. The facilities contracting officer (KO) or contracting officer representative (COR) can provide additional information. The KO shall send the contract specifications to the NAVFACLANT PPMC for review prior to sending the contract out for bidding (MCO P5090, paragraph 14206).

Termite pretreatment contract specifications for new construction shall also be reviewed by the NAVFACLANT PPMC prior to procurement. The Unified Facilities Guide Specifications (UFGS) 31 31 16 Soil Treatment for Subterranean Termite Control (http://www.wbdg.org/ccb/DOD/UFGS/UFGS%2031%2031%2016.pdf) should be included in all new construction contracts for termite pretreatment. See section 3.2.4.3 for more information on termite treatment contracts.

2.5.3 Government Representatives

For the pest control and grounds maintenance (FSC/BOS) contracts, the representative is the PMPAR responsible for assessing the contract. For Non-Appropriated Fund (NAF) (i.e. NEX, MWR) contracts, the representative is the local NAF organization manager. In cases where a government representative is not available, the installation IPMC may liaison with a contractor's representative.

2.5.4 Contract Requirements

The application of pesticides by contractors is strictly regulated by Department of Defense and Marine Corps regulations, this IPMP, and state regulations. These requirements apply to all pesticide applications including insecticides, herbicides, fungicides, molluscicides, etc. to any area in or outdoors. These requirements apply to any size contract (small purchase or facility support contract generated) and services acquired by any other means including government purchase cards (EBUSOPSOFFINST 4200.1A, chapter 6, paragraph 7). The specific requirements for contracted pest control operators working on Marine Corps properties are:

1. Contractor Work Plan (CWP): If required by the contract, a CWP shall be submitted as part of the contractor's proposal. The CWP specifies how the contractor will meet the contract requirements.

2. Pesticide Applicator Certification: All contractor personnel, who apply pesticides (which include all herbicides), shall be certified/licensed in the appropriate applicator category in accordance with section 2.4.4 of this IPMP. All contractors who apply pesticides shall, prior to the start of work, supply a copy of the certificate(s)/license(s) in accordance with contract specifications. A list of applicators and their license or certificate numbers is included in appendix E of this plan.

3. Pesticide Approval: Pesticides used by contractors must be approved and added to the installation PAUL, before use, by the NAVFACLANT PPMC as described in section 2.2. The list of proposed pesticides shall be included in the CWP or submitted to the designated government representative using the format designated in the contract specifications. The PAUL is in appendix D of this IPMP.

4. Pesticide Mixing, Storage, and Disposal: Contractors shall not store, mix, or dispose of pesticides or clean pest control equipment on the installation unless an approved pesticide and storage area is specified in the contract. One exception to this is soil treatment for termite prevention during building construction; the contractor must mix the termiticide on-site while the PMPAR or IPMC is there to witness the mixing.

5. Pesticide Applications: Only pesticides listed on the PAUL shall be used and applied in a manner consistent with the pesticide label.

6. Pest Management Reporting: Contractors shall submit reports in accordance with the reporting requirements in section 2.3.3.

7. Contractor Vehicles:

    a. Safety equipment: Vehicles used to transport pesticides shall be equipped with a fire extinguisher and a spill and decontamination kit, capable of handling the maximum amount of pesticide transported at any given time.

    b. Security: All pesticides carried on the vehicles shall be secured in locked compartments at all times. Vehicles shall not be left unattended at any time unless properly locked and secured.

    c. Identification: Vehicles will be clearly identified as pest control vehicles.

    d. Appearance: All vehicles shall be maintained with a clean and orderly appearance, free from observable pesticide spills, residues, or build-up.

    e. Transporting pesticides: Pesticides shall not be transported in the cab or occupied part of any vehicle. They shall always be carried in a separate compartment from the occupied cab.

8. Compliance Assessment: All contractors are subject to regulatory compliance assessments by the PMPAR, IPMC, environmental compliance staff, and other authorized government personnel. Pest control vehicles, pesticide applications, and administrative requirements are subject to inspection. Authorized government personnel may also require the contractor to stop work if the work is not being performed in a safe manner.

2.5.5 Contract Performance Assessment

Contracts shall be assessed by a trained PMPAR to ensure environmental and contractual compliance. For FSC/BOS contracts, Functional Assessment Plans (FAPs) for pest control and grounds maintenance should be developed and implemented. Templates for FAPs are available from the KO or NAVFACLANT. Assessments for pests prior to, during, and after pest control operations should be conducted to ensure efficacy of the services. Pest survey methods for contract performance assessments are found in chapter 8 on each of the Integrated Pest Management Sheets. Inspection of the contractors during pesticide application should also be conducted to ensure safety measures are being taken. The contractors' vehicles and equipment must be made available for inspection when requested. In the absence of a PMPAR, installation PMTs can provide information on the efficacy of pest control in some facilities and outdoor areas. Preventive medicine technicians conduct monthly inspections that include pest surveys of food service facilities and child development centers. The PMPAR and the IPMC should liaison and coordinate performance assessment activities with the PMT.

THIS PAGE IS INTENTIONALLY BLANK.

CHAPTER 3

Operations

3.1 INTEGRATED PEST MANAGEMENT

3.1.1 Federal Regulation and Policy

Presidential executive order (EO 13514), October 5, 2009, requires federal agencies to promote pollution prevention and eliminate waste by implementing integrated pest management and other appropriate landscape management practices. U.S. Code states, "Federal agencies shall use Integrated Pest Management techniques in carrying out pest management activities and shall promote Integrated Pest Management through procurement and regulatory policies, and other activities" (7 U.S.C.§136r-1). It is DOD policy to, "incorporate sustainable Integrated Pest Management (IPM) philosophy, strategies, and techniques in all aspects of DOD and Component vector control and pest management planning, training, and operations including installation Integrated Pest Management Plans and other written guidance to reduce pesticide risk and prevent pollution" (DODI 4150.07, paragraph 4.4).

3.1.2 What is Integrated Pest Management?

Integrated pest management is, 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. Integrated pest management uses regular or scheduled monitoring to determine if and when treatments are needed and employs physical, mechanical, cultural, biological, genetic, regulatory, chemical, and educational methods to keep pest numbers low enough to prevent unacceptable damage or impacts" (MCO 5090.2A, paragraph 14102). There are significant differences between IPM and traditional pest control methods. Table 3-1 lists some of the differences.

In IPM programs, treatments are not made according to a predetermined schedule; rather, 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 hazardous to non-target organisms and the general environment.

Pest Management	Traditional Pest Control	IPM
Program Strategy	Reactive	Preventive
Customer Education	Minimal	Extensive
Potential Liability	High	Low
Emphasis	Routine pesticide application	Pesticides used when exclusion, sanitation, and other non-chemical methods are inadequate
Inspection and Monitoring	Minimal	Extensive
Pesticide Application Frequency	By schedule	By need
Pesticide Application Target	Area-wide spraying	Spot treatment of areas where pests are found
Customer Involvement in Preventing Pests	Minimal	Extensive

Table 3-1. Comparison of traditional pest control and integrated pest management methods

Under an IPM program, execution of individual pest management practices involves the following steps:

1. Identify pests and possible natural enemies.

2. Develop plans/strategies through an integration of treatment methods that are effective against the pest, least disruptive to natural controls, and least hazardous to human health and the environment.

3. Establish action thresholds, or the size of the pest population correlated with a threshold, that is sufficient to warrant treatment. In determining threshold levels, the amount of aesthetic or economic damage that can be tolerated must be correlated with the population size of pests, natural enemies, time in the season, and/or life stage of the pest or host.

4. Monitor pest population by regularly surveying pest and natural enemy populations. Monitoring is an ongoing activity.

5. Control pest (optional).

6. Document results.

7. Evaluate/redesign plan to determine the outcome of treatment actions.

Controlling pests has traditionally been the responsibility of the pest control operator. In IPM, preventing and controlling pests is the responsibility of all personnel on the installation.

3.1.3 Integrated Pest Management Compliance

All pesticide applicators are trained in IPM techniques during initial and refresher licensing or certification training. Government representatives shall assess the PMSP's compliance with IPM. This may include:

1. Reviewing the approved pesticide list for use of less toxic pesticides, baits with sustainable control, short-residual and pest-specific products, and products used for spot treatment rather than broadcast application.

2. Ensuring contractor work plans and partner pest management plans incorporate IPM.

3. Reviewing pest management records to ensure that only approved pesticides are used, spot applications are performed, non-chemical methods are used, and routine surveys are being performed.

4. Observing pest control service calls to ensure pest control operators identify conditions conducive to pest infestations, provide information to building occupants on how they can prevent pests, use only approved pesticides, perform spot treatments, properly apply baits, conduct routine surveys, and monitor baits/bait stations/traps.

3.1.4 Integrated Pest Management Sheets

The IPM project sheets in chapter 8 provide guidelines for the integrated management of pests at the installation. They may be used as a reference for surveillance, and non-chemical and chemical control alternatives.

3.2 CURRENT PEST MANAGEMENT OPERATIONS

3.2.1 Inspections

Inspections are a key component to IPM and routine inspections provide early detection of pests. Pest inspections are routinely done at all food service facilities and at food sales and storage sites. Preventive medicine technicians conduct food safety inspections including surveys for pests and pest signs at the galleys and food facilities each month. The preventive medicine department provides monthly and quarterly sanitation inspection reports and, if necessary, immediate recommendations to facility managers when contractor-administered pest control operations are needed to control pests.

3.2.2 General Household and Nuisance Pests

Pest control, for the purposes of this IPMP, is the control of arthropod and vertebrate pests in and around buildings. Sanitation, glue traps, and exclusion are the primary means of non-chemical control in and around structures. Low-toxicity insecticidal baits are used effectively for cockroaches and ants. Most pesticide applications involve the application of contact chemicals or those that have a short residual period.

3.2.2.1 Cockroaches

German and American cockroaches are the most common cockroaches. The general adaptability of the German cockroach makes it an important pest problem in food service areas. An integrated approach of using both preventive and corrective techniques is the only practical means of controlling this pest.

3.2.2.2 Control Measures

Preventive control measures—including inspection, interior and exterior facility sanitation, and exclusion methods such as closing harborage areas by caulking or other modifications—reduce the chances for pest survival by limiting needed food, water, and shelter. In buildings that are most susceptible to pest infestation, services are performed on a scheduled basis through pest control contracts. Service includes inspection, recommendations on pest proofing and sanitation, and chemical control, if needed. Food-handling facilities, such as the mess halls, are often serviced on a bi-weekly basis. Common use areas and food consumption areas of other buildings, such as restrooms, coffee messes, lounge areas, and vending machine rooms, are serviced on either a monthly or quarterly basis, depending on the preventive maintenance contract for that building, with response to call-backs as necessary. This also includes common use areas of the barracks, warehouses, and administration buildings. Buildings where there is no food and where problems occur only occasionally such as shops and storage buildings, are handled on a service call basis. Pesticide treatments in food handling areas shall be confined to crack and crevice placement when using residual aerosol or dust formulations. Insect growth regulators and baits are used to complement other control measures. Low-odor formulations are used in offices and in other spaces where a pesticide odor would be objectionable.

3.2.3 Grounds Maintenance

Grounds maintenance is performed on improved or landscaped grounds. Pest management during grounds maintenance may involve weed control; control of pests and diseases on plants, trees and turf; and control of vertebrate animals (e.g. squirrels, moles) that may destroy plants and turf. Mechanical removal of weeds and mowing are routinely performed. Grounds maintenance also includes weed control in the parade fields and around the commandant houses.

3.2.3.1 Turf and Ornamental Pests

Turf and ornamental pests include insects and diseases. White grubs and ants infest the soil and roots of plants. Japanese beetles, bagworms, tent caterpillars, sod webworms, and armyworms feed on the leaves of plants. Leafhoppers, scale insects, and aphids are referred to as plant sucking insects and feed on the fluids inside of plants. Oak borers and bark beetles are insects that bore into plants or trees and disrupt the plants' ability to transport nutrition and water. Various plant diseases including brown patch and dollar spot are also possible turf diseases that may be encountered. Ornamental diseases can cause leaf spots, blights, mildews, and wilts from fungi, bacteria, and viruses.

3.2.3.2 Weed Control

A wide variety of herbicides are available for controlling unwanted vegetation. Herbicides are used around mowing obstacles such as signs, fire hydrants, and manholes. Herbicides are used to control weeds along cracks in sidewalks and asphalt parking areas, along fence lines, and around buildings. Selective herbicides are used to control various weeds that occur in lawns and parade fields on the base. Various cultural and chemical controls can be used to deal with these and other weed control problems. When using chemical control, both selective and non-selective herbicides may be used.

Figure 3-1. Selective weed control is conducted in the parade field to keep it maintained.

3.2.4 Structural Pests

Structural pests which have an impact on activity operations include subterranean termites, powder post beetles, wood borers, and wood-destroying fungi. Of these, subterranean termites and wood-destroying (decay) fungi cause the most damage.

3.2.4.1 Structural Control Program

A well-managed structural pest control program includes inspection, prevention, and chemical treatments as needed. All susceptible structures that contain wood or wooden structural components should be inspected on an annual basis. The records should note when building inspections are completed, the location of an infestation found, and the description of any treatment performed.

3.2.4.2 Termite Control

Various control techniques as part of an integrated approach to structural pest control include:

1. The use of construction practices which protect wood from attack
2. The control of moisture through proper drainage and ventilation
3. The use of termiticides for barrier treatment of soil and hollow masonry units of building foundations
4. The use of treated wood and or metal and concrete supporting structures.

Corrective chemical treatments should be performed when termites are found actively damaging wood. Control operations should be based on annual inspections of buildings and reports of termite swarming from building occupants. All wood that is damaged by termites or wood rot fungi should be replaced with treated wood to prevent future damage.

Top priority is given to preventive control treatments, such as preconstruction termite soil treatments and the use of treated wood to protect wood from attack. Once treated with termiticides, care must be taken to

prevent disruption of the treated soil barrier within one foot of the foundation, such as being moved by gardening activity or covered when raised flower beds are installed against a building. Disturbance of treated soil within one foot of the foundation cannot be allowed. Raised beds must be four-sided (i.e. not using the foundation as one side) and soil within one foot of the foundation cannot be cultivated for planting.

3.2.4.3 Administration of Termite Treatment Contracts and Warrantees

Termite treatment contracts shall follow all of the requirements found in section 2.5.4. The NAVFACLANT PPMC should review contract specifications for termite control. Termiticides, when needed, must be applied at the highest EPA-labeled concentration and application rate. Soil treatment for termite prevention will be conducted during building construction in accordance with the Unified Facilities Guide Specifications (UFGS) 31 31 16, Soil Treatment for Subterranean Termite Control, (DODI 4150.07, paragraph E4.7.15.1). In accordance with UFGS 31 31 16, the contractor shall provide a warranty of no less than five years. This ensures that if termite activity is discovered during the five-year warranty period, the contractor will re-treat the soil and repair or replace any damage that has been caused by termite infestation. Termiticides used for termite control must be nonrepellent, such as pesticides with the active ingredient of fipronil, imidacloprid, chlorfenapyr, or chlorantraniliprole. DOD-certified pesticide applicators or PMPARs trained in pest control shall inspect applications of pesticides by contractors to control termites or other wood-destroying organisms.

3.2.5 Stored Products Pests

Stored product pests are a potential problem at the MARBKS. Inspection upon receipt of products and rejection of obviously infested materials generally prevents heavily infested material from being placed in the storage area.

3.2.5.1 Dermestid Beetle

If the dermestid beetle (*Trogoderma*) is found in a commodity, the whole lot of food must be condemned. The pointed hairs on the larvae will cause digestive problems if the contaminated food is eaten. An accurate identification of *Trogoderma* is required to condemn the lot. Sanitation (i.e. keeping storage areas clean) and stock rotation often minimize or prevent pest infestation. If an infestation is found, the most effective way to control *Trogoderma* is through deep cleaning, vacuuming, and discarding or segregating the infested product while surveying adjacent areas. Ultra-low volume space treatments and residual sprays are used to stop movement of an infestation to clean stock within food storage areas.

3.2.5.2 Meal, Ready to Eat Stores

More stringent controls are required for prevention of stored products pests in MRE storage areas. Guidance on this program can be found in the AFPMB Technical Guide (TG) No. 38, Protecting Meals, Ready-to-Eat Rations (MREs) and Other Subsistence during Storage.

3.2.6 Health Related Pests

In accordance with OPNAVINST 6250.4C (paragraph 4c), the Washington Navy Yard Branch Health Clinic Preventive Medicine Department is responsible for conducting inspections and surveys aboard the MARBKS to determine the species, source, location, and density of medically-important arthropods and provide the results to the public works and facilities departments for use in planning pest control operations. Mosquitoes, biting flies and gnats (*Culicoides*), and filth flies constitute the most important insect groups from the standpoint of both disease transmission and general annoyance. Operations

directed at controlling potential disease vectors must be based on a thorough knowledge of the target pest, actionable surveillance data, and compelling evidence of an infestation that poses an emergent public health risk.

3.2.6.1 Mosquito Management

West Nile virus (WNV) is the primary vector borne disease threat on this activity. In 2012, two mosquito pools tested positive for WNV on the MARBKS. Information on the prevention, surveillance and control of mosquito species implicated in the spread of these diseases can be found at the District of Columbia Department of Health, http://doh.dc.gov/service/infectious-diseases.

3.2.6.1.1 Mosquito Surveillance

Adult mosquito surveys are the responsibility of the preventive medicine technicians. However, if a PMT is not available, a pest control provider can conduct the adult mosquito surveillance. Mosquito surveys are necessary to determine the species present, their abundance, the potential hazard of disease transmission, and information on which to base an efficient control program. Mosquito surveillance includes conducting both larval and adult surveys. Larval surveys are important because they determine exactly where mosquitoes are breeding, providing the information necessary to manage or eliminate mosquitoes at the source. Larval surveys involve regular dipping stations that are selected, noted on a map, and inspected periodically throughout the mosquito season. In areas where mosquito control is conducted, random larval sampling should be made to check the effectiveness of the control program. A West Nile Virus surveillance program is currently in place. Two gravid traps are placed at CMC Garden (Quarter 6) and the southeast corner of the parade deck on the main post and maintained by the pest control contractor. Mosquitoes are collected once a week from May through October and sent to the U.S. Army Public Health Command at Fort Meade for counting and testing. Gravid traps collect female mosquitoes that have had a blood meal and are ready to lay eggs. The Navy Bureau of Medicine and Surgery entomologists, centered at the Navy Entomology Center of Excellence and the Navy environmental and preventive medicine units, are responsible for providing professional guidance, recommendations, and on-site assistance on all technical matters relating to disease vectors and other medically-important pests (OPNAVINST 6250.4C, paragraph 4c).

Figure 3-2. Gravid traps are used to survey mosquitoes used for West Nile Virus testing.

3.2.6.1.2 Mosquito Control

Mosquito control methods are either permanent (e.g. eliminating the water source) or temporary (e.g. chemical control) in nature and may be directed against larvae or adults. Larviciding is the most effective way to control mosquitoes. Larvicides should be applied when results of mosquito dip counts exceed two larvae per dip. During high summer temperatures, egg hatching to pupa can take three days. There is a very small window available to treat successfully for control of larvae. To decrease the amount of standing water, it is important to have a drainage system allowing proper runoff of rain water from roadways. The ditches should be maintained free of weed growth and the storm drains should be free of debris.

This installation performs ultra-low volume (ULV) pesticide applications for mosquitoes on an as needed basis via the base pest control contractor. When gravid trap mosquito pools are positive for West Nile virus, ULV treatments are initiated. Ultra-low volume treatments must be made during peak mosquito activity when weather conditions are optimal; therefore, ULV operations will be conducted in the early morning hours before the sun warms the ground or in the evening after the ground has cooled (i.e. temperature inversion). Regular testing of ULV aerosol droplet dispersal is required to assure maximum control, minimum insecticide use, and prevention of automobile finish spotting caused by droplets that are too large. This testing must be done at the beginning of each spray season and for every 50-100 hours of operation, or when the pesticide is changed. More information is included in the AFPMB TG No. 13, Dispersal of Ultra Low Volume (ULV) Insecticides by Cold Aerosol and Thermal Fog Ground Application Equipment. Slides for aerosol droplet size testing can be obtained from and analyzed by the Testing and Evaluation Department at the Navy Entomology Center of Excellence, Jacksonville. Also, application of residual insecticides labeled for mosquito control to relatively small areas near the source of the mosquitoes has been shown to be highly effective.

3.3.6.2 Filth Fly Management

Filth flies (houseflies, blow flies, flesh flies, bottle flies, etc.) can be a problem during the warm summer months if high sanitation levels are not maintained. Timely disposal of garbage and routine cleaning of garbage cans and dumpsters helps to minimize the problem. Garbage cans and dumpsters should be placed on concrete pads at least 100 feet from facilities to reduce breeding under and around the containers and to minimize access to the facilities. Continuous monitoring of sanitation conditions in and around food service areas helps assure that significant fly breeding will not occur.

The choice of fly control techniques must be based on an on-site evaluation of the problem. Pest control personnel inspect areas where garbage is handled and treat these locations with approved insecticides when flies exceed control limits. Preventive medicine technicians also inspect these areas and report significant findings to facility managers for corrective action. Exclusion devices, such as screens and air curtains, help prevent the entrance of flying insects into buildings when installed and properly maintained. Aerosol insecticide treatments are provided when adult flies become a problem in indoor spaces. Automated pesticide misting devices are not allowed according to DODI 4150.07 (paragraph E4.10.3). Light trap devices are also helpful for filth fly control in food handling areas, but only when they are placed inside of the building. Use only non-contaminating light traps with some way of containing the dead insects. For more information on this, see AFPMB TG No. 29, Integrated Pest Management in and around Buildings.

3.2.6.3 Bed Bug Management

Within the past decade, there has been a significant resurgence of bed bugs worldwide. Bed bugs are occasionally a problem in the barracks due the transient nature of the Marines. Bed bugs are blood-

feeding ectoparasites that are usually associated with humans, bats, or birds. These insects have a number of features that make them very effective pests and thus difficult to control: their small, flattened body design allows them to take harborage in inconspicuous places such as cracks and crevices; a female can lay several hundred eggs during her lifetime; they can survive a long time without feeding; and many insecticides have been rendered ineffective due to resistance development. The most common way bed bugs are introduced is by the movement of infested items (i.e. bedding, clothing, and luggage) from one place to another. The common bed bug is not known to transmit human disease. For most people, the bite of a bed bug is painless and will usually go unnoticed, though many people can have allergenic skin reactions ranging in severity from local inflammation and itchiness to asthmatic symptoms and anemia.

Because of their cryptic lifestyle, bed bugs can be difficult pests to detect without a diligent survey strategy. Bed bugs typically feed at night when the host is asleep, and seek off-host harborage in cracks and crevices during the day. It is very important to thoroughly inspect areas where bed bug infestation is suspected. Typical harborage areas might include mattress seams, box springs, bed frames, night stands, picture frames, loose wallpaper, and curtains. Bed bugs typically travel 5–20 feet from their harborage area to feed. When populations are small, infestations may go unnoticed. Some tell-tale signs of a larger bed bug population include the presence of fecal spotting, shed skins, increased biting frequency, and in serious cases, a distinct obnoxiously sweet odor produced by the bugs. Persons conducting inspections and surveys should be properly trained on what to look for and where to look for infestations.

Since bed bugs are a public health issue, the first step in control is the involvement of the installation preventive medicine department. Bed bug control may be more difficult to achieve today with increased travel and more stringent limitations on available control materials. A successful control program will require a carefully planned and integrated approach. For more information on controlling bed bugs, see AFPMB TG No. 44, Bed Bugs—Importance, Biology, and Control Strategies.

3.3.6.4 Rodent Management

Rodent control work is an ongoing program to eliminate the causes of rodent infestations. Major emphasis is placed on sanitation and exclusion to limit the amount of food and harborage areas available to rodents. Tamper-proof bait stations should be maintained in high infestation areas. There are EPA requirements for the placement and containment of first generation anticoagulant products (warfarin, chlorophacinone, and diphacinone), second generation anticoagulant products (brodifacoum, bromadiolone, difenacoum, and difethialone), and non-anticoagulants (bromethalin, cholecalciferol, and zinc phosphide). Bait stations are required for all outdoor, above-ground placements and must be placed within 100 feet of man-made structures. Bait stations are also required indoors if exposure to children, pets, or nontarget animals is possible. Mechanical traps (snap traps, glue traps, etc.) are another effective control method. Trapping is a particularly effective way of quickly reducing a large mouse population.

3.2.7 Self-Help Pest Management

Self-help pest control programs on DOD installations are authorized by DODI 4150.07 (paragraph E4.7.7.3) when they are cost-effective and when IPM monitoring indicates the need for control. Self-help pest control allows uncertified personnel to use low-toxicity, ready-to-use (RTU) pesticides for small-scale pest control operations. Examples of self-help programs available are: stinging insect pest control for maintenance personnel, venomous spider control, vegetation control using glyphosate, and barracks/office pest control. Any personnel or departments conducting unauthorized pesticide applications should be directed to immediately cease applications. Requirements for self-help are:

1. The program shall be reviewed and approved by the IPM coordinator and then by the NAVFAC PPMC

2. A program manager, who will be responsible for the program and be the primary point of contact, shall be designated

3. All personnel that will be applying pesticide must be trained and their training documented

4. Only ready-to-use (RTU) pesticides approved by the NAVFAC PPMC shall be used

5. The area(s) to be treated should be small enough to be practically treated with RTU pesticides

6. All pesticides will be stored in a storage site as described on the pesticide label

7. All pesticide use will be reported.

To request review of a proposed program and submit a statement of need, the IPMC must contact the NAVFAC Atlantic PPMC.

3.2.8 Prohibited Operations and Devices

3.2.8.1 Application of liquid and dust formulations in occupied spaces

Installations should not permit liquid spray and dust pesticide formulations in any space occupied by unprotected personnel. However, pesticides contained in gel or paste bait formulation may be applied in occupied spaces.

3.2.8.2 Preventive or Scheduled Pesticide Treatments

DOD policy prohibits the use of regularly scheduled, periodic pesticide applications 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. (DODI 4150.07, paragraph E4.10.3)

3.2.8.3 Paints and Coatings Containing Pesticides and Other Biocides

DOD policy prohibits the use of paints containing insecticides on DOD property. This includes interior and exterior paints. Paints containing fungicides as mildew inhibitors and approved marine antifouling compounds or coatings may be applied to protect surfaces of watercraft. (DODI 4150.07, paragraph E4.10.2)

3.2.8.4 Electrically-Operated Devices

“Electromagnetic exclusion or control devices, ultrasonic repellent or control devices, and outdoor devices for electrocuting flying insects are not approved for use on DOD installations.” (DODI 4150.07, paragraph E4.10.1) This exclusion does not apply to indoor use of selected devices, carefully placed, for electrocuting flying insects. Pest surveillance traps and monitoring equipment, such as non-electrocuting mosquito light traps, may also be used by trained personnel.

3.3 REGULATORY COMPLIANCE

3.3.1 Policy

The Department of Defense’s policy is to 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. When there is a conflict between federal and state or local

regulations, the installation will comply with the more stringent of the regulations. This may occur with pesticides limited for use by the state, which are not necessarily restricted by the EPA. In this case, the installation must comply with state regulations.

3.3.2 Pesticide Regulation and Enforcement

3.3.2.1 Pesticide Regulation

The EPA has the primary authority to regulate pesticides in the United States. The EPA delegates pesticide enforcement authority to states through cooperative agreements.

3.3.2.2 Enforcement

The responsibility for compliance and enforcement lies with the installation's commanding officer (ICO). As the ICO's pest management advisor, the IPMC shall be familiar with federal, state, and local pesticide use regulations and ensure that all applicators conduct operations in compliance with these regulations.

Pest management performance assessment representatives shall provide assistance by monitoring contract PMSPs for compliance with all applicable regulations as specified in the contract and will recommend appropriate actions to the KO if the contractor does not comply. Preventive medicine technicians conducting sanitation inspections of food service facility pest management programs can also ensure compliance for safe pesticide use and applicator licensing/certification. Inspection guidelines are found in NAVMED P-5010, chapters 1 and 8. The preventive medicine technicians will notify the IPMC of any potential pesticide application violations observed during the course of routine sanitation inspections.

The NAVFACLANT Applied Biology Section shall provide assistance to the installation IPMC with compliance and enforcement issues and clarification of regulations. The senior pest management consultant is the certifying official for DOD-certified pesticide applicators on the installation.

3.3.3 Laws and Regulations

3.3.3.1 Primary Pesticide Regulations

The following are the primary federal, state, DOD, and Marine Corps regulations for pest and pesticide management:

1. Federal: U.S. Code of Federal Regulations (C.F.R.) in 40 C.F.R. § 152–180, Pesticide Programs
2. District of Columbia: Municipal Regulations
    - Title 20 Chapter 22–Control of Pesticides
    - Title 20 Chapter 23–Pesticide Applicators
    - Title 20 Chapter 24–Pesticide Operators
    - Title 20 Chapter 25–Pesticides Administration and Enforcement
3. DOD and Marine Corps: DODI 4150.07, DOD Pest Management Program; and MCO P5090.2A Environmental Compliance and Protection Manual, Chapter 14-Pesticide Pollution Prevention

3.3.3.2 The Pesticide Label

The primary source of pesticide regulations for the pesticide applicator is found on the pesticide label in accordance with 40 CFR§156. The District of Columbia may add supplementary labels which are regulations that must be complied with within the state. It is a violation of federal and/or state law to use a pesticide in a manner inconsistent with the label. Note, however, that the pesticide label does not provide specific information for each site where the pesticide may be applied. For example, the pesticide label may allow application of an herbicide to unimproved grounds, but if those grounds are within a ringed map turtle habitat, then pesticide use may be restricted under the Endangered Species Act. Pesticide applicators should be aware of environmentally-sensitive areas before beginning any new pesticide application and should consult the installation's environmental department. For more on the pesticide label, see http://www.epa.gov/pesticides/label/.

3.3.3.3 Other Regulations

Other applicable directives, laws, and regulations concerning pesticide applicators and pest management operations are listed and described in appendix F.

3.4 PESTICIDE MANAGEMENT

Chemical control of pests using pesticides can be an integral part of an IPM program. Proper management of pesticides will ensure a safe and cost-effective pest management program. Management of pesticides includes the proper selection of pesticides, pesticide approval, procurement, storage, mixing, use of pesticide application equipment, and clean-up. The pesticide label provides most of the information needed to manage pesticide use and must be affixed to the container at all times.

3.4.1 Pesticide Selection

The following criteria should be used when selecting a pesticide:

1. Determine the need for a pesticide. Is a chemical pesticide really needed? In some situations, non-chemical control methods may be more effective or less costly and time-consuming in the long term. Will exclusion or habitat elimination take care of the problem?

2. Choose a pesticide with a low toxicity. Can the pest be sufficiently controlled with a pesticide that has a low toxicity to humans?

3. Choose pesticides and pesticide formulations with minimal environmental impact. Avoid using restricted-use pesticides if possible. The environmental impact of a pesticide spill is reduced when using a granular pesticide formulation rather than a liquid. Can attractant bait stations be used instead of broadcast application of a pesticide?

4. Choose pesticides that provide a long-term or sustainable solution. For example, contact insecticides applied to ant trails will only temporarily halt the infestation, and may cause the colony to bud and form new colonies, while baits can kill the entire colony including the queen.

3.4.2 Pesticide Procurement

Pesticides used by contractors are included in the cost of the contract and are procured through commercial sources. Pesticides used by DOD personnel may be purchased through the Federal Stock System. Contractors cannot purchase pesticides through the Federal Stock System. Only pesticides listed

on the installation's PAUL in appendix D may be purchased. For information on requesting new pesticides to the installation PAUL, see section 2.2.

3.4.3 Pesticide Storage

No contractor pesticides shall be stored on the installation. Self-help pesticides must be stored in accordance with the product label which is generally a cool, dry place away from food items.

3.4.4 Mixing

No mixing of pesticides shall be performed on the installation. Self-help pesticides are ready-to-use and do not require mixing.

3.4.5 Application

3.4.5.1 Service containers

Containers other than the original pesticide container used for transporting pesticides to the job site must have a copy of the label attached. Service containers used for the application of a pesticide must have the following information on a tag attached to the container: name of party responsible for the container, the identity of the chemical in the container, and the signal word of the chemical. Containers commonly used for food, drink, or household products shall not be used to hold pesticides.

3.4.5.2 Equipment

Only pest control equipment that is in good repair and safe to operate shall be used by PMSPs. The equipment should be in good condition, free from corrosion, clean, and free from leaks. The PMPAR shall inspect equipment used by contract applicators. Applicators shall also ensure they use equipment suitable to ensure proper application of pesticides.

3.4.5.3 Pesticide Application

All pesticides shall be applied in accordance with federal, state, and label directions. Application of pesticides should be timed to ensure contact with and maximum kill of the pest and to prevent use under adverse weather conditions that can cause drift of the chemical outside of the target area. See section 4.2.2 for more information on timing and drift prevention.

3.4.6 Post-application Clean Up

All pest control equipment shall be properly cleaned. Contract PMSPs are not allowed to dispose of excess pesticide, used containers, or residues on the installation per contract specifications; they must conduct all cleaning off-site. Spray tanks and pesticide containers must be triple-rinsed prior to storage or disposal. Disposal of pesticide spray tank rinse water should be performed by applying it to a site listed on the pesticide label, by using it for future mixing of the same pesticide, or by disposing of it as hazardous waste. Rinse water shall not be allowed to enter storm drains.

3.5 MINIMUM RISK PESTICIDES

Minimum risk pesticides, such as those marketed under the EcoEXEMPT brand, may be used by PMSPs as part of their IPM program. According to the EPA, "Minimum risk pesticides are a special class of pesticides that are not subject to federal registration requirements because their ingredients, both active

and inert, are demonstrably safe for the intended use." These pesticides are exempt from federal registration under section 25(b) of the FIFRA and are not labeled with an EPA registration number. Since there is no federal review of these pesticides or their pesticide label, there is no federal review of the instructions for effective use of these products. Although these pesticides are exempt from federal registration, they still need to be approved prior to use on DOD property, primarily for efficacy and safety reasons.

3.6 CANCELED PESTICIDES

The EPA has canceled or restricted several common organophosphate pesticide registrations. Chlorpyrifos (e.g. Dursban, Lorsban), and diazinon, widely used pesticides by private and commercial pesticide users, have been canceled. The following actions are allowed with these pesticides:

1. End users (e.g. PMSPs and private, residential users) should check with NAVFAC Applied Biology or state/local regulatory agencies for guidance. Some canceled pesticides are allowed to be used until stocks are depleted, while others are under a stop use order.

2. PMPARs should monitor the use of the pesticides by contractors to ensure that they are not using an increased amount of the pesticides as a means of using up their stock.

The EPA is also cancelling most organic arsenical pesticide registrations, which consist of MSMA, disodium methanearsonate (DSMA), calcium acid methanearsonate (CAMA), and cacodylic acid and its sodium salt. Organic arsenical pesticides are used, or have been used, as herbicides on cotton and other agricultural crops, in forestry, on residential and other lawns and turf, and in non-crop areas such as rights of way, drainage ditch banks, fence rows, and storage yards. All uses of DSMA, CAMA, and cacodylic acid and its sodium salt were canceled as of September 30, 2009.

All uses of MSMA—except for cotton, sod farms, golf courses, and highway rights-of-way—were canceled as of September 30, 2009. Use of MSMA on sod farms, golf courses, and highway rights-of-way was to have been prohibited after December 31, 2013, but because the EPA is considering newly-submitted information, these uses remain registered. These uses, in addition to the cotton use, will be considered in the pending registration review process for MSMA. Users can continue to apply MSMA on sod farms, golf courses, and highway rights-of-way until further notice, but thoughtful use and consideration of depleting stocks is highly encouraged.

CHAPTER 4

Health and Safety

4.1 PESTICIDE APPLICATOR SAFETY

To ensure the safe use of pesticides, pesticide applicators shall handle and apply pesticides in accordance with the product's label directions.

4.1.1 Potential Occupational Hazards

The following hazards may be encountered by pesticide applicators or government representatives that may be exposed while inspecting pest management operations. Occupational safety and health guidance is found in the OPNAVINST 5100.23G, The Navy Occupational Safety and Health Program Manual.

4.1.1.1 Direct Contact Toxic Chemical Exposure

Many chemicals used as pesticides are also harmful to humans. The three routes of exposure to applicators are dermal, inhalation, and ingestion. For applicators, the most common route of exposure is dermal and is frequently due to not wearing the appropriate personal protective equipment. Severity of the harmful effects is determined by duration of exposure and toxicity of the chemical. The effects can be acute (rapid onset due to high-dosage, high-toxicity chemicals) or chronic (slow or delayed onset; due to long-term exposure to low-dosage, low-toxicity chemicals). The highest risk for severe acute chemical exposure occurs during pouring and mixing of concentrated pesticide resulting in high-dose, rapid-onset chemical poisoning. Chronic exposure can occur when the applicator fails to use appropriate PPE during frequent pesticide applications and the chemical accumulates in the body of the individual over a period of time leading to delayed or gradual onset of illness or injury. Direct chemical exposure can result not only in pesticide poisoning, but in skin burns due to corrosive chemicals.

4.1.1.2 Heat

The use of protective equipment such as respirators, goggles, gloves, and coveralls increases the risk of heat injury especially in warm climates. Heat injury can occur during long periods of work outdoors during warm weather or in enclosed spaces where machinery or equipment may generate heat.

4.1.1.3 Noise

Some pesticide application equipment uses gas-powered air compressors or pumps that produce noise hazards. Gas-powered backpack sprayers are particularly hazardous due to the proximity of the noise source to the ears.

4.1.1.4 Eye Hazards

Eye hazards may result from chemical splashed into the eyes causing corrosive, toxic, or impact injury. Some pesticides are labeled restricted use due to their corrosive nature. The highest risk occurs during

pesticide pouring, mixing and application. During pesticide applications, chemicals may enter the eyes through splash back when applying the chemical under pressure into a crack or crevice or when applying pesticides overhead. Injury may also occur during equipment cleaning.

4.1.1.5 Infectious Zoonotic Disease

Care should be taken when trapping and handling live or dead animals. Hantavirus may be transmitted from rodents to humans through body fluid exposure or when breathing aerosolized rodent excreta. Pest management providers may be exposed when handling rodent carcasses after trapping or handling traps contaminated with rodent urine and feces. Feral dogs, cats, skunks, raccoons, and bats may carry and transmit rabies through a bite.

4.1.1.6 Inhalation Hazards

Many pesticides release hazardous vapors and are particularly hazardous in enclosed spaces. Some pesticides are labeled restricted use due to the high risk of inhalation injury. Personnel may be exposed during mixing, application, and cleaning.

4.1.1.7 Electrical and Fire Hazards

Spot and crack and crevice applications may require application of a pesticide to areas near motors of refrigerators, compressors, and other machinery where it can become an electrical shock hazard. Pesticides may also be applied to areas near pilot lights resulting in an explosion and/or fire hazard.

4.1.1.8 Head Impact and Sharps Hazards

Surveys and pest control procedures may be done in attics, crawl spaces, basements, and other areas with low overheads where head impact hazards exist. Some devices used for bird roosting exclusion and rodent control have sharp edges and can cause cuts, puncture wounds, and abrasions.

4.1.1.9 Trip and Fall Hazards

Trip hazards may occur when applicators are spraying without close attention to where they are stepping. Spraying around buildings where there are various obstacles (e.g. plants, utility boxes, plumbing) in the path of the applicator can be particularly hazardous. Pest control may also need to be performed from ladders, on roofs, in ceilings, and in trees. Wet surfaces on the ground or on elevated surfaces can increase the risk of trips and falls.

4.1.1.10 Exposure to Harmful Animals

Venomous animals such as bees, wasps, and spiders are potential hazards when attempting to control them. Some of these are very dangerous due to envenomation and allergic reactions. Feral dogs, cats, raccoons, and other large pest animals can inflict serious bites or clawing wounds.

4.1.2 Hazard Abatement

4.1.2.1 Operational Risk Management

Operational risk management (ORM) is a decision-making tool to reduce the risk of mishaps, whether in military contingency or support operations. Pest management operations pose risks to human health and

the environment that affect the installation's mission that can be reduced and minimized through ORM. Pest management ORM uses the following process to minimize hazards:

1. Identify hazards—the hazards may involve the pesticide or the application equipment (see list of hazards above)

2. Assess hazards—determine the degree of risk based on the probability and severity of these hazards. For example, the risk may be high if a highly-toxic pesticide is used daily.

3. Make risk decisions—develop risk control options. Decide whether benefits of control outweigh the risks involved.

4. Implement controls

    a. Engineering controls—example: use a less toxic pesticide for controlling the pest

    b. Administrative controls—example: place warning placards around pesticide vehicles and pesticide storage areas

    c. Personal protective equipment—example: wear a respirator when an inhalation hazard exists

5. Supervise—follow-up to determine effectiveness of controls and monitor changes to hazards.

For more information on ORM, go to the Navy Safety Web site at: http://www.safetycenter.navy.mil/.

4.1.2.2 Training and education

Pesticide safety is a core requirement for civilian pesticide applicator certification and licensing programs. Safety topics are also given during recertification courses. See section 2.4 for specific training information.

4.1.2.3 Read the Pesticide Label

Pesticide labels are found on all pesticide containers used by installation PMSPs. The pesticide label provides directions for mixing, applying, and disposing of pesticides safely. It also includes a list of hazards to humans and first aid treatment. It may also include a list of personal protective equipment that must be worn and user safety recommendations. The label should always be read completely and thoroughly by the applicator before purchasing and using a pesticide. The label is a legal document mandated by FIFRA.

4.1.2.4 Personal Protective Equipment

Personal protective equipment should always be used when applying pesticides. The type and level of protection needed will be determined by the toxicity, formulation, and method of application of the pesticide. The pesticide label provides guidance on what PPE to use. This may include:

1. Respirator

2. Chemical-resistant gloves

3. Chemical-resistant coveralls or long-sleeve shirt and long pants

4. Chemical-resistant boots
5. Hard hat
6. Chemical-resistant goggles
7. Apron
8. Faceshield
9. Self-contained breathing apparatus (for fumigation).

Personal protective equipment must be appropriate for the type and application of the pesticide being used. It is the applicator's responsibility to maintain the PPE. Contractors must provide appropriate PPE to their applicators.

4.1.2.5 Pest Control Vehicle Safety Devices

Pest control vehicles should be equipped with safety devices and information. This may include:

1. Labels and SDSs for all pesticides in vehicle
2. Emergency medical information including the nearest emergency treatment center
3. Fire extinguisher
4. Spill kit
5. First aid kit
6. Cell phone or radio
7. Drinking water supply
8. Rinse water supply for washing pesticide off skin.

4.1.2.6 Pesticides and Equipment

The risk of pesticide exposure can be reduced by selecting the appropriate pesticide and equipment for the job. Applying small amounts of low-toxicity pesticide using appropriate and properly maintained equipment greatly reduces the risk of harm. Using pesticides that are formulated (e.g. contain emetics) or packaged (e.g. water-soluble packets) to minimize chemical exposure and increase safety should be considered when purchasing pesticides. Pesticide selection is addressed in section 3.5.1. Equipment should be tested with water prior to application to ensure proper application and that it is not leaking. Situational awareness, such as monitoring meteorological conditions and location, also prevents harmful exposure to pesticides.

4.1.2.7 Protection from Infectious Zoonotic Diseases

Pest control personnel who handle trapped animals or dead animal carcasses should wear gloves to prevent exposure to potentially infectious body fluids. A respirator fitted with a high-efficiency particulate air filter should be worn when entering enclosed spaces with large amounts of rodent feces that

might be disturbed and become airborne. Additional protection from hantavirus can be provided by spraying dead rodents and rodent feces with a commercial disinfectant. This will kill hantavirus as well as wet the feces to prevent it from becoming airborne. Detailed guidance on rodent handling is found in AFPMB TG No. 41, Protection from Rodent-borne Diseases with Special Emphasis on Occupational Exposure to Hantavirus.

4.1.2.8 Hazard Communication

All pesticide applicators must receive Occupational Safety and Health Administration (OSHA) Hazard Communication training (29 CFR§1910.1200). Contractors must carry safety data sheets in their vehicles or, as appropriate, at their on-base administration office. Applicators must understand all of the hazards associated with the chemicals they will use and be able to communicate those to the customer if necessary.

4.2 PUBLIC SAFETY

4.2.1 Potential Hazards to Public

4.2.1.1 Direct Contact with Pesticides

Pesticide exposure can occur through dermal contact with a pesticide on a surface, inhalation of vapors, or ingestion of pesticide contaminated food or eating utensils. This type of exposure can occur if a pesticide application is done while unprotected building occupants are present, occupants are allowed entry into buildings before the pesticide has dried, or food and food preparation and serving equipment were not properly protected or cleaned after an application.

4.2.1.2 Pesticide Drift

Pesticide drift occurs when a pesticide leaves the target area and affects unprotected persons outside the area. This commonly occurs outdoors when winds can carry the pesticide off-site. Drift can occur indoors if there is air movement or pesticides are drawn up through ventilation ducts. Pesticide applications that involve small pesticide droplets, such as fogging or ultra-low volume application, or dusts are most susceptible to drift.

4.2.1.3 Contact with Contaminated Water

Some pesticides can move through soil and contaminate groundwater used for drinking. Others, if applied in or close to surface water, can cause contamination of recreational waterways.

4.2.1.4 Injury Due to Animals

The use of an inappropriate pesticide may cause collateral injury due to an insufficient knockdown of the target pest. This can occur with bees and wasps. Some insecticides do not knockdown the insects rapidly and may actually excite them causing them to become more aggressively defensive in behavior. Unprotected persons blocks away from the pesticide application may become the target of their aggression. Injury can also occur when persons get too close to or try to release a trapped animal or try to capture feral animals by themselves.

4.2.2 Hazard Abatement

4.2.2.1 Proper Timing of Pest Control Operations

Most indoor application of pesticides should be conducted when building occupants are not present. An exception to this is the application of pesticide baits that are enclosed in a tamper-proof bait station that does not allow exposure to occupants or pets. The building occupants must remain out of the building to allow the liquid pesticide to dry. Some pesticide labels are specific about re-entry times (i.e. the time after application that occupants are allowed back into the treated building). Some pesticides, such as fumigants, provide specific directions on aeration of spaces to remove pesticide prior to re-entry. Certain operations, such as bee and wasp control or removal are best conducted after the area has been cleared of unprotected persons. Refer to the product label for specific information.

4.2.2.2 Preventing Pesticide Drift

Pesticide drift from target areas to areas where humans, animals, and plants can be affected can be reduced through the following means (adapted from University of Nebraska publication G1773, Spray Drift of Pesticides).

1. Select low or nonvolatile pesticides.
2. Read and follow the pesticide label. Apply a pesticide only if an application is warranted.
3. Use spray additives that decrease drift within label guidelines. This will increase the droplet sizes and pesticide effectiveness.
4. Use larger spray nozzle orifice sizes. This will give larger droplets and will increase the number of tank refills, but will improve coverage and effectiveness.
5. Avoid high pressure. High pressure creates finer droplets; 45 PSI should be considered maximum for conventional broadcast spraying.
6. Use drift-reduction nozzles. They will produce larger droplets when operated at low pressures.
7. Use wide angle nozzles and low boom heights, and keep the boom stable.
8. Do not spray when wind is greater or blowing towards sensitive crops, gardens, dwellings, livestock, or water sources. Drift is minimal when the wind velocity is less than 10 mph.
9. Use shielded spray booms. When banding, use shroud covers to keep chemicals from drifting.
10. For indoor applications, turn off ventilation and close doors to prevent air currents.

4.2.2.3 Prevent Tampering with Animal Traps

Caged animals can be very aggressive. Traps should be placed in areas where they will not be tampered with by humans or pets. Place warning signs on the traps and warn area occupants of the risk of injury. Live and dead rodents in traps can also be a hazard for hantavirus. Place traps in areas where humans or domestic animals will not be exposed to the rodents.

4.2.3 Special Safety Considerations

4.2.3.1 Barracks and Commandant Houses

Based on the District of Columbia Act to Amend the Pesticide Operations Act of 1977, pesticide applicators are required to provide information to customers concerning the type of pesticide to be used in and around housing areas. The managers of multi-unit properties (e.g., barracks) are required to provide a 24-hour notice to residents prior to the application of pesticides and information concerning that pesticide. More information can be found at http://green.dc.gov/pestrules.

A sign will be placed following pesticide applications to lawns or ornamental plants based on specifications in the District of Columbia Municipal Regulations (20 DCMR§2214).

4.2.3.2 Food Service Areas

Food contaminated with pesticides can lead to pesticide poisoning. Sanitation and exclusion should be the primary means of preventing and reducing pest infestations. Pesticide use in food service areas should be limited to low-toxicity pesticides applied to cracks and crevices, and baits. The area should be properly prepared for treatment by putting away utensils and equipment and covering food preparation areas. After treatment, the area should be thoroughly cleaned to prevent contamination.

4.2.4 Specific State Laws

Information specific to the District of Columbia can be found at http://green.dc.gov/pestrules. A list of District of Columbia laws pertaining to pest management activities can also be found in appendix F.

4.3 PEST CONTROL ACCIDENTS

4.3.1 First Aid

First aid for pesticide accidents is included on the pesticide label. The applicator should be familiar with first aid procedures required for the pesticide they are using. A copy of the label must be available at the application site. For some pesticides, immediate first aid and medical treatment may be required.

4.3.2 Medical Emergencies

The Washington Navy Yard Branch Health Clinic does not provide emergency medical services. Pesticide applicators experiencing an acute exposure to hazardous pesticides or significant injuries sustained in control operations should immediately go to the nearest emergency room capable of treating their emergent condition. The name, address, and telephone number of an emergency medical care facility should be posted in the commercial applicator's vehicle. For pesticide poisonings, a copy of the pesticide label should be given to the medical first responders or taken to the emergency medical facility.

THIS PAGE IS INTENTIONALLY BLANK

CHAPTER 5

Environmental Considerations

5.1 ENVIRONMENTAL MANAGEMENT SYSTEM FOR PESTICIDES

This IPMP puts pesticide management within the framework of the DOD and Navy Environmental Management System. This plan provides the tools and products to include pesticide management in the installation's overall EMS program.

5.1.1 Department of Defense Policy

DOD policy states, "The Department of Defense shall integrate EMS into missions, activities, functions, contracts, and installation support agreements as a business practice for improving overall performance. EMS is a vital supporting component of the DOD mission and is therefore the responsibility of all DOD personnel. It is not just an environmental function responsibility, but requires active participation from all functions and organizations." The remainder of this policy and details on the EMS program are found in DODI 4715.17, Environmental Management Systems.

5.1.2 Definition of Environmental Management System

According to the Council on Environmental Quality, "Instructions for Implementing Executive Order 13423, Strengthening Federal Environmental, Energy, and Transportation Management," March 29, 2007, "Environmental management system means a set of processes and practices that enable an organization to increase its operating efficiency, continually improve overall environmental performance, and better manage and reduce its environmental impacts, including those environmental aspects related to energy and transportation functions. EMS implementation reflects accepted quality management principles based on the "Plan, Do, Check, Act," model found in the ISO 14001:2004(E) International Standard and using a standard process to identify and prioritize current activities, establish goals, implement plans to meet the goals, evaluate progress, and make improvements to ensure continual improvement."

5.1.3 Conformance of the Pest Management Program to an Environmental Management System

An EMS is composed of five basic components. The components and how the pest management program conforms to these components are as follows.

5.1.3.1 Policy

The installation has established an environmental policy to support the mission of sustaining and enhancing war-fighter readiness (appendix H). The pest management environmental objectives to meet this policy are to:

1. Reduce pesticide pollution that affects the installation's neighbors through the use of IPM preventing adverse impacts on air, water, and land resources

2. Use IPM to preserve aspects of the natural environment by managing and controlling invasive and nuisance pests and preventing pesticide pollution

3. Ensure and maintain the competence of pest management personnel through certification and training ensuring that effective operations and technologies are used to control pests that minimize waste, prevent air and water pollution, minimize health and safety risks, and dispose of waste safely and responsibly

4. Enable the IPMC to maintain effective oversight and coordination of the program and liaison with local agencies in order to ensure regulatory compliance.

5.1.3.2 Planning

This IPMP is the installation's primary planning document. The Integrated Natural Resources Management Plan also provides pest management-related planning. Specific planning items included in the IPMP are:

1. Legal and other requirements identified in section 3.3, appendix F, and listed throughout the plan.

2. General objectives and targets included in section 1.3.2 and specific pest management objectives included in the IPM sheets in chapter 8.

3. Environmental aspects of pesticide use and the pest management program included in the environmental impact log in section 5.1.3.7. The environmental impact log includes the personnel responsible for the practice, the environmental aspect, potential impact, and the vulnerable asset.

5.1.3.3 Implementation

Implementation of the EMS is addressed in the following sections of the plan:

1. Roles and responsibilities—section 2.1.

2. Pest management personnel training and awareness—section 2.4.

3. Program documentation including record keeping, reporting, and IPMP updates—sections 2.3 and 1.2.6.

4. Operational requirements—section 1.3.3. Operational control is the responsibility of the pest management service providers and is maintained through their contract. Integrated pest management is the operation used for reducing environmental impacts and supporting mission priorities.

5. Safety considerations—chapter 4.

5.1.3.4 Checking and Corrective Action

The success of an EMS depends on the ability of an installation to assess and correct itself. The Internal Assessment Plan provides the basis for a self-assessing and self-correcting system. The IAP inventory lists the practices and their owners and creates a checklist for assessment. The IAP inventory for pest management is found in appendix C. Additionally, an IPM program self-assessment checklist is also included in appendix C. Compliance is addressed in section 3.3.

5.1.3.5 Management Review

The review of the program is conducted during environmental audits conducted by Marine Corps Headquarters.

5.1.3.6 EMS Definitions

The following are common terms used in EMS:

1. Practice—Any activity conducted by an installation or its tenants in performing their missions that has an actual or potential impact on the installation's assets. The term practice includes equipment, processes, and facilities. It includes both business and management practices.

2. Practice owner—The person, unit, or organization that operates, conducts, controls, or is otherwise responsible for a practice.

3. Environmental aspects—Elements of an organization's activities, products, or services which can interact with the environment.

4. Impact—The positive or negative effects on assets of conducting business and management practices.

5. Vulnerable assets—A resource on which the installation depends or for which it has some responsibility, and which may be impacted by the conduct of practices. Vulnerable assets may include environmental, historical, and cultural areas on and off the installation; personnel health and safety; mission effectiveness; military training lands; real property; financial resources; and public relations status.

5.1.3.7 Environmental Impact Log

An environmental impact log is used to identify the practices and aspects to be managed in an EMS. Table 5-1 identifies the general practices associated with pest management on the MARBKS. Personnel responsible for the practice, specific aspects of each practice, and the impacts on installation vulnerable assets are also identified for each practice.

Practice	Practice Owner	Aspects	Impacts	Vulnerable Assets
Pesticide transport	Pesticide applicator/ transporter	Potential spill	• Degradation of water and soil quality • Property contamination	• Real property • Mission • Human health and safety • Public perception
Pesticide application	Pesticide applicator	Potential spill	• Degradation of water and soil quality • Human, animal, and plant exposure to toxic chemicals • Cost of clean up	• Natural resources • Human health and safety • Mission
		Pesticide drift	• Degradation of water and soil quality • Damage or injury to non-target plants and animals • Human exposure to toxic chemicals	• Natural resources • Real property • Human health and safety • Public perception
		Chemical usage	• Exposure to toxic chemicals	• Human health and safety • Environmental resources

Table 5-1. Environmental impact log.

5.2 VULNERABLE ASSETS

5.2.1 Mission

Pest management practices affect the installation's mission through depletion of MARBKS resources that are needed to maintain the base's training and deployment readiness. Marine Barracks Washington, D.C. depends heavily on its people to maintain, store, and move valuable equipment and supplies in order to accomplish its mission. When pests affect human or material assets, the financial costs can be high. Likewise, pest management practices must be managed in such a way as to prevent expenditures on unnecessary expensive or unproven pest control methods or mishaps due to improper handling of pesticides or equipment.

5.2.2 Human health and safety

The Marine Corps depends on the readiness of its military members and invests resources improving the quality of life of those members and their dependents. Force health protection includes protecting them from pests that cause impacts to their health and well-being. Pest management practices can effectively protect or adversely affect human health. Proper pest management and use of pesticides to control disease vectors and nuisance pests can lead to health protection and an enhanced quality of life. However, accidents involving pesticides and inappropriate or illegal use of pesticides can cause human poisoning or allergic reactions leading to acute or chronic health problems.

5.2.3 Environmental Resources

Air, water, and soil risk contamination from pesticides. Drift of pesticides outside the target application area are the primary reason for contamination. Pesticides that pose the highest risk of contamination are herbicides applied to improved and unimproved grounds. Structural pest control chemicals are usually applied in small quantities indoors and pose a minimal risk. Mosquito larval control operations, although using a water-applied pesticide, pose a minimal risk due to the target-specific nature of the pesticide (e.g., the biopesticide, *Bacillus thuringiensis israelensis* (Bti)).

5.2.4 Natural and Cultural Resources

5.2.4.1 Natural Resources

The MARBKS does not have significant natural resources on-site.

5.2.4.2 Cultural Resources

The Home of the Commandants and the Barracks are registered national historic landmarks. Pest management operations requiring alteration of the historical structure, including exclusion modifications and significant changes in landscape, will require consultation with the cultural resources program manager (CRPM).

Termites damage wooden structures and incidental wood in steel and concrete buildings, such as trim or molding, paneling, or door and window frames. Annual termite inspections detect termite infestations before significant damage occurs. Any termite inspections of historical buildings should be documented using DD Form 1070 and reported to the CRPM.

5.2.5 Public Perception

The misuse of pesticides that lead to animal or human injury can lead to negative publicity for the installation. This is also the case with accidental pesticide spills, especially if they occur off-base or cause contamination of a local natural or cultural resource.

5.3 ENVIRONMENTAL CONSIDERATIONS ON THE PESTICIDE LABEL

If the pesticide is potentially harmful to the environment, information will be provided in the following sections:

1. Directions for Use—If pesticide drift is a potential environmental hazard, then the directions may require certain application equipment and/or the addition of an anti-drift agent to the tank mix.

2. Environmental Hazards—This section may indicate the pesticide is particularly hazardous to specific animals (e.g. bees, fish). It will also provide information on how to avoid environmental damage.

5.4 MANAGING ENVIRONMENTAL IMPACT

Many procedures to reduce the impact of pest management practices on vulnerable assets are already in place. Many of these are contained within existing environmental management plans.

5.4.1 Pesticide Pollution

5.4.1.1 Synthetic Pyrethroids

Pyrethroids are insecticides that are widely used for household, garden, and agricultural pest control. Most were replacements for the more toxic and environmentally-hazardous organophosphate and carbamate insecticides. Statewide surveys have indicated that some pyrethroids are being found in urban stream sediment and at least one chemical has been shown to be toxic to sediment-dwelling organisms. The specific pyrethroids of concern are:

1. Bifenthrin (e.g. Talstar)
2. Cyfluthrin (e.g. Cykick, Tempo)
3. Beta-Cyfluthrin (e.g. Tempo Ultra)
4. Cypermethrin (e.g. Demon, Cynoff)
5. Deltamethrin (e.g. Deltadust)
6. Lambda-Cyhalothrin (e.g. Demand)
7. Permethrin (e.g. Permanone)
8. Tralomethrin.

Outdoor operations pose the greatest risk for pyrethroid contamination of surface water and stormwater runoff. Increased risk operations that may use pyrethroids include landscape plant insect control, turfgrass insect control, and uniform repellent treatment.

5.4.1.2 Bee Protection from Pesticides

Bees are an important resource as they provide crop and natural plant pollination. Certain classes of insecticides are highly toxic to bees. These are organophosphates, carbamates, and neonicotinoids (e.g. imidacloprid). The greatest risk for bee poisoning is application of these insecticides for ornamental plants and agricultural crops. Insecticide labels include specific precautions to protect bees. These include timing applications when plants aren’t blooming, bees aren’t foraging, and at night when bees aren’t active. The label will also include a residual toxicity time (i.e. the time after application until there is minimal toxic effect on bees).

5.4.1.3 Pollution Prevention

Pesticides may or may not be considered as a potential environmental pollutant depending on the circumstance. When it is applied properly for the correct target pest and to the target location, pesticides are not considered a pollutant. When a pesticide is applied or it drifts outside of the target area, then it becomes a pollutant. Pollution can occur during most pest management practices as the result of accidental spills, air and water emissions, and container disposal. Pollutants can be in the form of pesticide residues from equipment and container cleaning or as waste containers. The following pollution prevention best practices should be used on the installation:

1. Conduct surveillance first to determine the need for pesticide use.

2. Apply pesticides away from storm drains to prevent storm water contamination.

3. Do not pour pesticide container rinsate into drains. Apply rinsate to a site listed on the pesticide label, store rinsate to use for future pesticide mixing, or dispose of according to label and local regulations.

4. Use target-specific, less-toxic pesticides.

5. When applying permethrin repellent to uniforms outdoors, do not mix or apply near storm drains or where water run-off will result in storm water contamination; avoid overspray of pesticide onto the ground; and apply spray tank rinsate to uniforms. PREVMED is available to provide oversight or direct assistance for permethrin application to uniforms.

6. Minimize outdoor applications of pyrethroids.

7. Use spot spraying and crack and crevice applications rather than broadcast or baseboard spraying.

8. Minimize pesticide storage on the installation by prohibiting contractors from storing pesticides on the installation.

9. Use rodent traps rather than rodenticides.

5.4.2 Spill Prevention and Management

Pest management personnel are trained on spill response procedures as part of their initial pest management certification training. All PMSPs are responsible for cleaning up spills and the IPMC is responsible for overseeing the cleanup process to ensure that it is performed properly. Further information on preventing and controlling pesticide spills is contained in the AFPMB TG No. 15, Pesticide Spill Prevention and Management.

5.4.3 Hazardous Materials and Hazardous Waste Management

Not permitting contractor storage of pesticides and on-site disposal of pesticide waste eliminates hazardous material and waste management of pesticides.

THIS PAGE IS INTENTIONALLY BLANK.

CHAPTER 6

Emergency Pest Management

6.1 PUBLIC HEALTH EMERGENCIES

Pests create a public health emergency when the pests increase in number and/or are found to carry human disease pathogens. A public health emergency, or potential emergency, requiring pest management actions may be indicated in several ways. See the Emergency Vector-borne Disease Control Plan (EVDCP) for more information (appendix I).

6.1.1 Natural or Manmade Disaster

Usually pest problems do not develop immediately after a disaster, such as earthquakes, wildfires, floods, vehicle accidents, and terrorist attacks. Public health pest problems may be the result of increased amounts of refuse, collapse of local infrastructure (e.g. lack of garbage pick-up), decaying human and animal bodies, and the accumulation of standing water. The potential pest-related consequences are vector-borne or zoonotic disease outbreaks and increased contact with rodents and feral animals that may cause injury.

6.1.2 Vector-borne or Zoonotic Disease

The report of human cases of vector-borne or zoonotic disease or the detection of infected mosquitoes or sentinel animals is an indicator of a public health emergency or potential emergency and often warrants an increase in pest management activities.

1. Reports of human cases—Many human cases of vector-borne and zoonotic disease identified in local medical facilities are reportable to the local and/or state health agencies. A report of a human case of West Nile virus or other disease may initiate an investigation and result in alerts going out to other hospitals and clinics if it appears that the case was locally acquired. Immediate vector control may be necessary to prevent further transmission.

2. Detection of infected mosquitoes or sentinel animals—Routine surveillance for mosquito-borne diseases are conducted by local and state health agencies. These agencies report testing results through the public health system. This surveillance program is an early warning system that indicates when vector control should be initiated or increased to prevent human disease.

6.1.3 Animal Attack

Africanized Honey Bees (AHBs) are of specific concern due to their aggressive, defensive behavior. The local fire department is usually the primary responder to bee sting incidents. Fire department personnel have been trained to protect and manage bee sting victims. A stinging incident is not considered a pest control response issue, but rather an emergency response and any and all appropriate bee control measures can be used. If fire department response is delayed, installation first responders should be trained how to protect themselves and victims from bee stings.

6.2 AGRICULTURAL EMERGENCIES

Agricultural emergencies are the result of the introduction of insects or other animals that can cause extensive damage to agriculture or forestry in the state. Some examples of introduced agricultural pests include the Mexican fruit fly and the gypsy moth. Military installations can be a conduit for the introduction of these pests due to the movement of military equipment and personnel in and out of the state and the country. The military's role in preventing introduction of these pests is described in OPNAVINST 6210.2: Quarantine Regulations of the Navy. Inspections to prevent importation of pests are normally conducted at the port of debarkation in the foreign country.

6.3 EMERGENCY PEST MANAGEMENT RESOURCES

Installation PMSPs maintain pesticides and equipment to manage most emergencies. Contract PMSPs can be used for emergencies if it is written in the contract specifications. The Washington Navy Yard Branch Health Clinic developed an EVDCP to manage public health emergencies (appendix I). It includes additional Navy and local government contingency vector surveillance and control resources.

CHAPTER 7

Program Resources

The MARBKS has access to the following support agencies and organizations for pest management assistance. Contact information is located in appendix B.

7.1 NAVAL FACILITIES ENGINEERING COMMAND, ATLANTIC, APPLIED BIOLOGY, CODE EV51, NORFOLK, VIRGINIA

Naval Facilities Engineering Command, Atlantic Applied Biology is currently staffed by six full-time, civilian DOD professional pest management consultants certified in DOD pesticide applicator categories 3, 5, 6, 7, 8, and 11. These personnel are assigned the following responsibilities:

1. Review and approve installation IPMPs in accordance with DOD and Navy policies

2. Provide technical assistance to the installation IPMCs, environmental managers, safety officers, medical officers, and other regional and installation personnel regarding pest management and pesticide regulatory compliance

3. Review and approve or reject pesticides and equipment to be used on installations

4. Conduct on-site program reviews and environmental compliance program external assessments to ensure compliance with the regulations and IPMPs

5. Compile and report actual pesticide use and pest management operations to appropriate DOD agencies

6. Provide IPM recommendations and pest identification

7. Assist installations with writing or re-writing IPMPs

8. Provide recertification training for DOD-certified applicators as well as initial and recertification training for PMPARs/IPMCs.

The NAVFAC Applied Biology Web site is at: https://portal.navfac.navy.mil/portal/page/portal/ev/applied_biology. This site is on the Naval Facilities Engineering Command intranet and is only available to NAVFAC, CNIC, and U.S. Marine Corps personnel who have an account. To request an account, personnel must have a sponsor with access approve the request through the initial single sign-on (SSO) page.

7.2 NAVY ENTOMOLOGY CENTER OF EXCELLENCE

Navy Entomology Center of Excellence (NECE) is a subordinate command of Navy and Marine Corps Public Health Center and is staffed by full-time, active duty U.S. Navy entomologists. The entomologists

are certified in DOD pesticide applicator categories 3, 5, 6, 7, 8, and 11. The unit's vector control department provides the following products and services:

1. Acts as BUMED's professional pest management consultants to provide BUMED review of IPMPs

2. Provides technical assistance on the surveillance and control of vectors on installations

3. Provides vector-borne disease risk assessments and disease prevention recommendations when requested

4. Provides disease vector management consultation and identification services

5. Provides contingency pest management in the event of a disaster or disease outbreak (see the Emergency Vector-borne Disease Control Plan in appendix I)

6. Provides initial certification for DOD-certified pesticide applicators

The Navy and Marine Corps Public Health Center Web site is at: http://www.med.navy.mil/sites/nmcphc/nece/Pages/default.aspx.

7.3 NAVY ENVIRONMENTAL AND PREVENTIVE MEDICINE UNIT TWO

The Navy Environmental and Preventive Medicine Unit Two (NEPMU-2) is staffed by three full-time, active duty Navy entomologists. The entomologists are certified in DOD pesticide applicator categories 3, 5, 6, 7, 8 and 11 and are assigned the following responsibilities:

1. Acts as BUMED's professional pest management consultants to provide BUMED review of Emergency Vector-borne Disease Control Plans

2. Provides technical assistance on the surveillance and control of vectors on installations

3. Provides vector-borne disease risk assessments and disease prevention recommendations when requested

4. Provides disease vector management consultation and identification services

5. Provides contingency pest management in the event of a disaster or disease outbreak.

The NEPMU-2 Web site is at: http://www.med.navy.mil/sites/nepmu2/Pages/default.aspx.

7.4 UNITED STATES ARMY PUBLIC HEALTH COMMAND REGION-NORTH

The Army Public Health Command Region-North is located at Fort George G. Meade, Maryland. The entomologists provide free testing for installations in the surrounding Washington, D.C. area for mosquito and tick-borne diseases, such as West Nile Virus and Lyme disease.

The PHCR-North Web site is at: http://phc.amedd.army.mil/organization/phcrnorth/Pages/default.aspx.

7.5 DISTRICT OF COLUMBIA DEPARTMENT OF THE ENVIRONMENT

Personnel from this department are the pesticide regulatory officials for the District of Columbia. Pesticide enforcement personnel can provide information regarding state and local pesticide regulations.

The DC Department of the Environment Web site is at: http://ddoe.dc.gov/service/toxic-substances

7.6 UNIVERSITY OF THE DISTRICT OF COLUMBIA COOPERATIVE EXTENSION SERVICE

The University of the District of Columbia (UDC) county extension offices' services include advisors on IPM, entomology, and natural resources. They also provide low-cost training on pest management topics.

The UDC Cooperative Extensive Service Web site is at: http://www.udc.edu/college_urban_agriculture_and_environmental_studies/cooperative_extension_service.

7.7 DISTRICT OF COLUMBIA DEPARTMENT OF HEALTH, CENTER FOR POLICY, PLANNING, AND EVALUATION DIVISION OF EPIDEMIOLOGY-DISEASE SURVEILLANCE AND HEALTH

Public health biologists provide vector surveillance and control assistance throughout the District of Columbia. They are state-certified in public health pest management.

The DC Department of Health Web site is at: http://doh.dc.gov/service/infectious-diseases.

THIS PAGE IS INTENTIONALLY BLANK.

CHAPTER 8

Integrated Pest Management Sheets

The following sheets provide guidance for control of common pests. They should be used as a basis for pest management action, but should not be considered regulations for the job. Management sheets should be used as guidelines to help implement reasonable, cost effective, safe, environmentally responsible control of pests. The IPMC or other pest control personnel may choose to establish different thresholds and use IPM methods that are more appropriate to their local circumstances. Write in any new ideas or programs to maintain a document that will remain applicable over time. Any suggested pesticides from these sheets are required to be approved before use. The following IPM sheets represent the pests that occur in the District of Columbia and not necessarily all pests covered by the contracts.

1. American Cockroaches
2. Nuisance Ants
3. Bats
4. Bed Bugs
5. Nuisance Birds
6. Feral Cats
7. Cockroaches in Food Preparation Areas
8. Drain Flies
9. Filth Flies
10. Fleas In and Around Buildings
11. Fruit Flies
12. Mites
13. Adult Mosquito Control
14. Larval Mosquitoes in Manmade Structures and Containers
15. Larval Mosquitoes in Permanent and Semi-Permanent Water Sources
16. Ornamental Plant Pests
17. Raccoons

18. Rodents
19. Slugs and Snails
20. Spiders
21. Stinging Insects
22. Stored Product Pests in Food Storage Areas
23. Subterranean Termites
24. Terrestrial Weeds
25. Weeds Right-of-Ways

American Cockroaches

TARGET PEST AND SURVEY	
TARGET PEST(S)	American cockroaches (*Periplaneta americana*)
TARGET AREA(S)	Office buildings, warehouses, residences, storm sewers
IMPACT ON MISSION	Control of cockroaches that may cause damage through food contamination, affect human health through allergic reactions or "entomophobia", or be an aesthetic or morale nuisance.
SCOPE	Base-wide in buildings and in sewers.
RESPONSIBILITY	• All Personnel: Ensure proper sanitation in all living and working spaces. • Installation Preventive Medicine Technicians (PMT): Conduct facilities sanitation inspections, enforce food-handling regulations, provide quality assurance for pest control, and provide pest management recommendations. • Pest Management Service Provider (PMSP): Conduct integrated pest management to control infestations. • Pest Management Performance Assessment Representative (PMSP): Ensure contracted pest management service providers perform work in accordance with contract specifications. • Facilities Maintenance Provider (FMP): Perform facility repairs and improvements that exclude and minimize pest infestations as requested.
REPORTING	Report all pest management operations to the integrated pest management coordinator
SURVEY TECHNIQUES	• Visual inspections (visual surveys of low to moderate infestations may require visiting the facility at night): o Observation of pests in harborages o Inspect floor drains o Inspect areas with heat and moisture • Application of a flushing agent to suspected harborages • Sticky trap surveys • Vacuum surveys of harborages • Personnel complaints including information on when, where, and how many pests were observed • Conduct pre- and post-treatment surveys to determine whether control operation was effective
SURVEY FREQUENCY/ SCHEDULE	• Daily observation by building occupants • Monthly observation and/or sticky trap monitoring by cognizant pest management or preventive medicine personnel

ACTION THRESHOLD	• Visual sighting of one or more cockroaches (all life stages) per room per survey—flushing agents or sticky traps may be used • Sighting of one egg capsule per survey	
NONCHEMICAL CONTROL		
TYPE	**PROCEDURES**	**RESPONSIBILITY**
SANITATION	• Thorough cleaning of potential food sources in buildings, especially coffee messes and food preparation areas. • Clean spills up as soon as possible. • Clean out floor drains by rinsing with hot water or using cleaners specifically designed to remove sludge from pipes. • Store food in pest-proof containers. • Empty trash cans daily or avoid putting food items in trash. • Do not eat at desk; eat in a designated coffee mess or dining area.	All personnel; food service personnel
ELIMINATE HARBORAGE	• Seal cracks and crevices with caulk. • Remove corrugated cardboard and other materials that can serve as harborage.	All personnel; FMP
ELIMINATE STANDING WATER	• Fix leaking plumbing especially around sinks, faucets, and dishwashers. • Remove standing water from floors after daily cleaning.	All personnel; FMP
PREVENTION	Inspect food boxes before bringing then into a building.	Food service personnel, vet techs
MECHANICAL REMOVAL	Vacuum cockroaches from their harborages. Use a wet/dry vacuum cleaner filled with water or empty and dispose of vacuum bag immediately.	All personnel; PMSP
PEST PROOFING	• Seal holes in walls and ceilings and other areas that may serve as cockroach harborage as required. Request support from facilities maintenance provider if necessary. • Screen floor drains if possible.	FMP
EDUCATION	Proper storage of food and sanitation to prevent infestations.	PMSP, PMT, PCPAR, IPMC
PROHIBITED ITEMS	Use of ultrasonic pest repelling devices is prohibited.	
CHEMICAL CONTROL		
PESTICIDE ACTIVE INGREDIENTS	Pyrethroids, fipronil, hydramethylnon, indoxacarb, imidacloprid, abamectin, boric acid, IGRs.	

METHODS OF DISPERSAL	• Flushing Agents: The pest management service provider may use aerosol contact pesticides directed into potential harborage areas to flush out and kill pests as needed. • Crack and Crevice Residuals: The pest management service provider may apply (by crack and crevice technique) a residual pesticide spray to all known or suspected harborages, feeding sites, or passageways. • Spot Treatment Residuals: A residual pesticide may be applied as a spot treatment to indicated areas (such as under dishwashers and refrigerators or behind stoves). • Baits: Cockroach baits (station containing solid bait or injectable style gel baits) will be used as much as possible. Gel bait can be applied to a sheet of hardware cloth and hung in manholes. Proper bait placement is critical to the success of treatment. Do not apply other insecticides around bait treatment areas. • Dusts: Boric acid dust is an effective low-toxicity insecticide that can be applied to wall voids and into manholes of storm sewers. The treatment area should remain dry after the application to avoid washing the dust away. • Growth Regulators: Affect the growth of the insect and prevents them from developing into egg-laying adults. Insect growth regulators will always be mixed with knock-down pesticides. • Fogging: For rapid knockdown of large infestation; will need to be followed up with crack and crevice treatments and/or bait placement. Preventive baseboard spraying in the absence of a pest is prohibited.
APPLICATION SITE	Pesticides shall be applied as required based on survey information to areas where cockroaches are known to harbor or travel.
SITE PREPARATION	Pre-treatment procedures: • If insecticidal baits will be used, thorough cleaning will be required to remove competing food sources. • Clean greasy and oily surfaces; these substances interfere with the effectiveness of some liquid insecticides. • Visual inspections (without flushing agents) or placement of sticky traps while the space is occupied. All pesticide applications shall only be accomplished when the space is unoccupied. • Pesticide applicator shall contact building occupants prior to pesticide applications. • All food should be removed from exposed areas and processing equipment and utensils covered or stored. Post-treatment procedures: • Thoroughly clean all food preparation surfaces. • Do not remove bait stations or bait gel placements.
SENSITIVE AREAS	• Exposed food products, food containers, counter tops, any surface where food may be stored or prepared, or any food storage area. • Minimize application of pesticides directly into drains. • Use care in selecting pesticides for use in storm sewers as this can lead to stormwater pollution problems. Applications should be made when dry and stormwater is not anticipated within a week.

RESTRICTIONS	• Preventive baseboard spraying in the absence of a pest is prohibited. • Do not apply liquid or dust formulations to occupied spaces or in the presence of exposed food. • In food service areas, use only insecticides specifically labeled for those areas.
Contract or Work Considerations	
TIME PERIOD TO RESPOND	Dependent on impact on mission. In food service areas, where impact is on health, and office spaces, where impact is on aesthetics and morale, response tie should be within 24 hours. Warehouses and unoccupied or rarely occupied spaces may warrant a longer response time.
TIME PERIOD TO OBTAIN CONTROL	Most insecticide treatments should result in immediate kill of the pest. Baits are designed to have a delayed toxic effect which allows cockroaches to take the bait to other cockroaches in their harborage. Generally, baits should result in fatalities within three days. Many insecticides are ineffective on egg cases (ootheca) and nymphal cockroaches may emerge within days after treatment and result in another infestation.
LEVEL OF CONTROL	Post-treatment survey of the target area should result in a pest population that is less than the action threshold number.
PCPAR ASSESSMENT	Sticky traps are the best way to quantify and compare pre- and post-treatment surveys. Visual surveys of low to moderate infestations may require visiting the facility at night. Follow-up surveys one week later should be done to see if eggs have hatched and resulted in another infestation.
REASONS FOR TREATMENT FAILURE	• Improper application of the insecticide • Harborages not identified and treated • Eggs hatched after treatment • Insecticide resistance • Improper placement of bait stations or gel baits.
SAFETY AND ENVIRONMENTAL CONSIDERATIONS	• Most insecticides used for indoor pest control are low in toxicity (signal word “Caution”), but care should be taken to prevent exposure to humans and domestic animals. • Outdoor treatments with pyrethroids are susceptible to runoff and contamination of stormwater. • Disposing of pesticides in a drain or stormdrain is strictly prohibited.
SPECIAL APPLICATOR QUALIFICATIONS	None. Baits may be used in a self-help program that requires no applicator certification, only training.

Nuisance Ants

TARGET PEST AND SURVEY	
TARGET PEST(S)	Pharaoh ants, Argentine ants, black ants, crazy ants, big-headed ants and other nuisance species that invade structures
TARGET AREA(S)	Offices, food preparation areas, living spaces, food storage, playgrounds, patios, barracks, medical treatment facilities, and other spaces invaded by ants
IMPACT ON MISSION	Control of ants that are nuisance in offices and eat and contaminate food and can make spaces uninhabitable or unusable.
SCOPE	Base-wide in and around buildings
RESPONSIBILITY	• All Personnel: Ensure proper sanitation in all living and working spaces. • Installation Preventive Medicine Technicians (PMT): Conduct facilities sanitation inspections, enforce food handling regulations, provide quality assurance for pest control, and provide pest management recommendations • Pest Management Service Provider (PMSP): Conduct integrated pest management to control infestations. • Pest Management Performance Assessment Representative (PMPAR): Ensure contractor pest management service provider performs work in accordance with contract specifications. • Grounds Maintenance Provider (PMP): Control aphids and similar insects on ornamental plants that attract and feed ants. • Facilities Maintenance Provider (FMP): Perform facilities repairs and improvements that exclude and minimize pest infestations as requested.
REPORTING	Report all pest management operations to the integrated pest management coordinator.
SURVEY TECHNIQUES	• Visual inspections: o Observation of foraging scout ants or ant trails o Follow ant trails to building entryways and to food source o Follow ant trails to nests • Personnel complaints including information on when, where, and how many pests were observed. • Conduct pre- and post-treatment surveys to determine whether control operation was effective
SURVEY FREQUENCY/ SCHEDULE	• Daily observation by building occupants • Monthly inspections outdoors around buildings to identify ant nests

ACTION THRESHOLD	• Visual sighting of ants indoors. • Food service areas: 3/room • Living areas: 5/room • Medical treatment facilities: 1/room • Grounds: 2 mounds/yard	
NONCHEMICAL CONTROL		
TYPE	**PROCEDURES**	**RESPONSIBILITY**
SANITATION	• Thoroughly clean potential food sources in buildings, especially coffee messes and food preparation areas. • Thoroughly clean food preparation surfaces, countertops, and stoves. • Remove and discard food that is attractive to ants. • Clean up food and drink spills as soon as possible. • Do not leave dirty dishes on countertops or in sinks. • Some ants are attracted to moisture. Fix leaky plumbing and remove other sources of water.	All personnel
MECHANICAL REMOVAL	• Use a wet sponge or cloth to wipe up ants. • Spray ant trail with household cleaner or soap water then wipe up.	All personnel; PMSP
PEST PROOFING	• Put food in tightly sealed containers. • Seal holes in walls with caulk or, temporarily, with petroleum jelly.	All personnel; PMSP; FMP
CONTROL OF PLANT INSECTS	• Ants live in cooperation with some plant-infesting insects such as aphids. These insects produce sugars that are food for the ants, while the ants provide protection for the plant-sucking insects. • Control aphids and other plant-sucking insects on plants	GMP
EDUCATION	• Proper storage of food and sanitation to prevent infestations. • Use of soapy water to control ants indoors.	PMSP, PMT, PMPAR, IPM Coordinator
PROHIBITIED PRACTICES	Use of ultrasonic pest repelling devices is prohibited.	

CHEMICAL CONTROL	
ACTIVE INGREDIENTS	Arsenic trioxide, abamectin, orate-based products, firponil, hydramethylnon, sulfuramid; pyrethroids (e.g. bifenthrin, lambda cyhalothrin)
METHOD OF DISPERSAL	• Baits: Bait stations can be used indoors or outdoors. Granular baits can be applied outdoors near nests. Baits are very specific to the species of ant. Most effective since it is effective in killing the egg-producing queen of the colony. May require 2–3 days for complete control. • Barrier Spraying: Application of a residual outdoors around a building may be necessary if there are many nests and entryways into the building. May also be necessary if nests are difficult to find. Usually requires periodic reapplication if ant nests are not destroyed. • Dusts: Boric acid dust is an effective low-toxicity insecticide that can be applied to wall voids where ants may be nesting. The treatment area should remain dry after the application to avoid washing the dust away. • Granular insecticide: Acute toxicant in granular form. Only effective if applied directly to the nest. Baseboard spraying for preventive treatment is prohibited.
APPLICATION SITE	Pesticides shall be applied as required to areas where ants nest or travel based on survey information.
SITE PREPARATION	Pre-treatment procedures: • Visual inspections. • Pesticide applicator shall contact building occupants prior to pesticide applications. • All food should be removed from exposed areas and processing equipment and utensils covered or stored. Post-treatment procedures: • Thoroughly clean all food preparation surfaces. • Do not remove bait stations or other bait placements.
SENSITIVE AREAS	• Exposed food products, food containers, counter tops, on any surface where food may be stored or prepared, or any food storage area. • Outdoors where children or pets may be exposed to pesticides. • Medical treatment facilities. • Streams, lakes, and other water sources. Avoid stormwater runoff of insecticides and do not apply directly to water. Many insecticides are highly toxic to aquatic organisms.
RESTRICTIONS	• Use spot treatments indoors; do not apply to baseboards as a preventive residual spray. • Do not apply liquid or dust formulations of insecticides in occupied spaces.
CONTRACTOR WORK CONSIDERATIONS	
TIEM PERIOD TO RESPOND	Ant infestations are generally not an emergency and do not require immediate response. At sensitive sites, such as medical treatment facilities and child development centers, immediate response may be necessary.
TIME PERIOD TO OBTAIN CONTROL	For indoor infestations, control should be within 2 hours when liquid formulations are used.
LEVEL OF CONTROL	100% control indoors is required.

PMPAR ASSESSMENT	Usually customer complaints and follow-up are sufficient to assess efficacy of work.
SAFETY CONSIDERATIONS	• Liquid and dust insecticides should not be applied to occupied spaces or when food is exposed; baits may be applied when spaces are occupied. • Allow for ventilation of spaces after liquid insecticides have been applied. • Clean food preparation surfaces after treatment. • Applicators must wear personal protective equipment as required by the product label.
ENVIRONMENTAL CONSIDERATIONS	Pyrethroid insecticides can be highly toxic to aquatic organisms.
SPECIAL APPLICATOR QUALIFICATIONS	None; ant control using bait stations may be used by non-certified personnel in an authorized self-help program.

COMMENTS:

For most people, ants become a problem and require action when they enter a building. Sometimes ants may nest in walls, especially if there is moisture in those areas; particularly bathrooms and kitchens. Surveys need to determine if the source of the infestation is indoors or outdoors. Control of ant nests outdoors during the spring and early summer may reduce ant problems later in the season. The most effective ant baits are slow acting to give worker ants enough time to carry small amounts of bait back to the nest where they will feed other ants and eventually kill the entire colony. For this reason, it may take several days to see results.

Bats

TARGET PEST AND SURVEY	
TARGET PEST(S)	Bats
TARGET AREA(S)	Buildings where bats may roost
IMPACT ON MISSION	• Prevent damage to real property and unsanitary conditions resulting from the buildup of bat guano (feces) • Prevent fear • Reduce the risk of disease transmission from infected bats • May be a source of bed bugs
SCOPE	Base-wide
RESPONSIBILITY	• Installation Preventive Medicine Technicians (PMT): o Conduct surveys if bats pose a health hazard o Provide pest management recommendations. • Pest Management Service Provider (PMSP): Conduct integrated pest management to control bats in structures when necessary. • Pest Management Performance Assessment Representative (PMPAR): Ensure contractor pest management service provider performs work in accordance with contract specifications. • Natural Resources Manager: o Implement a bat management plan developed by the contracted biological consultant. o Conduct bat removal from workspaces. • Facilities Maintenance Provider (FMP): Perform facilities repairs and improvements that exclude and minimize pest infestations as requested. • All Personnel: Report bat problems, especially when they pose a health hazard.
REPORTING	• Report all pest management operations to the integrated pest management coordinator. • Report sick or dead bats suspected of carrying rabies to a preventive medical technician.
SURVEY TECHNIQUES	• Visual inspections: o Observation of bats roosting or entering a building o Observation of signs of bat roosting such as guano • Personnel complaints including information on when, where, and how many pests were observed.

SURVEY FREQUENCY/ SCHEDULE	Daily observation by all personnel and pest management service providers.	
ACTION THRESHOLD	• When bats pose a health hazard, become a nuisance, or deface property. • Bats in human living quarters or food preparation areas should always be removed.	
NONCHEMICAL CONTROL		
TYPE	**PROCEDURES**	**RESPONSIBILITY**
EXCLUSION	Seal openings to attics and other areas where bats may enter and roost	PMSP; FMP
BAT EVICTION	• <u>One-way valves</u>: Devices that allow bats to leave a building, but not return, can be installed on buildings already infested. o Leave such devices in place for 7 to 10 days before permanently sealing the opening. • Do not install devices on roosts where mothers are nursing immature bats.	PMSP; FMP
MECHANICAL REMOVAL	Bats that accidentally enter a room can be captured and released outside. To reduce stress on the animal, use the following procedure: 1. Close doors to confine the bat to a single room. 2. Allow the bat to become exhausted and land. Do not attempt to catch a bat in flight. 3. Once the bat has landed (usually on curtains or a piece of furniture), allow it to rest for 20 to 30 minutes. 4. Place a bowl, can, or other suitable container over the bat. 5. Trap the bat in the container by sliding a piece of cardboard or other rigid material between the bat and the surface on which it is resting. Wear thick leather gloves for this procedure, and avoid touching the bat. 6. Release the bat outside. The bat may not fly immediately, so release it in an area where it can remain undisturbed for several hours. If the bat is still present the next day, report it to a preventive medicine technician or pest control service provider.	PMSP
PROVIDE ALTERNATIVE ROOSTS	Bat houses can provide an alternative to buildings as roosting sites. Houses must be correctly built and placed for acceptance by bats.	FMP
EDUCATION	Education of the public of both the benefits and the risks associated with bats.	PMSP, PMPAR, PMT, IPMC
PROHIBITED PRACTICES	Use of ultrasonic pest repelling devices is prohibited.	

CONTRACTOR WORK CONSIDERATIONS	
TIME PERIOD TO RESPOND	Dependent on type of area; generally, same day.
TIME PERIOD TO OBTAIN CONTROL	One to five days depending on the severity of the infestation.
LEVEL OF CONTROL	100%
PMPAR ASSESSMENT	Visual inspection
SAFETY CONSIDERATIONS	Use care when handling bats, donning proper PPE when necessary.
ENVIRONMENTAL CONSIDERATIONS	Contact the natural resources manager for restrictions and guidance on bat management.
SPECIAL APPLICATOR QUALIFICATIONS	None

CHEMICAL CONTROL:

There are no chemical pesticides registered for use against bats. Deliberately poisoning bats or other wildlife is a violation of federal law.

COMMENTS:

Bats are generally considered beneficial organisms that reduce insect populations. Control is only necessary if the bats are causing a nuisance or public health concern.

ADDITIONAL INFORMATION:

How to build and place bat houses and bat eviction devices can be found at http://www.batcon.org/.

THIS PAGE IS INTENTIONALLY BLANK.

Bed Bugs

TARGET PEST AND SURVEY	
TARGET PESTS	Bed Bugs (*Cimex* spp.)
IMPACT ON MISSION	Control of bed bugs that can cause bites or allergic reactions, be a nuisance, and affect morale and quality of life. Can be carried on board ship from infested barracks.
SCOPE	Primarily berthing areas, especially transient quarters in bachelor enlisted and officer quarters.
RESPONSIBLE PARTY	• Berthing Quarters Managers: o Establish rules and regulations to prevent establishment and propagation of pests. o Prevent movement of furniture between rooms if bedbugs are identified • Berthing Quarters Residents: o Comply with quarters rules and regulations. o Maintain sanitation and cleanliness of personal items such as bedding. • Cognizant Military Unit Leadership: The command leadership, from the CO to NCOs, is responsible for their personnel and must enforce public health measures to protect their health and well-being. Sanitation and other pest prevention measures should be enforced through room inspections if necessary. • Installation Preventive Medicine Technicians (PMT): o Conduct berthing inspections o Enforce berthing regulation per NAVMED P-5010 o Provide informal quality assurance for pest control o Provide pest management recommendations • Pest Management Service Provider (PMSP): Conduct integrated pest management to control infestations. • Pest Management Performance Assessment Representative (PMPAR): Ensure contractor pest management service provider performs work in accordance with contract specifications. • Facilities Maintenance Provider (FMP): Perform facilities repairs and improvements that exclude and minimize pest infestations as requested.
REPORTING	• Report all pest management operations to the integrated pest management coordinator • Report infestations to PMT to assist medical department in identifying further bed bug infestations.

SURVEY METHODS	• Personnel complaints: Complaints are commonly received when a patient goes to medical complaining of itching or dermatitis due to bites.
	• Visual inspections:
	  o Look for pests in mattresses, box springs, bed frames, and headboards. Less commonly found on baseboards and on walls behind furniture.
	  o Application of a flushing agent to cracks and crevices
	• Sticky trap surveys
	• Vacuum surveys of harborages
	• Conduct pre- and post-treatment surveys to determine whether control operation was effective
	• Dry ice/CO_2 attractant traps
	• Bed-bug sniffing dogs are available.

SURVEY FREQUENCY/ SCHEDULE	• Daily observation by residents. • Observation during zone inspections by unit command leadership personnel. • Monthly observation and/or sticky trap monitoring by PMT of spaces post-treatment. • In NGIS, lodges and other hotel rooms, housekeeping should perform inspections during cleaning.
ACTION THRESHOLD	Detection of 1 bed bug, cast skins, or fecal stains should initiate survey and control as needed.

NONCHEMICAL CONTROL		
TYPE	**PROCEDURES**	**RESPONSIBLE PARTY**
SANITATION	• Thorough cleaning (field day) shall be performed in each room. • Remove all clutter particularly from under and around beds to reduce harborage. Removal of clutter also enables easier inspection of furniture and mattresses. Note: When removing materials from an infested room, either treat the material or place in bags then seal before taking out of room to prevent spread of the bugs.	Residents; command leadership enforce
WASHING/ CLEANSING	• Thoroughly wash bedding • Clean mattresses, box springs, frames, headboards with soap and water.	Residents, berthing manager
MECHANICAL REMOVAL	Vacuum bedbugs from their harborages on mattresses, headboards and other surfaces where they are found. Use a wet/dry vacuum cleaner filled with water or empty and dispose of vacuum bag immediately.	Residents, berthing manager

ISOLATION AND EXCLUSION	• Prevent removal of furniture from rooms found to be infested until they are cleaned. • Remove debris from around outside of buildings • Repair cracks in walls • Caulk windows and doors • Caulk cracks and crevices in bed frames and furniture • Specially designed mattress encasements without seams will prevent bed bugs from getting on mattresses and leaving mattresses to infest other areas.	Berthing manager, FMP
HEAT	• Heat infested articles and/or areas through to at least 113 °F (45 °C) for at least one hour. The higher the temperature, the shorter the time needed to kill bed bugs at all life stages. • A pesticide barrier around doorways may be necessary to prevent spread of fleeing bed bugs to adjacent spaces. • Infested bedding and clothing can be placed in the clothes dryer on high heat. Note: Heat may damage sprinkler systems and will require protective measures before treatment of rooms.	PMSP, residents
CHEMICAL CONTROL		
APPLICATION SITE	• Pesticides shall be applied as required based on survey information to areas where bedbugs are known to harbor. • This could include bed frames, mattresses, baseboards, and furniture. In heavy infestations, barrier treatments may be required, especially around doors, to prevent bed bugs from fleeing to adjacent areas during treatment.	
SITE PREPARATION	<u>Pre-treatment procedures</u>: • All pesticide applications shall only be done when the space is unoccupied. • Pesticide applicator shall contact berthing manager prior to pesticide applications. • All bedding and personal items should be removed from exposed areas and placed in bags and washed or cleaned. • Do not remove furniture or beds until PMSP has conducted an inspection.	
ACTIVE INGREDIENTS	• Pyrethrin, pyrethroids (cyhalothrin, bifenthrin, deltamethrin), hydroprene (IGR), chlorfenapyr, dichlorvos strips, silica gel, boric acid • Chemicals that leave a residual are preferred.	

METHOD OF DISPERSAL	Chemical control using insecticides alone will not control/prevent a bed-bug infestation. • Flushing Agents: The pest management service provider may use aerosol contact pesticides directed into potential harborage areas to flush out and kill pests as needed. • Crack and Crevice Residuals: The pest management service provider may apply (by crack and crevice technique) a residual pesticide spray to all known or suspected harborages. • Spot Treatment Residuals: A residual pesticide may be applied as a spot treatment to indicated areas. • Mattress Treatment: Infested mattresses can be treated. Using a residual insecticide will prevent future infestations. • Slow-release vapor strips: A plastic strip impregnated with Dichlorvos slowly releases an insecticide vapor that will control flying and crawling pests. Treatment times are 48–72 hours for adults and nymphs and 7–1- days for eggs. Any room/area where strip is placed must be vacated by people and pets during the treatment. This can also be placed in containers or bags to treat infested materials. • Insect Growth Regulators (IGRs): Affect the development and reproduction of predators. When properly applied, IGRs have essentially no effect on vertebrate metabolism because of their mode of action and low application rates, but they have a significant impact on bed-bug molting, fertility, and egg hatching success. Preventive baseboard spraying in the absence of a pest is prohibited.
PROHIBITED PRACTICES	• Use of ultrasonic pest repelling devices is prohibited. • Use of aerosols, dusts, and other insecticide formulations that can become airborne are prohibited in occupied spaces.
SENSITIVE AREAS	• Some persons may be sensitive to some pesticides. Pesticide applications should be avoided if possible and be made only to areas where pests have been observed. • The insecticide on treated mattresses should be allowed to dry and then should be covered with a mattress cover before use. • Ensure that insecticides do not enter drains, streams, lakes, or other surface water.
RESTRICTIONS	• Insecticide resistance may cause treatment failure • Use of aerosols, dusts, and other insecticide formulations that can become airborne shall not be applied in occupied spaces. Spaces must be vacated before treatment and then ventilated and the insecticide allowed to dry before personnel are allowed to occupy the space.
CONTRACTOR WORK CONSIDERATIONS	
TIME PERIOD TO RESPOND	Discovery of bed bugs in any area requires a response within 24 hours.
TIME PERIOD TO OBTAIN CONTROL	One to two weeks. Time to obtain control may be dependent on when the occupant needs to move back into the room.
LEVEL OF CONTROL	100% control
PMPAR ASSESSMENT	PMPAR should accompany preventive medicine or PMSP on pre- and post-treatment surveys and learn to identify bed bugs.

SAFETY CONSIDERATIONS	Do not treat occupied rooms with liquid or dust formulations
ENVIRONMENTAL CONSIDERATIONS	Minimal
SPECIAL APPLICATOR QUALIFICATIONS	None

ADDITIONAL INFORMATION:

Treatment failure may be due to incomplete surveys for the pest, improper application, and insecticide resistance. Follow-up inspections and control are crucial to eliminating the bugs.

THIS PAGE IS INTENTIONALLY BLANK.

Nuisance Birds

TARGET PEST AND SURVEY	
TARGET PEST(S)	Nuisance birds (including pigeons, English sparrows, starlings, seagulls, etc.)
TARGET AREA(S)	• Office buildings, warehouses, and parking lots • Light posts and signs • Ledges, window ledges, and rooftops
IMPACT ON MISSION	• Bird Aircraft Strike Hazard (BASH). • Nests may short circuit electrical systems. • Bird droppings deface and damage buildings, vehicles and equipment. • May spread diseases (primarily through droppings) –droppings which accumulate over several years may harbor spores of fungus that cause histoplasmosis, ornithosis, and cryptococcosis. • Source of mite and bed bug infestations.
SCOPE	Base-wide in all areas where birds roost and nest.
RESPONSIBILITY	• Installation Preventive Medicine Technicians (PMT): o Conduct surveys if birds pose a health hazard o Provide pest management recommendations • Pest Management Service Provider (PMSP): Conduct integrated pest management to control birds. • Pest Management Performance Assessment Representative (PMPAR): Ensure contractor pest management service provider performs work in accordance with contract specifications. • Facilities Maintenance Provider (FMP): Perform facilities repairs and improvements that exclude and minimize pest infestations as requested. • Natural Resource Manager: Coordinate management of birds and other wildlife with USDA Wildlife Services and be the POC for depredation permits. • All Personnel: o Report bird problems especially when they pose a health hazard. o Do not feed pest birds (except for residential bird feeders) o Keep lids closed on dumpsters and other receptacles
REPORTING	Report all pest management operations to the integrated pest management coordinator.

SURVEY TECHNIQUES	• Visual inspections: o Observation of birds roosting or nesting or entering into a building o Observation of signs of bird roosting and nesting such as feces o Observation of bird mites in buildings infested with birds. • Personnel complaints including information on when, where, and how many pests were observed.	
SURVEY FREQUENCY/ SCHEDULE	Daily observation by all personnel and pest management service providers.	
ACTION THRESHOLD	When birds pose a health hazard, become a nuisance, or deface property.	
NONCHEMICAL CONTROL		
TYPE	**PROCEDURES**	**RESPONSIBILITY**
REMOVAL OF FOOD SOURCES	• Cover trashcans and dumpsters which attract birds such as gulls • Avoid feeding birds especially pigeons • Sanitation	All personnel
EXCLUDE ENTRY INTO BUILDINGS	• Close windows and doors to buildings • Place netting over windows and doors that must remain open • Place wood, metal, glass, masonry, rust-proofed wire mesh (1/4” thick), or plastic/nylon screen/netting or other barriers over openings or areas of buildings that might be used for nesting	PMSP; FMP
ELIMINATE ROOSTING	• Design structures that prevent bird roosting. For example, place a board over ledges at a 45° angle. Make sure the ends are closed to prevent entry. • Remove structures that allow roosting. • Attach anti-roosting devices such as Nixalite bird strips • Apply a chemical repellent such as Hot Foot. • Thinning or pruning trees to remove protective cover can discourage roosting.	Facilities planning personnel; FMP
SHOOTING	• If allowed, a low-caliber rifle can be used indoors to eliminate birds. • Outdoors, shotgun blasts can also scare birds. • This method should only be used by personnel trained in the use of firearms. There are tight restrictions on bringing firearms onto an installation.	PMSP can recommend shooting, but must request permission from various departments including public works, safety, and security. PMSP may need to request assistance in shooting the birds from security or others that use firearms on the installation.

HABITAT MODIFICATION	Modify habitats to make them less attractive to birds (especially around airfields) • Keep grass low • Fill in areas that hold water	FMP
TRAPPING	• Pigeon traps have proven to be effective in some situations. • "Australian crow traps" collect a wide variety of birds, but may require a permit to use. • Pigeons should not be relocated as they will likely return to their roosting and feeding areas. They may need to be euthanized.	PMSP
NEST REMOVAL	• Remove bird nests: Nuisance bird nests can be removed with eggs or chicks. Other bird nests cannot be removed unless abandoned or empty. • Cliff swallows: Remove mud nests while they are still under construction and do not contain eggs or hatchlings. Once the nest has been established, it is illegal to destroy the nest until it is abandoned.	FMP
SCARE DEVICES	• Acoustical devices, such as propane-fired cannons, are known as bird bangers. The cannons that work most effectively are those that randomly fire at different times and are multidirectional. It is the unpredictable nature of the noise that frightens the birds • Visual repellent devices such as scare-eye balloons, bird effigies, laser lights, and streamers and flashtape. • Timing is important. It is easier to scare birds if the site has been occupied for a short period of time rather than used for many nights. Scare tactics require at least three to five evenings to be effective. • Raptor Models—strategic placement of owl decoys or raptor silhouettes may be used to discourage roosting. Models must be relocated frequently and have only a short-term effectiveness. Both visual and auditory frightening devices are only effective for short periods of time.	FMP; PMSP
EDUCATION	Understanding of how baits and repellents work Importance of not feeding birds and keeping trash receptacles closed.	PMSP, PMPAR, PMT, IPMC
PROHIBITED ITEMS	Use of ultrasonic pest repelling devices is prohibited.	

CHEMICAL CONTROL	
ACTIVE INGREDIENTS	4-aminopyridine, polybutene, methyl anthranilate
METHOD OF DISPERSAL	• Bait: One type of chemically-treated bait causes birds that ingest the toxicant to emit distress and alarm cries and visual displays that frighten the rest of the flock causing them to leave the site (e.g. Avitrol). • Chemical repellent: Chemical repellents are non-toxic to the birds and are available for direct application to turf and other surfaces where birds feed or roost. (e.g. 4 The Birds, Hot foot, Tanglefoot, Roost No More, Bird-Proof). Another application method available is a ULV formulation that is allowed to drift directly onto the birds (e.g. Fog Force).
APPLICATION SITE	Pesticides and repellents shall be applied as required based on survey information to areas where birds feed or roost.
SITE PREPARATION	Pre-treatment procedures: • When using baits, pre-bait to ensure that the birds accept the bait that will be treated with toxicant. • Before removing birds from inside buildings, conduct ectoparasite control. • Determine how bait will be applied based on feeding habits of birds and non-target animal protection. Post-treatment procedures: • Remove dead birds after shooting or poisoning them. • Remove any remaining bait.
SENSITIVE AREAS	• Areas where endangered or threatened species occur. • The use of toxicant bait can elicit a negative public response. Public education, timing, and placement of the bait are important in preventing negative publicity.
RESTRICTIONS/ REGULATIONS/ PERMITS	• Nuisance birds are not protected under the Migratory Bird Treaty Act, but control of the birds may require a depredation permit. • The NRM should always be consulted when managing non-nuisance birds.
CONTRACTOR WORK CONSIDERATIONS	
TIME PERIOD TO RESPOND	Consider mission impact risk and location. Inside administrative buildings requires a more rapid response.
TIME PERIOD TO OBTAIN CONTROL	Inside administration buildings the birds should be removed immediately. Complete control of birds in hangars, warehouses and industrial building may take weeks to months.
LEVEL OF CONTROL	100% in administrative buildings. To acceptable levels in industrial buildings.
PMPAR ASSESSMENT	Assesses PMSP's ability to not only remove birds, but also to provide sustained control or exclusion. PMSP should also identify conditions conducive to infestation.
SAFETY CONSIDERATIONS	• Firearms safety if shooting • Noise hazards with auditory scare devices. • Fall hazard when working on roofs or ledges
ENVIRONMENTAL CONSIDERATIONS	Adverse impact on non-target bird especially when using chemicals.

SPECIAL APPLICATOR QUALIFICATIONS	• None • PMSPs recommending chemical control or bird exclusion methods should be experienced and have specialized training in bird management.

COMMENTS:

All birds except rock doves (pigeons), English sparrows, and starlings are protected under the Migratory Bird Treaty Act and require a depredation permit to control. This also includes nests occupied by birds protected by the MBTA. Contact the installation environmental department regarding a permit before beginning new bird control operations.

Cliff Swallows, http://www.ipm.ucdavis.edu/PMG/PESTNOTES/pn7482.html

Pigeons, http://extension.missouri.edu/p/G9448

Starlings, http://lib.colostate.edu/research/agnic/starlings.html

English Sparrows, http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/agdex3498?opendocument

THIS PAGE IS INTENTIONALLY BLANK.

Feral Cats

TARGET PEST AND SURVEY	
TARGET PEST(S)	Feral Cats
TARGET AREA(S)	Buildings where cats frequent
IMPACT ON MISSION	• Infestations of fleas • Increases the risk of rabies and other disease transmission from infected cats • Predation of local wildlife
SCOPE	Base-wide
RESPONSIBILITY	• Army Veterinary Detachment: Conduct surveys if cats pose a health hazard and trap cats when necessary. • Pest Management Service Provider (PMSP): Conduct integrated pest management to control cats near buildings when necessary. • Pest Management Performance Assessment Representative (PMPAR): Ensure contractor pest management service provider performs work in accordance with contract specifications. • Facilities Maintenance Provider (FMP): Perform facilities repairs and improvements that exclude and minimize pest infestations as requested.
REPORTING	Report all pest management operations to the integrated pest management coordinator.
SURVEY TECHNIQUES	• Visual inspections • Customer complaints
SURVEY FREQUENCY/ SCHEDULE	Daily observation by all personnel.
ACTION THRESHOLD	• Any wild/feral animals capable of transmitting rabies and acting sick or aggressive, or damaging property shall be managed. • Any animal (capable of carrying rabies) that has bitten or scratched someone shall be managed and analyzed for rabies.

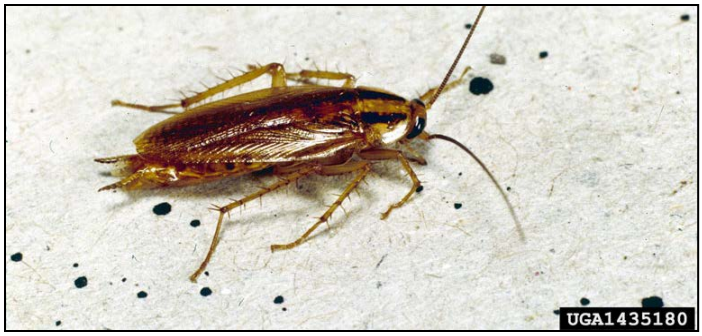
NONCHEMICAL CONTROL		
TYPE	**PROCEDURES**	**RESPONSIBILITY**
LIVE TRAPS	Cats that require extensive care will be taken to the local humane society or Society for the Prevention of Cruelty to Animals (SPCA), cats that are rejected by the SPCA will be euthanized.	Army Veterinary Detachment
SANITATION	• Remove food source • Cover trash cans/dumpsters	FMP

EDUCATION	Keep personnel who eat outdoors from feeding the feral cat population.	Command
HABITAT MANAGEMENT	Remove available harborage sites	FMP, PMSP

COMMENTS:

Toxic baits shall not be used for feral cat management.

Feral Cats and their Management, http://ianrpubs.unl.edu/live/ec1781/build/ec1781.pdf



Cockroaches in Food Preparation Areas

TARGET PEST AND SURVEY	
TARGET PEST(S)	Cockroaches (primarily German cockroach, *Blatella germanica*)
TARGET AREA(S)	• Food service facilities • All government dining facilities including galleys, sculleries, bakeries, storage, and mess decks. • All MWR facilities including clubs, restaurants, and storage. • All commercial lessees. • Coffee messes and snack bars in administrative areas.
IMPACT ON MISSION	May cause food contamination, allergic reactions, or a nuisance.
SCOPE	Base-wide in food service areas
RESPONSIBILITY	• Food Service Personnel: Ensure compliance with food handling regulations that prevent pest infestations. • Installation Preventive Medicine Technicians (PMT): Conduct food service inspections, enforce food handling regulations, provide quality assurance for pest control, and provide pest management recommendations. • Pest Management Service Provider (PMSP): Conduct integrated pest management to control infestations. • Pest Management Performance Assessment Representative (PMPAR): Ensure contractor pest management service provider performs work in accordance with contract specifications. • Facilities Maintenance Provider (FMP): Perform facilities repairs and improvements that exclude and minimize pest infestations as requested.
REPORTING	Report all pest management operations to the integrated pest management coordinator.

SURVEY TECHNIQUES	• Visual inspections:
	  o Observation of pests in harborages
	  o Application of a flushing agent
	• Sticky trap surveys
	• Vacuum surveys of harborages
	• Personnel complaints including information on when, where, and how many pests were observed.
	• Conduct pre- and post-treatment surveys to determine whether control operation was effective.
	• Surveys should identify environmental conditions conducive to infestation.

SURVEY FREQUENCY/ SCHEDULE	• Daily observation by food service personnel. • Monthly observation and/or sticky trap monitoring by cognizant preventive medicine personnel.	
ACTION THRESHOLD	• Visual sighting of 3 or more cockroaches (all life stages) per room per survey. Flushing agents or sticky traps may be used. • Sighting of 1 egg capsule per survey.	
NONCHEMICAL CONTROL		
TYPE	**PROCEDURES**	**RESPONSIBILITY**
SANITATION	• Cleaning of floors and all surfaces to include debris and grease removal. • Clean up spills. • Store food in sealed containers. • Remove cardboard boxes from storage areas. • Keep garbage in containers with tight-fitting lids and use liners.	FSP
ELIMINATE STANDING WATER	• Fix leaking plumbing especially around sinks, faucets, and dishwashers. • Remove standing water from floors after daily cleaning.	FSP; FMP
MECHANICAL REMOVAL	Vacuum cockroaches from their harborages. Use a wet/dry vacuum cleaner filled with water or empty and dispose of vacuum bag immediately.	FSP, PMSP
PEST PROOFING	Seal holes in walls, ceilings, and other areas that may serve as cockroach harborage as required. Request support from facilities maintenance provider if necessary.	FMP
EDUCATION	• Proper storage of food and sanitation to prevent infestations and increase effectiveness of pesticide applications • Understanding of how baits work	PMSP, PMT, PMPAR, IPMC
PROHIBITED PRACTICES	• Use of ultrasonic pest repelling devices is prohibited. • Use of aerosols, dusts, and other insecticide formulations that can become airborne are prohibited in occupied spaces.	

CHEMICAL CONTROL	
ACTIVE INGREDIENTS	Fipronil, hydramethylnon, boric acid, indoxacarb, imidacloprid and abamectin baits; boric acid dust; pyrethroids
METHOD OF DISPERSAL	• Flushing Agents: The pest management service provider may use aerosol contact pesticides directed into potential harborage areas to flush out and kill pests as needed. • Crack and Crevice Residuals: The pest management service provider may apply (by crack and crevice technique) a residual pesticide spray to all known or suspected harborages, feeding sites, or passageways. • Spot Treatment Residuals: A residual pesticide may be applied as a spot treatment to indicated areas (such as under dishwashers and refrigerators or behind stoves). • Baits: Cockroach baits (station or injectable style gel baits) will be used as much as possible. Gel baits can be more effective than dry baits due to the moisture in the bait and because it can be applied to more areas. • Growth Regulators: Insect growth regulators will always be mixed with knock-down pesticides. Preventive baseboard spraying in the absence of a pest is prohibited.
APPLICATION SITE	Pesticides shall be applied as required based on survey information to areas where cockroaches are known to harbor or travel.
SITE PREPARATION	Pre-treatment procedures: • Visual inspections (without flushing agents) or placement of sticky traps may be placed while the space is occupied. All pesticide applications shall only be done when the space is unoccupied. • Pesticide applicator shall contact food service officer or manager prior to pesticide applications. • All food should be removed from exposed areas, processing equipment and utensils covered or stored, and ventilation turned off. • Thorough cleaning of all potential food debris will increase the effectiveness of bait stations. • Grease should be cleaned off surfaces since it can interact with some insecticides and reduce their effectiveness. Post-treatment procedures: • Thoroughly clean all food preparation surfaces. • Do not remove bait stations or bait gel placements.
SENSITIVE AREAS	• Exposed food products, food containers, counter tops, any surface where food may be stored or prepared, or any food storage area. • Ensure that insecticides do not enter drains, streams, lakes, or other surface water.
RESTRICTIONS/ REGULATIONS/ PERMITS	• Use spot treatments indoors; do not apply to baseboards as a preventive residual spray. • Do not apply liquid or dust formulations of insecticides in occupied spaces.

CONTRACTOR WORK CONSIDERATIONS	
TIME PERIOD TO RESPOND	Generally not an emergency requiring immediate response.
TIME PERIOD TO OBTAIN CONTROL	Application of liquid pesticides will result in immediate control. Baits generally require 2–3 days before cockroaches are killed.
LEVEL OF CONTROL	Cockroaches are difficult to completely eliminate in food service areas. Level of control should be maintained below the established action threshold.
PMPAR ASSESSMENT	Follow-up inspections need to be conducted
SAFETY CONSIDERATIONS	• Liquid and dust insecticides should not be applied to occupied spaces or when food is exposed; baits may be applied when spaces are occupied. • Allow for ventilation of spaces after liquid insecticides have been applied. • Clean food preparation surfaces after treatment. • Applicators must wear personal protective equipment as required by the product label.
ENVIRONMENTAL CONSIDERATIONS	Environmental impact is minimal since applications are performed indoors
SPECIAL APPLICATOR QUALIFICATIONS	None. Use of enclosed bait stations can be used by non-certified persons in an authorized self-help program.

ADDITIONAL INFORMATION:

Cockroaches, http://www.ipm.ucdavis.edu/PMG/PESTNOTES/pn7467.html

Cockroaches and their Management, http://edis.ifas.ufl.edu/ig082

Drain Flies

TARGET PEST AND SURVEY	
TARGET PEST(S)	Drain flies (*Psychoda* sp.); sometimes called moth flies, sewage flies, or filter flies.
TARGET AREA(S)	Buildings where adult flies may become a nuisance. These flies may be very common around sewage treatment facilities, where they are considered beneficial decomposers of organic matter.
IMPACT ON MISSION	• Nuisance and a health hazard due to respiratory problems that can be associated with inhalation of fly hairs and body parts. • Able to mechanically transfer bacteria and other microorganisms from their breeding sites to places where humans live and work.
SCOPE	Base-wide
RESPONSIBILIES	• All personnel: Ensure proper sanitation in all living and working areas to avoid conditions that are attractive to flies. • Installation Preventive Medicine Technicians (PMT): Conduct food service inspections, enforce food handling regulations, provide quality assurance for pest control, and provide pest management recommendations. • Facilities Maintenance Provider (FMP): Periodically clean drain pipes to prevent buildup of organic matter where drain flies breed. • Pest Management Service Provider (PMSP): Conduct integrated pest management to control infestations. • Pest Management Performance Assessment Representative (PMPAR): Ensure contracted pest management service provider performs work in accordance with contract specifications.
REPORTING	Report all pest management operations to the integrated pest management coordinator.
SURVEY TECHNIQUES	• Visual sighting: Adult drain flies will congregate on walls and windows of rooms containing drains where drain flies are breeding. Adults are weak fliers, and usually make a series of short, erratic flights to move from one area to another. The body and wings are hairy, and the wings are held roof-like over the body when at rest, giving the fly a moth-like appearance. Adult coloration is yellow, gray, or black. • Source drain: An attempt should be made to locate the drain(s) from which flies are emerging so that the breeding sites can be targeted. Sealing the suspected drain opening with a glue board, masking tape, or inverted plastic cup overnight should trap adult flies if they are present.

SURVEY FREQUENCY/ SCHEDULE	Scheduled surveys are not typically required. The presence of flies resting on walls in restrooms and other areas with drains will typically prompt a request for pest control.	
ACTION THRESHOLD	Sufficient numbers of flies to constitute a nuisance indicate the need for treatment.	
NONCHEMICAL CONTROL		
TYPE	**PROCEDURES**	**RESPONSIBILITY**
HABITAT REMOVAL	• Drain cleaning: Drain flies breed in accumulated organic matter inside drainpipes. This material may be removed with over-the-counter drain cleaners. A stiff brush may be necessary to remove heavy buildup. • Bacterial drain cleaners: Products containing a specialized complex of bacteria can be used to digest the organic matter in which drain fly larvae breed and should then be followed by rinsing with very hot water. These products cannot be used in conjunction with other cleaning products, and are only available to pest control operators.	FMP; PMSP
EDUCATION	• Educate building occupants on sanitation, and proper food disposal.	PMSP, PMPAR, PMT, IPMC
PROHIBITED PRACTICES	• Use of ultrasonic pest repelling devices is prohibited. • Use of aerosols, dusts, and other insecticide formulations that can become airborne are prohibited in occupied spaces.	
CHEMICAL CONTROL		
ACTIVE INGREDIENTS	Pyrethrum-based	
METHOD OF DISPERSAL	Pyrethrum-based aerosols may be used to kill adult flies. However, the breeding site must be eliminated to prevent additional flies from emerging.	
APPLICATION SITE	Surfaces where flies are resting or spaces where flies are flying	
SITE PREPARATION	Pre-treatment procedures: • Visual inspections • Pesticide applicator shall contact building occupants prior to pesticide applications • All food should be removed from exposed areas and processing equipment and utensils covered or stored. Post-treatment procedures: • Thoroughly clean all food preparation surfaces.	

SENSITIVE AREAS	• Chemical pesticide use inside hospitals should be minimized as much as possible to avoid exposing patients. Control should focus on drain cleaning, which will provide better control and reduce the health risks associated with pesticides. • Ensure that insecticides do not enter drains, streams, lakes and other surface water.
RESTRICTIONS/ REGULATIONS/ PERMITS	Do not apply liquid or dust formulations in occupied spaces.
CONTRACTOR WORK CONSIDERATIONS	
TIME PERIOD TO RESPOND	Drain flies are generally not an emergency and do not require immediate response.
TIME PERIOD TO OBTAIN CONTROL	Immediate–10 days. Maintaining control may require 2–4 weeks, depending on the severity of the infestation.
LEVEL OF CONTROL	100% control indoors
PMPAR ASSESSMENT	Conduct pre- and post-treatment visual surveys. Track customer complaints.
SAFETY CONSIDERATIONS	• Liquid and dust insecticides should not be applied to occupied spaces or when food is exposed. • Allow for ventilation of spaces after liquid insecticides have been applied. • Clean food preparation surfaces after treatment. • Applicators must wear personal protective equipment as required by the product label.
ENVIRONMENTAL CONSIDERATIONS	Minimal
SPECIAL APPLICATOR QUALIFICATIONS	None

THIS PAGE IS INTENTIONALLY BLANK.

Filth Flies

TARGET PEST AND SURVEY	
TARGET PEST(S)	House flies (*Musca domestica*), face flies (*Musca autumnalis*), stable flies (*Stomoxys calcitrans*), little house flies (*Fannia* spp.), and other fly species that breed in garbage, compost, manure, or other organic debris.
TARGET AREA(S)	• Animal kennels or stables • Refuse storage areas • Any places where organic debris may accumulate • Dumpsters • Garbage dumps and recycle centers
IMPACT ON MISSION	• Nuisance interferes with mission • Mechanical transmission of pathogens leading to illnesses
SCOPE	Management of biting and non-biting flies associated with organic debris. Excludes flies of public health importance such as mosquitoes, biting gnats, black flies, and bot flies.
RESPONSIBILITY	• Food Service Personnel: Ensure compliance with food handling regulations that prevent pest infestations • Installation Preventive Medicine Technicians (PMT): Conduct food service inspections, enforce food handling regulations, provide quality assurance for pest control, and provide pest management recommendations • Pest Management Service Provider (PMSP): Conduct integrated pest management to control infestations. • Janitorial Personnel: Ensure that refuse containers are frequently emptied and sanitized. • Pest Management Performance Assessment Representative (PMPAR): Ensure contractor pest management service provider performs work in accordance with contract specifications. • Facilities Maintenance Provider (FMP): Perform facilities repairs and improvements that exclude and minimize pest infestations as requested.
REPORTING	Report all pest management operations to the integrated pest management coordinator.

SURVEY TECHNIQUES	• Visual sighting:
	  o Flies that enter buildings will congregate around windows.
	  o Flies may be seen crawling on or flying around organic debris.
	  o Flies are active during the daytime in warm weather.
	  o Flies may be seen flying and landing on dumpsters and trash cans.
	  o Visual surveys of adult flies should also identify where flies are entering a building and where they are breeding.
	• Bites:
	  o Adult stable flies will painfully bite humans, dogs, and livestock.
	  o Stable flies may be surveyed by counting the flies on all four legs of livestock animals.
	  o Most filth flies do not bite.
	• Trapping:
	  o Light traps: traps can be used to control adult flies as well as monitor populations. Flies are attracted to ultraviolet light and trapped on a sticky pest strip.
	  o Sticky traps: Traps can be placed around areas where filth flies are known to be a problem. Many types contain visual lures.
	  o Pheromone traps: Use a fly pheromone (muscamone) to attract flies to a container.
	• Spec counts:
	  o Index cards (3×5) may be placed around areas to be monitored. Flies that land on the cards will leave vomit or fecal specs that can be counted.
	  o Though inexpensive and simple, this technique gives no indication of fly species and may overestimate fly numbers since a single fly may leave multiple specs.
	Note: Identification of adult flies is important in determining where flies are breeding in order to target control at the source of the infestation. If you can't find the breeding locations of the flies, then collect some flies and identify or send to an entomologist for identification.

SURVEY FREQUENCY/ SCHEDULE	• Visual observations should be made around likely breeding sites (e.g. dumpsters). • Traps should be inspected weekly. More frequent inspection may be necessary if sticky traps are placed in areas where they will quickly become covered with dust, insects, or other debris. • Counts of flies on animals should be conducted weekly.
ACTION THRESHOLD	• The presence of biting flies in numbers constituting a nuisance for people or animals indicates a need for control within 24 hours if the presence is interfering with the mission or activities. • For counts on livestock, an average of 10 stable flies per animal indicates a need for control. • For counts on sticky traps, 100 flies per week indicates a need for control.

NONCHEMICAL CONTROL		
TYPE	**PROCEDURES**	**RESPONSIBILITY**
BIOLOGICAL CONTROL	• Several species of parasitic wasps can be purchased for use against filth flies. • Biological control agents do not kill adult flies. Wasps lay their eggs in fly pupae, where the wasp larvae consume the developing fly, preventing it from emerging. • Biological control agents will not sting or otherwise harm humans or animals. • Biological control agents are not compatible with chemical insecticides. • Release timing, climatic conditions, release frequency, and number of agents released are all critical for biological control success. • Contact pest management consultants for additional information before instituting a biological control program.	Kennel operator; stable manager; PMSP
TRAPPING	• Ultraviolet light traps may be used to reduce adult fly populations in buildings invaded by flies. • Exercise caution when placing traps; if the trap is visible from outside the structure, it may attract flies into the building. • Traps by themselves are unlikely to control heavy fly infestations. • Do not use bug zappers that electrocute flies in food-preparation areas or eating facilities. Use attractant light traps that collect flies on sticky traps.	PMSP; FMP
SANITATION TO ELIMINATE BREEDING SITES AND FLY ATTRACTANTS	• Eliminating breeding sites is critical for effective filth fly control. • Filth flies often breed in neglected refuse containers. • Cover outdoor trash containers with tight-fitting lids. • Empty trash containers frequently. • Sanitize trash containers that have accumulated organic material. • Steam clean dumpsters regularly. • Do not allow animal manure to build up. • Maintain compost piles to promote rapid decay of organic material. • Do not place compost piles near areas where flies are likely to become a nuisance. • Hydrated lime may be applied to stable floors to speed manure decomposition and render stables less suitable for fly breeding.	JP; FMP; stable manager

PEST PROOFING	• Seal cracks and other openings around doors and windows. • Use tight-fitting screens. • Air-screens/air-curtains may be installed in commercial facilities.	FMP
EDUCATION	Educate building occupants on sanitation, excluding flies by closing doors and maintaining screens, and proper food storage.	
PROHIBITED PRACTICES	• Use of ultrasonic pest repelling devices is prohibited. • Use of aerosols, dusts and other insecticide formulations that can become airborne are prohibited in occupied spaces.	
CHEMICAL CONTROL		
ACTIVE INGREDIENTS	Pyrethroids, dichlorvos (in insecticide strips), methomyl, and others	
METHOD OF DISPERSAL	• Non-residual space spray or aerosol: may temporarily control adult fly populations in buildings; will not provide long-term control unless breeding sites are eliminated. • Residual insecticides: may be applied to areas outside where adult flies rest; will not provide long-term control unless breeding sites are eliminated. • Baits: may be used around refuse containers and other places to which flies are attracted. Do not use baits indoors or in other areas where flies are not already present. Baits may attract flies to an otherwise fly-free area. • Impregnated strips: Plastic/paper strips impregnated with insecticides will kill adult flies that contact the strips. Useful when placed inside trash cans or other unoccupied spaces. • Insect repellents: may be used on humans or animals for temporary prevention of stable fly bites. Will not provide long-term control of fly populations, and must be frequently re-applied. • Oral larvicides: may be administered to livestock; will render manure unsuitable for fly breeding.	
APPLICATION SITE	• Fly resting areas • Livestock (repellents and oral larvicides)	
SITE PREPARATION	Do not apply residual insecticides during high temperatures, high winds, or if precipitation is expected.	
SENSITIVE AREAS	• Filth fly infestations often occur in food-preparation areas. Ensure that the insecticide is labeled for use in food preparation areas, and that foods are not contaminated during application. • Emphasize nonchemical control in areas frequented by children (e.g. child development centers). • Ensure that insecticides do not enter drains, streams, lakes, and other surface water.	
RESTRICTIONS/ REGULATIONS/ PERMITS	• Do not apply liquid or dust formulations in occupied spaces. • Dichlorvos is a carcinogen and cannot be placed in occupied spaces.	

CONTRACTOR WORK CONSIDERATIONS	
TIME PERIOD TO RESPOND	Indoor infestations should have shorter response time than outdoor infestations.
TIME PERIOD TO OBTAIN CONTROL	Most control methods result in rapid kill and so control should be obtained in a short period of time
LEVEL OF CONTROL	100% control indoors. Outdoors, the level can be higher depending on the level of tolerance by people around the buildings. If the source of flies is treated, 100% control is expected in that area.
PMPAR ASSESSMENT	Conduct pre- and post-treatment visual surveys. Track customer complaints.
SAFETY CONSIDERATIONS	• Take precautions when using pesticides around food service areas and the child development center. • Applicator should use personal protective equipment as required by the product label.
ENVIRONMENTAL CONSIDERATIONS	• Avoid contaminating water with pesticides. • Space spraying outdoors can result in drift and have impact on non-target organisms.
SPECIAL APPLICATOR QUALIFICATIONS	None

COMMENTS:

The numbers of products available for filth fly monitoring and control is overwhelmingly large. The efficacy of a given product often depends on local climatic characteristics, the severity of the infestation, the species comprising the infestation, and other localized conditions. Also, many products are available that do not work or whose efficacy is unproven. Pest management consultants or county or state extension personnel can assist with choosing fly control methods that are most appropriate for a given area.

THIS PAGE IS INTENTIONALLY BLANK.

Fleas In and Around Buildings

TARGET PEST AND SURVEY	
TARGET PESTS	Dog, cat, and rodent fleas
TARGET AREA(S)	Military family housing, administrative and industrial buildings that harbor feral cats and other animals, and dog kennels
IMPACT ON MISSION	• Potential disease transmission such as murine typhus • Biting nuisance impacting mission
SCOPE	Flea infestations in and around buildings. Does not include outdoor flea infestations in training and natural areas.
RESPONSIBILITY	• Veterinary Services: Prescribe pet treatments for flea control • Pet owner/Dog handlers: Treat animals for flea infestations. • Installation Preventive Medicine Technicians (PMT): Conduct surveys and inspections of pests of public health importance to assess health risk. • Pest Management Service Provider (PMSP): Conduct integrated pest management to control infestations. • Pest Management Performance Assessment Representative (PMPAR): Ensure contractor pest management service provider performs work in accordance with contract specifications. • Facilities Maintenance Provider (FMP): Perform facilities repairs and improvements that exclude and minimize pest infestations as requested.
REPORTING	Report all pest management operations to the integrated pest management coordinator.
SURVEY TECHNIQUES	• Observe for fleas on pets or while grooming and washing pets • Walk around a room with light colored pants • Pull a white cloth across the floor • Concentrate on areas where pets animals frequent or rest • Survey for feral cats and buildings under which they may be harboring; survey in crawl spaces
SURVEY FREQUENCY/ SCHEDULE	Flea infestations are usually reported by housing residents or building occupants. Survey should be conducted by the PMSP to determine where to treat.
ACTION THRESHOLD(S)	• One flea per room • One flea-infested animal in or under a building

NONCHEMICAL CONTROL		
TYPE	**PROCEDURES**	**RESPONSIBILITY**
VACUUMING	Using a vacuum cleaner with a rotating brush on an infested carpet will remove a majority of the adults, larvae, and eggs. Should be done even if an insecticide will be applied. Hard surfaces should also be vacuumed if they contain cracks and crevices.	Housing resident, building occupant, janitorial service
CARPET CLEANING	Steam cleaning or cleaning with a carpet cleaner, especially after vacuuming, may be sufficient to remove remaining fleas from carpet.	Housing resident, building occupant, janitorial service
CLEAN PET BEDDING	Launder all pet bedding and any other materials upon which dogs or cats sleep in soap and water	Housing resident
CONTROL AND EXCLUDE FERAL CATS	• Feral cats are a common source of fleas in industrial and office buildings and are often encouraged by uninformed cat lovers to harbor under buildings. • DOD policy requires removal of feral animals from installations; neutered cats still carry fleas. • Cat harborages under buildings should be cleaned and treated with an insecticide. • Openings to crawl spaces should be sealed to exclude animals.	PMSP, FMP
GROOM AND WASH PETS	• Flea combs can be used on pets to extract fleas. • Washing pet with soap and water is very effective at killing fleas.	
EDUCATION	• Teach pet owners about ways to prevent fleas and treat pets for fleas • Provide awareness to installation personnel about the risk of flea infestations caused by feral cats. • Pre-treatment awareness of the need to clean/treat pets and pet bedding concurrently with the PMSP's insecticide treatment of the premises.	PMSP, PMPAR, PMT, IPMC
PROHIBITED ITEMS	Use of ultrasonic pest repelling devices is prohibited	

CHEMICAL CONTROL	
ACTIVE INGREDIENTS	Pyrethroids, methoprene and pyriproxyfen (insect growth regulators), fipronil, imidacloprid, lufenuron, spinosad, and others
METHODS OF DISPERSAL	On-pet Treatments: • Spot-on treatments, such as Frontline (fipronil) and Advantage (imidacloprid) are convenient and easy to use and very effective at preventing fleas when monthly treatments are maintained throughout the season (late spring to early fall). • Oral treatments, such as Program (lufenuron) are effective and useful on pets that frequently swim or are bathed frequently. Indoor Treatment: These treatments target areas where pets rest or on carpets and other surfaces that might hold adult and immature fleas. The most effective treatments contain IGRs which are often mixed with a contact insecticide (such as a pyrethroid). The contact insecticide will kill any existing adult fleas while the residual IGR will prevent larvae from becoming biting adults. Outdoor Treatment: • This is rarely necessary in residential situations if indoor and on-pet treatment is done correctly. • Outdoor dog kennels and crawl spaces where feral cats were harboring should be treated if infested. Again, an IGR / contact insecticide treatment is most effective.
APPLICATION SITE	Usually indoors
SITE PREPARATION	Pre-treatment: • Educate customer as to why pet and pet bedding need to be cleaned/treated concurrently with premise insecticide treatment. • Ensure clutter is cleaned up, particularly clothing and toys, before insecticide is applied. • Vacuum carpet and flooring • Store exposed food • Occupants must vacate premises; remove pets Post-treatment: • Allow surfaces to dry before allowing occupants and pets to return • Clean any food preparation surfaces of pesticide residue
SENSITIVE AREAS	Medical treatment facilities, child development centers
CONTRACTOR WORK CONSIDERATIONS	
TIME PERIOD TO RESPOND	Generally within 2 days depending on the mission impact and location
TIME PERIOD TO OBTAIN CONTROL	Initial treatment should eliminate most biting adults and provide immediate relief. Larvae or eggs that were not killed by the initial treatment may develop into adults resulting in biting fleas at a later time. This will require re-treatment in a week or less. If an IGR was used, then this shouldn't be a problem and control should be obtained in 24 hours.
LEVEL OF CONTROL	Indoors should be 100%.

PMPAR ASSESSMENT	Usually based on customer complaint and customer satisfaction should be used to assess since the customer may also have responsibilities for managing the problem (i.e. treating their pet)
SAFETY CONSIDERATIONS	Applicators should use personal protective equipment as required by the product label.
ENVIRONMENTAL CONSIDERATIONS	Minimal for indoor applications. For outdoor applications, avoid contamination of water with insecticides.
SPECIAL APPLICATOR QUALIFICATIONS	None

ADDITIONAL INFORMATION

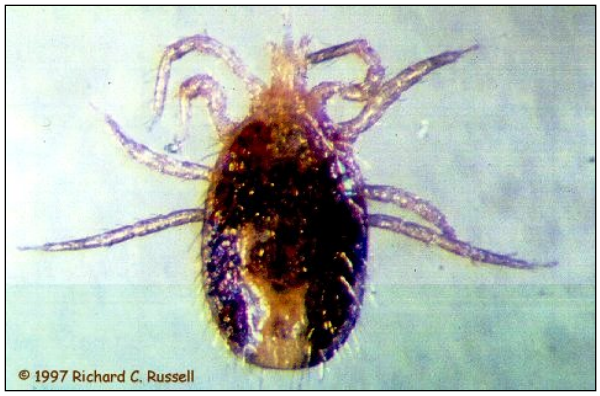
Successful control of fleas in a building requires room cleaning (vacuuming and carpet cleaning, cleaning pet bedding), pet treatment or washing, and insecticide treatment be done within 12 hours of each other. Some of the products and devices that aren't effective for flea control are indoor aerosol foggers (aka "bug bombs"), ultrasonic devices, herbal collars, vitamin B1, brewer's yeast, and flea repellents.

Fruit Flies

TARGET PEST AND SURVEY	
TARGET PEST(S)	Small flies in the family Drosophilidae, commonly called fruit flies or vinegar flies.
TARGET AREA(S)	Refuse containers, offices with windows facing the loading docks, galleys, and other areas that may have ripening fruit.
IMPACT ON MISSION	Quality of life.
SCOPE	Base-wide
RESPONSIBILITY	• All Personnel: Ensure proper sanitation in all living and working areas to avoid conditions that are attractive to flies. • Janitorial Personnel (JP): Ensure that refuse containers are emptied daily. Also, periodically clean refuse containers to prevent the buildup of organic matter where flies breed. • Facilities Maintenance Provider (FMP): Provide necessary building repairs and modifications needed for pest exclusion. • Pest Management Service Provider (PMSP): Conduct integrated pest management to control infestations. • Pest Management Performance Assessment Representative (PMPAR): Ensure contractor pest management service provider performs work in accordance with contract specifications.
REPORTING	Report all pest management operations to the integrated pest management coordinator
SURVEY TECHNIQUES	• Flies are attracted to ripening and rotting fruit, as well as other decaying organic matter. • Flies can be seen hovering around refuse containers and resting on walls and cabinets near refuse containers. Fruit flies can be distinguished from other small flies by their tan or yellow colored bodies and red eyes.
SURVEY FREQUENCY/ SCHEDULE	• Scheduled fly surveying is generally not necessary. • Scheduled sanitation should prevent infestations.
ACTION THRESHOLD	The presence of flies in numbers constituting a nuisance for personnel indicates a need for control.

NONCHEMICAL CONTROL		
TYPE	**PROCEDURES**	**RESPONSIBILITY**
SANITATION	• Refuse removal: Waste baskets and other refuse	All personnel; JP

	containers should be emptied daily to prevent the buildup of decaying matter that will attract flies. • Refuse container sanitation: Fruit flies are attracted to moist fermenting foods. All they need for breeding is a moist film of decaying organic matter. They will lay their eggs in garbage disposals, empty bottles and cans, trash containers, mops and cleaning rags. Keep all these items clean. Over time organic debris builds up on the bottom and sides of waste containers, particularly large dumpster and other trash bins. Refuse containers should be periodically steam-cleaned or washed to remove organic matter.	
ELIMINATE FOOD SOURCES	Fruit bowls: Fruit flies are attracted to volatiles produced by ripening fruit. Store fruit in the refrigerator in order to avoid attracting fruit flies and other pests.	All personnel
PEST PROOFING	Exclusion: Flies may migrate indoors from breeding sites located outdoors. Tight fitting screens and weather proofing around doors and windows (caulking, weather stripping, etc.) may delay entrance.	FMP
PROHIBITED PRACTICES	• Use of ultrasonic pest repelling devices is prohibited. • Use of aerosols, dusts, and other insecticide formulations that can become airborne are prohibited in occupied spaces.	
CHEMICAL CONTROL		
METHOD OF DISPERSAL	• For chemical controls to work, all breeding sites must be found and cleaned first. Potential breeding sites which are inaccessible (e.g., garbage disposals and drains) can be inspected by taping a clear plastic food storage bag over the opening overnight. If flies are breeding in these areas, the adults will emerge and be caught in the bag. • Adults may be killed with pyrethrum-based aerosol insecticides applied as a space spray or surface residual.	
APPLICATION SITE	Surfaces where flies are resting or spaces where flies are flying.	
SENSITIVE AREAS	• Fruit fly infestations often occur in food-preparation areas. Ensure that the insecticide is labeled for use in food preparation areas, and that foods are not contaminated during application. • Ensure that insecticides do not enter drains, streams, lakes, and other surface water.	



Mites

TARGET PEST AND SURVEY	
TARGET PESTS	Mite parasites of animals (especially birds and rodents)
TARGET AREA(S)	Office buildings, industrial buildings, outbuildings, and residences
IMPACT ON MISSION	Biting nuisance.
SCOPE	Mite infestations in buildings most commonly result from their searching for food after their rodent or bird host dies, being eliminated by pest control operations, or abandoning their nest.
RESPONSIBLE PARTY	• Pest Management Service Provider (PMSP): Conduct integrated pest management to control infestations • Pest Management Performance Assessment Representative (PMPAR): Ensure contractor pest management service provider performs work in accordance with contract specifications • Installation Preventive Medicine Technicians (PMT): o Conduct surveys when pests pose a health threat o Provide pest management recommendations
REPORTING	Report all pest management operations to the integrated pest management coordinator.

TECHNIQUES	• Personnel complaints: o Most often mite infestations are recognized when personnel complain of bites associated with specific work spaces or areas of a building; the mite may or may not be observed. o Have the personnel who are being bitten keep transparent tape nearby. When they feel like they are being bitten, tap the area of the biting with the sticky side of the tape. Personnel should take the tape to preventive medicine to have it identified. • Workspace investigations: o Have personnel being bitten identify the specific areas in which they are being bitten. o Ask if any bird or rodent problems have occurred in the building and, if it has, ask if control has been performed recently. o Look for evidence of rodent or bird infestation in false ceilings, under floor boards, in rafters, inside walls, and outside of the building. o Observe light colored surfaces for mites. o Identify other sources of nonliving material that may cause a biting sensation such as visible particles especially those coming from ventilation ducts. • Sticky traps: place sticky traps around the area of infestation. • Identification of the mite will indicate whether the source is from a bird or rodent. Precise identification may require an entomologist. Contact NECE or NAVFAC Applied Biology.	
SURVEY FREQUENCY/ SCHEDULE	When notified of a potential problem.	
ACTION THRESHOLD	Identification of mites collected from a person(s) or from a sticky trap.	
NONCHEMICAL CONTROL		
TYPE	**PROCEDURES**	**RESPONSIBILITY**
RODENT AND BIRD MANAGEMENT	• Preventing birds and rodents from entering a building will prevent mite problems. • See commensal rodent and nuisance bird pest management fact sheet for more information.	See specific project sheets
NEST REMOVAL	• Nests are the usual source of most mites. • Apply a pesticide to the nest to kill any mites (see below). • Remove nesting material and place in a double plastic bag. Clean area around nest with soap and water.	PMSP
MITE REMOVAL	• Use soap and water to wipe up mites observed on surfaces. • Use a wet/dry vacuum filled with water to vacuum area where mites are found.	PMSP; personnel who observe mites

CHEMICAL CONTROL	
METHOD OF DISPERSAL	• Aerosols: Apply to cracks and crevices and other areas where mites are seen. • Dusts: Use in enclosed spaces where mites have been found. Preventive baseboard spraying in the absence of a pest is prohibited.
APPLICATION SITE	Pesticides shall be applied as required based on survey information to areas.
SITE PREPARATION	Pre-treatment procedures: • Because mite infestations accompany bird and rodent problems, it is important to monitor and locate areas where these animals and their nests are present. Determining these locations aids the applicator in their placement of any treatments. • Any nests should be removed prior to application of pesticides. Post-treatment procedures: • Monitor areas where mites were found to see if problem continues. If this is the case, more extensive treatment with residual and non-residual pesticides might be necessary.
SENSITIVE AREAS	Childcare facilities

THIS PAGE IS INTENTIONALLY BLANK.

Adult Mosquito Control

TARGET PEST AND SURVEY	
TARGET PEST(S)	Flying adult pest mosquito species.
TARGET AREA(S)	Industrial and residential areas
IMPACT ON MISSION	• Transmission of mosquito-borne diseases to installation personnel • Nuisance biting interfering with occupational and recreational activities
RESPONSIBILITY	• Housing Residents: o Use personal protective measures to prevent mosquito bites. o Ensure maintenance of window and door screens. o If screens are not available, keep doors and windows closed when mosquitoes are present. • Installation Preventive Medicine Technicians (PMT): o Conduct adult mosquito trapping to identify problem areas and mosquito species. o Map locations of trapping sites. o Conduct disease risk assessments including pathogen testing if available. o Provide information to housing residents on how to prevent mosquito biting. o Provide approval to Public Works Department for mosquito ULV treatments • Mosquito Control Provider: o Conduct surveys to verify presence of adult mosquitoes at site to be treated. Treat only when and where adult mosquitoes are present. o Use pesticides in accordance with the label. • Pest Management Performance Assessment Representative (PMPAR): o Ensure contractor pest management service provider performs work in accordance with contract specifications. o Conduct pre- and post-treatment surveys to monitor efficacy of control measures. • Natural Resources Manager: Review and approve mosquito control operations conducted adjacent to sensitive areas to ensure minimal impact on the environment. • Housing Director: o Ensure that residents keep premises clear of clutter that can hold water and become breeding sites. o Ensure distribution of mosquito prevention and control information to

	residents. • Integrated Pest Management Coordinator: o Coordinate with PMTs, control provider, PMPAR, and natural resource manager to identify mosquito-breeding sites that can be permanently eliminated by nonchemical methods. o Maintain mosquito control operation records.
REPORTING	• PMTs report surveillance results to mosquito control provider. • Report all pest management operations to the integrated pest management coordinator.
SURVEY TECHNIQUES	• Conduct surveys using visual assessments (i.e. landing counts) and/or traps at sites where personnel complain about mosquito bites to verify presence of mosquitoes. • Record sites of verified complaints on a map. Use GPS receiver if available. • Use traps weekly at same locations to reveal seasonal trends in mosquito abundance. Surveys can be used in subsequent years to plan mosquito control program. • Trap mosquitoes for virus testing. • PMTs will continue to conduct adult mosquito surveys.
SURVEY FREQUENCY/ SCHEDULE	• Ongoing surveys by residents. • Survey prior to application of adulticide. For visual surveys, post-treatment surveys may be conducted immediately after the treatment. For traps, survey within 24 hours after application.
ACTION THRESHOLD	• Light traps: 25 biting females or 1 vector species in an un-baited light trap • Landing counts: 15 per hour or 4 per 15 minutes • Disease emergencies declared: light traps: 1 female of a species which has been identified as carrying disease within 5 miles of base caught in a trap NOTE: Action thresholds can be changed on advice of a BUMED entomologist.

Vector species of concern	Primary diseases of concern
Culiseta melanura	Eastern equine encephalitis (EEE),West Nile Virus (WNV)
Culex pipiens complex	EEE, St. Louis encephalitis, WNV
Culex nigripalpus	EEE, St. Louis encephalitis, WNV

NONCHEMICAL CONTROL

TYPE	PROCEDURES	RESPONSIBILITY
PERSONAL PROTECTION	• Encourage use of repellents when outdoors in mosquito-infested areas. Products with the active ingredient diethyl toluamide (DEET) are most effective. • Avoid outdoor activities at dusk and during the evening hours to lessen chances of being bitten. • Wear long-sleeved shirts and pants when outdoors in mosquito infested areas.	Personnel
EXCLUSION/PEST PROOFING	• Window and door screens • Remove tall weeds and overgrowth to remove possible resting areas for mosquitoes.	Housing residents; Housing maintenance

TRAPS	Propane-powered trapping devices that use heat and a chemical attractant have been shown to be effective for small to moderate area control of certain species of mosquitoes.	
CHEMICAL CONTROL		
CHEMICALS Note: Apply all pesticides in accordance with label directions.	• Organophosphates (i.e. malathion, naled). Apply with ULV or fog-generating equipment. Some chemicals may be corrosive. Resistance to these chemicals is widespread. • Pyrethrum and Pyrethroids. Apply with ULV equipment. Safer for humans and mammals. May be toxic to nontarget insects and fish.	
SITE PREPARATION	• Survey treatment site prior to application to ensure presence of flying mosquitoes. • Ensure building occupants are given warning of spray operations if they will be in the area during treatment. Occupants should be advised to stay indoors and keep doors and windows closed during spraying. • Check for thermal inversion to ensure pesticide stays close to ground. • Check for light wind (3–5 mph) perpendicular to path of vehicle travel to maximize swath width. • Check direction of wind and ensure pesticides do not drift into environmentally-sensitive areas. The pesticide label will indicate what animal species are at risk for pesticide poisoning. • Survey area surrounding treatment area to ensure that bee hives will not be in the path of pesticide drift.	
SENSITIVE AREAS	All ULV-applied pesticides may affect aquatic organisms especially fish. Care should be taken to ensure proper insecticide droplet size, timing of application, environmental conditions, and calibration of equipment.	

COMMENTS:

Emergency control operations as the result of a disease outbreak may require large area application of an adulticide. Aerial spraying using an appropriately labeled pesticide and application equipment may be used. However, all aerial spraying operations must be reviewed and approved by a pest management consultant from NAVFAC Applied Biology. Aerial spray operations must also be reviewed and approved by the installation's operations officer.

See AFPMB Technical Guide 13 for more information on ULV application of pesticides.

THIS PAGE IS INTENTIONALLY BLANK.

Larval Mosquitoes in Manmade Structures and Containers

TARGET PEST AND SURVEY	
TARGET PEST(S)	*Culex*, *Culiseta*, and *Aedes* mosquito larvae that prefer to live in manmade structures and containers.
TARGET AREA(S)	Catch basins, culverts, backyard ponds, planters, and gutters
IMPACT ON MISSION	Development into adults that cause: • Transmission of mosquito-borne diseases to installation personnel • Nuisance biting interfering with occupational and recreational activities
RESPONSIBILITY	• Housing Residents: o Eliminate backyard mosquito breeding sites. o Keep gutters and backyard ponds clean. • Installation Preventive Medicine Technicians (PMT): o Survey and identify larval breeding sites in catch basins and culverts. o Map locations of breeding sites. o Conduct disease risk assessments. o Provide information to housing residents on how to prevent mosquito breeding and biting. • Mosquito Control Provider: o Conduct surveys to verify presence of larvae at site to be treated. o Use integrated pest management methods to control mosquito larvae. o Use pesticides in accordance with the label. • Pest Management Performance Assessment Representative (PMPAR): o Ensure contractor pest management service provider performs work in accordance with contract specifications. o Conduct pre- and post-treatment surveys to monitor efficacy of control measures. • Natural Resources Manager: Review and approve mosquito control operations conducted adjacent to sensitive areas to ensure minimal impact on the environment. • Housing Director: o Ensure residents keep premises clear of clutter that can hold water and become breeding sites o Ensure distribution of mosquito prevention and control information to residents. • Integrated Pest Management Coordinator (IPMC): o Coordinate with PMTs, control provider, PMPAR, and natural resource manager to identify mosquito-breeding sites that can be permanently eliminated by nonchemical methods.

	o Maintain mosquito control operation records.
REPORTING	• PMTs report surveillance results to mosquito control provider. • Report all pest management operations to the integrated pest management coordinator.
SURVEY TECHNIQUES	• Maps should be used to identify non-residential water-holding sites. Conduct ground truthing to verify presence of sites. • Record all non-residential water-holding sites on a map or on a GPS receiver regardless of whether larvae are found or not. • Survey non-residential water-holding sites for larvae. Use a dipper to take water samples. Dip as follows: o 1 dip/10 ft in linear sources o 1 dip/100 ft^2 in wide sources o 2 dips/source when small source i.e. catch basin For the first two sources, dip until larvae are found, then record number of dips after that; do not count negative dips prior to this. • Record quantity as number of larvae/dip. Record negative sources. • Mark locations for treatment or treat immediately. • All positive larval sites will be identified on the map as larval sampling stations. These stations will be used in the ongoing surveillance program to detect the presence of mosquitoes after a high tide and when the action threshold for that site is exceeded, then control will be initiated. • PMTs will continue to look for and identify additional non-residential water-holding and breeding sites.
SURVEY FREQUENCY/ SCHEDULE	• Ongoing surveys by residents. • Survey prior to application of larvicide and within 24 hours after application. (Method cannot be used after application of methoprene.)
ACTION THRESHOLD	One or more larvae per dip

NONCHEMICAL CONTROL		
TYPE	**PROCEDURES**	**RESPONSIBILITY**
MOSQUITO FISH	• *Gambusia affinis*, or mosquito fish, feed on mosquito larvae and other small aquatic animals and can eliminate and prevent mosquito breeding. • Mosquito fish can be placed into large ornamental ponds. • Mosquito fish are often introduced into a water source after treatment with a larvicide.	
DRAINAGE	• Ponds may be drained to eliminate breeding sites. • Containers such as pet food dishes, garbage cans, garden pots, and wheel barrels should be emptied of water and prevented from collecting water.	Housing residents; Grounds maintenance
PROPER IRRIGATION	Lawn and landscape should be irrigated properly to prevent over watering and run-off that can collect and produce mosquitoes.	Housing residents; Grounds maintenance
CHEMICAL CONTROL		

CHEMICALS Note: Apply all pesticides in accordance with label directions.	• Bti: Apply by hand (granules), hand-compressed or hydraulic sprayer (liquid), as briquets, or by manual or powered granule spreader. Liquid cost-effective when applied to open water; granules effective when water is covered by heavy vegetation. • Methoprene: Apply by hand or manual or powered granule spreader (granules and pellets), as briquets, or by hand-compressed or hydraulic sprayer (liquid). Methoprene slow-release briquets can be applied as a pre-flood application to dry water-holding areas that have been surveyed and are known to produce mosquitoes. Risk assessments for methoprene's effects on nontarget aquatic invertebrates mixed and may require trials in test plots before using in environmentally sensitive areas. • Surface Films: Apply by hand compressed sprayer.
SITE PREPARATION	Survey treatment site prior to application of Bti and methoprene to ensure that majority of mosquitoes are in larval stage. Both are not effective on pupae.
SENSITIVE AREAS	Some catch basins and culverts drain into environmentally-sensitive habitats and pesticide use may have adverse effects.

THIS PAGE IS INTENTIONALLY BLANK.

Larval Mosquitoes in Permanent and Semi-Permanent Water Sources

TARGET PEST AND SURVEY	
TARGET PEST(S)	*Culex, Culiseta, and Anopheles* mosquito larvae that live in permanent or semi-permanent water sources.
TARGET AREA(S)	Drainage ditches, ponds, freshwater marshes
IMPACT ON MISSION	Development into adults that cause: • Transmission of mosquito-borne diseases to installation personnel • Nuisance biting interfering with occupational and recreational activities.
RESPONSIBILITY	• Installation Preventive Medicine Technicians (PMT): o Survey and identify larval breeding sites in ditches, ponds, and marshes o Map locations of breeding sites o Conduct disease risk assessments. • Mosquito Control Provider: o Conduct surveys to verify presence of larvae at site to be treated o Use integrated pest management methods to control mosquito larvae o Use pesticides in accordance with the label. • Pest Management Performance Assessment Representative (PMPSR): o Ensure contractor pest management service provider performs work in accordance with contract specifications. o Conduct pre- and post-treatment surveys to monitor efficacy of control measures • Natural Resources Manager: Review and approve mosquito control operations conducted sensitive areas to ensure minimal impact on the environment. • Integrated Pest Management Coordinator (IPMC): o Coordinate with PMTs, control provider, PMPAR, and natural resource manager to identify mosquito-breeding sites that can be permanently eliminated by nonchemical methods. o Maintain mosquito control operation records.
REPORTING	• PMTs report surveillance results to mosquito control provider. • Report all pest management operations to the integrated pest management coordinator.
SURVEY	• Maps should be used to identify non-residential water-holding sites. Conduct

TECHNIQUES	ground truthing to verify presence of sites. • Record all non-residential water-holding sites on a map or on a GPS receiver regardless of whether larvae are found or not. • Survey non-residential water-holding sites for larvae. Use a dipper to take water samples. Dip as follows: o 1 dip/10 ft in linear sources o 1 dip/100 ft^2 in wide sources o 2 dips/source when small source i.e. catch basin For the first two sources, dip until larvae are found, then record number of dips after that; do not count negative dips prior to this. • Record quantity as number of larvae/dip. Record negative sources. • Mark locations for treatment or treat immediately. • All positive larval sites will be identified on the map as larval sampling stations. These stations will be used in the ongoing surveillance program to detect the presence of mosquitoes after a high tide and when the action threshold for that site is exceeded, then control will be initiated. • PMTs will continue to look for and identify additional non-residential water-holding and breeding sites.	
SURVEY FREQUENCY/ SCHEDULE	• Weekly survey of permanent or semi-permanent sites. • Survey prior to application of larvicide and within 24 hours after application. (Method cannot be used after application of methoprene.)	
ACTION THRESHOLD	One or more larvae per dip	
NONCHEMICAL CONTROL		
TYPE	**PROCEDURES**	**RESPONSIBILITY**
VEGETATION REMOVAL/ IRRIGATION	• Aquatic vegetation encourages mosquito breeding by slowing down water movement in ditches and streams and by providing larvae with protection from predators. Emergent and floating vegetation can be removed mechanically. • Carefully irrigate lawns and gardens in order to prevent water from standing for several days.	Grounds Maintenance
MOSQUITO FISH	• *Gambusia affinis*, or mosquito fish, feed on mosquito larvae and other small aquatic animals and can eliminate and prevent mosquito breeding. • Mosquito fish are often introduced into a water source after treatment with a larvicide.	
DRAINAGE	Ponds and marshes may be drained to eliminate breeding sites	Grounds Maintenance
CHEMICAL CONTROL		
CHEMICALS Note: Apply all pesticides in accordance with label directions.	• Bti: Apply by hand (granules), hand compressed sprayer, or hydraulic sprayer (liquid); as briquettes; or by manual and powered granule spreader. Liquid cost-effective when applied to open water; granules effective when water is covered by heavy vegetation. • Methoprene: Apply by hand or by manual or powered granule spreader (granules and pellets); as briquettes; or hand-compressed and hydraulic sprayer (liquid). Methoprene slow-release briquettes can be applied as a pre-	

	flood application to dry water-holding areas that have been surveyed and are known to produce mosquitoes. Risk assessments for methoprene's effects on nontarget aquatic invertebrates mixed and may require trials in test plots before using in environmentally-sensitive areas. • Surface Films: Apply by hand-compressed sprayer. • Herbicides: Herbicides labeled for aquatic sites may be used to remove vegetation where removal by mechanical means is not feasible or practical.
SITE PREPARATION	Survey treatment site prior to application of Bti and methoprene to ensure that majority of mosquitoes are in larval stage. Both are not effective on pupae.
SENSITIVE AREAS	• Some permanent and semi-permanent water sources may be habitats for birds, fish, and other animals. Alterations, such as vegetation removal or drainage, introduction of fish, or herbicide application may have significant impact on these habitats. • Some drainage channels drain into environmentally-sensitive habitats and pesticide use may have adverse effects.

THIS PAGE IS INTENTIONALLY BLANK.

Ornamental Plant Pests

TARGET PEST AND SURVEY	
TARGET PEST(S)	Insects and mites attacking ornamental plants
TARGET AREA(S)	All interior and exterior areas with ornamental plants
IMPACT ON MISSION	• Damage to real property (valuable ornamental plants) • Reduce plant vigor and aesthetics • Unsightly honeydew and mold accumulation on vehicles and structures
SCOPE	Base-wide; improved grounds
RESPONSIBILITY	• All Personnel: properly care for houseplants in working areas • Pest Management Service Provider (PMSP): conduct integrated pest management to control infestations. • Pest Management Performance Assessment Representative (PMPAR): ensure contractor pest management service provider performs work in accordance with contract specifications • Grounds Maintenance Provider (GMP): maintain the health of ornamental plants • Landscape Designer: ensure use of plants well adapted for the given areas in landscaping; ensure placement of plants in areas where their health can be maintained • Integrated Pest Management Consultant (IPMC): identify unknown pests and recommend control measures.
REPORTING	Report all pest management operations to the integrated pest management coordinator.
SURVEY TECHNIQUES	• Visual sighting of pests: o Caterpillars: immature forms of moths and butterflies. These insects chew on leaves and are often found on the undersides of leaves. o Aphids: small (usually about 1/16-inch or smaller) globular, pear-shaped insects. Color is usually green, but may be pink, yellow, blue-green, or black. Almost always with two dorsal tubular structures on the posterior end of the body (cornicles). Wingless and winged forms may be present. Typically found on the undersides of leaves, but may also be present on stems. o Scales: flattened sessile insects that suck plant juices from leaves or, more often, stems. Usually appear as oval, waxy shells; no legs or body divisions are visible. Size and color vary depending on age and species. o Mealybugs: oval insects that superficially resemble small sowbugs. Exude loose cottony wax that may obscure the body of the insect. May be found on almost any part of the host plant, including the roots.

	o Whiteflies: adults usually appear as minute white flies that hold their wings roof-like over their bodies at rest (though these insects are not true flies). Dark spots or patterns are visible on the wings of some species. Adults typically rest on the undersides of leaves, but fly readily if disturbed. Immature whiteflies are sessile, flattened, oval insects that are almost always found on the undersides of leaves. They suck plant juices and can severely reduce plant vigor. o Mites: minute, globular arachnids very diverse in habit and form. Some are pests of plants. Adult mites will have eight legs, distinguishing them from insects which have six legs. Spider mites are the most common mite pests of ornamentals. Immature spider mites are usually yellowish or straw-colored and the adults are yellowish or green. In severe infestations, a fine web, similar to spider web will coat the plant's foliage. Bright red, fast moving, velvety mites are often present on plant foliage. These mites are predaceous and, therefore, considered beneficial. o Nematodes: microscopic, eel-like roundworms. Many species are root-feeding. They are difficult to control and can be easily spread from garden to garden on tools, in soil, or on boots. o Other pests: other insects, including cicadas, psyllids, leaf-feeding beetles, and gall-forming insects may be pests of ornamentals. Contact a pest management consultant if unsure of the identity of a pest. • Signs of pest infestation: o Leaves: chewed, spotted, curled, or otherwise disfigured leaves can indicate an insect or mite infestation. Plant pathogens, nutrient imbalances, and uptake of toxic substances can cause similar disfigurements of leaves. Consult with the pest management consultant when in doubt of the origin of plant damage. o Branches: girdled twigs are an indication of infestation by certain types of beetles. o Trunks: holes in the trunk or globules of plant resin can indicate infestation by certain types of boring beetles. o Ants: ants scurrying about the foliage of a plant may be a sign of infestation by certain plant feeding insects, especially scales, aphids, and mealybugs. These insects exude sugary waste products that ants feed upon. In return, the ants protect the plant feeding insects from predators and parasites.
SURVEY FREQUENCY/ SCHEDULE	Ornamental plants should be inspected weekly for pests or signs of pests.
ACTION THRESHOLD	Variable, depending on pest. A low-level of infestation is to be expected on outdoor plants. Natural controls (predators, parasites, and plant defenses) typically prevent these low-level infestations from significantly harming the plant. Infestations that significantly reduce plant health or seriously affect plant aesthetics are candidates for chemical control. Unnecessary or excessive pesticide application can compromise natural control by killing beneficial organisms and may lead to pesticide resistance.

NONCHEMICAL CONTROL		
TYPE	**PROCEDURES**	**RESPONSIBILITY**
BIOLOGICAL CONTROL	• Bti: Several formulations of the bacterial agent, *Bacillus thuringiensis israelensis* are available for use against certain pests, particularly caterpillars. • Fungi: some fungal pathogens of insects have been isolated and formulated for use against insect pests. • Natural control: Many pests of ornamentals are maintained at low, undamaging levels by the actions of natural enemies. Applying chemical pesticides only when necessary can help conserve these natural enemies. In some cases, universities and government agencies may be actively importing, rearing, and releasing natural enemies for control of particular pests.	GMP; Universities and government agencies (USDA-APHIS)
SANITATION	• Removing, burning, or chipping dead wood and other plant debris can reduce certain pest populations, particularly beetles. • Keep gardening tools clean so as not to carry pests from one plant to the next. • Only buy plants from reputable sources. Ensure that plants don't harbor ants, nematodes, invasive weeds, or other problems.	GMP
MECHANICAL REMOVAL	• Minor infestations: simply picking pests off of plants can sometimes control small infestations. This technique is typically not practical for large infestations or infestations on outdoor landscaping. • Severe infestations: in some cases, a plant may be so severely infested that there is little chance of control, or the cost of control is not justified by the value of the plant. These plants should be removed, and their tissues destroyed (chipping or burning) so that they do not serve as a source of pests for other plants.	All personnel; GMP
IMPROVE AND MAINTAIN PLANT HEALTH	• The best defense against pest infestations is maintenance of healthy, vigorous plants. Healthy plants will be able to tolerate low levels of infestation and prevent pest outbreaks. • Ensure proper watering, fertilizing, and pruning schedules. Do not over water or over fertilize. • Place plants in areas where they receive the appropriate quality and quantity of light.	GMP; LD
USE OF NATIVE VEGETATION LANDSCAPING	• Native plants are usually less susceptible to pests because they are well adapted to survival in the area. Consider using native vegetation rather than exotic vegetation in landscape design. • Grow a diversity of plants. Plant a variety of	GMP; LD

	sequentially flowering species to provide natural enemies with nectar, pollen, and shelter throughout the growing season.	
EDUCATION	Education on natural enemies	PMSP, PMPAR, IPMC
PROHIBITED PRACTICES	Use of ultrasonic pest repelling devices is prohibited.	
CURRENT NONCHEMICAL CONTROL PRACTICES	Maintain health of ornamental plants through proper watering and pruning.	
CHEMICAL CONTROL		
ACTIVE INGREDIENTS	A number of soap and oil insecticides are available. Many of these are "25(b)" or EPA minimum-risk pesticides and are exempt from registration due to the low toxicity of the active and inactive ingredients in the product. For a list of these active ingredients, go to http://www.epa.gov/oppbppd1/biopesticides/regtools/25b_list.htm.	
METHOD OF DISPERSAL	• Contact pesticides: may be sprayed directly onto infested plants. The pesticide must directly contact the pest for control. The applicator should concentrate on the undersides of leaves for most types of pests. Insecticidal soaps are a particular class of contact pesticide with very low toxicity to nontarget organisms. These can be particularly effective against some scale, mealybug, and mite infestations. • Systemic pesticides: these chemicals are absorbed by the plant and ingested by the pest when it feeds on the plant. Some systemics are applied to the foliage; others are applied to the soil and absorbed by the plant's roots.	
APPLICATION SITE	Ornamental trees, shrubs, and ground covers	
SITE PREPARATION	Pre-treatment procedures: • Identify pest species and affected plant species. If in doubt seek advice from pest management consultants. • Ensure that the pesticide will not adversely affect the plant. Many insecticides can damage plants if used on the wrong plants or at the incorrect dosage. • Check the local weather forecast. Rain can reduce or negate the effectiveness of a pesticide by washing it off the plant. If precipitation is expected in the next 24-hours, delay application. Rain can also result in excessive pesticide runoff into storm drains or other nontarget areas. • Modify irrigation schedule if necessary. Ensure that sprinklers do not come on immediately following a pesticide application. • Check the local wind conditions. Pesticides can drift into nontarget areas if applied during windy conditions. • Do not apply pesticides during high temperatures (>95 °F). This can result in excess vaporization of the pesticide, reduced efficacy, and excessive drift. Post-treatment procedures: • Survey the area to establish the efficacy of control. The length of time between application and survey is dependent upon the pest being controlled. • Multiple applications may be necessary, particularly if conditions during the first application were too warm, too dry, or too wet.	

SENSITIVE AREAS	• Use nonchemical controls whenever possible around playgrounds and childcare centers. • Avoid exposing natural areas containing endangered or threatened species. • Ensure that insecticides do not enter drains, streams, lakes and other surface water.
RESTRICTIONS/ REGULATIONS/ PERMITS	None
CONTRACTOR WORK CONSIDERATIONS	
TIME PERIOD TO RESPOND	Dependent on service levels, type of area, and type of pest. Prestige areas may require more rapid response.
TIME PERIOD TO OBTAIN CONTROL	Biological controls may require days to weeks before efficacy is apparent. Chemical insecticides, including 25(b), are usually immediate.
LEVEL OF CONTROL	Controls should be sustainable and provide long-term control.
PMPAR ASSESSMENT	• Pre- and post-treatment inspection of plants for pests and signs of pests. • Determine if follow-up treatment is needed. • Efficacy of some 25(b) pesticides is questionable and treatments with these should always be followed up until you determine that it is effective.
SAFETY CONDITIONS	• Applicators must use personal protective equipment as required by the product label. • Take precautions to prevent pesticide exposure to personnel when spraying near buildings or other populated areas.
ENVIRONMENTAL CONSIDERATIONS	Avoid contaminating water. Do not apply before rain or irrigation to prevent runoff.
SPECIAL APPLICATOR QUALIFICATIONS	None.

THIS PAGE IS INTENTIONALLY BLANK.

Raccoons

TARGET PEST AND SURVEY	
TARGET PEST(S)	Raccoons.
TARGET AREA(S)	Areas near buildings or populated areas where raccoons become a pest.
IMPACT ON MISSION	• Dangerous when they are cornered and become aggressive. • May carry rabies and raccoon roundworm which can infect humans. Both diseases can be fatal to humans. • Can cause severe damage to buildings and other structures.
SCOPE	Base-wide
RESPONSIBILTY	• Installation Preventive Medicine Technicians (PMTs): o Conduct surveys where raccoons pose a adverse health or safety risk, such as inside buildings • Pest Management Service Provider (PMSP): Conduct integrated pest management to control raccoons. • Pest Management Performance Assessment Representative (PMPAR): Ensure contractor PMSP performs work in accordance with contract specifications. • Facilities Maintenance Provider (FMP): Perform facilities repairs and improvements that exclude raccoons from buildings. • Base Operation Support: Ensure that dumpsters and trashcans are emptied on schedule and that they are securely covered to prevent raccoon entry. • All Installation Personnel: Practice good sanitation and do not feed wild animals to prevent attracting raccoons from becoming a pest.
REPORTING	• Report all pest management operations to the integrated pest management coordinator. • Contractors report conditions conducive to raccoon infestation to PMPAR.
SURVEY TECHNIQUES	• Visual sighting of raccoons or signs of raccoons. • Raccoons are nocturnal, so visual surveys are usually conducted at night. • Verify personnel reports of raccoon activity.
SURVEY FREQUENCY/ SCHEDULE	As needed
ACTION THRESHOLD	Any verified sighting of a raccoon where it enters a building or poses a safety or health hazard.
NONCHEMICAL CONTROL	

TYPE	PROCEDURES	RESPONSIBILITY
EXCLUSION	Use lids/covers that can be secured on dumpsters and trashcans.	FMP
SHOOTING	• Shooting with a .22 cal rifle may be used to control small populations in areas where: o shooting is legal o shooting can be safely conducted • Qualified marksmen should do shooting. • Not generally practical for large populations	Qualified marksman
TRAPPING	• Live cage-type traps should be used • Use cat food containing fish or canned tuna for bait. To avoid catching cats use marshmallows, grapes, prunes, peanut butter, or sweet rolls. • Ensure that the raccoon cannot reach through the back or side of the trap to steal the bait. • Secure trap to the ground to prevent the raccoon from tipping it over.	PMSP
FOOD REMOVAL	• Deny access to trash and other sources of food. • Prevent personnel from feeding raccoons.	GMP
PROHIBITED PRACTICES	• Use of ultrasonic pest repelling devices is prohibited. • Relocation of trapped animals greater than one mile from point of capture is prohibited by State law.	
CHEMICAL CONTROL		
Chemicals are not available for the control of raccoons.		

ADDITIONAL INFORMATION:

Raccoon biology and management
http://www.ipm.ucdavis.edu/PMG/PESTNOTES/pn74116.html

Information on raccoon roundworm infection
http://www.cdc.gov/parasites/baylisascaris/index.html

Rodents

TARGET PEST AND SURVEY	
TARGET PEST(S)	Commensal: Norway rats, roof rats, house mice Peridomestic: Field mice (i.e. deer mice) Landscape: gophers, ground squirrels
TARGET AREA(S)	Buildings, utility vaults, other structures, and landscaped areas
IMPACT ON MISSION	• May transmit disease • Contaminate food • Damage equipment • Nuisance / morale
SCOPE	All structures where rodents can potentially be a problem; Landscaped areas.

RESPONSIBILITY	• Building Occupants: Ensure sanitation and other measures to prevent introduction and propagation of pests.
	• Installation Preventive Medicine Technicians (PMT):
	  o Conduct surveys where rodents pose a adverse health or safety risk
	  o Provide informal quality assurance for pest control
	  o Provide pest management and disease prevention recommendations
	• Pest Management Service Provider (PMSP): Conduct integrated pest management to control infestations.
	• Pest Management Performance Assessment Representative (PMPAR): Ensure contractor pest management service provider performs work in accordance with contract specifications.
	• Facilities Maintenance Provider (FMP): Perform facilities repairs and improvements that exclude and minimize pest infestations as requested.
	• Grounds Maintenance Provider (GMP): Perform removal of potential food sources (i.e. fruit on trees) and creation of barriers (i.e. vegetation removal) around buildings that promote rodent invasion.
	• Natural Resource Manager: Provide guidance when rodent control operations may impact endangered or threatened species or species of concern.

REPORTING	• Report all pest management operations to the integrated pest management coordinator • Report rodent infestations to PMT if rodents pose an adverse health or safety risk.
SURVEY TECHNIQUES	• Visual inspections: observations of rodents or signs of rodents, such as nests, rubmarks, gnawing, earth mounds, holes, etc. • Use of tracking powder • Personnel complaints: including information on when pests were observed, where, and how many.

	• Conduct pre- and post-treatment surveys to determine whether control operation was effective • Use of ultraviolet inspection lights (rodent urine and hair will fluoresce under UV light)	
SURVEY FREQUENCY/ SCHEDULE	• Daily observation by building occupants. • Routine facilities inspections by cognizant PMT or pest control service provider.	
ACTION THRESHOLD	Sighting of any rodent or sign of rodent in or immediately surrounding the building.	
NONCHEMICAL CONTROL		
TYPE	**PROCEDURES**	**RESPONSIBILITY**
SANITATION	Remove or prevent access to all potential food and harborage sources inside and outside of buildings.	Building occupants, GMP
ELIMINATE STANDING WATER	Fix leaking plumbing around buildings	FMP
PEST PROOFING	• Trim ornamental plants and trees to prevent harborage. • Seal holes in exterior walls that may serve as entryways. • Trim tree limbs so that they are at least 6 feet from the building. • Trim vegetation around buildings. • Clean up debris from inside and around buildings. • Request support from facilities maintenance and/or grounds maintenance provider if necessary.	FMP
HABITAT DESTRUCTION	• For field mice, vegetation removal and disking of soil in a barrier 50 ft around buildings will prevent rodent invasion. This is usually done after area-wide rodenticide application. • Use of native landscaping will tend to reduce peridomestic and landscape rodent infestations. Avoid heavy ground covers that provide harborage and cover for rodents to move into buildings from unimproved grounds.	GMP
TRAPPING	Glue boards, snap traps, or other mechanical trapping devices. (see health precautions below)	PMSP; may be done by occupants
EDUCATION	• Awareness of the importance of sanitation on preventing rodents. • Understanding and preventing diseases associated with rodents.	PMSP, PMPAR, PMT, IPMC
PROHIBITED ITEMS	• Use of ultrasonic pest repelling devices is prohibited. • Myth: Allowing cats to live around buildings controls rodent population. Reality: Cats are	

	inefficient at rodent control especially when they are already being fed. In many situations, cats pose greater hazards than rodents.	
CHEMICAL CONTROL		
ACTIVE INGREDIENTS	• Second generation anti-coagulants: brodifacoum, bromadiolone, difenacoum, difethialone • First generation anti-coagulants: diphacinone, chlorophacinone, warfarin • Others: zinc phosphide, cholecalciferol, bromethalin • Fumigant: aluminum phosphide	
METHOD OF DISPOSAL	• Anticoagulant bait: Multi or single dose blocks or pellets; toxicant effect is delayed. • Single dose acute toxicant bait: Acute toxicant effect; often broadcast outdoors on ground. • Liquid bait: Used in areas where water sources are scarce. When used in occupied spaces or outdoors where there is a risk of exposure to humans and nontarget animals, the bait should be contained in a tamper-proof bait station. Baits can be applied directly into burrows. • Fumigation: Used for control of rodents in burrows. Consult a NAVFAC pest management consultant if necessary.	
APPLICATION SITE	Pesticides shall be applied as required based on survey information to areas where rodents are known to harbor, feed or travel.	
SITE PREPARATION	Pre-treatment procedures: • Pesticide applicator shall contact building occupants prior to pesticide applications. • All bait locations must be mapped. • Bait stations should be secured to prevent removal. • Bait stations must be properly labeled and marked with the date on which they were placed. Post-treatment procedures: • Bait stations should be checked to ensure that stations are filled, intact and no bait has fallen from them. • Remove bait stations once post-treatment surveys indicate that rodents have been eliminated.	
SENSITIVE AREAS	• Areas where humans and nontarget animals may come into contact with the rodenticide, particularly childcare centers. • Areas where endangered or threatened rodent species occur and may consume bait. • Areas where rodents may be primary food source for an endangered or threatened animal. • Habitat destruction to reduce food sources or harborage may also be destructive to critical habitats of endangered or threatened species. • The pest management coordinator shall consult the environmental compliance office before any pest management operations are conducted outdoors on unimproved grounds or wildlands.	
RESTRICTIONS/ REGULATIONS/ PERMITS	• All rodenticide baits are required to be applied in tamper-proof bait stations.	

CONTRACTOR WORK CONSIDERATIONS	
TIME PERIOD TO RESPOND	• Rodents indoors require an immediate response. • High priority areas (e.g. food service establishments) with known rodent problems may require continuous baiting as part of a recurring contract.
TIME PERIOD TO OBTAIN CONTROL	Trapping may take several days to complete. Some rodenticides have a delayed effect and may take 24–48 hours to kill the rodent.
LEVEL OF CONTROL	100% indoors
PMPAR ASSESSMENT	• Validate customer complaints and inspect for signs of rodent activity. Check to make sure rodenticides are sufficiently contained in tamper-proof bait stations.
SAFETY CONSIDERATIONS	• Active ingredients in rodenticides are highly toxic to humans and precautions must be taken to prevent human exposure. • Applicators must wear proper protective equipment as required by the product label.
ENVIRONMENTAL CONSIDERATIONS	• Rodenticides can adversely impact non-target animals through direct poisoning or secondary poisoning. • Traps, such as stick traps, may catch non-target animals such as reptiles and birds. These should only be used indoors.
SPECIAL APPLICATOR QUALIFICATIONS	None.

COMMENTS:

1. Precautions on indoor rodent control:

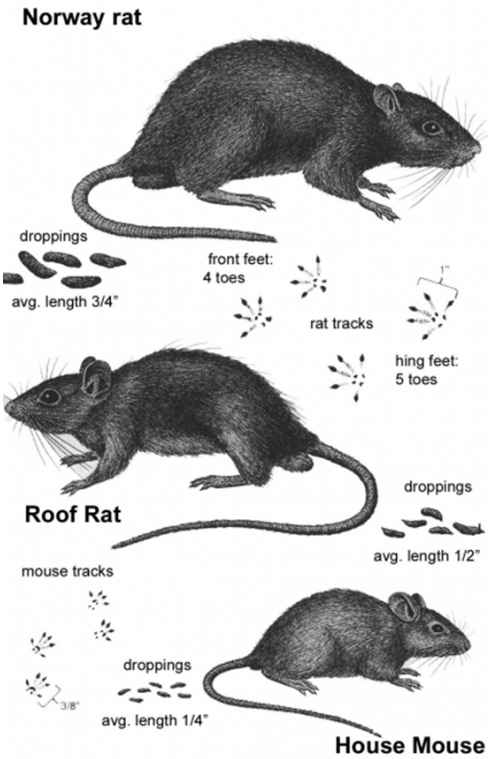
   a. Most rodents are infested with ectoparasites (fleas, mites, lice) that may also infest or transmit disease to humans. Ectoparasite control should be conducted prior to eliminating (trapping or rodenticides) rodents.

   b. Rat control indoors using rodenticides should be avoided. The most commonly used rodenticide baits have a delayed toxic effect that do not kill the rodent until hours (or days for multidose) after they have consumed the bait.

   c. Rodents may die in walls and other voids where the carcass is difficult to retrieve leading to odor problems due to the decaying carcass.

2. Disease Prevention:

   Rodents can harbor a number of human disease agents; among them are hantavirus and plague. Precautions must be taken when working in rodent infested areas. Rodent feces and dried urine may contain hantavirus that is transmitted when these waste materials are inhaled. Precautions should also be taken



when handling dead rodents in traps and when found after rodenticide use. The following precautions should be taken:

a. Avoid disturbing feces and other rodent waste when entering enclosed spaces. Use a fitted respirator with high efficiency particulate air (HEPA) filter if necessary.

b. Soak rodent waste and dead rodents with a household disinfectant or bleach solution before removing.

c. Wear gloves when cleaning or picking up rodent carcasses. Put material in a double plastic bag and dispose of in regular trash.

Additional Information:

Bait stations for controlling rats,
http://www.ianrpubs.unl.edu/epublic/pages/publicationD.jsp?publicationId=633

Rodent-proof construction and exclusion methods,
http://www.ces.ncsu.edu/nreos/wild/pdf/wildlife/RODENT_PROOF_CONSTRUCT.PDF

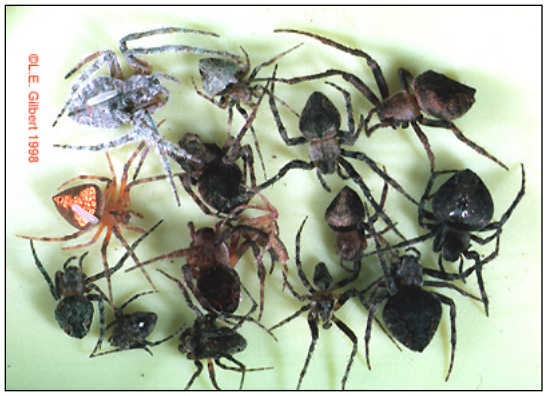
Non-chemical rodent control, http://edis.ifas.ufl.edu/mg218

THIS PAGE IS INTENTIONALLY BLANK.

Snails and Slugs

TARGET PEST AND SURVEY	
TARGET PEST(S)	Snails and slugs, particularly the brown garden snail (*Helix aspersa*) and the gray garden slug (*Peroceras reticulatum*), the banded slug (*Limax poirieri*), and the greenhouse slug (*Milax gagates*)
TARGET AREA(S)	Landscaped areas around buildings
IMPACT ON MISSION	• Damage to real property (landscaping plants) • The presence of unsightly snails and slugs on and around buildings
SCOPE	Base-wide
RESPONSIBILITY	• Pest Management Service Provider (PMSP): Conduct integrated pest management to control infestations. • Pest Management Performance Assessment Representative (PMPAR): Ensure contractor pest management service provider performs work in accordance with contract specifications. • Grounds Maintenance Provider (GMP): Maintain the health of ornamental plants.
REPORTING	Report all pest management operations to the integrated pest management coordinator
SURVEY TECHNIQUES	Visual sighting of pests: • Snails: Conspicuous, shelled slow moving animals found in moist habitats. Most active at night and on cloudy or foggy days. During hot dry periods, dormant snails may be seen attached to walls, fences, or tree trunks. • Slugs: Similar to snails, but without shell Signs of pest infestation: • Trails: Snails and slugs leave silvery mucus trails wherever they crawl. Trails may be present on the ground, on the foliage of plants, or on buildings. • Plant damage: Chew irregular holes with smooth edges in leaves of succulent and herbaceous plants. Prefer plants that are close to the ground, but will climb to feed on fruits and leaves of fruit trees.
SURVEY FREQUENCY/ SCHEDULE	Survey during normal landscape maintenance
ACTION THRESHOLD	Populations densities sufficient to cause a nuisance or significant damage to plants warrants control

NONCHEMICAL CONTROL		
TYPE	**PROCEDURES**	**RESPONSIBILITY**
BIOLOGICAL CONTROL	Decollate snail: A predaceous snail that feeds on young plant feeding snails and slugs. These snails pose a risk to endangered native snail populations, so their release is restricted to particular counties. They are not commercially available.	University and government agencies conducting biological control research
DRIP IRRIGATION	Replacing sprinklers with drip irrigation will reduce unnecessary moisture and therefore reduce the habitat for snails and slugs to hide	GMP
HABITAT REMOVAL	Remove debris, such as boards, flat stones, dead vegetation, and low hanging limbs that provide moist cover for snails and slugs during dry periods.	GMP
MECHANICAL REMOVAL	• Picking: Snails and slugs can be picked out of landscaped areas, placed in plastic bags, and disposed of in refuse containers. This method is not likely to be practical in large landscaped areas • Trapping: A board with two rails on opposite edges will serve as an attractive site for snails and slugs to hide during dry periods. The board can be periodically lifted and the snails and slugs removed.	PMSP; GMP
PEST PROOFING	Barriers: Consist of copper foil or screens. Copper foil can be wrapped around the bases of potted plants. Copper screen can be used to create barriers around gardens and landscaped areas.	GMP
IMPROVE PLANT VIGOR	Healthy plants will be less likely to succumb to damage by pests.	GMP
PROHIBITED PRACTICES	Use of ultrasonic pest repelling devices is prohibited.	
CHEMICAL CONTROL		
METHOD OF DISPERSAL	Baits: products containing metaldehyde or iron phosphate are effective for slug and snail control. Apply baits in the evening. Baits applied during hot dry conditions are less likely to be effective because snails and slugs will be inactive and therefore less likely to come in contact with the bait. **Note:** Do not use salt to kill snails and slugs. This will damage the soil and render it unusable for landscaping or gardening.	
APPLICATION SITE	• Landscaped areas • Gardens around housing	
SITE PREPARATION	Ensure that the area has been thoroughly irrigated to promote snail and slug activity.	
SENSITIVE AREAS	Products containing metaldehyde can be hazardous to children or pets. Emphasize nonchemical control and iron phosphate baits in areas frequented by children or pets.	



Spiders

TARGET PEST AND SURVEY	
TARGET PEST(S)	Various spiders. Medically important spiders such as the black widow (*Latrodectus hesperus*), the brown widow (*Latrodectus geometricus*), and the brown recluse (*Loxoceles reclusa*).
TARGET AREA(S)	Housing and child development centers where young children may be at risk for spider envenomation. Other areas where spiders are unwanted.
IMPACT ON MISSION	• May cause envenomation or painful, serious bites. • Discomfort or fear associated with the presence of spiders. • Nuisance due to webs
SCOPE	Medically-important spiders in occupied areas.
RESPONSIBILITY	• All Personnel: Ensure proper of all living and working spaces as spiders harbor in areas that are rarely disturbed. • Installation Preventive Medicine Technicians (PMT): Conduct sanitation inspections. Investigate reported spider bites. Provide control recommendations. • Pest Management Service Provider (PMSP): Conduct integrated pest management to control infestations. • Pest Management Performance Assessment Representative (PMPAR): Ensure contractor pest management service provider performs work in accordance with contract specifications.
REPORTING	• Report all pest management operations to the integrated pest management coordinator. • Refer serious spider bites to medical department.
SURVEY TECHNIQUES	• Visual inspections: Look for spiders and webbing in areas where people may be at risk for spider bites. • Personnel complaints: including information on when pests were observed, where, and how many. • Conduct pre- and post-treatment surveys to determine whether control operation was effective
SURVEY FREQUENCY/ SCHEDULE	• Daily observation by building occupants • Monthly inspections outdoors around buildings by PMSP to identify spiders.
ACTION THRESHOLD	Visual sighting of one medically-important spiders indoors/room.

NONCHEMICAL CONTROL		
TYPE	**PROCEDURES**	**RESPONSIBILITY**
VIGILANCE TO PREVENT BITES	Be cautious when entering areas that are infrequently visited and disturbed such as storage sheds, wood piles, attics, utility sheds, etc.	All personnel
SANITATION	• Routinely clean out storage areas. • Vacuum carpets and furniture routinely. • Remove webbing from ceilings.	All personnel, custodians
MECHANICAL REMOVAL	• Smash the spider. • Place a jar over the spider and slip a piece of paper under the opening. Relocate the spider outdoors. • Vacuum spiders and webs while cleaning. Use a wet/dry vacuum filled with water or carefully empty bag when done.	Building occupants
PEST PROOFING	• Avoid attracting flying insects to buildings with exterior lighting. Reducing flying insects near buildings will deny spiders of their food. Save energy and turn off lights, or use motion detectors or colored lamps that do not attract insects readily. • Seal cracks in the foundation and other parts of the structure and gaps around windows and doors.	Maintenance service provider, occupant/resident
EDUCATION	• Emphasize the importance of sanitation in preventing spiders. • Education and awareness to reduce the fear of spiders and to highlight the benefits of spiders	PMSP, PMPAR, PMT, IPMC
PROHIBITED PRACTICES	• Use of ultrasonic pest repelling devices is prohibited. • Use of aerosols, dusts and other insecticide formulations that can become airborne are prohibited in occupied spaces.	
CURRENT NONCHEMICAL CONTROL PRACTICES	• Sanitation: in indoor storage areas, place boxes off the floor and away from walls to reduce harborages. Seal boxes with tape. • Vigilance	All personnel
CHEMICAL CONTROL		
ACTIVE INGREDIENTS	Pyrethroids, silica gel, and other insecticides	

METHOD OF DISPERSAL	Pesticides are a last resort for recurring problems, since non-chemical control methods, particularly mechanical, are very effective. • Residual application: Pesticide applications should be done only as a last resort for recurring spider problems. • Liquid Aerosol: Most indoor-use insecticides do not leave a residual and require direct application to the spider. • Dust: Sorptive dusts, such as silica gel, that are formulated with pyrethrin can provide residual control. Preventive baseboard spraying in the absence of a pest is prohibited.
APPLICATION SITE	Pesticides shall be applied as required based on survey information to areas where spiders are found.
SITE PREPARATION	Pre-treatment procedures: • Visual inspections. • Pesticide applicator shall contact building occupants prior to pesticide applications. • Occupants must not be present during indoor spraying. Post-treatment procedures: • Remove webbing.
SENSITIVE AREAS	• Outdoors where children or pets may be exposed to pesticides. • Ensure that insecticides do not enter drains, streams, lakes and other surface water.
CONTRACTOR WORK CONSIDERATIONS	
TIME PERIOD TO RESPOND	Within 24 hours in high-risk areas where spiders pose an imminent threat to public health.
TIME PERIOD TO OBTAIN CONTROL	Immediate. Most insecticides used are contact toxicants and should result in immediate kill.
LEVEL OF CONTROL	100% indoors in high-risk areas. Control to acceptable levels in other areas.
PMPAR ASSESSMENT	Assessment is generally based on validated customer complaints
SAFETY CONSIDERATIONS	Applicators must use personal protective equipment as required by the product label. Insecticide liquid and dusts shall not be applied to occupied spaces.
ENVIRONMENTAL CONSEQUENCES	Minimal. Avoid contamination of water with pesticides.
SPECIAL APPLICATOR QUALIFICATIONS	None

COMMENTS:

The greatest problem posed by spiders is arachnophobia, the fear of spiders. Most spiders are harmless and are very beneficial in controlling insects around buildings. Education of the public is an important part of control.

Brown recluses—Many of the purported bites attributed to brown recluses are probably other arthropod bites, skin infections, or allergic reactions misdiagnosed as brown recluse bites. For general information on brown recluse identification, go to https://spiders.ucr.edu/recluseid.html.

Brown widow—venom is more potent than black widow venom. However, they do not inject as much venom as a black widow, are very timid, and do not defend their web so their bites are rare.

ADDITIONAL INFORMATION:

Eliminating spiders around homes and buildings, http://www2.ca.uky.edu/entomology/entfacts/ef623.asp

Common spiders in and around homes,
http://labs.russell.wisc.edu/insectid/files/2014/03/ControllingSpidersinandAroundHomes.pdf

Stinging Insects

TARGET PEST AND SURVEY	
TARGET PEST(S)	Bees, wasps, and yellow jackets
TARGET AREA(S)	Outdoors
IMPACT ON MISSION	• Cause painful stings, massive envenomization, or serious allergic reactions. • Removal of bee hives can cause property damage and attract other unwanted pests.
SCOPE	• Outdoors where stinging insects are a threat to people. • In occupied buildings and outbuildings where bees nest.
RESPONSIBILITY	• Installation Preventive Medicine Technicians (PMT): Evaluate medical threat of stinging insects if necessary • Pest Management Service Provider (PMSP): Conduct inspections and integrated pest management to control infestations through killing or removal. Arrange for removal of beehives in buildings. • Pest Management Performance Assessment Representative (PMPAR): Ensure contractor pest management service provider performs work in accordance with contract specifications. • Facilities Maintenance Provider (FMP) and Grounds Maintenance Provider (GMP): Report any stinging insect nest sightings.
REPORTING	• Report all pest management operations to the integrated pest management coordinator. • Unusually aggressive bee colonies should be reported to the PMT.
SURVEY TECHNIQUES	• Visual inspections: • Observation of insect nesting or swarming. • Routinely examine buildings for openings where bees or other stinging insects appear to be entering and exiting. • Personnel complaints: including information on when pests were observed, where, and how many. • Identify whether bees are swarming or nesting. (see remarks below)
SURVEY FREQUENCY/ SCHEDULE	As observed by personnel.

ACTION THRESHOLD	• Nesting bees, wasps, or yellow jackets near populated areas require immediate response. • Swarming bees, especially near areas where few people are found, should be left alone. • Swarming bees in areas that cannot be avoided by people and appear to be a threat should be controlled. • Individual bees are foraging and are docile, but may be nesting nearby.	
NONCHEMICAL CONTROL		
TYPE	**PROCEDURES**	**RESPONSIBLE PARTY**
DISCOURAGE AND ELIMINATE NESTS	Nests should be removed by trained personnel	PMSP
AVOIDANCE	Stay away from stinging insects if possible.	All personnel
ELIMINATE FOOD SOURCES	• Keep pet foods indoors. • Cover trash cans.	All personnel
ELIMINATE STANDING WATER	• Some stinging insects are attracted to water. • Repair leaking outdoor faucets and other mechanical water sources. • Eliminate standing water.	FMP; GMP
TRAPS (WASPS AND YELLOWJACKETS)	• <u>Wasps and yellow jackets</u>: o Trapping should start in the spring and be continued through the summer. Early elimination of queen will reduce the size of populations later in the year. o Lure traps—baited with a chemical attractant or with meat. o Water traps—Meat hung on a string hung 1-2 inches over a bucket of soapy water. Cover bucket with mesh to exclude other animals. • <u>Bees</u>: o Swarming bees can be lured into a trap that mimics a nesting site.	PMSP
MECHANICAL REMOVAL	Wet/dry vacuums may be used to remove bees, but should only be done by trained personnel.	PMSP
PEST PROOFING	• Seal holes in exterior walls of buildings. Request support from facilities maintenance provider if necessary. • Remove debris that can serve as nesting areas. • Cover tree holes.	FMP; GMP

CHEMICAL CONTROL	
METHOD OF DISPERSAL	• Aerosol knockdown agents: High pressure aerosols that can be applied from a long distance can be used. Application of these insecticides results in a rapid knockdown of the insects. • Dusts: Dusts can be applied to nesting areas. • Baits: Baits mixed with a toxicant can be used for wasps and yellow jackets
APPLICATION SITE	Pesticides shall be applied as required based on survey information to areas where stinging insects are known to harbor or rest.
SITE PREPARATION	Pre-treatment procedures: • Determine the extent of nesting in buildings to determine whether hive removal will be necessary after removing bees. • Ensure the safety of people in the immediate area of the treatment area. Do not allow unprotected bystanders to watch control procedures. • Pest management personnel should don protective bee suits. Post-treatment procedures: • Remove dead bees and hive material from buildings. • The melting of hive materials can cause extensive damage to building structures as well as attract other pests.
SENSITIVE AREAS	• Personnel that may be harmed by bees or pesticide application. • Buildings that may be damaged by hives. • Ensure that insecticides do not enter drains, streams, lakes and other surface water.

COMMENTS:

Notes regarding Africanized Honey Bees (AHB)

Africanized Honey Bees (AHB), or "killer bees" have colonized most of the southwestern United States, as well as parts of Florida, and are moving northward. Most feral colonies of bees in those areas are considered to be AHB colonies.

AHB are often mistaken to be more venomous than their European counterparts that are raised for honey production and pollination. The venom that AHB produce is not more toxic. In fact, AHBs inject less venom than EHBs because they are smaller. AHB are more dangerous than EHB because they exhibit a more aggressive response to a disturbance of their nest or colony. An "attack" usually involves a large number of bees resulting in a large number of stings; often ranging into the hundreds. Injuries in these types of attacks are the result of massive envenomation. Massive envenomation for small children, elderly and disabled persons and pets can be very serious and sometimes fatal.

Precautions that should be taken when dealing with any feral bee colony include:

1. Hiring a professional pest controller to kill or remove the bees.
2. Be aware of hives in the area. AHB are easily disturbed by loud noises or vibrations caused by lawn mowers and other machinery.
3. Warn people not to disturb hives or swarming bees.
4. Do not leave pets tied up in areas where they may be attacked by bees.
5. If attacked by bees, run and/or cover yourself up with a coat or heavy blanket or seek shelter in a building or a car immediately. Do not stop to swat at the bees or jump into water.

6. Call 911 or other emergency phone number in the event of an aggressive bee attack on a human.

Refer to Technical Information Memorandum (TIM) 34 "Bee Resource Manual with Emphasis on the Africanized Honey Bee" or view TG 34 on the Department of Defense Armed Forces Pest Management Board web site at http://www.afpmb.org/sites/default/files/pubs/techguides/TG34/TG34.pdf

ADDITIONAL INFORMATION:

Yellowjackets and other social wasps, http://www.ipm.ucdavis.edu/PMG/PESTNOTES/pn7450.html

Wasps and bees, https://edis.ifas.ufl.edu/topic_wasps_and_bees

Stored Product Pests in Food Storage Areas

TARGET PEST AND SURVEY	
TARGET PESTS	Beetles and moths that infest food products
IMPACT ON MISSION	Control of SPPs that may cause food contamination, medical problems, or be unsightly.
SCOPE	• Includes food items for human and animal consumption. • All food storage areas in food service facilities. • Fleet food storage and distribution warehouses. • Commissary and NEX food storage areas.
RESPONSIBLE PARTY	• Food Service Personnel: Ensure compliance with food handling regulations that prevent pest infestations; report infested food items to appropriate authority. • Installation Preventive Medicine Technicians (PMT): Conduct food service inspections, enforce food handling regulations, and provide pest management recommendations. • Pest Management Service Provider (PMSP): Conduct integrated pest management to control infestations. • Pest Management Performance Assessment Representative (PMPAR): Ensure contractor pest management service provider performs work in accordance with contract specifications. • U.S. Army Veterinary Services: Perform food quality inspections of storage facilities including surveys for SPPs.
REPORTING	• Report all pest management operations to the integrated pest management coordinator • Report infestations to PMT or U.S. Army veterinary technician for possible reporting to Defense Supply Center Philadelphia (DSCP) as a Suspected Hazardous Food Item per NAVSUP P-486 Volume 1.

SURVEY TECHNIQUES	• Visual inspections of food items before and during storage. Conduct in accordance with MILSTD 904B. • Attractant traps may be used to monitor movement and spread of SPPs in storage areas. They are inefficient as a means of control. Guidelines for the use of traps are found in AFPMB TG 27, Stored Product Pest Monitoring Methods • Personnel complaints	
SURVEY FREQUENCY/ SCHEDULE	• Particular attention should be given to animal feed which are a common source of infestation. • Daily observation by food service personnel • Monthly observation by cognizant Preventive Medicine personnel. • Routine food inspections by US Army veterinary technicians.	
ACTION THRESHOLD	• Observation of any number of SPP (whole insect, webbing, droppings, skins) inside or immediately outside of package. This should initiate a more thorough survey and control if necessary. • Observation of one SPP on a monitoring trap.	
NONCHEMICAL CONTROL		
TYPE	**PROCEDURES**	**RESPONSIBLE PARTY**
SANITATION	• Maintain thorough sanitation of food storage area • Clean up all spills immediately	Food service or storage officer or manager
PACKAGING AND STORAGE	• Ensure all packages are intact. Place in sealed insect proof containers if available • Repair any torn packages • Rotate food items: “first-in-first-out”; do not allow food to remain stored for long periods of time • Store on pallets off the floor. • Maintain adequate ventilation and lighting in storerooms.	Food service or storage officer or manager
ISOLATION	Remove infested items from the storeroom if they can’t be disposed of immediately.	Food service or storage officer or manager
MECHANICAL REMOVAL	Vacuuming, sweeping, mopping of floors on which SPPs are found may be used. Ensure that a wet/dry vacuum filled with water is used or remove, empty, and dispose of vacuum bag immediately.	Food service or storage officer or manager
FREEZING/ HEATING	SPPs may be killed by freezing or cooking. Insects can be removed from food item by sifting	Food service or storage officer or manager
SURVEY (DISPOSAL)	Dispose of infested food items (see MILSTD 904B for guidance)	Food service or storage officer or manager

CHEMICAL CONTROL	
METHOD OF DISPERSAL	• Since many infestations are confined to the food packages, nonchemical methods are the preferred control method. • Crack and Crevice Applications: The pest management service provider may apply (by crack and crevice technique) a contact or residual pesticide spray to areas in storerooms where insects may be found after leaving infested packages. • Insect Growth Regulators: Insect growth regulators (IGR) prevent immature insect larvae from developing into mature adults. IGRs may be useful for chronic SPP problems, but cannot be applied to food or cause immediate kill of the pest. It must be used in conjunction with other forms of control. • Fumigation: Consult a NAVFAC pest management consultant before considering fumigation. Fumigation can be performed on pallets of food items. It will penetrate most materials to kill insects inside the food without harming or making inedible the food item. Preventive baseboard spraying of a residual pesticide in the absence of a pest is prohibited.
APPLICATION SITE	Pesticides shall be applied to cracks and crevices and building surfaces as required based on survey information. Pesticides, except fumigants labeled for food package treatment, shall not be applied to food or food packages.
SITE PREPARATION	Remove food items from storeroom before pesticides are applied.
PROHIBITED PRACTICES	Use of aerosols, dusts and other insecticide formulations that can become airborne are prohibited in occupied spaces.
SENSITIVE AREAS	• Exposed food products, food containers, counter tops, on any surface where food may be stored or prepared, or any food storage area. • Ensure that insecticides do not enter drains, streams, lakes and other surface water.

COMMENTS:

Review TG 29, Integrated Pest Management In and Around Buildings or view the Department of Defense Armed Forces Pest Management Board web site at
http://www.afpmb.org/sites/default/files/pubs/techguides/tg29.pdf

Review TG 27, Stored Product Pest Monitoring Methods at
http://www.afpmb.org/sites/default/files/pubs/techguides/tg27.pdf

THIS PAGE IS INTENTIONALLY BLANK.

Subterranean Termites

TARGET PEST AND SURVEY	
TARGET PEST(S)	Several species of termites in the family Rhinotermitidae, particularly the western subterranean termite, *Reticulitermes hesperus*
TARGET AREA(S)	Structures containing wood
IMPACT ON MISSION	Reduces the aesthetics and integrity of real property.
SCOPE	Base-wide
RESPONSIBILITY	• All Personnel: Report termite damage and signs to the Pest Management Coordinator. • Pest Management Service Provider (PMSP): Conduct integrated pest management to control infestations. • Facilities Maintenance Provider (FMP): Provide facility repairs and modifications needed for termite exclusion. • Pest Management Performance Assessment Representative (PMPAR): Ensure contractor pest management service provider performs work in accordance with contract specifications.
REPORTING	Report all pest management operations to the integrated pest management coordinator.
SURVEY TECHNIQUES	Visual inspections: • Inspect wood that is touching or near the soil surface. • Pay particular attention to wood that is damp • Look for shelter tubes in crawl spaces and in walls. • Termite galleries will be filled with excrement and other debris • Infested wood may be discolored (darkened) and can often be easily punctured by a knife or screwdriver. • The surface of a severely damaged piece of wood may appear blistered or peeled.
SURVEY FREQUENCY/ SCHEDULE	• Annually in most regions • Biannually in arid regions
ACTION THRESHOLD	Presence of termites indicates a need for treatment

NONCHEMICAL CONTROL

TYPE	PROCEDURES	RESPONSIBILITY
BUILDING DESIGN AND MAINTENANCE	• Several design and construction techniques can help prevent subterranean termite infestations o Use wood species that are resistant to termite attack o Keep all wooden components at least 12-inches above the surface of the soil o Replace soil around the foundation of the building with sand (particle size ranging from 10 to 16 mesh) o Provide adequate ventilation in crawl spaces to keep wood dry. o Before pouring slab, install termite-resistant mesh and eliminate openings around plumbing and other utilities protruding from slab. • Reduce excess moisture in the building by correcting leaky plumbing and moisture associated with air conditioning condensate	Facilities planning, design, and construction personnel; FMP
PEST PROOFING	• Use screening over vents and other openings to discourage entry by winged reproductives. • Remove scrap wood from around structures.	FMP
SAND BARRIER	Replace soil around foundation and in crawl spaces with sand. Sand particles should be 10 to 16 mesh. Termites are unable to tunnel through sand.	
EDUCATION	Difference between a winged ant and a termite swarmer.	PMSP, PMPAR, IPMC
PROHIBITED PRACTICES	Use of ultrasonic pest repelling devices is prohibited.	
CHEMICAL CONTROL		
ACTIVE INGREDIENTS	Fipronil, sulfuramid., diflubenzuron, hydramethylnon, chlorantraniliprole, and others.	
METHOD OF DISPERSAL	• Chemically Treated Lumber: Lumber to be used near the soil surface is impregnated (pressure treated) with a variety of repellent/fungicidal/insecticidal chemicals prior to construction. Some of these products are also available to topical application to wood after construction. These products are not effective for controlling pre-existing termite infestations. • Pre-Construction Soil Treatment: The soil under and around the perimeter of a slab is treated with an insecticide prior to construction. The insecticide acts as a barrier, either by killing termites that contact the treated soil or repelling foraging termites. Only non-repellent termiticides should be used. • Soil Insecticide Injection: This is the most common method for controlling termites if a pre-construction chemical barrier fails or was never applied. Holes are drilled through the foundation of the building, and insecticides are injected into the soil. Insecticides will kill termites already infesting the building and prevent future infestations for several years. A licensed professional is recommended, applying pesticide to the wrong place can cause contamination in the pluming or heating ducts. • Baits: Bait stations containing a slow acting insecticide are placed around the	

	building. Termites feed on the bait, then return to the colony where they share the bait with other members of the colony. Some baits are available to the general public whereas others are available only to licensed pest management personnel. Proper bait placement is critical to the success of the procedure, and is therefore best performed by pest management personnel with experience in termite baiting.
APPLICATION SITE	• Construction sites determined to be good candidates for pre-treatment. • Structures infested with termites.
SITE PREPARATION	Pre-treatment procedures: • Visual inspection of crawl spaces and review of structural plans to determine the best locations for insecticide injections. • Cover furnishings and surfaces to protect from dust generated during drilling. Post-treatment procedures: • Thoroughly clean surfaces and furnishings that may have been covered with dust during drilling • Plug drill holes with cement, caulking, or other appropriate material and repair any other damages associated with drilling and termite survey.
SENSITIVE AREAS	• If properly applied, insecticide pre-treatments and injections should pose little risk of unwanted insecticide exposure. • Bait stations should be placed to minimize the chances that children or facilities maintenance personnel will disturb them. • Ensure that insecticides do not enter drains, streams, lakes and other surface water.
CONTRACTOR WORK CONSIDERATIONS	
TIME PERIOD TO RESPOND	Subterranean termite infestations progress very slowly. Take time to select the proper control measures and PMSP.
TIME PERIOD TO OBTAIN CONTROL	Termiticides are slow acting. Treatments target not only foragers, but also the colony and queen as well and require time before there is a noticeable effect.
LEVEL OF CONTROL	Once the colony is destroyed, the control level should be 100%.
PMPAR ASSESSMENT	Observe mixing and application during pre-construction treatments to ensure that the PMSP uses the proper concentration and amount of termiticide and that the ground is thoroughly treated to prevent “gaps.” Conduct pre- and post-treatment surveys with PMSP for post construction treatments to determine efficacy.
SAFETY CONSIDERATIONS	Applicators must use personal protective equipment as required by the product label.
ENVIRONMENTAL CONSIDERATIONS	Termiticides leave a long residual in soil. Care must be taken when applying to prevent contamination of non-target areas.
SPECIAL APPLICATOR QUALIFICATIONS	None

THIS PAGE IS INTENTIONALLY BLANK

Terrestrial Weeds

TARGET PEST AND SURVEY	
TARGET PEST(S)	Grass-like, Broadleaf, and Woody weeds growing on land
TARGET AREA(S)	• Landscaped areas • Natural areas threatened by invasive weeds
IMPACT ON MISSION	• Fire hazard • Vegetation coverage for rodents and other pests • Spread of invasive species
SCOPE	Base-wide
RESPONSIBILITY	• Pest Management Service Provider (PMSP): Conduct integrated pest management to control weeds. • Pest Management Performance Assessment Representative (PMPAR): Ensure contractor pest management service provider performs work in accordance with contract specifications. • Grounds Maintenance Provider (GMP): Remove weeds during regular landscape maintenance to prevent establishment; maintain the health of desirable plants.
REPORTING	• Report all pest management operations to the integrated pest management coordinator. • Report invasive weed control operations to Natural Resources Personnel in cases where weeds are being removed to protect or restore natural habitats.
SURVEY TECHNIQUES	Visual sighting
SURVEY FREQUENCY/ SCHEDULE	• Daily inspection of areas with extreme fire hazard • Weekly inspection of landscaped areas. Can be done in conjunction with regular landscape maintenance. • Yearly inspection of natural habitats targeted for ongoing weed-abatement programs
ACTION THRESHOLD	Areas of installations where ordinance or other flammable/explosive materials are stored have zero tolerance for weeds due to fire hazard. Consequently, visual sighting of any weed warrants control.

NONCHEMICAL CONTROL		
TYPE	**PROCEDURES**	**RESPONSIBILITY**
MECHANICAL REMOVAL	• Pulling or hoeing: Pulling can be done either by hand or with tools such as the weed wench which works well on large plants. Try to pull up as much root as possible as roots can sprout new shoots. Digging or hoeing is sometimes used in conjunction with pulling to remove the entire root. Follow up work will be necessary until desired plants become well established. • Mulching: Mulch shades the soil surface and kills sprouting weeds. Mulching also keeps lawn mowers away from ornamentals. • Mowing: Mow unwanted plants before they have a chance to set seeds. • Chaining: Chains are dragged across the top of target weeds, destroying the canopy and reducing weed density. • Root plowing: Horizontal blades beneath the surface of the ground sever the root system of target weeds	GMP
STEAM	Steam applied to foliage will often kill plants. This technique is unlikely to be cost effective for most weed-control situations	GMP, PMSP
IMPROVE PLANT VIGOR	• Landscaping plants that are healthy will be better able to compete with weeds, thereby slowing the rate of weed invasion. • Maintain proper watering, fertilizing, and pruning schedules for desirable landscaping plants. This is particularly important for managing crabgrass in turf.	GMP
MULCH	• Organic mulches include wood chips, sawdust, yard waste, and bark chips. Course textured mulches should be applied up to 4 inches deep. Fine textured mulches should be applied to a depth of about 2 inches. • Inorganic mulches include sand, gravel, and pebbles. Use a porous landscape fabric underneath to prevent mulch from sinking into soil. • Synthetic mulches include geotextiles and landscape fabric. Synthetic mulches can be used in conjunction with organic and inorganic mulches.	Landscaper

CHEMICAL CONTROL	
ACTIVE INGREDIENTS	Glyphosate and others
METHOD OF DISPERSAL	• Pre-emergent: Herbicide is applied to the soil before the weed emerges, preventing the weed from developing. The chemical should be applied to the soil just before seed germination. Selective pre-emergents must be used so that desirable landscape plants are not harmed. • Foliar-sprayed post-emergent: Herbicide is sprayed directly onto the foliage of the weed. Post-emergents should be applied after the weed emerges, but before seed set. Foliar application is most effective when weeds are young. • Soil-applied post-emergent: Herbicide is applied to the soil around the weed. The herbicide is absorbed by the plant through its root system. • Stump treatment: Herbicide is applied to stumps immediately following cutting. For trees, the herbicide needs to cover the cambium which is located between the bark and wood. The herbicide prevents the tree or weed from growing stump-sprouts in the next growing season. • Weed and feed products: Some fertilizers are formulated with herbicides to prevent the growth of weeds. Note: Correct timing of the herbicide application is often essential for effective weed control. Timing will depend on the species of weed, the mode of action and persistence of the herbicide, nonchemical practices in use, soil conditions, and climate.
APPLICATION SITE	Herbicides shall be applied as required based on survey information to areas where target weeds are problematic.
SITE PREPARATION	Pre-treatment procedures: • Check the local weather forecast. Rain can reduce or negate the effectiveness of an herbicide by washing the herbicide off the plant. If precipitation is expected in the next 24-hours, delay application. • Modify irrigation schedule if necessary. Ensure that sprinklers do not come on immediately following an herbicide application. • Check the local wind conditions. Herbicides can drift and effect nontarget plants if applied during windy conditions. • Do not apply herbicides during high temperatures (>95 °F), as this can result in excess vaporization of the herbicide. Post-treatment procedures: • Survey the area to establish the efficacy of control. The length of time between application and survey is dependent upon the species of weed being controlled. • Multiple applications may be necessary, particularly if conditions during the first application were too warm, too dry, or too wet.
SENSITIVE AREAS	• Use mechanical controls instead of chemical controls whenever possible around playgrounds and childcare centers. • Avoid exposing natural areas containing endangered or threatened plant or animal species. • Prevent pesticide drift into sensitive areas and onto desirable landscape plants.

CONTRACTOR WORK CONSIDERATIONS	
TIME PERIOD TO RESPOND	Dependent on service levels.
TIME PERIOD TO OBTAIN CONTROL	Dependent on service levels.
LEVEL OF CONTROL	Dependent on service levels.
PMPAR ASSESSMENT	Visual observations are done during routine grounds maintenance.
SAFETY CONSIDERATIONS	Applicators use personal protective equipment required by the product label.
ENVIRONMENTAL CONSIDERATIONS	Prevent drift of herbicides to non-target areas and prevent contact with desirable plants. Avoid contaminating water.
SPECIAL APPLICATOR QUALIFICATIONS	None. All for-hire personnel applying pesticides must be licensed/certified as pesticide applicators.

ADDITIONAL INFORMATION:

Non-chemical methods are preferred.

Weeds in Right-of-Ways

TARGET PEST AND SURVEY	
TARGET PESTS	Grasses and broadleaf and woody weeds
TARGET AREA(S)	Fence lines, road shoulders, parking lots, around fuel storage tanks, and sidewalks.
IMPACT ON MISSION	• Fire hazard • Damage to paved surfaces • Dense weeds encourage rodent and other pest infestations • Weeds along roadways hide wildlife increasing the risk for vehicle and animal collisions • Impair sight lines along security fences • Degrade aesthetics.
SCOPE	Basewide, semi-improved grounds and pavement
RESPONSIBLE PARTY	• Pest Management Service Provider (PMSP): Conduct integrated pest management to control weeds • Pest Management Performance Assessment Representative (PMPAR): Ensure contractor pest management service provider performs work in accordance with contract specifications. • Grounds Maintenance Provider (GMP): Mowing to reduce height of weeds. May be the PMSP.
REPORTING	Report all pest management operations to the integrated pest management coordinator.
SURVEY TECHNIQUES	Visual observation and identification during routine inspections. Annual surveys of roadways and fence lines.
SURVEY FREQUENCY/ SCHEDULE	• Daily inspection of area with extreme fire hazard. • Weekly inspection of landscaped areas. Can be done in conjunction with regular landscape maintenance.
ACTION THRESHOLD	Areas of installations where ordnance or other flammable/explosive materials are stored have zero tolerance for weeds due to fire hazard. Consequently, visual sighting of any weed warrants control.

NONCHEMICAL CONTROL		
TYPE	**PROCEDURES**	**RESPONSIBILITY**
MECHANICAL REMOVAL	• Pulling or hoeing: Pulling can be done either by hand or with tools such as the weed wench which works well on large plants. Try to pull up as much root as possible as roots can sprout new shoots. Digging or hoeing is sometimes used in conjunction with pulling to remove the entire root. Follow up work will be necessary until desired plants become well established. • Mowing: Mow unwanted plants before they have a chance to set seeds. • Chaining: Chains are dragged across the top of target weeds, destroying the canopy and reducing weed density. • Root plowing: Horizontal blades beneath the surface of the ground sever the root system of target weeds.	GMP
STEAM	Steam applied to foliage will often kill plants. This technique is unlikely to be cost effective for most weed-control situations	PMSP
PLANT COMPETITION	Plant areas with desirable, low-height plants to outcompete weeds such as invasive grasses.	Landscape architect, landscaper
WEED CONTROL MAT	Comes in roll form and is composed of synthetic polyester fibers spun tightly together to prevent weed growth by blocking sunlight, yet still allowing water percolation for drainage.	Landscape architect
MULCH	• Organic mulches include wood chips, sawdust, yard waste, and bark chips. Course textured mulches should be applied up to 4 inches deep. Fine textured mulches should be applied to a depth of about 2 inches. • Inorganic mulches include sand, gravel, and pebbles. Use a porous landscape fabric underneath to prevent mulch from sinking into soil. • Synthetic mulches include geotextiles and landscape fabric. Can be used in conjunction with organic and inorganic mulches.	Landscaper

CHEMICAL CONTROL	
ACTIVE INGREDIENTS	Imazapyr, dichlobenil, bromacil, diuron, pendimethalin, prometon, tebuthiuron, hexazinone, dicamba, 2,4-D, diflufenzopyr, glyphosate, triclopyr, metsulfuron methyl, paraquat, sulfometuron, and others.
METHOD OF DISPERSAL	• Pre-emergent: Herbicide is applied to the soil before the weed emerges, preventing the weed from developing. The chemical should be applied to the soil just before seed germination. Selective pre-emergents must be used so that desirable landscape plants are not harmed. • Foliar-sprayed post-emergent: Herbicide is sprayed directly onto the foliage of the weed. Post-emergents should be applied after the weed emerges, but before seed set. Foliar application is most effective when weeds are young. Use spot treatment of weeds on paved areas. • Soil-applied post-emergent: Herbicide is applied to the soil around the weed. The herbicide is absorbed by the plant through its root system. Applications can be made to soil or paved surfaces. Herbicide treatments can also be made to graded surfaces prior to pouring asphalt or concrete during road or walkway construction. Note: Correct timing of the herbicide application is often essential for effective weed control. Timing will depend on the species of weed, the mode of action and persistence of the herbicide, non-chemical practices in use, soil conditions, and climate.
APPLICATION SITE	Herbicides shall be applied as required to areas where target weeds are problematic based on survey information.
SITE PREPARATION	Pre-treatment procedures: • Check the local weather forecast. Rain can reduce or negate the effectiveness of an herbicide by washing the herbicide off the plant. If precipitation is expected in the next 24-hours, delay application. • Modify irrigation schedule if necessary. Ensure that sprinklers do not come on immediately following an herbicide application. • Check the local wind conditions. Herbicides can drift and effect non-target plants if applied during windy conditions. • Do not apply herbicides during high temperatures (>95 °F), as this can result in excess vaporization of the herbicide. Post-treatment procedures: • Survey the area to establish the efficacy of control. The length of time between application and survey is dependent upon the species of weed being controlled. • Multiple applications may be necessary, particularly if conditions during the first application were too warm, too dry, or too wet.
SENSITIVE AREAS	• Use mechanical controls instead of chemical controls whenever possible around playgrounds and childcare centers. • Avoid exposing natural areas containing endangered or threatened plant or animal species. • Prevent herbicide drift onto desirable landscape plants.

CONTRACTOR WORK CONSIDERATIONS	
TIME PERIOD TO RESPOND	Dependent on service levels. Can be scheduled annually for pre-emergent applications
TIME PERIOD TO OBTAIN CONTROL	Dependent on service levels. May take several days before signs of herbicide effect appear.
LEVEL OF CONTROL	Dependent on service levels. Complete removal of weeds from sidewalks and other paved surfaces. For fence lines, weeds should be low enough to maintain site liens. Around fuel tanks, weeds should be maintained to reduce fire risk.
PMPAR ASSESSMENT	Visual observations are done during routine grounds maintenance. Post-treatment inspections should also be performed.
SAFETY CONSIDERATIONS	Applicators use personal protective equipment required by product label.
ENVIRONMENTAL CONSIDERATIONS	Prevent drift of herbicides to non-target area and prevent contact with desirable plants. Avoid contaminating water.
SPECIAL APPLICATOR QUALIFICATIONS	None. All for-hire personnel applying pesticides must be licensed/certified as pesticide applicators. Small areas can be treated by non-certified personnel using ready-to-use glyphosate in an authorized self-help program.

ADDITIONAL INFORMATION:

Roadside Weed Management:
http://edis.ifas.ufl.edu/topic_roadside_weeds

Weed Control Mat:
http://www.dot.ca.gov/hq/LandArch/roadside/detail-fwc.htm

References

Armed Forces Pest Management Board. (2011). Armed Forces Pest Management Board Technical Guide No. 13, Dispersal of Ultra Low Volume (ULV) Insecticides by Cold Aerosol and Thermal Fog Ground Application Equipment. Washington, DC: Armed Forces Pest Management Board Retrieved from http://www.afpmb.org/sites/default/files/pubs/techguides/tg13.pdf.

Armed Forces Pest Management Board. (2009). Armed Forces Pest Management Board Technical Guide No. 15, Pesticide Spill Prevention and Management. Silver Spring, MD: Armed Forces Pest Management Board Information Services Division Retrieved from http://www.afpmb.org/sites/default/files/pubs/techguides/tg15.pdf.

Armed Forces Pest Management Board. (2009). Armed Forces Pest Management Board Technical Guide No. 29, Integrated Pest Management (IPM) in and Around Buildings. Silver Spring, MD: Armed Force Pest Management Board Retrieved from http://www.afpmb.org/sites/default/files/pubs/techguides/tg29.pdf.

Armed Forces Pest Management Board. (2012). Armed Forces Pest Management Board Technical Guide No. 37, Integrated Management of Stray Animals on Military Installations. Washington, DC: Armed Forces Pest Management Board Retrieved from http://www.afpmb.org/sites/default/files/pubs/techguides/tg37.pdf.

Armed Forces Pest Management Board. (2005). Armed Forces Pest Management Board Technical Guide No. 38, Protecting Meal, Ready-to-Eat Rations (MREs) and Other Subsistence during Storage. Washington, DC: Defense Pest Management Information Analysis Center Retrieved from http://www.afpmb.org/sites/default/files/pubs/techguides/tg38.pdf.

Armed Forces Pest Management Board. (2013). Armed Forces Pest Management Board Technical Guide No. 41, Protection from Rodent-Borne Diseases with Special Emphasis on Occupational Exposure to Hantavirus. Washington, DC: Defense Pest Management Information Analysis Center Retrieved from http://www.afpmb.org/sites/default/files/pubs/techguides/tg41.pdf.

Armed Forces Pest Management Board. (2012). Armed Forces Pest Management Board Technical Guide No. 44, Bed Bugs-Importance, Biology, and Control Strategies. Silver Spring, MD: Armed Forces Pest Management Board Retrieved from http://www.afpmb.org/sites/default/files/pubs/techguides/tg44.pdf.

Certification of Pesticide Applicators, 40 C.F.R. § 171 (2013) Retrieved from http://www.ecfr.gov/cgi-bin/text-idx?tpl=/ecfrbrowse/Title40/40cfr171_main_02.tpl.

Chief of Naval Operations Instruction (OPNAVINST) 5100.23G w/CH-1 (2011), Navy Safety and Occupational Health Program Manual Retrieved from http://www.public.navy.mil/navsafecen/Documents/OSH/SafetyOfficer/5100.23G_CH-1_with_updated_links.pdf.

Chief of Naval Operations Instruction (OPNAVINST) 6210.2 (2006), Quarantine Regulations of the Navy Retrieved from

http://doni.daps.dla.mil/Directives/06000%20Medical%20and%20Dental%20Services/06-200%20Preventive%20Medicine%20Services/6210.2.pdf.

Chief of Naval Operations Instruction (OPNAVINST) 6250.4C (2012), Navy Pest Management Programs Retrieved from http://doni.daps.dla.mil/Directives/06000%20Medical%20and%20Dental%20Services/06-200%20Preventive%20Medicine%20Services/6250.4C.pdf.

Control of Pesticides (2014) District of Columbia Municipal Regulations, Title 20, Chapter 22 Retrieved from http://green.dc.gov/pestrules.

Council on Environmental Quality, "Instructions for Implementing Executive Order 13423, Strengthening Federal Environmental, Energy, and Transportation Management," March 29, 2007 (http://www.whitehouse.gov/sites/default/files/omb/procurement/green/eo13423_instructions.pdf)

Department of Defense Directive (DODD) 5134.01 w/CH-1 (2008), Under Secretary of Defense for Acquisition, Technology, and Logistics (USD(AT&L)) Retrieved from http://www.dtic.mil/whs/directives/corres/pdf/513401p.pdf.

Department of Defense Instruction (DODI) 4150.07 (2008), DOD Pest Management Program Retrieved from http://www.dtic.mil/whs/directives/corres/pdf/415007p.pdf.

Department of Defense Instruction (DODI) 4715.17 (2009), Environmental Management Systems Retrieved from http://www.dtic.mil/whs/directives/corres/pdf/471517p.pdf.

Department of Defense Manual (DODM) 4150.07, Volume 1 (2013), DOD Pest Management Training and Certification Program: The DOD Plan for Pesticide Applicators Retrieved from http://www.dtic.mil/whs/directives/corres/pub1.html.

District Department of the Environment. (2011). Act to Amend the Pesticide Operations Act of 1977 Retrieved from http://green.dc.gov/publication/act-amend-pesticide-operations-act-1977.

eBusiness Operations Office Instruction (EBUSOPSOFFINST) 4200.1A (2003), Department of Navy Policies and Procedures for the Operation and Management of the Government Commercial Purchase Card Program Retrieved from http://www.acq.osd.mil/dpap/Docs/pcard/DoN_OI_4200-1a.pdf.

Exemption of Federal and State Agencies for Use of Pesticides under Emergency Conditions, 40 C.F.R. § 166 (2013) Retrieved from http://www.ecfr.gov/cgi-bin/text-idx?tpl=/ecfrbrowse/Title40/40cfr166_main_02.tpl.

Federal Compliance with Right-to-Know Laws and Pollution Prevention Requirements, Exec. Order No. 12856, 58 Fed. Reg. 41981 (1993) Retrieved from http://www.archives.gov/federal-register/executive-orders/pdf/12856.pdf.

Federal Leadership in Environmental, Energy, and Economic Performance, Exec. Order No. 13514, 74 Fed. Reg. 52117 (2009) Retrieved from http://www.gpo.gov/fdsys/pkg/FR-2009-10-08/pdf/E9-24518.pdf.

Integrated Pest Management, 7 U.S.C. § 136r-1 (2012) Retrieved from http://www.law.cornell.edu/uscode/text/7/136r-1.

Interagency Cooperation, 16 U.S.C. § 1536 (2012) Retrieved from http://www.law.cornell.edu/uscode/text/16/1536.

Interagency Cooperation—Endangered Species Act of 1973, as amended, 50 C.F.R. § 402 (2013) Retrieved from http://www.ecfr.gov/cgi-bin/text-idx?tpl=/ecfrbrowse/Title50/50cfr402_main_02.tpl.

Kruger, G. R., Klein, R. N., & Ogg, C. L. (2013). Spray Drift of Pesticides. NebGuide, G1773, 1-4. Retrieved from http://www.ianrpubs.unl.edu/epublic/live/g1773/build/g1773.pdf.

Labeling Requirements for Pesticides and Devices, 40 C.F.R. § 156 (2013) Retrieved from http://www.ecfr.gov/cgi-bin/text-idx?SID=5f3e9ad05dd2738b5e52c9645c3a2f0b&node=40:25.0.1.1.7&rgn=div5.

Manual of Naval Preventive Medicine (NAVMED P) 5010-1 (2004), Chapter 1, Food Safety Retrieved from http://www.med.navy.mil/directives/Pub/5010-1%20with%20CH-1%20Incl.pdf.

Manual of Naval Preventive Medicine (NAVMED P) 5010-8 (2004), Chapter 8, Navy Entomology and Pest Control Technology Retrieved from http://www.med.navy.mil/directives/Pub/5010-8.pdf.

Marine Corps Order Plan (MCO P) 5090.2A (2009), Environmental and Compliance Manual Retrieved from http://www.marines.mil/Portals/59/MCO%20P5090.2A%20W%20CH%201-3.pdf.

National Oil and Hazardous Substances Pollutant Contingency Program, 40 C.F.R. § 300 (2013) Retrieved from http://www.ecfr.gov/cgi-bin/text-idx?tpl=/ecfrbrowse/Title40/40cfr300_main_02.tpl.

Navy and Marine Corps Public Health Center Technical Manual (NMCPHC-TM) 6260.96-2 (2006), Occupational and Environmental Medicine Field Operations Manual Retrieved from http://www.med.navy.mil/sites/nmcphc/Documents/oem/OccMedFieldOpsManual_Aug2006.pdf/

Occupational Safety and Health Standards, 29 C.F.R. § 1910 (2013) Retrieved from http://www.ecfr.gov/cgi-bin/text-idx?SID=5f3e9ad05dd2738b5e52c9645c3a2f0b&node=29:5.1.1.1.8&rgn=div5.

Pesticide Management and Disposal, 40 C.F.R. § 165 (2013) Retrieved from http://www.ecfr.gov/cgi-bin/text-idx?c=ecfr&tpl=/ecfrbrowse/Title40/40cfr165_main_02.tpl.

Recordkeeping on Restricted Use Pesticides by Certified Applicators; Surveys and Reports, 7 C.F.R. § 110 (2014) Retrieved from http://www.ecfr.gov/cgi-bin/text-idx?SID=5f3e9ad05dd2738b5e52c9645c3a2f0b&node=7:3.1.1.3.25&rgn=div5.

Standards for Universal Waste Management, 40 C.F.R. § 273 (2013) Retrieved from http://www.ecfr.gov/cgi-bin/text-idx?tpl=/ecfrbrowse/Title40/40cfr273_main_02.tpl.

Toxic Chemical Release Reporting: Community Right-to-know, 40 C.F.R. § 372 (2013) Retrieved from http://www.ecfr.gov/cgi-bin/text-idx?c=ecfr&tpl=/ecfrbrowse/Title40/40cfr372_main_02.tpl.

Unified Facilities Guide Specifications (UFGS) 31 31 16 (2008), Soil Treatment for Subterranean Termite Control Retrieved from http://www.wbdg.org/ccb/DOD/UFGS/UFGS%2031%2031%2016.pdf.

THIS PAGE IS INTENTIONALLY BLANK.

Glossary

Acaricide. An agent used to kill mites and ticks.

Applied Biology Program. A network of NAVFAC Pest Management Consultants (PMCs) in the Environmental Business Line that assist Navy and Marine Corps installations with FIFRA and Final Governing Standards-based compliance and provide Integrated Pest Management solutions that protect operations, war-fighters, quality of life, property, materiel and the environment from the adverse effects of living organisms.

Arachnid. An arthropod that has eight legs and two body segments in the adult stage.

Arthropod. Invertebrate animals (insects, arachnids and crustaceans) that have jointed appendages and a segmented body.

Avicide. An agent used to kill or repel birds.

Broad spectrum. A classification of pesticide that will kill a wide range of pests.

Broadcast application. The application of a pesticide to a wide area.

Crack and crevice treatment. Application of a pesticide to cracks and crevices where pests are known to live, feed, and/or breed.

DoD-certified pesticide applicator. Military or civilian personnel certified per the "DOD Plan for Certification of Pesticide Applicators" in the pest management categories that are appropriate for their type of work.

Drift. The movement of a pesticide through air, ground, or water out of the control target area.

Exclusion. A pest control method that prevents the entry of a pest into an area to be protected from the pest.

Functional area. Installation personnel, agencies, departments, contractors and facilities that use or store pesticides, conduct pest management operations, provide for safety or security of pest control operations, or have the responsibility of preventing pests.

Fungicide. An agent used to destroy or inhibit growth of fungi.

Herbicide. An agent used to destroy or inhibit plant growth.

Insecticide. An agent used to destroy insects.

Integrated pest management (IPM). A planned program incorporating education, continuous monitoring, 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 habitat modification;

biological, genetic, cultural, mechanical, physical, and regulatory controls; and, when necessary, the judicious use of least-hazardous pesticides.

Integrated pest management coordinator. The individual officially designated by the installation commander to coordinate and oversee the installation pest management program and installation IPM plan. IPM coordinators must be certified as pesticide applicators if their job responsibilities require them to apply or supervise the use of pesticides.

Integrated Pest Management Plan. A detailed document for the design, implementation, and maintenance of all pest management and pesticide storage and use on an installation or group of installations.

Invasive species. A species of animal, plant or organism that is not native to a geographic area and can potentially cause harm to native organisms and their habitats.

Leach. The movement of a pesticide through soil.

Material Safety Data Sheet. A document (OSHA form 174, or equivalent) that accompanies a pesticide product, providing the handler with chemical information on ingredients, handling instructions, potential hazards, and manufacturer address and emergency contact information.

Molluscicide. An agent used to kill snails.

Noxious or invasive weed. A weed that, if introduced, into a habitat can cause damage or injury to other organisms in that habitat. They may cause deprivation of water to other plants, physical injury to animals, or increased risk for wild fire.

Personal relief. Pest management control efforts made by DoD personnel or their family members at their own expense for control of pests consistent with DoD and Navy policy.

Pest. Any organism (except for microorganisms that cause human or animal diseases) that adversely affects operations, preparedness, the well-being of humans or animals, real property, materiel, equipment or vegetation, or is otherwise undesirable.

Pest management performance assessment representatives (PMPAR). Installation personnel trained in contract performance assessment and pest management, whose duties include surveillance of commercial pest management services to ensure that the performance complies with contract specifications and legal requirements. [Formerly known as Pest Control Quality Assurance Evaluators (PCQAE).]

Pest management. The prevention and control of disease vectors and pest that may adversely affect the DoD mission or military operations; the health and well-being of people; or structures, materiel, or property.

Pesticide. Any substance or mixture of substances registered by EPA under FIFRA, intended to destroy, repel, or mitigate pests. Includes, insecticides, rodenticides, herbicides, fungicides, plant regulators, defoliants, desiccants, disinfectants, antifouling paints and biocides (such as water treatment chemicals). NAVFAC PPMCs do not approve disinfectants or biocides.

Pesticide applicator. Any individual who applies pesticides.

Pesticide cancellation. An action by EPA that may limit the use of a pesticide. EPA often issues instructions with the pesticide cancellations providing information on the disposition of canceled pesticides.

Pesticide Facility. The building and areas designated for handling and storing pesticides.

Pre-treatment. A termiticide applied to the soil during the construction of a new building or addition.

Professional pest management consultant. Degreed technical specialists, such as NAVFAC civilian entomologists (Applied Biologist) and BUMED commissioned medical entomologists, who have command program oversight responsibilities and provides guidance and information on the management of pest management programs for commands and installations.

Registered pesticide. A pesticide registered by EPA for sale and use within the United States.

Residual pesticide. The application of a pesticide that will remain effective on to the surface to which it is applied for a long period of time.

Rodenticide. An agent used to destroy rodents.

Space spray. The application of a pesticide as a fine airborne mist to kill flying insects. This includes ultra-low volume application and fogging.

Stakeholder. A person, agency, organization, or department that has an interest in the installation's pest management program.

State-certified commercial pesticide applicators. Personnel certified in accordance with FIFRA by a State (in which the work will be performed) with an EPA-approved certification plan and certified in the category in which a pesticide will be applied.

Subsistence. Stored food items.

Surveillance. The use of surveys over a period of time to monitor the increase and decrease of pest populations over time. Often used as a means of "early warning" of increase in pests or risk of disease and as a means of determining efficacy of pest management operations.

Survey. Observing, collecting, quantifying, identifying and analyzing a pest population.

Ultra-low volume (ULV). A method of applying a pesticide as a space spray. This method involves applying fine droplets of concentrated pesticide.

Uncertified pesticide applicators. Individuals who have not successfully completed certification training. Uncertified military and DOD civilian personnel who are in training to become certified pesticide applicators may apply pesticides when under the direct line-of-sight supervision of a DOD-certified pesticide applicator. Uncertified personnel may apply self-help or personal relief pesticides when the operation has been approved by a command pest management consultant.

Vector / Disease Vector. Any animal capable of transmitting the causative agent of human disease; serving as an intermediate or reservoir host of a pathogenic organism; or producing human discomfort or injury, including (but not limited to) mosquitoes, flies, other insects, ticks, mites, snails, and rodents.

It is recognized that certain disease vectors are predominantly economic pests that as conditions change may require management or control as a disease vector.

Vector-borne disease. A disease transmitted by a vector.

Zoonosis. A disease that normally occurs in animals that can be transmitted to humans.

List of Acronyms and Abbreviations

AFPMB	Armed Forces Pest Management Board
AHB	Africanized Honey Bee
Bti	*Bacillus thuringiensis israelensis*
BUMED	Navy Bureau of Medicine and Surgery
CAMA	calcium acid methanearsonate
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CO	commanding officer
COR	contracting officer representative
CRPM	cultural resources program manager
CWP	Contractor Work Plan
DC or D.C.	District of Columbia
DOD	Department of Defense
DODI	Department of Defense instruction
DON	Department of the Navy
DSMA	disodium methanearsonate
EHS	extremely hazardous substance
EMS	Environmental Management System
EO	executive order
EPA	Environmental Protection Agency
ESA	Endangered Species Act
EPCRA	Emergency Planning and Community Right-to-know Act
EVDCP	Emergency Vector-borne Disease Control Plan
FAP	Functional Assessment Plan

FHP	Force Health Protection
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
FSC/BOS	Facilities Support Contract/Base Operation Support
IAP	Internal Assessment Plan
ICO	installation commanding officer
IPM	integrated pest management
IPMC	integrated pest management coordinator
IPMP	Integrated Pest Management Plan
KO	contracting officer
MARBKS	Marine Barracks Washington, D.C.
MCO	Marine Corps order
MoM	measure of merit
MRE	meal, ready to eat
MSMA	monosodium methanearsonate
MWR	morale, welfare, & recreation
NAVFACLANT	Naval Facilities Engineering Command, Atlantic
NAVMED	Navy Medical (Command)
NAFI	Non-Appropriated Fund Instrumentality
NECE	Navy Entomology Center of Excellence
NMCI	Navy and Marine Corps Intranet
NPDES	National Pollutant Discharge Elimination System
NOPRS	NAVFAC Online Pesticide Reporting System
NEPMU	Navy Environmental and Preventive Medicine Unit
OPNAVINST	Chief of Naval Operations instruction
OPNAV M	Chief of Naval Operations manual
ORM	operational risk management
OSHA	Occupational Safety and Health Administration

PAI	pounds of active ingredient
PAUL	Pesticide Authorized Use List
PHCR-North	U.S. Army Public Health Command Region-North
PMPAR	Pest Management Performance Assessment Representative
PMRS	Pest Management Record Spreadsheet
PMSP	Pest Management Service Provider
PMT	preventive medicine technician
POC	point of contact
PPE	personal protective equipment
PPMC	professional pest management consultant
PPV	public-private venture
PREVMED	Preventive Medicine Department
RBOS	Regional Base Operating System
RTU	ready-to-use
SDS	safety data sheet
SERC	state emergency response commission
sq ft	square feet
TG	technical guide
UDC	University of the District of Columbia
UFGS	Unified Facilities Guide Specifications
ULV	ultra-low volume
U.S.	United States
U.S.C.	United States Code
USDA	United States Department of Agriculture
USDA-APHIS	United States Department of Agriculture-Animal and Plant Health Inspection Service
USN	United States Navy

WNV West Nile Virus

INTEGRATED PEST MANAGEMENT PLAN NOVEMBER 2013

NAVAL SUPPORT ACTIVITY BETHESDA, MARYLAND

Prepared by
Naval Facilities Engineering Command Atlantic,
Norfolk, VA

Naval Support Activity Bethesda Integrated Pest Management Plan Approval and Implementation

Prepared by:

- Ms. Sabra Scheffel, Applied Biology, Naval Facilities Engineering Command Atlantic, Code EV51, 6506 Hampton Boulevard, Norfolk, VA 23508

Technical and Administrative Approval:
Approved and signed in accordance with DODINST 4150.07

Mr. Sam Brandt Integrated Pest Management Coordinator / Natural Resources Program Manager	Date
Ms. Susan Paul Acting Installation Environmental Program Manager	Date
Mr. Brian Hillis Cultural Resources Program Manager	Date
CDR Burr Vogel Public Works Officer	Date
LCDR Ulda Perez Chief, Environmental Health Service Preventive Medicine Department	Date

Approved for Implementation:

CAPT David Bitonti Commanding Officer	Date

Naval Support Activity Bethesda Integrated Pest Management Plan Technical Review

The Integrated Pest Management Plan has been reviewed in accordance with OPNAVINST 6250.4C.

Ms. Sabra Scheffel Applied Biology Branch Head NAVFAC Atlantic Norfolk, VA	CAPT Eric Hoffman MSC, USN OIC, NECE Naval Air Station Jacksonville Jacksonville, FL
Date: _____	Date: _____

Integrated Pest Management Plan Annual Review

Year	Completion Date	Integrated Pest Management Coordinator	Copies of changes to the Pest Management Consultant (Annual) Date Completed
14			
15			
16			
17			
18	Rewrite		

Scheduled On-Site Pest Management Technical Review

Scheduled Date	Integrated Pest Management Coordinator	Pest Management Consultant Date Review Completed

Note: Technical Reviews should be scheduled approximately 18 months apart and in conjunction with an EMS or NECE review if possible.

Table of Contents

Executive Summary **i**
1. Introduction **1-1**

1.1. The Integrated Pest Management Plan *1-1*
1.1.1. Scope 1-1
1.1.2. Authority 1-1
1.1.3. Purpose and Structure 1-1
1.1.4. IPMP Implementation 1-1
1.1.5. IPMP Maintenance 1-2

1.2. Installation Background *1-2*
1.2.1. Mission 1-2
1.2.2. Location and Facilities 1-2
1.2.3. Overview 1-2
1.2.4. Pest Management Objectives 1-3
1.2.5. Program Requirements 1-4

2. Program Administration **2-1**

2.1. Roles and Responsibilities *2-1*
2.1.1. Installation Commanding Officer (ICO) 2-1
2.1.2. Integrated Pest Management Coordinator (IPMC) 2-1
2.1.3. Public Works Department (PWD) Bethesda, Environmental 2-1
2.1.4. PWD Bethesda, Facilities Engineering and Acquisition Division (FEAD) 2-2
2.1.5. Preventive Medicine 2-2
2.1.6. Contract Pest Management Service Providers (PMSP) 2-2
2.1.7. PPV Housing Manager 2-2
2.1.8. Building Occupants and Barracks / Housing Residents 2-3

2.2. Pesticide Approval *2-3*
2.2.1. Pesticide Labels and MSDSs 2-3

2.3. Records and Reporting *2-3*
2.3.1. Pest Management Record Keeping 2-3
2.3.2. Maintaining Pest Management Operations Records 2-4
2.3.3. PMSP Reporting Procedures 2-4

2.4. Training, Certification and Licensing *2-4*
2.4.1. General Requirements 2-4
2.4.2. Verification of Qualifications 2-5
2.4.3. Requirements for DOD Pesticide Applicators 2-5
2.4.4. Requirements for Commercial Contract Applicators 2-5
2.4.5. Requirements for Natural Resource Management Applicators 2-5
2.4.6. Requirements for Performance Assessment Representatives 2-6
2.4.7. Requirements for Integrated Pest Management Coordinators and Environmental Personnel 2-6

2.5. Pest Management Contracting *2-6*
2.5.1. Current Pest Management Contracts 2-6
2.5.2. Contract Specifications and Review 2-6
2.5.3. Government Representatives 2-7
2.5.4. Contract Requirements 2-7
2.5.5. Contract Performance Assessment 2-8

3. Operations **3-1**

3.1. Integrated Pest Management (IPM) *3-1*
3.1.1. Federal Regulation and Policy 3-1
3.1.2. What is IPM? 3-1
3.1.3. IPM Compliance 3-2
3.1.4. Integrated Pest Management Sheets 3-2

3.2. Current Pest Management Operations *3-2*
3.2.1. General Household and Nuisance Pests 3-2

Table of Contents

3.2.2. Grounds Maintenance 3-3
3.2.3. Aquatic Weed Control 3-3
3.2.4. Structural Pests 3-3
3.2.5. Stored Product Pests 3-4
3.2.6. Health Related Pests 3-5
3.2.7. Pest Management in Housing 3-8
3.2.8. Prohibited Operations and Devices 3-8

3.3. Regulatory Compliance 3-9
3.3.1. Policy 3-9
3.3.2. Pesticide Regulation and Enforcement 3-9
3.3.3. Laws and Regulations 3-10

3.4. Pesticide Management 3-10
3.4.1. Pesticide Selection 3-11
3.4.2. Pesticide Procurement 3-11
3.4.3. Pesticide Storage 3-11
3.4.4. Mixing 3-11
3.4.5. Application 3-12
3.4.6. Post-application Clean Up 3-12

3.5. Minimum Risk Pesticides 3-12

3.6. Cancelled Pesticides 3-13

4. Health and Safety 4-1

4.1. Pesticide Applicator Safety 4-1
4.1.1. Potential Occupational Hazards 4-1
4.1.2. Hazard Abatement 4-2

4.2. Public Safety 4-4
4.2.1. Potential hazards to public 4-4
4.2.2. Hazard Abatement 4-5
4.2.3. Special Safety Considerations 4-6
4.2.4. Emergency Planning and Community Right-to-know Act (EPCRA) 4-6
4.2.5. Specific State Laws: 4-7

4.3. Pest Control Accidents 4-7
4.3.1. First Aid 4-7
4.3.2. Medical Emergencies 4-7

5. Environmental Considerations 5-1

5.1. Environmental Management System (EMS) for Pesticides 5-1
5.1.1. Department of Defense Policy 5-1
5.1.2. What is an EMS? 5-1
5.1.3. Conformance of the Pest Management Program to EMS 5-1

5.2. Environmental Considerations on the Pesticide Label 5-2

5.3. Managing Environmental Impact 5-2
5.3.1. Pesticide Pollution 5-3
5.3.2. Natural Resource Protection 5-4
5.3.3. National Pollutant Discharge Elimination System (NPDES) 5-4
5.3.4. Spill Prevention and Management 5-5
5.3.5. Hazardous Materials and Hazardous Waste Management 5-5

6. Emergency Pest Management 6-1

6.1. Public Health Emergencies 6-1
6.1.1. Natural or Manmade Disaster 6-1
6.1.2. Vector-borne or Zoonotic Disease 6-1
6.1.3. Animal Attack 6-1

Table of Contents

6.2. Agricultural Emergencies *6-1*

6.3. Emergency Pest Management Resources *6-2*

7. Program Resources 7-1

7.1. NAVFAC Atlantic Applied Biology, Code EV51, Norfolk, VA *7-1*

7.2. Navy Environmental and Preventive Medicine Unit TWO (NEPMU-2), Norfolk, VA *7-1*

7.3. Navy Entomology Center of Excellence (NECE), Jacksonville, FL *7-1*

7.4. Maryland Department of Agriculture, Pesticide Regulation Section *7-2*

7.5. University of Maryland Extension (UME) *7-2*

7.6. Maryland Department of Health and Mental Hygiene *7-2*

Table of Contents

Appendices

Appendix	Content
A	Maps
B	Definitions and Acronyms
C	Laws
D	Program Review
E	Pesticides
F	Equipment
G	Contracts
H	Pest Operations
I	Environmental
J	Medical
K	Licenses
L	Resources

List of Tables

No.	Description	Pg.
1-1	Pest Management Administrative Program Requirements	1-5
1-2	Pest Management Operations Program Requirements	1-6
3-1	Comparison of Traditional Pest Control and IPM Methods	3-1

Executive Summary

This Integrated Pest Management Plan (IPMP) provides a comprehensive, long-range document that captures all the pest management operations and pesticide-related activities conducted at the Naval Support Activity (NSA) Bethesda located in Bethesda, Maryland. It incorporates pest management practices and the local, State, Federal and Department of Defense regulations conforming to the requirements of DOD Instruction 4150.07 and OPNAVINST 6250.4C while providing comprehensive information to installation staff and internal and external compliance auditors.

This IPMP was prepared by Naval Facilities Engineering Command Atlantic (NAVFAC LANT) Applied Biology (AB), from data collected through pest management data collection, on-site observations, and interviews with installation personnel, and document reviews.

The main goal of the various pest control functions is to support the mission of NSA Bethesda. Commercial contractors provide both pest control and grounds maintenance services for NSA Bethesda. Pest control services are needed at NSA Bethesda to:

(1) Provide services that will prolong the life of the structures through subterranean termite and nuisance pest control;

(2) Maintain the safety and security of industrial and storage areas through weed control;

(3) Provide nuisance pest control to all buildings (except PPV housing) and outdoor areas to ensure a good working and living environment;

(4) Control weed and insect pests in all recreational and lawn areas to maintain aesthetics and provide recreational facilities to personnel;

(5) Provide control of mosquitoes, flies and other potential disease vectors to ensure the comfort and well-being of all personnel; and

(6) Provide vertebrate pest control, including rodent control, to all areas of NSA Bethesda.

For the current level of work to be accomplished, a sufficient staff of qualified applicators must be maintained. Contract personnel must meet state certification requirements specified by contract. Performance Assessment Representatives (PARs) must successfully take an initial Pest Management PAR Course. To maintain their certification, the PARs and DOD pesticide applicators must successfully pass a DOD pest management training and recertification course every three years. Pest control facilities must comply with current safety standards to provide a safe workplace and to minimize pesticide hazards.

The focus of this IPMP is on safe, environmentally sound, and cost-effective control of pests through Integrated Pest Management (IPM). IPM depends on education, proper surveying and identification of pests; non-chemical and chemical control methods, and individual responsibility for pest prevention.

1. Introduction

1.1. The Integrated Pest Management Plan

1.1.1. Scope

The Naval Support Activity (NSA) Bethesda Integrated Pest Management Plan (IPMP) is a long-range, comprehensive planning and operational document that establishes the strategy and methods for conducting a safe, effective, and environmentally sound Integrated Pest Management (IPM) program. The IPMP covers all pest management and pesticide-related activities conducted by civilian and military DOD personnel and commercial contractors within all functional areas of NSA Bethesda. A glossary of acronyms used in this document is found in Appendix B.

1.1.2. Authority

OPNAVINST 6250.4C and OPNAVINST 5090.1C, Chapter 17 require all Navy activities that conduct pest management operations to have an IPMP. Pest management programs at Navy activities shall be conducted under an IPMP in accordance with DODINST 4150.07 and OPNAVINST 6250.4C.

1.1.3. Purpose and Structure

The IPMP provides a comprehensive overview of pest management and pesticide-related operations on NSA Bethesda and can be used as a reference by all installation personnel. The IPMP is structured as follows:

- Section 1 addresses the purpose of the IPMP and its maintenance and implementation. It also provides background on the installation and an overview of the current pest management program and requirements.
- Section 2 describes the organization and responsibilities of the functional area of the program and the administrative requirements and documentation.
- Section 3 describes the field operation of pest management including Integrated Pest Management (IPM), pesticide management, contracting, and current practices.
- Section 4 provides lists and descriptions of hazards and hazard abatement practices associated with pest management.
- Section 5 addresses the environmental considerations of the program including regulatory compliance, and the application of environmental management systems to pest management.
- Section 6 describes emergencies that are the result of infestations.
- Section 7 provides a list of resources available to the installation.
- The Appendices provide references and supporting documents. The NAVFAC Pest Management Resource CD is included in Appendix L, which includes downloadable forms and templates, pest management technical guides and handbooks, DOD directives, and pest management website links.

1.1.4. IPMP Implementation

The IPMP must be reviewed and approved by installation stakeholders and Professional Pest Management Consultants (PPMCs) from Naval Facilities Engineering Command Atlantic (NAVFAC LANT) and Navy Bureau of Medicine and Surgery (BUMED). The IPMP is implemented upon signature of the Installation Commanding Officer. The Integrated Pest Management Coordinator (IPMC) has the task of implementing, coordinating and executing the IPMP among each of the functional areas of the installation.

1.1.5. IPMP Maintenance

Once the IPMP has been developed and implemented, it must be reviewed annually and updated as necessary. The annual IPMP update form is located in Appendix D. The installation IPMC is responsible for maintaining the IPMP.

1.1.5.1. Internal Review

An internal review is conducted annually by the IPMC in coordination with the Pest Management Service Providers (PMSPs) and other functional area Points of Contact (POC). The review should include updating contract information, applicator certifications, pesticides and pest management operations to be used on the installation, and ensuring all pesticide use is reported. An Internal Assessment Plan (IAP) for the pesticide program should be used by the IPMC as a tool to review compliance issues during the internal review. A sample IAP can be found in Appendix I and other compliance self-assessments can be found in Appendix D.

1.1.5.2. Off-site Review

The IPMC may request a review by a NAVFAC LANT Applied Biology Professional Pest Management Consultant (PPMC) for review of regulatory requirements, reporting and pesticide approval procedures.

1.1.5.3. On-site Review

An on-site review of the entire pest management program shall be performed by the NAVFAC LANT Applied Biology PPMC every 3 years to ensure compliance with the IPMP. The review may be performed more frequently if extensive program problems exist.

1.1.5.4. IPMP Rewrite

The IPMP should be rewritten every 5 years to reflect new contracts, personnel, pest management practices, and regulatory changes.

1.2. Installation Background

1.2.1. Mission

NSA Bethesda's mission is to provide customer-focused installation management and base operating support to tenant activities in their pursuit of excellence. NSA Bethesda partners in healing, wellness, research and education. The main goal of the various pest control functions is to support this mission.

1.2.2. Location and Facilities

NSA Bethesda is located northwest of Washington, DC in Bethesda, Maryland. It is one of the nation's largest and most renowned military medical centers. NSA Bethesda hosts the National Naval Medical Center, the President's Hospital, that serves our Nation's Leaders, Warriors (past and present), and their families. NSA Bethesda is also home to Uniformed Services University of Health Sciences (USUHS), the Armed Forces Radiobiology Research Institute, Commander, Joint Task Force, National Capital Region Medical, and a cadre of other key tenant commands that provide research and training support to our base population. NSA Bethesda and the Navy's Medical Center and the DOD Medical School provide the training and education of the medical staff to care for the National Capital Region's beneficiary population.

1.2.3. Overview

The pest management program is summarized below.

- The currently designated Integrated Pest Management Coordinator (IPMC) for NSA Bethesda is an employee in the Environmental Department.
- The prime contractor at NSA Bethesda is Marathon who subcontracts to Alexandria Pest Services for general pest control services. This includes larval and adult mosquito control, when necessary.
- The prime grounds maintenance contractor is Diversified Services Contracting (DSC) who subcontracts to Angel Systems and Trugreen.
- There is one DOD-certified pesticide applicator who applies pesticides at the USUHS.
- Invasive species control is contracted through Environmental Systems Analysis (ESA) who subcontracts to both Patriot Land and Wildlife and Habitat Enhancers.
- Lincoln PPV Housing is responsible for obtaining their own pest management services and contracts with Noble Pest Management for pest control services and Clippers for grounds maintenance in Flag Housing.
- Preventive Medicine performs food service sanitation and facilities habitability inspections and oversees programs to prevent vector-borne and other infectious diseases at NSA Bethesda.

In addition to the PMSPs, individual personnel including employees and housing tenants have a responsibility for preventing and reducing pest infestations in their workplace and/or berthing/residence areas. This IPMP encompasses all of the activities of the PMSPs and individuals.

1.2.4. Pest Management Objectives

The objectives of the NSA Bethesda pest management program are:

1. **The prevention of pest-related health and safety problems that affect the mission.** Examples of health related pests that may affect the mission include, but are not limited to mosquitoes and bed bugs. Any pest may impact the mission when its numbers become excessive. Prevention of pest-borne disease and injury is a component of Force Health Protection (FHP). FHP seeks to maintain a healthy and fit military and civilian force in order to maintain the highest levels of readiness. Pest management is a “Force Multiplier” for construction battalions, maintenance commands, and other deployable units. Additionally, the military and civilian infrastructure on the installation must be protected in order to provide the necessary support to these units as well. Readiness also means ensuring that all installation personnel, including dependents, are provided with healthy work and living conditions that will contribute to a high quality of life.
2. **The prevention of pest damage to equipment and subsistence used to support the operational mission of the activities and tenant commands.** Equipment and materials are susceptible to physical damage by pests. Rodents, for example, can cause considerable damage to electronic equipment through gnawing on electrical components. Examples of pests that may damage equipment and subsistence include, but are not limited to rodents, wood destroying pests and stored product pests.
3. **Vegetation management to protect the local environment.** The introduction of non-native/invasive species of plants can increase the risk of fire and degrade the surrounding native environment that is home to a number of endangered and threatened animal and plant species.
4. **The protection of government real property, materiel and aesthetics.** Buildings and roads that form the infrastructure of the installation are susceptible to pests. Termites can cause extensive damage to wood structures if not adequately prevented and controlled. Weeds can cause damage to roadways and increase the risk of fire.
5. **The reduction of the use and dependence on pesticides.**

1.2.5. Program Requirements

1.2.5.1. Administration

Proper administration of the pest management program ensures accountability and documentation through planning, record keeping, reporting, training, pesticide and contract approval and regulatory compliance. Table 1-1 outlines the pest management administrative program requirements.

1.2.5.2. Operations

Operations are the day-to-day management of pests through pesticides and non-chemical means. Pest management on NSA Bethesda includes the following categories of operations:

- **Ornamental and turf -** Control and management of pests of landscape plants and turf, including arthropods, fungi, and weeds.
- **Right-of-way -** Control and management of vegetation along roadways. It also includes vegetation control near fuel farms to reduce fire risk and along fence lines to enhance security.
- **Aquatic Weed Control -** Control of vegetation in ponds and ditches.
- **Industrial, Institutional, Structural, and Health-Related -** Control and management of pests in and around buildings. Pests may include cockroaches, termites, bees, venomous animals, stored product insects, rodents, and feral animals.
- **Public Health -** Control and management of human and animal disease vectors such as rodents, mosquitoes, flies, and fleas.
- **Nuisance Pest Control** - Control of insect pests that are a nuisance or annoyance to base personnel but do not present a health risk.
- **Invasive weeds -** Removal of non-native species of plants that are detrimental to native plant and animal habitats.
- **Vertebrate Control -** Control of animal predators that prey upon endangered or threatened animals and their habitats, or infest food and material storage.

Each of these operations must meet various requirements that are listed and described in Table 1-2.

Table 1-1: PEST MANAGEMENT ADMINISTRATIVE PROGRAM REQUIREMENTS

Requirement	Description	Reference	Responsibility
PLANNING	Review and revise the Integrated Pest Management Plan annually.	OPNAVINST 6250.4C; DODINST 4150.07	IPMC
RECORDING	Record all pest management operations conducted on the Base after each operation.	OPNAVINST 6250.4C; DODINST 4150.07; 7 CFR 110* (applies to restricted-use pesticides only)	All pesticide applicators
MAINTAINING	Maintain records of all pest management operations conducted on Base on-site indefinitely	OPNAVINST 6250.4C; DODINST 4150.07; 7 CFR 110* (applies to restricted-use pesticides only)	IPMC in coordination with PMPARs
REPORTING	Compile and report all pest management operations to NAVFAC Atlantic Applied Biology monthly.	OPNAVINST 6250.4C; DODINST 4150.07; 7 CFR 110* (applies to restricted-use pesticides only)	IPMC in coordination with PMPARs
PESTICIDE APPLICATOR CERTIFICATION	Ensure that all personnel applying pesticides on installations have current DOD pesticide applicator certification if in-house or state commercial applicator certification if contracted.	OPNAVINST 6250.4C; DODINST 4150.07; 40 CFR 171* (applies to restricted-use pesticides only)	IPMC in coordination with PMPARs
COMPLIANCE	Ensure that all program elements are in compliance with all Federal regulations. The Base is also encouraged to comply with County and State regulations.	OPNAVINST 6250.4C; DODINST 4150.07	IPMC in coordination with PMPARs
PESTICIDE APPROVAL	Compile and submit list of new pesticides to NAVFAC Atlantic Applied Biology for approval for use on the Base.	OPNAVINST 6250.4C; DODINST 4150.07	IPMC in coordination with PMPARs
CONTRACT REVIEW	Review pest management contract specifications for compliance with the Integrated Pest Management Plan and submit to NAVFAC Atlantic Applied Biology for final review and approval prior to advertising.	OPNAVINST 6250.4C; DODINST 4150.07	Facilities Support Contracts, PMPARs

Table 1-2: PEST MANAGEMENT OPERATIONS PROGRAMS REQUIREMENTS

Requirement	Description	Reference	Responsibility
INTEGRATED PEST MANAGEMENT	"Federal agencies shall use Integrated Pest Management techniques in carrying out pest management activities and shall promote Integrated Pest Management through procurement and regulatory policies, and other activities."	USC Title 7, Chapter 6, Subchapter II, Sec. 136r-1	IPMC/pesticide applicators
STORAGE	Pesticides kept on installations must be procured and stored in accordance with installation Base and Federal regulations. The Base is also encouraged to comply with County and State regulations.	OPNAVINST 6250.4C; AFPMB TG 17-Military Handbook; 40 CFR 165	Pest control shop supervisor
CONTAINERS	All containers used to store or transport a pesticide must have the original or copy of the original label attached. Service containers must have attached label identifying person responsible for the container, name of chemical and signal word.	OPNAVINST 6250.4C; DODINST 4150.07; 40 CFR 156	Pesticide applicators
VEHICLES	Must carry pesticide spill kits and properly secure pesticides and pesticide application equipment when not in use.	OPNAVINST 6250.4C	Pesticide applicators / vehicle operators
APPLICATION	Only registered pesticides will be used. Applications of pesticides must be performed to ensure safety and protection of the environment. A copy of the pesticide label shall be available at the application site.	OPNAVINST 6250.4C; DODINST 4150.07; 40 CFR 166	Pesticide applicators
APPLICATOR SAFETY	Procedures, medical support, equipment and supplies to ensure the safety of DOD pesticide applicators during pest control operations must be provided by the installation.	OPNAVINST 6250.4C; 29 CFR 1910	Naval Medical Clinic, Safety Department
OCCUPATIONAL HAZARDS MONITORING	Workplace monitoring shall be conducted by the medical department to ensure a safe and healthful environment for pest management personnel.	OPNAVINST 6250.4C; OPNAVINST 5100.23G	Naval Medical Clinic
CLEANING AND DISPOSAL	Equipment shall be cleaned to prevent health and environmental hazards due to chemical residues. Rinse water from container and equipment rinsing should be prevented from entering storm drains and water bodies. Dispose of empty containers properly.	OPNAVINST 6250.4C; 40 CFR 165	Pesticide applicators
SPILL PREVENTION	Spill kits should be maintained in pest control shops and on pest control vehicles. Pest management personnel should be familiar with the installation spill contingency plan.	OPNAVINST 6250.4C	Pesticide applicators

2. Program Administration

2.1. Roles and Responsibilities

The success of the pest management program depends largely on a clear understanding of the roles and responsibilities for the organizations and personnel involved. The following is a listing of the key organizations and personnel and their duties as presented in DOD guidance documents for the implementation of the IPMP.

2.1.1. Installation Commanding Officer (ICO)

- Designate an Integrated Pest Management Coordinator in writing;
- Implement and support the IPMP;
- Ensure appropriate funding of pest management programs to provide for effective and safe control of pests based on pest management objectives for the installation;
- Ensure that installation personnel performing pest control receive adequate training, and achieve pest management certification as required;
- Ensure that all pest management operations are conducted safely and have minimal impact on the environment;
- Ensure that contract specifications that include the use of pesticides are approved by a NAVFAC pest management consultant prior to advertisement for bid;
- Ensure that an IPM program, minimizing the use of pesticides, is implemented; and
- Ensure that the Installation's IPM plan and program are in compliance with all applicable environmental protection statutes.

2.1.2. Integrated Pest Management Coordinator (IPMC)

The IPMC is designated by the ICO in writing to coordinate all installation pest management activities. The IPMC, Mr. Sam Brandt, works in the Environmental Department.

- Coordinate NSA Bethesda's pest management program including implementation, maintenance, and annual update of the IPMP;
- Coordinate rewrite of the IPMP every 5 years;
- Promote Integrated Pest Management (IPM) in the pest management program to cost-effectively and safely manage pests and to prevent adverse environmental impact;
- Coordinate reporting of pest management and pesticide use on the installation to NAVFAC Atlantic Applied Biology;
- Ensure current certification and continuing pest management training of pesticide applicators and PMPARs;
- Receive and compile lists of new pesticides and uses from all Pest Management Service Providers (PMSPs) on NSA Bethesda and submit to NAVFAC Atlantic Applied Biology for review and approval;
- Maintain current list of approved pesticides;
- Act as liaison between NSA Bethesda and NAVFAC Atlantic Applied Biology and local, State of Maryland, and Federal agencies for pest management and pesticide regulatory issues;
- Ensure that the NSA Bethesda Contracting Officers submit pest management contract specifications to the NAVFAC Atlantic Applied Biology PPMC for review prior to advertising; and
- Act as the Installation Commanding Officer's advisor for pest management issues.

2.1.3. Public Works Department (PWD) Bethesda, Environmental

The PWD Bethesda Environmental Department provides oversight on environmental protection and compliance regarding pest management operations.

- Review and approve new pesticides and pest management operations that may adversely impact the environment;
- Conduct internal compliance assessments of the pesticide and pest management program; and
- Provide technical review of the IPMP.

2.1.4. PWD Bethesda, Facilities Engineering and Acquisition Division (FEAD)

The FEAD prepares, manages, and assesses pest control and grounds maintenance contracts. The Pest Management Performance Assessment Representative (PMPAR) monitors and evaluates the performance of contracted PMSPs to ensure that pest control measures are properly applied. The PMPAR, Mr. Eric Donald, is a contract surveillance representative and is the liaison between the contractor and the IPMC.

- Prepare contracts ensuring that all requirements of the IPMP are included in the contract specifications;
- Coordinate pest management contract specifications prior to bidding with the IPMC for review prior to submittal to the NAVFAC Atlantic Applied Biology PPMC for review and final approval;
- Maintain copy of each contract on file;
- Monitor pest management contractors ensuring effective and safe application of pest management practices and identify and document discrepancies and seek corrective action with contractor in accordance with the contract; and
- Ensure that the contractors record all pest management activities and submit reports including actual pesticide use through the NAVFAC Online Pesticide Reporting System or to the IPMC on a monthly basis.

2.1.5. Preventive Medicine

Preventive Medicine provides public health support to NSA Bethesda in accordance with NAVMED P-5010.

- Act as advisor and liaison to ICO for public health pest prevention and management;
- Conduct surveys for pests of medical importance, such as cockroaches, mosquitoes, bedbugs, etc., through habitability and food service sanitation inspections;
- Establish and maintain liaison with local health agencies as they pertain to vector management and vector-borne and zoonotic disease prevention;
- Maintain current certification as DOD Category 8 (public health) pesticide applicator;
- Develop and maintain an emergency plan for vector and pest control during a vector-borne disease outbreak or disaster; and
- Provide technical review of the IPMP.

2.1.6. Contract Pest Management Service Providers (PMSP)

Commercial contractors provide pest control and grounds maintenance services on NSA Bethesda. Contract PMSPs at NSA Bethesda are required to be certified as pesticide applicators by the State of Maryland. These responsibilities also apply to all other contractors on the installation.

- Conduct pest management operations in accordance with the contract specifications or lease agreements, the IPMP and in compliance with Federal and State of Maryland laws and regulations;
- Submit a list of pesticides proposed for use on the installation to their Government representative;
- Communicate all pest management issues and requirements via the Government representative; and
- Submit daily management operation records to the Government representative.

2.1.7. PPV Housing Manager

Provides pest control and landscape maintenance for Flag Housing residents.

- Provide the IPMC or NAVFAC LANT PPMC with access to all outdoor pesticide application records; and
- Ensure that only current State licensed pesticide applicators apply pesticides.

2.1.8. Building Occupants and Barracks / Housing Residents

- Apply good sanitary and pest exclusionary practices to prevent pest infestations;
- If permitted for personal use, use pesticides in accordance with the pesticide label; and
- Coordinate and cooperate fully with PMSPs in scheduling pest management and preparing the areas for pesticide treatment if necessary.

2.2. Pesticide Approval

Only pesticides approved by both the EPA and the State shall be used. Additionally, DOD and DON directives require installations to submit a list of all pesticides that will be used during control operations to the cognizant NAVFAC LANT PPMC for review and approval (OPNAVINST 6250.4C). The purpose of this approval process is to ensure that only registered pesticides which are safe, effective and appropriate for the site will be used on the installation. Requests for pesticide approval will be submitted to the NAVFAC LANT PPMC via the installation IPMC using the NAVFAC Online Pesticide Reporting System (NOPRS) (see section 2.3.3.1) or the Pesticide Approval Spreadsheet (PAS). Once a pesticide is approved, it may be used on-site as per the label directions. New pesticides may also be added to the list and submitted for approval as needed. The list should be reviewed and updated annually by the IPMC as part of the IPMP maintenance. Pesticides currently approved for use on the installation are listed in Appendix E. The electronic PAS is included in the NAVFAC Pest Management Resource CD that accompanies this IPMP in Appendix L.

2.2.1. Pesticide Labels and MSDSs

A copy of the manufacturer's label and an MSDS for each pesticide on the approved pesticide list can be maintained by the IPMC, PMPAR, and PMSP. Labels may be maintained by hard copy, electronically, or online. Pesticide labels and their registration status can be found on the EPA's National Pesticide Information Retrieval System, http://iaspub.epa.gov/apex/pesticides/f?p=PPLS:1.

2.3. Records and Reporting

"All shore installations, ships, and units performing pest management operations shall maintain records of pesticide applications and report pesticide use" (OPNAVINST 6250.4C pg 31 and OPNAVINST 5090.1C Ch. 17, Section 17-4.2, pg 17-6).

2.3.1. Pest Management Record Keeping

All PMSPs shall record pest management operations daily. Records shall include all pest management operations including surveys and non-chemical control operations performed on the installation by commercial contractors as well as work performed by DOD pest management personnel. The records will include the following information: date of application, location and site, type of operation, target pest, amount of area treated, name of applicator, pesticide information (trade name, active ingredient, and formulation), amount of pesticide applied, final concentration, and calculated pounds of active ingredient applied. The following operations are excluded from the record keeping requirement:

- Personal use of insect repellent.
- Application of repellent by deployable units during mass treatment of clothing and tentage.
- Application of pesticides for personal relief by residents of military housing.

- Application of pesticides for flea and tick control to pets by pet owners and veterinary services.

Records shall be submitted to the IPMC monthly by either the NAVFAC Online Pesticide Reporting System (section 2.3.3.1) or the electronic Pest Management Record System (section 2.3.3.2).

2.3.2. Maintaining Pest Management Operations Records

NSA Bethesda must archive on-site indefinitely, complete daily pest management operation records. Pesticide applications for each building, structure, or outdoor site must be accounted for. Past hardcopy records must be archived so as to prevent them from being destroyed. Electronic records shall be stored to prevent destruction or loss; back-up copies are recommended. All records reported to NAVFAC LANT will be stored and may be used as a back-up. Downloading of records from NOPRS and maintaining them on-site is highly recommended.

2.3.3. PMSP Reporting Procedures

Two methods of reporting are available. Reports will be reviewed by the IPMC and NAVFAC LANT PPMC to provide program oversight to the installation and to generate data for tracking overall DON pesticide usage.

2.3.3.1. NAVFAC Online Pesticide Reporting System (NOPRS)

All NSA Bethesda PMSPs that have internet access must use the NAVFAC Online Pesticide Reporting System (https://clients.emainc.com/dcs/pestmanagement/pesticidelogon.asp) to record, report and manage pesticide and pest management records. This system is preferred to other methods because it eliminates the need to send hardcopy or electronic records to the IPMC and then to the PPMC. The records are entered directly into a central database that can be accessed by the PPMC and the IPMC and downloaded into a spreadsheet. The only computer requirement is reliable internet access. IPMCs that wish to use this on their installation must contact the NAVFAC LANT PPMC to establish a “Supervisor” account. PMSP applicators can then contact the IPMC to request an “Applicator” account.

2.3.3.2. Pest Management Record System (PMRS)

An alternate method for record keeping and reporting, for those without internet access, is the PMRS. The PMRS template is a Microsoft® Excel ™ file. The template and instructions are available on the NAVFAC Pest Management Resource CD. Using the PMRS requires the following minimum computer hardware and software:

- Computer capable of running Microsoft® Office software
- CD drive, or e-mail capability in order to transfer files

The PMRS does not require Navy and Marine Corps Intranet (NMCI) approval since it runs on an NMCI-approved program. The user should have basic knowledge of MS Excel®, e-mail, and computer file management. The completed PMRS should be sent to the IPMC, Sam Brandt (clarence.brandt@med.navy.mil). The IPMC shall submit the PMRS’s monthly to the NAVFAC LANT PPMC at sabra.scheffel@navy.mil, NAVFAC LANT Applied Biology, Code EV51, 6506 Hampton Blvd, Norfolk, VA 23508.

2.4. Training, Certification and Licensing

2.4.1. General Requirements

IPM requires personnel who are properly trained to investigate and diagnose pest problems, select the appropriate pest management method, apply the appropriate pesticide, perform these operations so that they are safe to humans and the environment, and educate and advise their customers on pest prevention methods. All DON personnel

who select or apply pesticides shall be trained and certified within two years of employment in accordance with the DOD Plan for the Certification of Pesticide Applicators (OPNAVINST 6250.4C pg 22).

2.4.2. Verification of Qualifications

Copies of contractor or lessee State licenses shall be obtained from all PMSP personnel applying pesticides on NSA Bethesda. Verification of DOD pesticide applicator license / IPMC and PMPAR accreditation can be obtained from the NAVFAC Atlantic PPMC at (757) 322-4320 or sabra.scheffel@navy.mil. A list of applicators and their certification / license numbers as well as a list of business licenses is found in Appendix K.

2.4.3. Requirements for DOD Pesticide Applicators

DOD applicators may be certified in the following categories:

- Cat. 2. Forestry
- Cat. 3. Ornamental and Turf (landscape arthropod and vertebrate pests)
- Cat. 5. Aquatic (aquatic weeds in lakes, ponds, rivers, streams, irrigation canals)
- Cat. 6. Right-of-Way (weeds on sidewalks, along fence lines, parking lots, road ways, storage tank grounds)
- Cat. 7. Industrial, Institutional, Structural, and Health-Related (termites and other wood-destroying insects, cockroaches, crickets and other invading organisms)
- Cat. 8. Public Health (mosquitoes, ticks, fleas, rodents)
- Cat. 11. Aerial Application (application of pesticides for any pest by fixed or rotary-wing aircraft)

Preventive Medicine Technicians (PMTs) are required to be certified only in Category 8 and receive certification during PMT School. Golf course applicators are only required to be certified in categories 3, 5, and 6.

Initial certification in Categories 2, 3, 5, 6, 7, and 8 for civilian employees is a three and a half week course conducted by a designated DOD training agency. Currently, the Navy course is conducted by the Navy Entomology Center of Excellence (NECE) in Jacksonville, Florida. Initial certification and recertification in Category 11 is a one week course conducted by the Air Force Reserve in Vienna, Ohio. Certification for all categories is valid for three years. With proper justification, certifications can be extended for an additional six months by the applicator's certifying authority. Recertification courses for civilians in all categories except Category 11 are conducted annually by NAVFAC Atlantic. Initial and recertification course schedules can be viewed at http://www.afpmb.org/pubs/courses/courses.htm.

2.4.4. Requirements for Commercial Contract Applicators

"Licensed firms shall perform all pest management services procured by contract using only trained operators who are certified in the applicable state in the required EPA pest management categories for the work planned. Copies of state or host nation business licenses and applicator certifications shall be reviewed prior to award" (OPNAVINST 6250.4C pg 27). Copies of contractor business licenses and applicator certificates can be found in Appendix K. Contractors who hold a registered technician certificate have not completed the EPA category tests and are NOT allowed to apply pesticides on DOD property. All contract pesticide applicators applying pesticides on NSA Bethesda must hold a Maryland Commercial Pesticide Applicator's License.

2.4.5. Requirements for Natural Resource Management Applicators

Commercial applicators applying herbicides for invasive weed control or habitat restoration must hold a state license. Maintenance wildlife managers that use pesticides for control must also hold an appropriate state license.

2.4.6. Requirements for Performance Assessment Representatives

Pest Management Performance Assessment Representatives (PMPARs) assess the performance of contractors in the Performance Based Acquisition (Contracting) Program. Installations shall train personnel who provide performance assessment for commercial pest control services in pest management within one year of appointment, and send them to refresher training every three years (OPNAVINST 6250.4C pg 27 and OPNAVINST 5090.1C Ch. 17, Section 17-4.1, pg 17-5). NAVFAC Atlantic provides initial and refresher PMPAR training annually. Go to http://www.afpmb.org/pubs/courses/courses.htm#pestmgmtquaassurance for initial training schedules. PMPARs may attend the DOD pesticide applicator recertification course for refresher training. Go to http://www.afpmb.org/pubs/courses/courses.htm#pestapprecert for refresher training schedules.

2.4.7. Requirements for Integrated Pest Management Coordinators and Environmental Personnel

"The IPMC shall have the educational background, technical knowledge, and management skills to implement and oversee the pest management program" (DODINST 4150.07, Para. E4.4.1). Newly designated IPMCs are required to receive training in the administrative and operational requirements of installation pest management. Environmental personnel who have compliance oversight of pesticides on the installation should also receive training. The initial PMPAR and IPMC course provides the necessary training. NAVFAC conducts this course annually. Go to http://www.afpmb.org/pubs/courses/courses.htm#pestmgmtquaassurance for training schedules. If the IPMC will be applying pesticides or recommending pesticide applications, then they must be certified as a DOD pesticide applicator.

2.5. Pest Management Contracting

Contracts requiring the use of pesticides must be reviewed and approved by NAVFAC Atlantic Applied Biology. This includes contracts issued by non-appropriated activities and tenant commands on the installation. Pest control contracts are required to be monitored by a trained PMPAR (OPNAVINST 6250.4C).

2.5.1. Current Pest Management Contracts

Alexandria Pest Services is the pest control contractor, Angel Systems is the grounds maintenance contractor, and Trugreen is the weed control contractor for NSA Bethesda. Contracts are prepared and managed by the Facilities Engineering and Acquisition Division (FEAD) within the Public Works Department (PWD). Contract documents are included in Appendix G.

2.5.2. Contract Specifications and Review

Pest management contract specifications must be written to ensure effectiveness, safety, and regulatory compliance. Specifications should state that the contractor:

- Shall comply with Federal, State, and local laws and regulations which also includes DOD, DON and USMC directives and this IPMP;
- Shall provide copies of pesticide applicator and business licenses to verify that they are current;
- Shall request approval of all pesticides to be used on the installation prior to their use;
- Shall use pest control vehicles that are properly marked and provide secure storage for pesticides;
- Shall report pesticide use and all pest management activities to the installation IPMC via the Government Representative; and

- Shall not store, mix, or dispose of pesticides or clean pest control equipment on the installation.

The Facilities Support Contract / Base Operation Support (FSC/BOS) performance-based contract template for pest control (Sub-annex 1503020) and grounds maintenance (Sub-annex 1503050) is available from NAVFAC Atlantic or on the NAVFAC Portal at https://portal.navfac.navy.mil/portal/page/portal/pw/fsc/template (requires login). The facilities contracting officer (KO) or contracting officer representative (COR) can provide additional information. Additional guidance on writing contracts can be found in AFPMB TG 39: *Guidelines for Preparing DOD Pest Control Contracts using Integrated Pest Management*. The online version (http://www.afpmb.org/sites/default/files/pubs/techguides/tg39.pdf) also contains links to the DOD Guide Performance Work Statement. The KO shall send the contract specifications to the NAVFAC Atlantic PPMC for review prior to procurement (OPNAVINST 6250.4C pg 26).

Termite pretreatment contract specifications shall also be reviewed by the NAVFAC Atlantic PPMC prior to procurement. The Unified Facilities Guide Specifications (UFGS) 31 31 16 Soil Treatment for Subterranean Termite Control (http://www.wbdg.org/ccb/DOD/UFGS/UFGS%2031%2031%2016.pdf) should be included in all new construction contracts for termite pretreatment. See section 3.2.4.2 for more information on termite treatment contracts.

2.5.3. Government Representatives

Contractors will communicate and submit required pest management reports via their Government representative. For the pest control and grounds maintenance (FSC/BOS) contracts, the representative is the PMPAR who is responsible for assessing the contract. For Non-Appropriated Fund (NAF) (i.e. NEX, MWR) contracts, the representative is the local NAF organization manager. In cases where a Government representative is not available, then the installation IPMC may liaison with a contractor's representative.

2.5.4. Contract Requirements

The application of pesticides by contractors is strictly regulated by Department of Defense and Navy regulations, this IPMP and State regulations. These requirements apply to all pesticide applications including insecticides, herbicides, fungicides, molluscides, etc. to turf, ornamentals, trees, and all indoor work. These requirements apply to any size contract (small purchase or facility support contract generated) and services acquired by any other means including government purchase cards (EBUSOFFINST 4200.1, Para.7). The specific requirements for contracted pest control operators working on Navy properties are:

- Contractor Work Plan (CWP): If required by the contract, a CWP shall be submitted as part of the contractor's proposal. The CWP specifies how the contractor will meet the contract requirements. If available, the CWP will be included in this IPMP in Appendix H.
- Pesticide Applicator Certification: All contractor personnel, who apply pesticides (which include all herbicides), shall be certified / licensed in the appropriate applicator category in accordance with section 2.4.4 of this IPMP. All contractors who will apply pesticides shall, prior to the start of work, supply a copy of the certificate(s) / license(s) in accordance with contract specifications. Pesticide business licenses and pesticide applicator certificates are included in Appendix K.
- Pesticide Approval: Pesticides used by contractors must be approved and added to the installation AUL, before use, by the NAVFAC Atlantic PPMC as described in section 2.2. The list of proposed pesticides shall be included in the CWP or submitted to the designated Government representative using the format designated in the contract specifications. The AUL is in Appendix E of this IPMP.

- Pesticide Mixing, Storage, and Disposal: Contractors shall not store, mix, or dispose of pesticides or clean pest control equipment on the installation. One exception to this is soil treatment for termite prevention during building construction; the contractor must mix the termiticide on-site while the PMPAR or IPMC is there to witness.
- Pesticide Applications: Only pesticides listed on the AUL shall be used and applied in a manner consistent with the pesticide label.
- Pest Management Reporting: Contractors shall submit reports in accordance with the reporting requirements in section 2.3.3.
- Contractor Vehicles:
  - Safety equipment: Vehicles used to transport pesticides shall be equipped with a fire extinguisher and a spill and decontamination kit, capable of handling the maximum amount of pesticide transported at any given time.
  - Security: All pesticides carried on the vehicles shall be secured in locked compartments at all times. Vehicles shall not be left unattended at any time unless properly locked and secured.
  - Identification: Vehicles will be clearly identified as a pest control vehicle.
  - Appearance: All vehicles shall be maintained with a clean and orderly appearance, free from observable pesticide spills, residues, or build-up.
  - Transporting pesticides: Pesticides shall not be transported in the cab or occupied part of any vehicle. They shall always be carried in a separate compartment from the occupied cab.
- Compliance Assessment: All contractors are subject to regulatory compliance assessments by the PMPAR, IPMC, environmental compliance staff, and other authorized Government personnel. Pest control vehicles, pesticide applications, and administrative requirements are subject to inspection. Authorized Government personnel may also require the contractor to stop work if the work is not being performed in a safe manner.

2.5.5. Contract Performance Assessment

Contracts shall be assessed by a trained PMPAR to ensure environmental and contractual compliance. For FSC/BOS contracts, Functional Assessment Plans (FAP) for pest control and grounds maintenance should be developed and implemented. FAP templates are available from the KO or NAVFAC Atlantic. Periodic assessments for pests prior to, during, or after pest control operations should be conducted to ensure efficacy of the services. Pest survey methods for contract performance assessments are found in Appendix H on each of the Integrated Pest Management Sheets. Periodic assessment of the contractors during pesticide application should also be conducted to ensure safety measures are being taken. The contractors' vehicles and equipment must be made available for inspection when requested. In the absence of a PMPAR, the installation Preventive Medicine Technician (PMT) can provide information on the efficacy of pest control in some facilities. The PMT conducts monthly inspections that include pest surveys of food service facilities and child development centers. The PMPAR and the IPMC should liaison and coordinate performance assessment activities with the PMT.

3. Operations

3.1. Integrated Pest Management (IPM)

3.1.1. Federal Regulation and Policy

Presidential executive order (EO 13514), October 5, 2009, requires federal agencies to promote pollution prevention and eliminate waste by implementing integrated pest management and other appropriate landscape management practices. US Code states "Federal agencies shall use Integrated Pest Management techniques in carrying out pest management activities and shall promote Integrated Pest Management through procurement and regulatory policies, and other activities." (USC Title 7, Chapter 6, Subchapter II, Sec. 136r-1). It is DOD policy to "Incorporate sustainable Integrated Pest Management (IPM) philosophy, strategies, and techniques in all aspects of DOD and Component vector control and pest management planning, training, and operations, including installation Integrated Pest Management Plans and other written guidance to reduce pesticide risk and prevent pollution" (OPNAVINST 6250.4C).

3.1.2. What is IPM?

IPM is "a planned program incorporating education, continuous surveillance, 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 habitat modification, biological, genetic, cultural, mechanical, physical, and regulatory controls, and when necessary, the judicious use of least hazardous pesticides" (OPNAVINST 6250.4C). There are significant differences between IPM and "traditional" pest control methods. Table 3-1 lists some of the differences.

Table 3-1. Comparison of Traditional Pest Control and IPM Methods

Pest Management	Traditional Pest Control	IPM
Program Strategy	Reactive	Preventive
Customer Education	Minimal	Extensive
Potential Liability	High	Low
Emphasis	Routine pesticide application	Pesticides used when exclusion, sanitation, and other non-chemical methods are inadequate
Inspection and Monitoring	Minimal	Extensive
Pesticide Application Frequency	By schedule	By need
Pesticide Application Target	Area-wide spraying	Spot treatment of areas where pests are found
Customer Involvement in Preventing Pests	Minimal	Extensive

In IPM programs, treatments are not made according to a predetermined schedule. Rather, 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 hazardous to non-target organisms and the general environment.

Under an IPM program, execution of individual pest management practices involves the following steps:

- **Identify** pests and possible natural enemies;
- **Develop plans/strategies**, an integration of treatment methods, that are effective against the pest, least disruptive to natural controls and least hazardous to human health and the environment;
- **Establish action thresholds** or the size of the pest population correlated with a threshold, sufficient to warrant treatment. In determining threshold levels, the amount of aesthetic or economic damage that can be tolerated must be correlated with the population size of pests, natural enemies, time in the season, and/or life stage of the pest or host;
- **Monitor pest population** for regular sampling of pest and natural enemy populations. Monitoring is an ongoing activity;
- **Control pest** (optional);
- **Document results**; and
- **Evaluate/redesign plan** to determine the outcome of treatment actions.

Controlling pests has traditionally been the responsibility of the pest control operator. **In IPM, preventing and controlling pests is the responsibility of all personnel on the installation.**

3.1.3. IPM Compliance

All pesticide applicators are trained in IPM techniques during initial and refresher licensing or certification training. Government representatives shall assess the PMSP's compliance with IPM. This may include:

- Reviewing the approved pesticide list for use of less toxic pesticides, baits with sustainable control, short-residual and pest-specific products, and products used for spot treatment rather than broadcast application.
- Contractor work plans and partner pest management plans that incorporate IPM.
- Reviewing pest management records to ensure that only approved pesticides are used, spot applications are performed, non-chemical methods are used, and routine surveys are being performed.
- Observing pest control service calls to ensure pest control operators identify conditions conducive to pest infestations, provide information to building occupants on how they can prevent pests, use only approved pesticides, perform spot treatments, properly apply baits, conduct routine surveys, and monitor baits / bait stations / traps.

3.1.4. Integrated Pest Management Sheets

The IPM sheets in Appendix H provide guidelines for the integrated control of pests at the installation. They may be used as a reference for surveillance and non-chemical and chemical control alternatives.

3.2. Current Pest Management Operations

3.2.1. General Household and Nuisance Pests

Pest control, for the purposes of this IPMP, is the control of arthropod and vertebrate pests in and around buildings. Sanitation, glue traps and exclusion are the primary means of non-chemical control in and around structures. Low toxicity insecticidal baits are used effectively for cockroaches and ants. Most pesticide applications involve the application of contact chemicals or those that have short residual efficacy.

3.2.1.1. Cockroaches

German and American cockroaches are common pests. The general adaptability of the German cockroach makes it an important pest problem in food service areas. An integrated approach of using both preventive and corrective techniques is the only practical means of controlling this pest.

3.2.1.2. Preventive Control Measures

Preventive control measures including inspection, interior and exterior facility sanitation, and exclusion methods such as closing harborage areas by caulking or other modifications, reduce the chances for pest survival by limiting needed food, water, and shelter. In buildings that are most susceptible to pest infestation, services are performed on a scheduled basis through preventive maintenance contracts. Service includes inspection, recommendations on pest proofing and sanitation and chemical control, if needed. Common use areas and food consumption areas of other buildings, i.e., areas used by people as a group, such as heads, coffee messes, lounge areas, and vending machine rooms, are serviced on either a monthly or quarterly basis, depending on the preventive maintenance contract for that building, with response to call-backs as necessary. This also includes common use areas of the barracks, warehouses, and administration buildings. Buildings where there is no food and where problems occur only occasionally such as shops and storage buildings, are handled on a service call basis. Pesticide treatments in food handling areas shall be confined to crack and crevice placement when using residual aerosol or dust formulations. Insect Growth Regulators and baits are used to complement other control measures. Self-contained light traps may also be utilized in these areas. Low odor formulations are used in offices and in other spaces where a pesticide odor would be objectionable.

3.2.2. Grounds Maintenance

Grounds maintenance is performed on improved or landscaped grounds. Pest management during grounds maintenance may involve weed control, control of pests and disease on plants, trees and turf, and control of vertebrate animals (i.e. squirrels, moles) that may destroy plants and turf. Mechanical removal of weeds and mowing are routinely performed. Grounds maintenance also includes weed control in drainage ditches that may contribute to mosquito control and bird habitat removal. Weed control is performed along roadways, fence lines, and at fuel farms where they pose fire and visibility concerns.

3.2.2.1. Weed Control

A wide variety of herbicides are available for controlling unwanted vegetation. Extreme care should be taken when using herbicides around waterways. Herbicides can be used around mowing obstacles such as signs, fire hydrants and manholes. Herbicides can also used to control weeds along cracks in sidewalks and asphalt parking areas, along fence lines, around buildings, and along ditch banks. Selective herbicides are used to control various weeds that occur in lawns on the Base. Various cultural and chemical controls can be used to deal with these and other weed control problems. When using chemical control, both selective and non-selective herbicides may be used.

3.2.3. Aquatic Weed Control

Aquatic weed control work should be maintained in accordance with the INRMP recommendations. The policy of NSA Bethesda is to control and limit the spread of invasive species of plants, and to protect native aquatic plant species.

3.2.4. Structural Pests

Structural pests which have an impact on activity operations include termites, powder post beetles, wood borers, and wood destroying fungi. Of these, subterranean termites and wood destroying (decay) fungi cause the most damage.

3.2.4.1. Structural Control Program

A well managed structural pest control program includes inspection, prevention and chemical treatments when needed. All susceptible structures that contain wood or wooden structural members should be inspected on an annual basis. Records should note when a building was inspected, the location of any infestation found, and the description of any treatment performed.

3.2.4.2. Administration of Termite Treatment Contracts and Warrantees

Various control techniques including: (1) the use of construction practices which protect wood from attack; (2) controlling moisture through proper drainage and ventilation; (3) the use of termiticides for barrier treatment of soil and hollow masonry units of building foundations, and (4) the use of treated wood and or metal and concrete supporting structures, are part of an integrated approach to structural pest control. Corrective chemical treatments should be performed when termites are found actively damaging wood. Control operations should be based on annual inspections of buildings and reports of termite swarming from building occupants. Top priority is given to preventive control treatments, such as preconstruction termite soil treatments and the use of treated wood to protect wood from attack.

The NAVFAC LANT PPMC should review contract specifications for termite control. Termiticides, when needed, must be applied at the highest EPA-labeled concentration and application rate. Soil treatment for termite prevention will be conducted during building construction in accordance with the Unified Facilities Guide Specifications (UFGS) 31 31 16 (DODINST 4150.07, para. E.4.7.15.1). In accordance with UFGS 31 31 16, the contractor shall provide a warranty of no less than five years. This ensures that if termite activity is discovered during the five year warranty period, the contractor will re-treat the soil and repair or replace any damage that has been caused by termite infestation. Termiticides used for termite control must be nonrepellent, such as pesticides with the active ingredient of fipronil, imidacloprid, chlorfenapyr, or chlorantraniliprole. DOD-certified pesticide applicators or PMPARs trained in pest control shall inspect applications of pesticides by contractors to control termites or other wood-destroying organisms

Once treated with termiticides, care must be taken to prevent disturbance of the soil barrier within one foot of the foundation (if moved by gardening activity or covered when raised flower beds are installed against a building). This can be a serious problem in housing areas where people are encouraged to beautify their yards. Raised beds must be four-sided (i.e. not using the foundation as one side) and soil within one foot of the foundation can't be cultivated for planting. All wood that is damaged by termites or wood rot fungi should be replaced with treated wood to prevent future damage.

3.2.5. <u>Stored Product Pests</u>

Stored product pests are a potential problem at NSA Bethesda. Receipt inspection and rejection of obviously infested materials generally prevents heavily infested material from being placed in the storage area.

3.2.5.1. Dermestid Beetle

If the dermestid beetle *Trogoderma* is found in a commodity, the whole lot of food must be condemned. The pointed hairs on the larvae will cause digestive problems if the contaminated food is eaten. An accurate identification of *Trogoderma* is required to condemn the lot. For the most part, sanitation (keeping storage areas clean) and stock rotation minimize or prevent pest infestation. If an infestation is found, the most effective way to control *Trogoderma* is through deep cleaning, vacuuming and discarding or segregating the infested product while surveying adjacent areas. ULV space treatments and residual sprays are used to stop movement of an infestation to clean stock within food storage areas.

3.2.5.2. MRE Stores

More stringent controls are required for prevention of stored products pests. Guidance on this program can be found in the AFPMB Technical Guide #38 (http://www.afpmb.org/sites/default/files/pubs/techguides/tg38.pdf).

3.2.6. Health Related Pests

Mosquitoes, biting flies and gnats (*Culicoides*), and filth flies constitute the most important insect groups from the standpoint of both disease transmission and general annoyance. Ticks are rarely a problem on base, and are identified to species and handled on a case-by-case basis when they occur. Operations directed at controlling potential disease vectors must be based on a thorough knowledge of the target pest. Survey operations are essential in determining the species present, the population level involved and the potential hazard of disease transmission. Surveys also serve as a valuable tool in evaluating control operations.

3.2.6.1. Mosquito Surveillance

Mosquito surveys are necessary to determine the species present, their abundance, the potential hazard of disease transmission, and information on which to base an efficient control program. Mosquito surveillance includes conducting both larval and adult surveys. Larval surveys are important because they determine exactly where mosquitoes are breeding, providing the information necessary to manage or eliminate mosquitoes at the source. Larval surveys involve regular dipping stations that are selected, noted on a map and inspected periodically throughout the mosquito season. In areas where mosquito control is conducted, random larval sampling should be made to check the effectiveness of the control program. Adult mosquito surveys may be conducted by either collecting mosquitoes from resting sites or using light traps. Adult collections are then counted and identified to genus or species so that the level of disease threat can be assessed. Adult surveys are focused on collecting female mosquitoes because they are the only ones that bite. Female mosquitoes require a blood-meal before they can lay viable eggs. The male mosquito feeds on plant sugars such as nectar, and does not bite. A high proportion of adult males in a trap collection usually will indicate a nearby larval habitat, and a survey of the area should be done to locate possible breeding sites. BUMED (Entomologists with the Navy Entomology Center of Excellence and also the Navy Environmental and Preventive Medicine Units) is responsible for providing professional guidance, recommendations, and on-site assistance on all technical matters relating to disease vectors and other medically important pests (OPNAVINST 6250.4C).

Alexandria Pest Services conducts the adult mosquito surveillance on NSA Bethesda. A map of the trap sites is located in Appendix J. Adult female mosquitoes are counted and sent to the Army Public Health Command for virus testing. Test results from the 2012 mosquito season are included in Appendix J. Based on mosquito surveillance results, Preventive Medicine determines whether control methods should be implemented.

3.2.6.2. Mosquito Control

Mosquito control methods are either permanent (e.g. eliminating the water source) or temporary (e.g. chemical control) in nature and may be directed against larvae or adults. Larviciding is the most effective way to control mosquitoes. Larvicides are applied by Alexandria Pest Services. Larvicides should be applied to areas where water stands for longer than 7 days. Biological control can be accomplished by the introduction of mosquito fish (*Gambusia* sp.), which are surface feeders that are predaceous on mosquito larvae. *Gambusia* species have the ability to outcompete other species, so it is important to consult with the Environmental Department prior to introducing them, as well as to only introduce them into waters that do not drain into other waterways. To decrease the amount of standing water it is important to have a drainage system

allowing proper runoff of rain water from roadways. Ditches should be maintained free of weed growth. This increases water flow in the ditch allowing access of natural mosquito predators.

When female adult mosquito counts exceed 25 per night per trap, Ultra Low Volume (ULV) insecticide treatments are initiated by Alexandria Pest Services. If a trap count exceeds the threshold, the area surrounding that trap should be surveyed to identify and treat the active breeding site. For most species, mosquito activity is greatest from dusk to dawn. Adult mosquito control efforts should be made during peak mosquito activity. ULV operations should be conducted in the early morning hours before the sun warms the ground, or in the evening after the ground has cooled. Regular testing of ULV aerosol droplet dispersal is required to assure maximum control, minimum insecticide use, and prevention of automobile finish spotting caused by droplets that are too large. This testing must be done at the beginning of each spray season and for every 50-100 hours of operation, or when the pesticide is changed. More information is included in the Armed Forces Pest Management Board Technical Guide #13: *Ultra Low Volume Dispersal of Insecticides by Ground Equipment* (http://www.afpmb.org/sites/default/files/pubs/techguides/tg13.pdf). Slides for aerosol droplet size testing can be obtained from and analyzed by the Testing and Evaluation Department at the Navy Entomology Center of Excellence, Jacksonville.

3.2.6.3. Filth Fly Management

Filth flies (houseflies, blow flies, flesh flies, bottle flies, etc.) can be a problem during the warm summer months if high sanitation levels are not maintained. Timely disposal of garbage and routine cleaning of garbage cans and dumpsters helps to minimize the problem. Garbage cans and dumpsters should be placed on concrete pads at least 100 feet from facilities to reduce breeding under and around the containers and to minimize access to the facilities. Continuous monitoring of sanitation conditions in and around food service areas helps assure that significant fly breeding will not occur.

The choice of fly control techniques must be based on an on-site evaluation of the problem. Pest control personnel inspect areas where garbage is handled and treat these locations with approved insecticides when flies exceed control limits. Preventive Medicine personnel also inspect these areas and report significant findings to appropriate people for corrective action. Exclusion devices such as screens and air curtains help prevent the entrance of flying insects into buildings when installed and properly maintained. Aerosol insecticide treatments are provided when adult flies become a problem in indoor spaces. Automated pesticide misting devices are not allowed by DOD instruction. Light trap devices are also helpful for filth fly control in food handling areas, but only when they are placed inside of the building. Use only non-contaminating light traps with some way of containing the dead insects. For more information on this, see AFPMB Technical Guide No. 29: *Integrated Pest Management In and Around Buildings* (http://www.afpmb.org/sites/default/files/pubs/techguides/tg29.pdf).

3.2.6.4. Bed Bug Management

Within the past decade, there has been a significant resurgence of bed bugs worldwide. Bed bugs are blood-feeding ectoparasites that are usually associated with humans, bats, or birds. These insects have a number of features that make them very effective pests and thus difficult to control: their small, flattened body design allows them to take harborage in inconspicuous places such as cracks and crevices; a female can lay several hundred eggs during her lifetime; they can survive a long time without feeding; and many insecticides have been rendered ineffective due to resistance development. The most common way bed bugs are introduced is by the movement of infested items (*i.e.,* bedding, clothing, and luggage) from one place to another. The common bed bug is not known to transmit human disease. For most people, the bite of a bed bug is

painless and will usually go unnoticed, though many people can have allergenic skin reactions, ranging in severity from local inflammation and itchiness, to asthmatic symptoms and anemia. Since this is a public health issue the involvement of installation Preventive Medicine personnel is highly recommended.

Because of their cryptic lifestyle, bed bugs can be difficult pests to detect without a diligent survey strategy. Bed bugs typically feed at night when the host is asleep, and seek off-host harborage in cracks and crevices during the day. It is very important to *thoroughly* inspect areas where bed bug infestation is suspected. Typical harborage areas might include mattress seams, box springs, bed frames, night stands, picture frames, loose wallpaper, and curtains. Bed bugs typically travel 5-20 feet from their harborage area to feed. When populations are small, infestations may go unnoticed. Some tell-tale signs of a larger bed bug population include the presence of fecal spotting, shed skins, increased biting frequency, and in serious cases a distinct "obnoxiously sweet" odor produced by the bugs. Persons conducting inspections and surveys should be properly trained on what to look for and where to look for infestations.

Bed bug control may be more difficult to achieve today with increased travel and more stringent limitations on available control materials. A successful control program will require a carefully planned and integrated approach. For more information on controlling bed bugs see the AFPMB's Technical Guide 44, Bed Bugs - Importance, Biology, and Control Strategies (http://www.afpmb.org/sites/default/files/pubs/techguides/tg44.pdf).

3.2.6.5. Red Imported Fire Ant

The red imported fire ant has not yet been found at NSA Bethesda. Inspections should be conducted periodically to determine whether fire ants have moved into the area. The fire ant's mound building and stinging behavior interferes with recreational and grounds maintenance activities. Bait and residual insecticides are available for control of fire ants if they are found on the installation.

3.2.6.6. Rodent Management

Rodent control work is an ongoing program to eliminate the causes of rodent infestations. Major emphasis is placed on sanitation and exclusion to limit the amount of food and harborage available to rodents. Tamper-proof bait stations should be maintained in high infestation areas. There are new EPA requirements for first generation anticoagulant products (warfarin, chlorophacinone, and diphacinone), second generation anticoagulant products (brodifacoum, bromadiolone, difenacoum, and difethialone) and non-anticoagulants (bromethalin, cholecalciferol and zinc phosphide). Bait stations are required for all outdoor, above-ground placements and are also required indoors if exposure to children, pets, or non-target animals is possible. All outdoor above ground use must be in a bait station and be applied within 100 feet of man-made structures. Mechanical traps (snap traps, glue traps, etc.) are another effective control method. Trapping is an effective way of quickly reducing a large mouse population.

3.2.6.7. Bird Management

Pigeons are the primary bird pests. Pigeons, English sparrows, and starlings can be controlled without a permit because they are not covered under the Migratory Bird Treaty Act. Other bird species require special permits before any control measures can be taken. Bird control methods vary according to the situation. Bird droppings pose a health hazard, as a possible cause of histoplasmosis and other respiratory problems when airborne. Bird ectoparasites, such as mites, can also fall on installation employees. Ultrasonic devices and plastic owls and snakes, etc. are not effective for bird control. The best alternative for bird control is "bird proofing" or the exclusion of birds by closing up all openings. Because of its permanency, bird proofing (i.e., the placing of hardware cloth and chicken wire over potential roosts) is considered the most

cost effective means of control. Population reduction techniques (i.e., destruction of nests accessible by a ladder or "cherry picker") can sometimes be used effectively. Repellent chemicals which produce alarm reactions and cause a flock to leave or avoid an area are often used. Control personnel should continually monitor bird population levels and take appropriate control actions when required.

3.2.6.8. Feral Cat Management

Cats may occasionally be found near food handling areas or dwelling in crawl spaces under buildings where they can cause flea problems inside of the buildings. The elimination of available food by keeping garbage cans and dumpsters sealed will decrease the appeal of the area to the cats. Elimination of shelter is also a good means of control. The activity should discourage people from feeding stray cats. EV Services pest control uses live traps for the capture and subsequent transport of these cats to the local animal shelter. Guidance on this control plan can be found in AFPMB Technical Guide # 37 (http://www.afpmb.org/sites/default/files/pubs/techguides/tg37.pdf).

3.2.7. Pest Management in Housing

3.2.7.1. Public Private Venture Housing

The Flag Housing area at NSA Bethesda is under a Public Private Venture (PPV) partnership with Lincoln Military Housing. Lincoln Military Housing is responsible for providing pest management services and responsible for upholding the agreements set forth in the Partner's Plan for Pest Control included in Appendix G. General pest control services are currently being provided by contract with Noble Pest Management and grounds maintenance services are being provided by Clippers. Certificates for the PPV contract pesticide applicators are located in Appendix K. Contractors providing services in the PPV areas must follow all state and local laws.

3.2.7.2. Pet Management

Pet dogs and cats released or lost by owners on base can become a pest problem. Feral cats and dogs are susceptible to and can carry disease, damage natural habitats, harm protected wild animals, become a vehicle strike hazard, and attack and injure personnel. Pet owners are encouraged to microchip their pets. Microchipping is a permanent pet identification system using a computer chip implant in the skin of the animal. This allows a lost pet to be identified even if the collar tag is missing.

3.2.8. Prohibited Operations and Devices

3.2.8.1. Occupied spaces

"Installations shall not permit the application of liquid, dust, or aerosol pesticide formulations in any space occupied by unprotected personnel. However, pesticides contained in gel or paste bait formulation may be applied in occupied spaces in accordance with pesticide label directions." (OPNAVINST 6250.4C pg 25 and OPNAVINST 5090.1C Para. 17-4.13)

3.2.8.2. Preventive or Scheduled Pesticide Treatments

"Regularly scheduled, periodic pesticide applications are not approved for DOD property except in situations where the IPM plan clearly documents that no other technology or approach is available to protect personnel or property of high value. Installations shall not use preventive pesticide treatments, to include automated misting devices, unless the appropriate pest management consultant has given approval based upon current surveillance information or records documenting past disease vector or pest problems that require this approach." (DODINST 4150.07, Para. E4.10.3).

3.2.8.3. Electrically Operated Devices

"Electromagnetic exclusion or control devices, ultrasonic repellent or control devices, and **outdoor** devices for electrocuting flying insects are not approved for use on DOD installations (DODINST 4150.07, Para. E4.10.1); this does not apply to **indoor** use of selected devices, carefully placed, for electrocuting flying insects. Pest surveillance traps and monitoring equipment, such as non-electrocuting mosquito light traps, may also be used by trained personnel.

3.3. Regulatory Compliance

3.3.1. Policy

Department of Defense policy is to 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. When there is a conflict between Federal and local regulations, the installation will comply with the more stringent of the two. This may occur with pesticides limited for use by the State of Maryland, which are not necessarily restricted by the EPA. In this case, the installation must comply with Maryland regulations.

3.3.2. Pesticide Regulation and Enforcement

3.3.2.1. Pesticide Regulation

The U.S. Environmental Protection Agency (EPA) has the primary authority to regulate pesticides in the U.S. The EPA delegates pesticide enforcement authority to states through cooperative agreements. OPNAVINST 6250.4C requires Navy installations to comply with state and local pesticide use regulations.

3.3.2.2. Enforcement

The responsibility for compliance and enforcement lies with the installation CO. As the CO's pest management advisor, the IPMC shall be familiar with Federal, State and local pesticide use regulations and ensure that all applicators conduct operations in compliance with these regulations. Regulatory enforcement for each of the PMSPs is provided.

- **Commercial contractor applicators:** PMPARs shall provide assistance by monitoring contract PMSPs for compliance with all applicable regulations as specified in the contract and will recommend appropriate actions to the contracting officer if the contractor does not comply. PMTs conducting inspections of food service facility pest management programs can also ensure compliance for safe pesticide use and applicator licensing / certification (Inspection guidelines are found in NAVMED P-5010 Chapters 1 and 8).
- **DOD applicators:** The pesticide applicator's immediate supervisor, with the assistance of the IPMC, shall also ensure that pesticide use is in compliance. Under the authority of DOD Instruction (DODINST) 4150.07 and DOD Directive 5134.01 and per DOD 4150.07, Volume 1, the DOD may deny, suspend, or revoke the certificate of any DOD employee who violates any provision of FIFRA or falsifies records. In accordance with DOD 4150.07, Volume 1, the installation CO may initiate a formal review if FIFRA violations are suspected. Violations shall be reported through appropriate command channels to the NAVFAC Atlantic certifying authority for review. The certifying authority shall determine if further action is required. That action may include suspension of the applicator's certification. See DOD 4150.07, Volume 1 for more information http://www.afpmb.org/sites/default/files/pubs/directives_mous/415007m_vol1.pdf.

NAVFAC Atlantic Applied Biology shall provide assistance to the installation IPMC with compliance and enforcement issues and clarification of regulations. The senior pest

management consultant is the certifying official for DOD certified pesticide applicators on the installation.

3.3.3. Laws and Regulations

3.3.3.1. Primary Pesticide Regulations

- **Federal:** U.S. Code of Federal Regulations (CFR) at 40 CFR Section E, 152-180: Pesticide Programs (http://www.access.gpo.gov/nara/cfr/waisidx_03/40cfrv21_03.html).
- **DOD and Navy:** DODINST 4150.07, DOD Pest Management Program; OPNAVINST 6250.4C, Navy Pest Management Programs; OPNAVINST 5090.1C, Environmental Readiness Program Manual.
- **Maryland:** The Maryland Department of Agriculture, Pesticide Regulation Section administers Maryland's Pesticide Applicator's Law, approves training courses in the handling, storage and use of pesticides, conducts examinations to determine that pesticide applicators are competent to follow prescribed pest control practices, enforces federal laws on the sale and use of pesticides, and investigates pesticide accidents or incidents and consumer complaints on pesticide misuse (http://mda.maryland.gov/plants-pests/Pages/pesticide_regulation.aspx).

3.3.3.2. The Pesticide Label

The primary source of pesticide regulations for the pesticide applicator is found on the pesticide label in accordance with 40 CFR 156. Maryland may add supplementary labels which are regulations that must be complied with in the State. **It is a violation of Federal and/or State law to use a pesticide in a manner inconsistent with the label.** Note, however, that the pesticide label does not provide specific information for each site where the pesticide may be applied. For example, the pesticide label may allow application of an herbicide to unimproved grounds, but if those grounds are within a ringed map turtle habitat, then pesticide use may be restricted under the Endangered Species Act. Pesticide applicators should be aware of environmentally sensitive areas before beginning any new pesticide application and should consult the installation's Environmental Department. For more on the pesticide label, see http://www.epa.gov/pesticides/label/.

Endangered Species Protection Bulletins set forth geographically specific pesticide use limitations for the protection of endangered or threatened species and their designated critical habitat. If your pesticide label directs you to the EPA Bulletins Live! Website (http://epa.gov/espp/bulletins.htm), you are required to follow the pesticide use limitations found in the Bulletin for your county, pesticide active ingredient and application month.

3.3.3.3. Other Regulations

Other applicable directives, laws, and regulations concerning pesticide applicators and pest management operations are listed and described in Appendix C.

3.4. Pesticide Management

Chemical control of pests using pesticides can be an integral part of an IPM program. Proper management of pesticides will ensure a safe and cost-effective pest management program. Management of pesticides includes the proper selection of pesticides, pesticide approval, procurement, storage, mixing, use of pesticide application equipment, and clean-up. The pesticide label provides most of the information needed to manage pesticide use and must be affixed to the container at all times.

3.4.1. Pesticide Selection

The following criteria should be used when selecting a pesticide:

- **Determine the need for a pesticide.** Is a chemical pesticide really needed? In some situations non-chemical control methods may be more effective or less costly and time-consuming in the long term. Will exclusion or habitat elimination take care of the problem?
- **Choose a pesticide with a low toxicity.** Can the pest be sufficiently controlled with a pesticide that has a low toxicity to humans?
- **Choose pesticides and pesticide formulations with minimal environmental impact.** Avoid using "Restricted Use" pesticides if possible. The environmental impact of pesticide spills is reduced when using a granular pesticide formulation rather than a liquid. Can attractant bait stations be used instead of broadcast application of a pesticide?
- **Choose pesticides that provide a long-term or sustainable solution.** For example, contact insecticides applied to ant trails will only temporarily halt the infestation, and may cause the colony to bud and form new colonies, while baits can kill the entire colony including the queen.

3.4.2. Pesticide Procurement

Pesticides used by contractors are included in the cost of the contract and are procured through commercial sources. Pesticides used by DOD personnel may be purchased through the Federal Stock System. Contractors cannot purchase pesticides through the Federal Stock System. A list of pesticides approved by DOD and found in the Stock System can be found at http://www.afpmb.org/pubs/standardlists/DOD%20pesticides%20list.pdf (these are not the only pesticides that may be used on the installation). Only pesticides listed on the installation's Authorized Use List (AUL) in Appendix E may be purchased. All pesticide products and pest control services procured via government credit cards must also be pre-approved by the NAVFAC LANT PPMC (NAVSUPINST 4200.99). For information on requesting new pesticides to the installation AUL, see section 2.2 Pesticide Approval.

3.4.3. Pesticide Storage

3.4.3.1. Pesticide Storage

The USUHS DOD-certified pesticide applicator maintains a small pesticide storage area. Pesticides used by commercial contractors are stored off-site in contractor-owned facilities. DODINST 4150.07 (Para. E4.5.1.) states that pesticide storage facilities "shall comply with all applicable regulatory standards and shall, where feasible, be modified to meet the minimum standards for new pesticide storage facilities." The DOD standards are described in *AFPMB TG 17: Military Handbook, Design of Pest Management Facilities* (http://www.afpmb.org/sites/default/files/pubs/techguides/tg17.pdf).

3.4.3.2. Vehicles

Pest control vehicles must carry pesticide spill kits in accordance with OPNAVINST 6250.4C. Pesticides shall not be transported in the vehicle's passenger compartment and pesticide containers shall be secured to vehicles to prevent spillage.

3.4.4. Mixing

The USUHS DOD-certified pesticide applicator conducts pesticide mixing at the pesticide storage area. All pesticide mixing conducted by commercial contractors is done off-site. One exception to this is soil treatment for termite prevention during building construction; the contractor must mix the termiticide on-site while the PMPAR or IPMC is there to witness. Pest control operators must mix pesticides in accordance with the pesticide label in appropriate areas that minimize the risk of safety and environmental hazards.

Contracted pest control operators must also mix pesticides in accordance with the contract specifications. Persons mixing pesticides with water shall protect the water supply from back-siphoning of the pesticide mixture. They shall also ensure accurate measurement of concentrated pesticide to ensure proper application rate. Precautions must be taken to minimize the risk of a pesticide spill. See Section 5.3.4 for pesticide spill prevention measures. Spill kits must be maintained on pest control vehicles and must be available at the mixing site.

3.4.5. Application

3.4.5.1. Service containers

Containers other than the original pesticide container that are used for transporting pesticides to the job site must have a copy of the label attached. Service containers used for the application of a pesticide must have the following information on a tag attached to the container: name of party responsible for the container, the identity of the chemical in the container, and signal word of the chemical. Containers commonly used for food, drink, or household products **shall not be used** to hold pesticides.

3.4.5.2. Equipment

Only pest control equipment that is in good repair and safe to operate shall be used by PMSPs. The equipment should be in good condition, free from corrosion, clean and free from leaks. The PMPAR shall inspect equipment used by contract applicators. Applicators shall also ensure that they use equipment suitable to ensure proper application of pesticides.

3.4.5.3. Pesticide Application

All pesticides shall be applied in accordance with Federal, State and label directions. Application of pesticides should be timed to ensure contact with and maximum kill of the pest and to prevent use under adverse weather conditions that can cause drift of the chemical outside the target area. See section 4.2.2 for more information on timing and drift prevention

3.4.6. Post-application Clean Up

All pest control equipment shall be properly cleaned. Contract PMSPs are not allowed to dispose of excess pesticide, used containers, or residues on the installation per contract specifications; they must conduct all cleaning off-site. Spray tanks and pesticide containers must be triple-rinsed prior to storage or disposal. Disposal of pesticide spray tank rinse water should be performed by applying to a site listed on the pesticide label, used for future mixing of the same pesticide, or disposed of as hazardous waste. Rinse water shall not be allowed to enter storm drains.

3.5. Minimum Risk Pesticides

Minimum risk pesticides, such as those marketed under the EcoEXEMPT® brand, may be used by pest management service providers (PMSP) as part of their IPM program. According to the EPA, “Minimum risk pesticides are a special class of pesticides that are not subject to federal registration requirements because their ingredients, both active and inert, are *demonstrably* safe for the intended use.” These pesticides are exempt from federal registration under section 25(b) of the FIFRA and are not labeled with an EPA registration number. Since there is no federal review of these pesticides or their pesticide label, there is no federal review of the instructions for effective use of these products. Although these pesticides are exempt from federal registration, they still need to be approved prior to use on DOD property, primarily for efficacy and safety reasons.

3.6. Cancelled Pesticides

In recent years several common organophosphate pesticide registrations have been cancelled or restricted. Chlorpyrifos (i.e. Dursban®, Lorsban®) and diazinon were widely used pesticides by private and commercial pesticide users that have been cancelled. The following actions are allowed with these pesticides:

- End users (e.g. PMSPs and private, residential users) are allowed to use the pesticides until depleted.
- PMPARs should monitor the use of the pesticides by contractors to ensure that they are not using an increased amount of the pesticides as a means of using up their stock.

The EPA is also cancelling most organic arsenical pesticide registrations, which consist of monosodium methanearsonate (MSMA), disodium methanearsonate (DSMA), calcium acid methanearsonate (CAMA), and cacodylic acid and its sodium salt. Organic arsenical pesticides are used or have been used as herbicides on cotton and other agricultural crops, in forestry, on residential and other lawns and turf, and in non-crop areas such as rights of way, drainage ditch banks, fence rows, and storage yards. All uses of DSMA, CAMA, and cacodylic acid and its sodium salt were canceled as of September 30, 2009.

All uses of MSMA **except** cotton, sod farms, golf courses, and highway rights-of-way, were canceled as of September 30, 2009. Use of MSMA on sod farms, golf courses, and highway rights-of-way **was** to have been prohibited after December 31, 2013, but because the EPA is considering newly-submitted information, these uses remain registered. These uses, in addition to the cotton use, will be considered in the pending registration review process for MSMA. **Users can continue to apply MSMA on sod farms, golf courses, and highway rights-of-way until further notice, but thoughtful use and consideration of depleting stocks is highly encouraged.**

4. Health and Safety

4.1. Pesticide Applicator Safety

To ensure the safe use of pesticides, pesticide applicators shall handle and apply pesticides in accordance with the product's label directions.

4.1.1. Potential Occupational Hazards

The following hazards may be encountered by pesticide applicators or Government representatives that may be exposed while inspecting pest management operations. Occupational Safety and Health guidance is found in the OPNAVINST 5100.23G: *The Navy Occupational Safety and Health Program Manual*.

4.1.1.1. Direct Contact Toxic Chemical Exposure

Many chemicals used as pesticides are also harmful to humans. The three routes of exposure to applicators are dermal, inhalation and ingestion. For applicators the most common route of exposure is dermal; frequently due to not wearing the appropriate personal protective equipment. Severity of the harmful effects is determined by duration of exposure and toxicity of the chemical. The effects can be acute (rapid onset due to high dosage, high toxicity) or chronic (slow or delayed onset; due to long term exposure to low dosage, low toxicity chemicals). The highest risk for severe acute chemical exposure occurs during pouring and mixing of concentrated pesticide resulting in high dose, rapid onset chemical poisoning. Chronic exposure can occur when the applicator fails to use appropriate PPE during frequent pesticide applications and the chemical accumulates in the body of the individual over a period of time leading to delayed or gradual onset of illness or injury. Direct chemical exposure can result not only in pesticide poisoning, but in skin burns due to corrosive chemicals.

4.1.1.2. Heat

The use of protective equipment such as respirator, goggles, gloves and coveralls increases the risk of heat injury especially in warm climates. Heat injury can occur during long periods of work outdoors during warm weather or in enclosed spaces where machinery or equipment may generate heat.

4.1.1.3. Noise

Some pesticide application equipment use gas-powered air compressors or pumps that produce noise hazards. Gas-powered backpack sprayers are particularly hazardous due to the proximity of the noise source to the ears.

4.1.1.4. Eye Hazards

Eye hazards may result from chemical splashed into the eyes causing corrosive, toxic, or impact injury. Some pesticides are labeled "Restricted Use" due to their corrosive nature. Highest risk occurs during pesticide pouring, mixing and application. During pesticide applications, chemicals may enter the eyes through "splashback" when applying the chemical under pressure into a crack or crevice or when applying pesticides overhead. Injury may also occur during equipment cleaning.

4.1.1.5. Infectious Zoonotic Disease

Care should be taken when trapping and handling live or dead animals. Hantavirus may be transmitted from rodents to humans through body fluid exposure or when breathing aerosolized rodent excreta. Pest management providers may be exposed when handling rodent carcasses after trapping or handling traps contaminated with rodent urine and feces. Feral dogs, cats, skunks, raccoons, and bats may carry and transmit rabies through a bite.

4.1.1.6. Inhalation Hazards

Many pesticides release hazardous vapors and are particularly hazardous in enclosed spaces. Some pesticides are labeled “Restricted Use” due to the high risk of inhalation injury. Personnel may be exposed during mixing, application, and cleaning.

4.1.1.7. Electrical and Fire Hazards

Spot and crack and crevice applications may require application of a pesticide to areas near motors of refrigerators, compressors and other machinery where it can become an electrical shock hazard. They may also be applied to areas near pilot lights resulting in an explosion and/or fire hazard.

4.1.1.8. Head Impact and Sharp Hazards

Surveys and pest control procedures may be done in attics, crawl spaces, basements, and other areas with low overheads where head impact hazards exist. Some devices used for bird roosting exclusion and rodent control have sharp edges and can cause cuts, puncture wounds, and abrasions.

4.1.1.9. Trip and Fall Hazards

Trip hazards may occur when applicators are spraying without close attention to where they are stepping. Spraying around buildings where there are various obstacles (i.e. plants, utility boxes, plumbing) in the path of the applicator can be particularly hazardous. Pest control may also need to be performed from ladders, on roofs, in ceilings, and in trees. Wet surfaces on the ground or on elevated surfaces can increase the risk of trips and falls.

4.1.1.10. Exposure to Harmful Animals

Venomous animals such as bees, wasps, rattlesnakes, and spiders are potential hazards when attempting to control them. Some of these are very dangerous due to envenomation and allergic reactions. Feral dogs, cats, coyotes, raccoons, and other large pest animals can inflict serious bites or clawing wounds.

4.1.2. Hazard Abatement

4.1.2.1. Operational Risk Management

Operational Risk Management (ORM) is a decision making tool to reduce the risk of mishaps, whether in military contingency or support operations. Pest management operations pose risks to human health and the environment that affect the installation’s mission that can be reduced and minimized by ORM. Pest management ORM uses the following process to minimize hazards:

- **Identify hazards** – the hazards may involve the pesticide or the application equipment (see list of hazards above)
- **Assess hazards** – determine the degree of risk based on the probability and severity of these hazards. For example, the risk may be high if a highly toxic pesticide is used daily.
- **Make risk decisions** – Develop risk control options. Decide whether benefits of control outweigh the risks involved.
- **Implement controls**
    - Engineering controls – Example: use a less toxic pesticide for controlling the pest
    - Administrative controls – Example: place warning placards around pesticide vehicles and pesticide storage areas
    - Personal protective equipment – Example: wear a respirator when an inhalation hazard exists
- **Supervise** – Follow-up to determine effectiveness of controls and monitor changes to hazards.

For more information on ORM go to the Navy Safety website at http://www.safetycenter.navy.mil/.

4.1.2.2. Training and education

Pesticide safety is a core requirement for DOD and civilian pesticide applicator certification and licensing programs. Topics included in the DOD training are listed in DOD Manual 4150.07, Volume 1 DOD Pest Management Training and Certification Program: The DOD Plan for Pesticide Applicators. Safety topics are also given during recertification courses. See section 2.4 for specific training information.

4.1.2.3. Read the Pesticide Label

Pesticide labels are found on all pesticide containers used by installation PMSPs. The pesticide label provides directions for mixing, applying, and disposing of pesticides safely. It also includes a list of hazards to humans and first aid treatment. It may also include a list of personal protective equipment that must be worn and user safety recommendations. The label should always be read completely and thoroughly by the applicator before purchasing and using a pesticide. The label is a legal document mandated by Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA).

4.1.2.4. Personal Protective Equipment

Personal Protective Equipment (PPE) should always be used when applying pesticides. The type and level of protection needed will be determined by the toxicity, formulation and method of application of the pesticide. The pesticide label provides guidance on what PPE to use.

- Respirator
- Chemical-proof gloves
- Coveralls or long-sleeve shirt and long pants
- Chemical-proof boots
- Hard hat
- Goggles
- Apron
- Faceshield
- Self-contained breathing apparatus (for fumigation)

PPE must be appropriate for the type and application of the pesticide being used. It is the applicator's responsibility to maintain the PPE. Contractors must provide appropriate PPE to their applicators.

4.1.2.5. Pest Control Vehicle Safety Devices

Pest control vehicles should be equipped with safety devices and information. This may include:

- Emergency medical information including nearest emergency treatment center
- Fire extinguisher
- Spill kit
- First aid kit
- Cell phone or radio
- Drinking water supply
- Rinse water supply for washing pesticide off skin.

4.1.2.6. Pesticides and Equipment

The risk of pesticide exposure can be reduced by selecting the appropriate pesticide and equipment for the job. Applying small amounts of low toxicity pesticide using appropriate and properly maintained equipment greatly reduces the risk of harm. Using pesticides that are formulated (i.e. contain emetics) or packaged (i.e. water-soluble packets) to minimize chemical exposure and increase safety should be considered when purchasing pesticides. Pesticide selection is addressed in section 3.4.1.

Equipment should be tested with water prior to application to ensure proper application and that it is not leaking. Situational awareness, such as monitoring meteorological conditions and location, also prevents harmful exposure to pesticides.

4.1.2.7. Protection from Infectious Zoonotic Diseases

Pest control personnel who handle trapped animals or dead animal carcasses should wear gloves to prevent exposure to potentially infectious body fluids. A respirator fitted with a high efficiency particulate air filter should be worn when entering enclosed spaces with large amounts of rodent feces that might be disturbed and become airborne. Additional protection from hantavirus can be provided by spraying dead rodents and rodent feces with a commercial disinfectant. This will kill hantavirus as well as wet the feces to prevent it from becoming airborne. Detailed guidance on rodent handling is found in AFPMB TG 41: *Protection from Rodent-borne Diseases with Special Emphasis on Occupational Exposure to Hantavirus* (http://www.afpmb.org/sites/default/files/pubs/techguides/tg41.pdf).

4.1.2.8. Hazard Communication

All pesticide applicators must receive OSHA Hazard Communication training (29 CFR 1910.1200). Contractors must carry material safety data sheets (MSDSs) in their vehicles or, as appropriate, at their on-base administration office. Applicators must understand all of the hazards associated with the chemicals they will use and be able to communicate those to the customer if necessary.

4.1.2.9. Medical Surveillance Program

DOD pesticide applicators are required to be in a medical surveillance program depending on their hazard exposure. Medical surveillance is conducted by the occupational health clinic at the Naval Medical Clinic in accordance with Navy Environmental Health Center Technical Manual (NEHC-TM-OEM) 6260.1: Occupational and Environmental Medicine Field Operations Manual and Medical Matrix.

4.2. Public Safety

4.2.1. Potential hazards to public

4.2.1.1. Direct Contact with Pesticides

Pesticide exposure can occur through dermal contact with a pesticide on a surface, inhalation of vapors, or ingestion of pesticide contaminated food or eating utensils. This type of exposure can occur if a pesticide application is done while unprotected building occupants are present, occupants are allowed entry into buildings before the pesticide has dried, or food and food preparation and serving equipment were not properly protected or cleaned after an application.

4.2.1.2. Pesticide Drift

Pesticide drift occurs when a pesticide leaves the target area and affects unprotected persons outside the area. This commonly occurs outdoors when winds can carry the pesticide off-site. Drift can occur indoors if there is air movement or pesticides are drawn up through ventilation ducts. Pesticide applications that involve small pesticide droplets, such as fogging or ultra low volume (ULV) application, or dusts are most susceptible to drift.

4.2.1.3. Contact with Contaminated Water

Some pesticides can move through soil and contaminate groundwater used for drinking. Others, if applied in or close to surface water, can cause contamination of recreational waterways.

4.2.1.4. Injury Due to Animals

The use of an inappropriate pesticide may cause collateral injury due to an insufficient "knockdown" of the target pest. This can occur with bees and wasps. Some insecticides do not knockdown the insects rapidly and may actually excite them causing them to become more aggressively defensive in behavior. Unprotected persons blocks away from the pesticide application may become the target of their aggression. Injury can also occur when persons get too close to or try to release a trapped animal or try to capture feral animals by themselves.

4.2.1.5. Fumigation Exposure

Fumigants are highly toxic and can cause immediate death upon exposure. Fumigations can be performed in the housing area where it poses a potential hazard to neighbors and pets. During fumigation the chemical is injected into a tarped structure and allowed to remain for 24 hours. The highest risk of injury or death occurs if a person or animal were to enter the tarp during this period or after the tarp is removed and the before the building is completely ventilated. The fumigant, when exposed to air, dissipates rapidly and readily.

4.2.2. Hazard Abatement

4.2.2.1. Proper Timing of Pest Control Operations

Most indoor application of pesticides should be conducted when building occupants are not present. An exception to this is the application of pesticide baits that are enclosed in a tamper-proof bait station that does not allow exposure to occupants or pets. The building occupants must remain out of the building to allow the liquid pesticide to dry. Some pesticide labels are specific about re-entry times (time after application that occupants are allowed back into the treated building). Some pesticides such as fumigants provide specific directions on aeration of spaces to remove pesticide prior to re-entry. Certain operations, such as bee and wasp control or removal are best conducted after the area has been cleared of unprotected persons. Refer to the product label for specific information.

4.2.2.2. Preventing Pesticide Drift

Pesticide drift from target areas to areas where humans, animals and plants can be affected can be reduced through the following means (adapted from University of Nebraska publication G1773: Spray Drift of Pesticides at http://www.ianrpubs.unl.edu/epublic/live/g1773/build/g1773.pdf).

- Select low or nonvolatile pesticides.
- Read and follow the pesticide label. Apply a pesticide only if an application is warranted.
- Use spray additives that decrease drift within label guidelines. This will increase the droplet sizes and pesticide effectiveness.
- Use larger spray nozzle orifice sizes. This will give larger droplets and will increase the number of tank refills, but will improve coverage and effectiveness.
- Avoid high pressure. High pressure creates finer droplets; 45 PSI should be considered maximum for conventional broadcast spraying.
- Use drift-reduction nozzles. They will produce larger droplets when operated at low pressures.
- Use wide angle nozzles, low boom heights, and keep the boom stable.
- Drift is minimal when wind velocity is less than 10 mph. Do not spray when wind is greater or blowing towards sensitive crops, gardens, dwellings, livestock, or water sources.
- Use shielded spray booms. When banding, use shroud covers to keep chemical from drifting.

- For indoor applications, turn off ventilation and close doors to prevent air currents.

4.2.2.3. Prevent Tampering with Animal Traps

Caged animals can be very aggressive. Traps should be placed in areas where they will not be tampered with by humans or pets. Warning signs can be placed on the traps and area occupants can be warned of the risk of injury. Live and dead rodents in traps can also be a hazard for hantavirus. Traps should be placed in areas where humans or domestic animals will not be exposed to the rodents.

4.2.2.4. Protection of Fumigation Sites

Warning signs should be posted at the fumigation site warning of the hazards. Some installation contracts require the contractor to provide a 24-hour roving watchperson to patrol the fumigation site to prevent entry by unauthorized personnel.

4.2.3. Special Safety Considerations

4.2.3.1. Child Development Center

Children can be sensitive to pesticides and other chemicals. Parents are also concerned about potential hazards that their children may be exposed to and have a right to know about these hazards. Best practice is to minimize pesticide use in and around child development centers and schools, use only enclosed baits and low toxicity pesticides, do not apply pesticides when people are present, and inform staff and parents of any pesticides to be used on the property. IPM should be used to reduce the health risks of pesticides to children.

4.2.3.2. Food Service Areas

Food contaminated with pesticides can lead to pesticide poisoning. Sanitation and exclusion should be the primary means of preventing and reducing pest infestations. Pesticide use in food service areas should be limited to low-toxicity pesticides applied to cracks and crevices and baits. The area should be properly prepared for treatment by putting away utensils and equipment and covering food preparation services. After treatment the area should be thoroughly cleaned to prevent contamination.

4.2.4. Emergency Planning and Community Right-to-know Act (EPCRA)

Executive Order 12856 requires all Federal agencies, including the DOD, to comply with the provisions of EPCRA. EPCRA is intended to 1) encourage and support emergency planning between the installation and the surrounding community, 2) provide the community with information about potential chemical hazards stored and used on the installation, and 3) establish a framework for local and state emergency planning. Chemical lists and applicable EPCRA sections and threshold quantities are found in the EPA List of Lists, which can be searched at: http://yosemite.epa.gov/oswer/lol.nsf/homepage.

4.2.4.1. Section 302: Emergency Planning Notification

Some pesticide active ingredients are Extremely Hazardous Substances (EHSs), and storage of them over a threshold planning quantity requires the installation to submit a facilities profile form to the State's Emergency Response Commission (SERC) and/or a Local Emergency Planning Committee (LEPC). However, typical pesticide storage does not incur an additional regulatory burden, because the installation stores other extremely hazardous substances that would require notification under this section.

4.2.4.2. Section 304: Emergency Release Notification

EHSs or CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act) listed hazardous substances that are accidentally released at or above their reportable quantity **must be reported** to local, state and federal authorities. Pesticides

applied in accordance with the pesticide label are exempt from this requirement. Pesticide spills are not exempt. The amount of pesticides stored, used and transported on the installation should be minimized to prevent accidental spills.

4.2.4.3. Section 311 and 312: Hazardous Chemical Inventory Reporting

This applies to OSHA hazardous chemicals which are any chemicals with an MSDS. Nearly all the pesticides used on the installation have MSDSs. This applies to pesticide storage and pesticides in spray tanks. Although it is unlikely that pesticide amounts in storage will exceed the threshold quantity at any given time, stored pesticides must be reported to the IPMC because reporting is cumulative.

4.2.4.4. Section 313: Toxic Chemical Release Reporting

40 CFR 372.38 (c)(2) exempts the use of toxic chemicals contained in products for routine janitorial and installations grounds maintenance. The routine maintenance exemption is intended to cover janitorial or other custodial maintenance and all other installation grounds maintenance activities using substances such as cleaning supplies, fertilizers, pesticides, fungicides, herbicides, rodenticides, and insecticides similar in type and concentrations to consumer products.

4.2.5. Specific State Laws:

Information specific to Maryland can be found at http://mda.maryland.gov/plants-pests/Pages/pesticide_regulation.aspx.

4.3. Pest Control Accidents

4.3.1. First Aid

First aid for pesticide accidents is included on the pesticide label. The applicator should be familiar with first aid procedures required for the pesticide they are using. A copy of the label must be available at the application site. For some pesticides, immediate first aid and medical treatment may be required.

4.3.2. Medical Emergencies

All pesticide applicators or persons responding to an injured applicator should call the installation's emergency number in the event of a medical emergency. The name, address, and telephone number of an emergency medical care facility should be posted in the commercial applicator's vehicle. For pesticide poisonings, a copy of the pesticide label should be given to the medical first responders or taken to the emergency medical facility. If cholinesterase-inhibiting pesticides (i.e. malathion) are used then the emergency room shall maintain the proper antidotes, atropine, and 2-pam chloride.

5. Environmental Considerations

5.1. Environmental Management System (EMS) for Pesticides

This IPMP puts pesticide management within the framework of the DOD and Navy EMS. This Plan provides the tools and products to include pesticide management in the installation's overall EMS program.

5.1.1. Department of Defense Policy

DOD policy states that "The Department of Defense shall integrate EMS into missions, activities, functions, contracts, and installation support agreements as a business practice for improving overall performance. EMS is a vital supporting component of the DOD mission and is therefore the responsibility of all DOD personnel. It is not just an environmental function responsibility, but requires active participation from all functions and organizations." The remainder of this policy and details on the EMS program are found in DODINST 4715.17 of 15 Apr 2009.

5.1.2. What is an EMS?

"Environmental Management System means a set of processes and practices that enable an organization to increase its operating efficiency, continually improve overall environmental performance and better manage and reduce its environmental impacts, including those environmental aspects related to energy and transportation functions. EMS implementation reflects accepted quality management principles based on the "Plan, Do, Check, Act," model found in the ISO 14001:2004(E) International Standard and using a standard process to identify and prioritize current activities, establish goals, implement plans to meet the goals, evaluate progress, and make improvements to ensure continual improvement." Council on Environmental Quality, "Instructions for Implementing Executive Order 13423, Strengthening Federal Environmental, Energy, and Transportation Management," March 29, 2007.

5.1.3. Conformance of the Pest Management Program to EMS

An EMS is comprised of five basic components. The components and how the pest management program conforms to these components are listed:

5.1.3.1. Policy

The installation has established an environmental policy to support "mission readiness through environmental stewardship". Pest management environmental objectives to meet this policy are:

- Reduce pesticide pollution that affects the installation's neighbors through the use of IPM to prevent adverse impact on air, water, and land resources.
- Use IPM to preserve aspects of the natural environment by managing and controlling invasive and nuisance pests and preventing pesticide pollution.
- Ensure and maintain the competence of pest management personnel through certification and training to ensure that effective operations and technologies are used to control pests that minimize waste, prevent air and water pollution, minimize health and safety risks, and dispose of waste safely and responsibly.
- Enable the IPMC to maintain effective oversight and coordination of the program and liaison with local agencies in order to ensure regulatory compliance.

5.1.3.2. Planning

This IPMP is the installations primary planning document. The Integrated Natural Resources Management Plan (INRMP) also provides pest management related planning. Specific planning items included in the IPMP are:

- Legal and other requirements are identified in Section 3.3, Appendix C, and listed throughout the plan.
- General objectives and targets are included in Section 1.3.2 and specific pest management objectives are included in the IPM project sheets in Appendix H.
- Environmental aspects of pesticide use and the pest management program are included in the Environmental Impact Log in Appendix I. Also included are personnel responsible for the practice, specific aspects of each pest management practice and the impacts on installation vulnerable assets are also identified for each practice.

5.1.3.3. Implementation

Implementation of the EMS is addressed in the following sections of the plan:

- Roles and responsibilities – Section 2.1
- Pest management personnel training and awareness – Section 2.4
- Program documentation includes record keeping, reporting and IPMP updates. These are addressed in Sections 2.3 and 1.1.5.
- Operational control is the responsibility of the pest management service providers. This is maintained through their contract or lease agreement. Operational requirements are found in Section 2.5. IPM is the operation used for reducing environmental impacts and supporting mission priorities. Safety considerations are in Chapter 4.

5.1.3.4. Checking and Corrective Action

The success of an EMS depends on the ability for an installation to assess and correct itself. The Internal Assessment Plan (IAP) provides the basis for a self assessing and self correcting system. The IAP inventory lists the practices and practice owners identified in the environmental impact log and creates a “checklist” for assessment. The IAP inventory for pest management is found in Appendix I. Additionally, a self-assessment checklist is included in Appendix D. Compliance is addressed in Section 3.3.2.

5.1.3.5. Management Review

The major claimant, Navy Installations Command (NIC), conducts periodic EMS reviews that will include the pest management program.

5.2. Environmental Considerations on the Pesticide Label

If the pesticide is potentially harmful to the environment, information will be provided in the following sections:

- Directions for Use: If pesticide drift is a potential environmental hazard, then the directions may require certain application equipment and/or the addition of an anti-drift agent to the tank mix.
- Environmental Hazards: This section may indicate the pesticide is particularly hazardous to specific animals (i.e. bees, fish). It will also provide information on how to avoid environmental damage.

5.3. Managing Environmental Impact

Many procedures to reduce the impact of pest management practices on vulnerable assets are already in place. Many of these are contained within existing NSA Bethesda environmental management plans.

5.3.1. Pesticide Pollution

5.3.1.1. Synthetic Pyrethroids

Pyrethroids are insecticides that are widely used for household, garden and agricultural pest control. Most were replacements for the more toxic and environmentally-hazardous organophosphate and carbamate insecticides. Recent State—wide surveys have indicated that some pyrethroids are being found in urban stream sediment and at least one chemical has been shown to be toxic to sediment dwelling organisms. The specific pyrethroids of concern are:

- Bifenthrin (i.e. Talstar®)
- Cyfluthrin (i.e. Cykick®, Tempo®)
- Beta-Cyfluthrin (i.e. Tempo Ultra®)
- Cypermethrin (i.e. Demon®, Cynoff®)
- Deltamethrin (i.e. Deltadust®)
- Lambda-Cyhalothrin (i.e. Demand®)
- Permethrin (i.e. Permanone®)
- Tralomethrin

Outdoor operations pose the greatest risk for pyrethroid contamination of surface water and stormwater runoff. Increased risk operations that may use pyrethroids include landscape plant insect control, agricultural insect control, and uniform repellent treatment.

5.3.1.2. Bee Protection from Pesticides

Bees are an important resource as they provide crop and natural plant pollination. Certain classes of insecticides are highly toxic to bees. These are organophosphates, carbamates, and neonicotinoids (i.e. imidacloprid). The greatest risk for bee poisoning is application of these insecticides for ornamental plants and agricultural crops. Insecticide labels include specific precautions to protect bees. These include timing applications when plants aren't blooming, bees aren't foraging, and at night when bees aren't active. The label will also include a residual toxicity (RT) time that is the time after application until there is minimal toxic effect on bees.

5.3.1.3. Pollution Prevention

A pesticide is unique as a potential environmental pollutant. When it is applied properly for the correct target pest and to the target location, it is not considered a pollutant. When a pesticide is applied or it drifts outside of the target area, then it becomes a pollutant. Pollution can occur during most pest management practices as the result of accidental spills, air and water emissions, and container disposal. Pollutants can be in the form of pesticide residues from equipment and container cleaning or as waste containers. The following pollution prevention best practices should be used on the installation:

- Conduct surveillance first to determine the need for pesticide use.
- Apply pesticides and clean equipment away from storm drains to prevent storm water contamination.
- Do not pour pesticide container rinsate into drains. Apply rinsate to a site listed on the pesticide label, store rinsate to use for future pesticide mixing, or dispose of according to local regulations.
- Use less-toxic and target-specific pesticides.
- When applying Permethrin repellent to uniforms outdoors: Do not mix or apply near storm drains or where water run-off will result in storm water contamination; Avoid overspray of pesticide onto the ground; and apply spray tank rinsate to uniforms.
- Minimize outdoor applications of pyrethroids.
- Use spot spraying and crack and crevice applications rather than broadcast or baseboard spraying.

- Minimize pesticide storage on the installation through proper inventory management and not allowing contractors to store pesticides on the installation.
- Use rodent traps rather than rodenticides.

5.3.2. Natural Resource Protection

Natural resources on NSA Bethesda have the potential to be impacted by pest management operations or have an impact on these operations. These operations include, but are not limited to, surveys, trapping, weeding, biological control, and pesticide use. The Integrated Natural Resources Management Plan (INRMP) for the installation provides detailed information on the natural resources found on the installation and will be included in Appendix I when finalized. The INRMP also lists management objectives and recommendations to protect and enhance the natural resources program.

5.3.2.1. Environmentally Sensitive Areas

No individuals of federally listed threatened or endangered species of plant or animal are known to be found on the installation. However, these negative results do not mean that individuals of a threatened or endangered species are not present or will not be found at some time in the future. Habitat suitable for several species is present on the installation, which leaves open the possibility of a population of one of these species being found. The current management plans call for continued surveys for threatened or endangered species on a regular basis, and to protect the habitat necessary for any threatened or endangered species that may be found during a biological survey.

5.3.2.2. Invasive Species Prevention

Invasive species can cause damage to native habitats and introduce diseases to native plants and animals. All military vehicles and materials that have been in contact with foreign soil and returning from foreign locations including Hawaii are required to be cleaned by the deployed unit and inspected by U.S. Department of Agriculture Plant Pest Quarantine Officers prior to disembarkation on U.S. soil per SECNAVINST 6210.2A, Quarantine Regulations of the Armed Forces. The purpose of these inspections is to prevent the introduction of disease causing organisms and plant pests. Although the inspections are generally thorough, the equipment of recently redeployed units should be monitored to ensure that any introduced pests are destroyed properly. Any pests found on this equipment should be reported to the Environmental Department. Appendix I includes the Invasive Plant Management Report for NSA Bethesda.

5.3.3. National Pollutant Discharge Elimination System (NPDES)

Water pollution degrades surface waters making them unsafe for drinking, fishing, swimming, and other activities. As authorized by the Clean Water Act, the National Pollutant Discharge Elimination System (NPDES) permit program controls water pollution by regulating point sources that discharge pollutants into waters of the United States. The permit is available to operators who discharge to waters of the U.S. from the application of (1) biological pesticides or (2) chemical pesticides that leave a residue when application is for one of four use patterns:

- Mosquito and other flying insect control
- Aquatic weed control
- Aquatic Nuisance Animal Control
- Forest Canopy Pest Control

If pesticide applications for the above use patterns are expected to exceed thresholds, a Notice of Intent (NOI) and preparation of a Pesticide Discharge Management Plan (PDMP) (PDMP template included in Appendix I) may be required. Practicing integrated pest

management, recordkeeping, and monitoring are also requirements under the NPDES permits.

5.3.4. Spill Prevention and Management

Installation spill prevention guidelines shall be followed. The following spill prevention actions shall be taken:

- Spill kits shall be readily accessible in all pest management vehicles, mixing sites and pesticide storage facilities.
- Pesticides shall only be stored in an area with containment to hold a spill and without a floor drain.
- Portable mixing pads shall be used when appropriate.
- All pesticide applicators shall be familiar with the installation spill contingency plan (included in Appendix I, if available).

All pesticide applicators are trained on spill response procedures as part of their initial pest management certification/licensing training. Spills will be managed as described in the installation spill contingency plan. Further information on preventing and controlling pesticide spills is contained in the AFPMB TG #15: *Pesticide Spill Prevention and Management* (http://www.afpmb.org/sites/default/files/pubs/techguides/tg15.pdf).

5.3.5. Hazardous Materials and Hazardous Waste Management

Pesticides, being hazardous materials, shall be managed in accordance with the installation's Hazardous Material Management Plan. Proper inventory management and planning will prevent waste generation. The appropriate use of pesticides produces very little hazardous waste. Rinse water containing pesticide residues usually has very small quantities of chemical and is often applied to the target pest site. Not permitting contractor storage of pesticides and on-site disposal of pesticide waste eliminates hazardous material and waste management. In general, pesticides that are not applied must be disposed of as hazardous waste. Large quantities of hazardous waste may be produced when a pesticide is not used by its expiration date. It may also be produced if a pesticide is not used up before the registration for that pesticide is cancelled and the stop-use date has occurred. These pesticides may be disposed of as Universal Waste only when allowed by the Standards for Universal Waste Management found in 40 CFR Part 273. Any excess pesticides or absorbent material used for spill clean-up requiring disposal requires evaluation by the Hazardous Waste Coordinator in the Environmental Department to ensure proper disposition.

6. Emergency Pest Management

6.1. Public Health Emergencies

Pests become a public health emergency when the pests increase in number and/or are found to carry human disease pathogens. A public health emergency, or potential emergency, requiring pest management action, may be indicated in several ways:

6.1.1. Natural or Manmade Disaster

Usually pest problems do not develop immediately after a disaster, such as earthquakes, wildfires, floods, vehicle accidents and terrorist attacks. Public health pest problems may be the result of increased amounts of refuse, collapse of local infrastructure (i.e. lack of garbage pick-up), decaying human and animal bodies, and accumulation of standing water. The potential pest related consequences are vector-borne or zoonotic disease outbreaks and increased contact with rodents and feral animals that may cause injury.

6.1.2. Vector-borne or Zoonotic Disease

- Reports of human cases – Many human cases of vector-borne and zoonotic disease identified in local medical facilities are reportable to the local and/or State health agencies. A report of a human case of West Nile Virus (WNV) or other disease may initiate an investigation and result in alerts going out to other hospitals and clinics if it appears that the case was locally acquired. Immediate vector control may be necessary to prevent further transmission.
- Detection of infected mosquitoes or sentinel animals – Routine surveillance for mosquito-borne diseases are conducted by local and State health agencies. These agencies report testing results through the public health system. This surveillance program is an early warning system that indicates when vector control should be initiated or increased to prevent human disease.
- CDC's Arbonet Maps, http://www.cdc.gov/ncidod/dvbid/westnile/USGS_frame.html, provide mosquito-borne disease information by state.

6.1.3. Animal Attack

Africanized Honey Bees (AHB) are of specific concern due to their aggressive defensive behavior. The local fire department is usually the primary responder to bee sting incidents. Fire department personnel have been trained to protect and manage bee sting victims. A stinging incident is not considered a pest control response issue, but rather, an emergency response and any and all appropriate bee control measures can be used. If fire department response is delayed installation first responders should be trained how to protect themselves and victims from bee stings.

6.2. Agricultural Emergencies

Agricultural emergencies are the result of the introduction of insects or other animals that can cause extensive damage to agriculture or forestry in the State. Examples of introduced agricultural pests include the Mexican fruit fly and gypsy moth. Military installations can be a conduit for the introduction of these pests due to the movement of military equipment and personnel in and out of the State and the Country. The military's role in preventing introduction of these pests is described in SECNAVINST 6210.2A: Quarantine Regulations of the Armed Forces. Inspections to prevent importation of pests are normally conducted at the port of debarkation in the foreign country.

6.3. Emergency Pest Management Resources

Installation PMSPs maintain pesticides and equipment to manage most emergencies. Contract PMSPs can be used for emergencies if it is written in the contract specifications. The Naval Branch Health Clinic should develop an Emergency Disease Vector Control Plan (EDVCP) to manage public health emergencies (included in Appendix J). It includes additional Navy and local government contingency vector surveillance and control resources.

7. Program Resources

NSA Bethesda has access to the following support agencies and organizations for pest management assistance. Contact information is located in Appendix L.

7.1. NAVFAC Atlantic Applied Biology, Code EV51, Norfolk, VA

NAVFAC Atlantic Applied Biology is currently staffed by six full time civilian DOD Professional Pest Management Consultants certified in DOD pesticide applicator categories 3,5,6,7,8 and 11. These personnel are assigned the following responsibilities:

- Review and approve the IPMP in accordance with DOD and Navy policy;
- Provide technical assistance to the installation IPMC, environmental manager, safety officer, medical officer and other regional and installation personnel regarding pest management and pesticide regulatory compliance;
- Review and approve or reject pesticides and equipment to be used on the installation;
- Conduct on-site program reviews and environmental compliance program external assessments (EA) to ensure compliance with the regulations and the IPMP;
- Compile and report actual pesticide use and pest management operations to appropriate DOD agencies;
- Provide IPM recommendations and pest identification;
- Assist installations with writing or re-writing IPMPs; and
- Provide recertification training for DOD certified applicators as well as initial and recertification training for PMPARs/IPMCs.

Website: https://portal.navfac.navy.mil/portal/page/portal/ev/applied_biology (This is on the NAVFAC intranet and is only available to NAVFAC, CNIC and USMC personnel who have an account. Personnel may individually request an account.)

7.2. Navy Environmental and Preventive Medicine Unit TWO (NEPMU-2), Norfolk, VA

NEPMU-2 is staffed by three full-time active duty Navy entomologists. The entomologists are certified in DOD pesticide applicator categories 3,5,6,7,8 and 11 and are assigned the following responsibilities:

- Act as Navy Medicine (BUMED) Professional Pest Management Consultants to provide BUMED review of IPMP and Emergency Disease Vector Control Plan;
- Provide initial and recertification training in categories 7&8 for Preventive Medicine Technicians;
- Provide technical assistance on the surveillance and control of vectors on the installation;
- Provide vector-borne disease risk assessments and disease prevention recommendations when requested;
- Provide disease vector management consultation and identification services; and
- Provide contingency pest management in the event of a disaster or disease outbreak.

Website: (http://www.med.navy.mil/sites/nepmu2/Pages/default.aspx).

7.3. Navy Entomology Center of Excellence (NECE), Jacksonville, FL

NECE is staffed by full-time active duty Navy entomologists. The entomologists are certified in DOD pesticide applicator categories 3,5,6,7,8 and 11 and are assigned the following responsibilities:

- Act as Navy Medicine (BUMED) Professional Pest Management Consultants to provide BUMED review and approval of IPMP;
- Provide initial training for DOD certified pesticide applicators;
- Provide technical assistance on the surveillance and control of vectors on the installation;
- Provide vector-borne disease risk assessments and disease prevention recommendations when requested;
- Provide disease vector management consultation and identification services; and

- Provide contingency pest management in the event of a disaster or disease outbreak.

Website: (http://www.med.navy.mil/sites/nmcphc/nece/Pages/default.aspx).

7.4. Maryland Department of Agriculture, Pesticide Regulation Section

The Pesticide Regulation Section administers Maryland's Pesticide Applicator's Law, approves training courses in the handling, storage and use of pesticides, conducts examinations to determine that pesticide applicators are competent to follow prescribed pest control practices, enforces federal laws on the sale and use of pesticides, and investigates pesticide accidents or incidents and consumer complaints on pesticide misuse. Website: http://www.mda.state.md.us/plants-pests/pesticide_regulation/index.php.

7.5. University of Maryland Extension (UME)

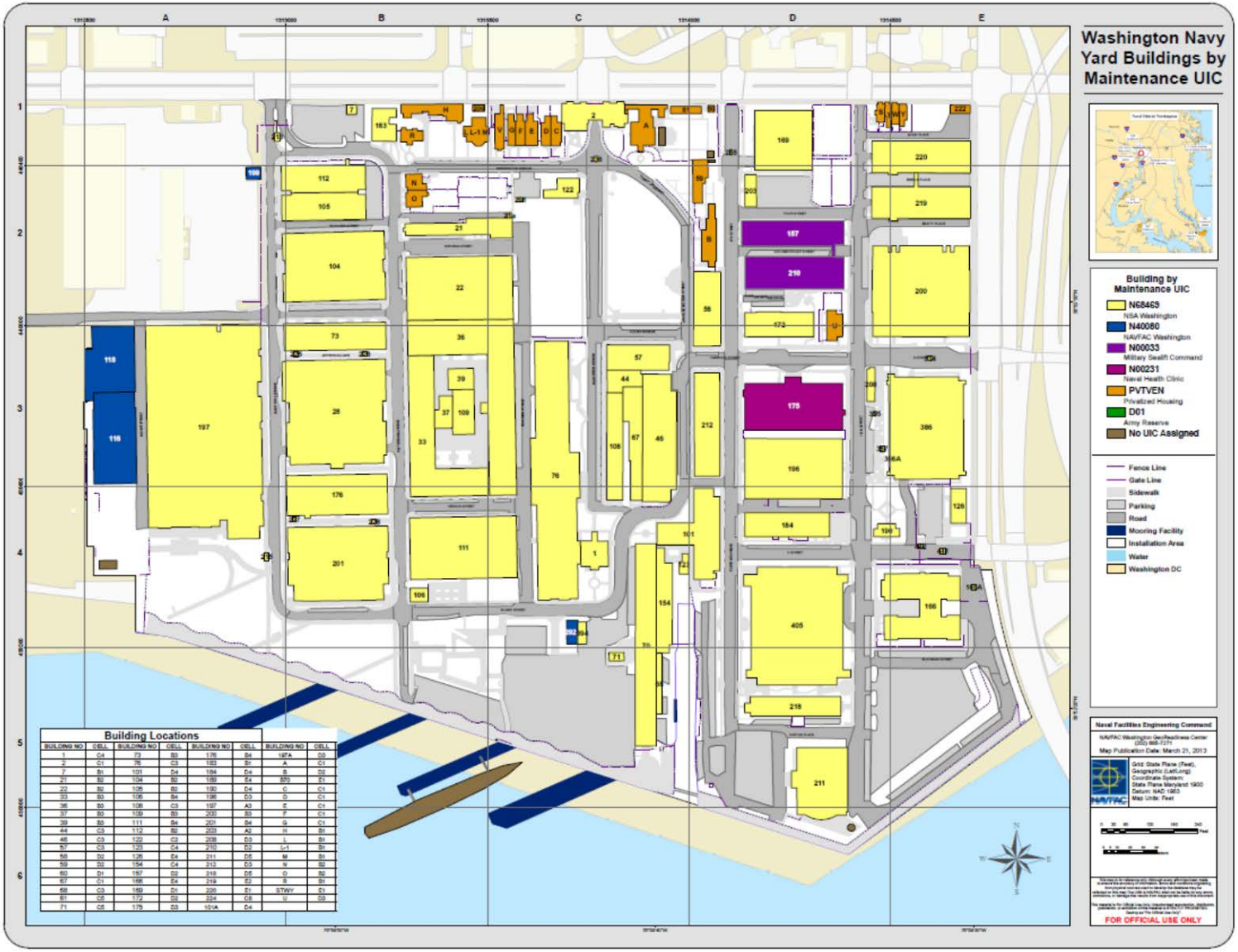
UME is a statewide, non-formal education system within the college of Agriculture and Natural Resources and the University of Maryland Eastern Shore. UME educational programs and problem-solving assistance are available to citizens and are based on the research and experience of land grant universities such as the University of Maryland, College Park. Website: http://extension.umd.edu/.

7.6. Maryland Department of Health and Mental Hygiene

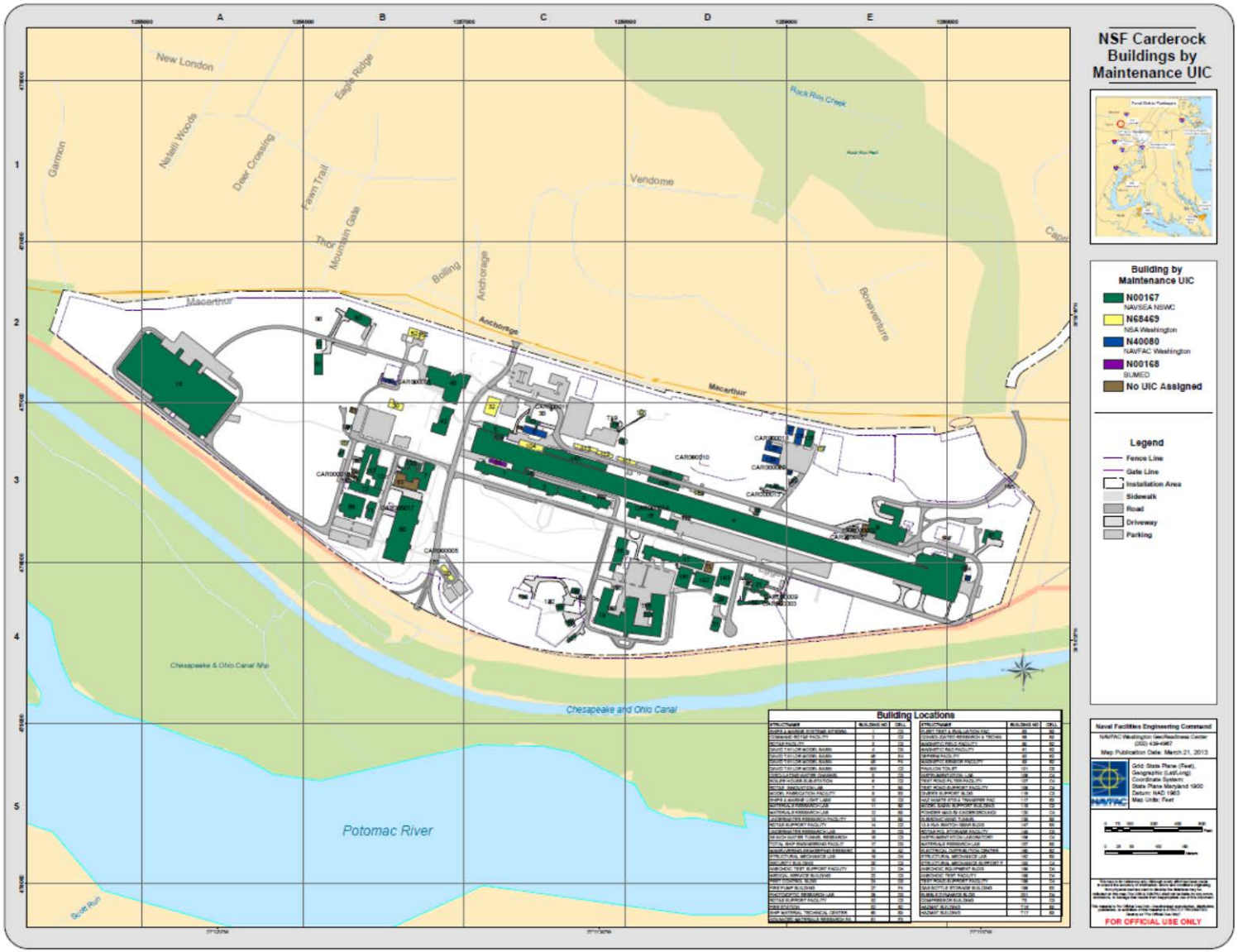
The Center for Zoonotic and Vectorborne Diseases (CZVBD) works to reduce the incidence and impact of rabies and other zoonotic and vectorborne diseases in Maryland. They do this in partnership with Maryland's 24 local health departments, other State agencies, health care providers, veterinarians, and the general public. Website: http://ideha.dhmh.maryland.gov/OIDEOR/CZVBD/SitePages/Home.aspx.

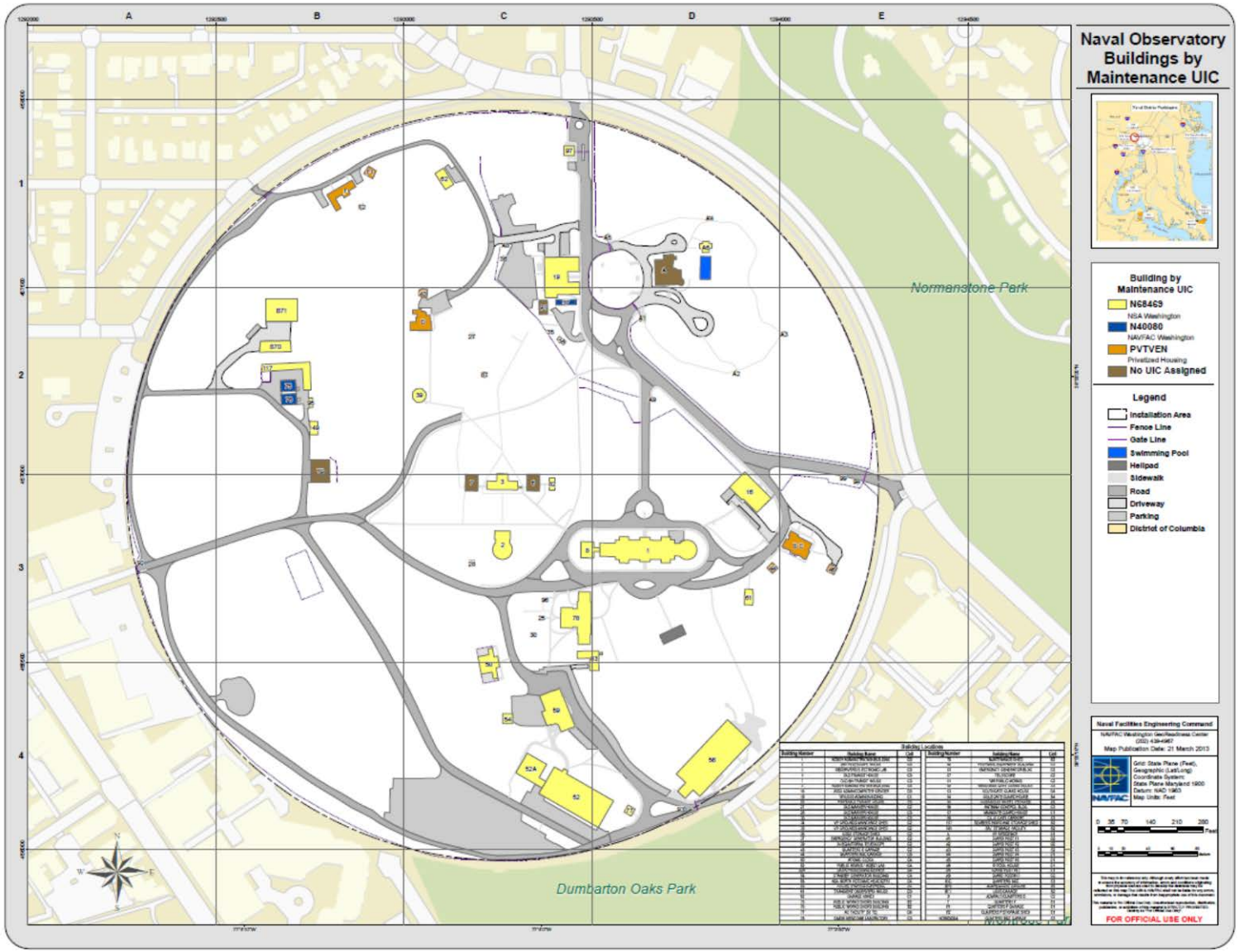
APPENDIX A

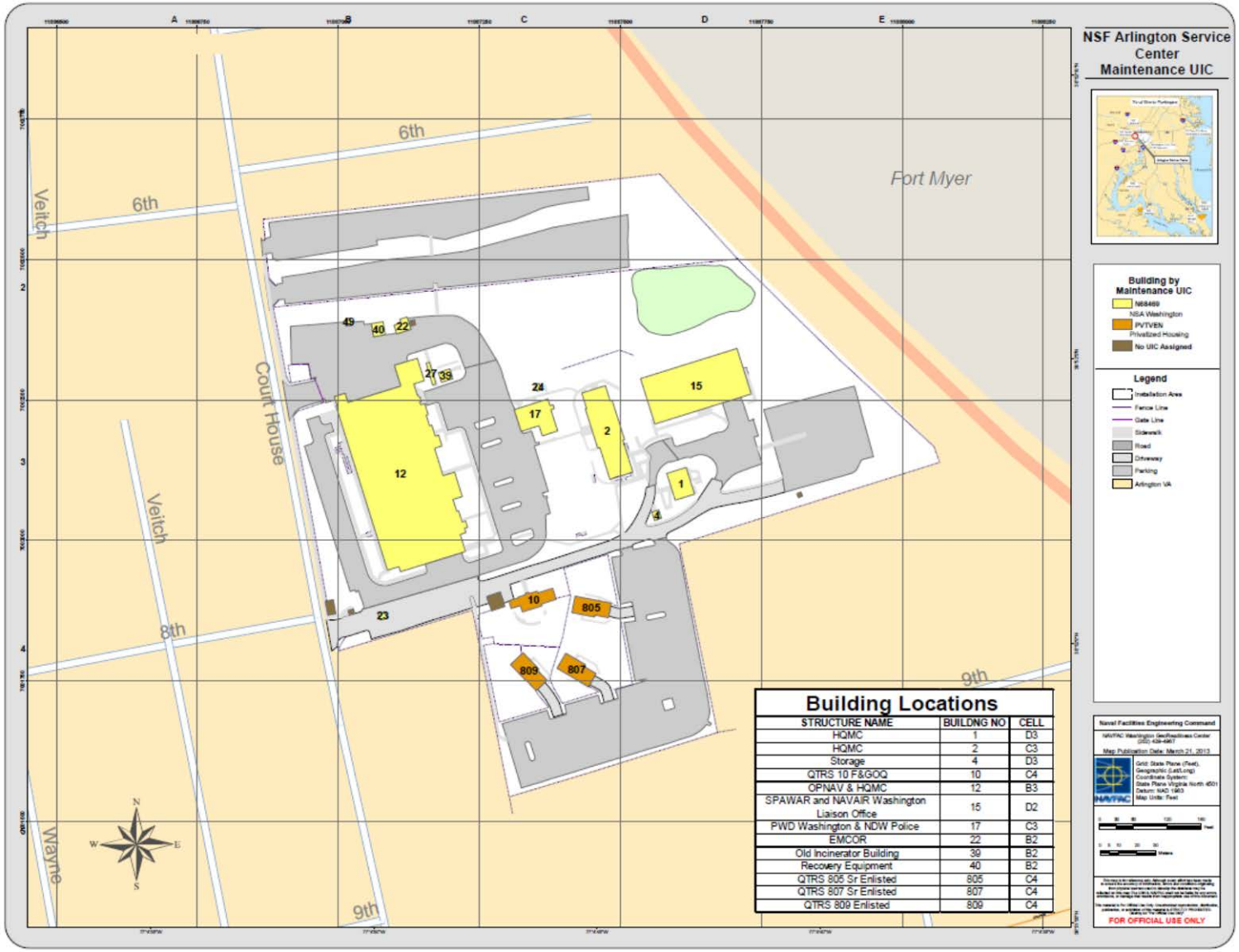
NSA Washington Installation Maps



BUILDING NO	CELL	BUILDING NO	CELL	BUILDING NO	CELL	BUILDING NO	CELL
1	C4	73	B3	176	B4	197A	D3
2	C1	76	C3	183	B1	A	C1
7	B1	101	D4	184	D4	B	D3
21	B2	104	B2	189	E4	BR	E1
22	B2	105	B2	190	D4	C	C1
33	B3	106	B4	196	D3	D	C1
36	B3	108	C3	197	A3	E	C1
37	B3	109	B3	200	B3	F	C1
39	B3	111	B4	201	B4	G	C1
44	C3	112	B2	203	A2	H	B1
46	C3	122	C2	208	D3	L	B1
57	C3	123	C4	210	D2	L-1	B1
58	D2	126	E4	211	D5	M	B1
59	D2	154	C4	212	D3	N	B2
60	D1	167	D2	218	D5	O	B2
67	C1	168	E4	219	E2	R	B1
68	C3	169	D1	220	E1	STWY	E1
81	C5	172	D2	224	C5	U	D3
71	C5	175	D3	101A	D4		


NSF Carderock Buildings by Maintenance UIC
Building by Maintenance UIC
N00167
NAVSEA NSWC
N68469
NSA Washington
N40080
NAVFAC Washington
N00168
BUMED
No UIC Assigned
Legend
Fence Line
Gate Line
Installation Area
Sidewalk
Road
Driveway
Parking
Building Locations
Naval Facilities Engineering Command
NAVFAC Washington Geo/Readiness Center
(202) 439-4967
Map Publication Date: March 21, 2013
Grid: State Plane (Feet), Geographic (Lat/Long)
Coordinate System: State Plane Maryland 1900
Datum: NAD 1983
Map Units: Feet
FOR OFFICIAL USE ONLY
Potomac River
Chesapeake and Ohio Canal
Chesapeake & Ohio Canal Nhp
Rock Run Creek
Scott Run
New London
Eagle Ridge
Natelli Woods
Deer Crossing
Garmon
Fawn Trail
Thor
Mountain Gate
Boling
Anchorage
Vendome
Bonaventure
Macarthur
Anchorage
Macarthur


Naval Observatory Buildings by Maintenance UIC
Building by Maintenance UIC
N68463
NSA Washington
N40080
NAVFAC Washington
PVTVEN
Privatized Housing
No UIC Assigned
Legend
Installation Area
Fence Line
Gate Line
Swimming Pool
Helipad
Sidewalk
Road
Driveway
Parking
District of Columbia
Normanstone Park
Dumbarton Oaks Park
Naval Facilities Engineering Command
Map Publication Date: 21 March 2013
FOR OFFICIAL USE ONLY


NSF Arlington Service Center
Maintenance UIC
Building by Maintenance UIC
N68469
NSA Washington
PVTVEN
Privatized Housing
No UIC Assigned
Legend
Installation Area
Fence Line
Gate Line
Sidewalk
Road
Driveway
Parking
Arlington VA
Naval Facilities Engineering Command
Map Publication Date: March 21, 2013
FOR OFFICIAL USE ONLY
Fort Myer
6th
Veitch
Court House
8th
9th
Wayne
49
40
22
27
39
24
17
2
15
12
1
4
23
10
805
809
807
Building Locations
STRUCTURE NAME | BUILDNG NO | CELL
HQMC | 1 | D3
HQMC | 2 | C3
Storage | 4 | D3
QTRS 10 F&GOQ | 10 | C4
OPNAV & HQMC | 12 | B3
SPAWAR and NAVAIR Washington Liaison Office | 15 | D2
PWD Washington & NDW Police | 17 | C3
EMCOR | 22 | B2
Old Incinerator Building | 39 | B2
Recovery Equipment | 40 | B2
QTRS 805 Sr Enlisted | 805 | C4
QTRS 807 Sr Enlisted | 807 | C4
QTRS 809 Enlisted | 809 | C4

APPENDIX B

INSTALLATION PEST MANAGEMENT POINTS OF CONTACT

Below is the contact information for pesticide compliance and pest management. This page should be kept up to date to ensure that the appropriate personnel may be contacted as necessary.

Name	Title	Phone Number	Email
CDR Andre Coleman	Public Works Officer PWD-W	202-685-7270	andre.coleman@navy.mil
James Watts	Deputy Public Works Officer PWD-W	202-433-2397	james.r.watts1@navy.mil
Jennifer Pipe	Integrated Pest Mgmt Coordinator NSAW	202-433-7182	jennifer.l.pipe@navy.mil
Heather Huddle	Integrated Pest Mgmt Coord NDW Region	202-685-0262	heather.huddle@navy.mil
Charles Napper	PAR (NSF Naval Observatory VPR)	202-762-0887	charles.e.napper@navy.mil
Tom Lewis	EVBLC NAVFAC Washington	202-433-6388	thomas.lewis@navy.mil
Durant Graves	IEPM NSA-W	202-433-0415	durant.graves@navy.mil
Kathryn Edwards	IEPM NRL	202-404-6641	kathryn.edwards@nrl.navy.mil
James Waite	Contracting Officer FSC	202-685-3141	james.waite@navy.mil
Madalyn Hawkins	FSC Service Manager	202-685-3316	madalyn.hawkins@navy.mil
Cari Gill	PAR (WNY)	202-685-8292	cari.gill@navy.mil
Mike Xander	Head Gardener (NSF Naval Observatory)	202-762-0691	michael.xander@navy.mil
Dave Pool	PAR (NSF Carderock)	301-370-1826	david.w.pool@navy.mil
Darrell DeMarr	PAR (NSF Naval Observatory & Arlington)	202-762-0884	darrell.demarr@navy.mil
HN Logan Ashby	Preventive Medicine, WNY Branch Health Clinic	202-433-0880	logan.ashby@med.navy.mil
Env Health Officer	Preventive Medicine		At Quantico if needed
Bob Kendall	Facility Manager (NSF Suitland)	301-669-5991	lkendall@nmic.navy.mil
Barbara Lashinger	NAVSEA EV Rep	202-781-1288 (326)	barbara.lashinger@navy.mil
Tawana Spencer	Drinking/Waste Water Program Manager NSA-W	202-685-6315	tawana.spencer@navy.mil

NAVFAC Atlantic Applied Biology Section
Code EV51
6506 Hampton Blvd
Norfolk, VA 23508-1278

NAME	TITLE	COMMERCIAL	DSN
Scheffel, Sabra	Pest Management Consultant	(757) 322-4796	262-4796
Markham, Jack	Pest Management Consultant	(757) 322-4882	262-4882
Scheffel, Sabra	Pest Management Consultant	(757) 322-4320	262-4320
DeBusk, Denise	Pest Management Consultant (Primary POC)	(757) 322-4459	262-4459
Williams, Kirk	Pest Management Consultant	(757) 322-4254	262-4254
Martin, Chris	Pest Management Consultant	(757) 322-4611	262-4611

Navy Entomology Center of Excellence (NECE)
Naval Air Station
P.O. Box 43 Bldg 937
Jacksonville, FL 32212-0043
Commercial: (904) 542-2424 DSN: 942-2424

APPENDIX C

ABBREVIATIONS & DEFINITIONS

Abbreviations

AFPMB	Armed Forces Pest Management Board
ASW	Anti-Submarine Warfare
AUTEC	Atlantic Undersea Test and Evaluation Center
AVMA	American Veterinary Medical Association
BASH	Bird Aircraft Strike Hazard
BUMED	Navy Bureau of Medicine and Surgery
CAC	Contract Audit Coordinator
CDC	Centers for Disease Control
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CO	Commanding Officer
DoD	Department of Defense
DoN	Department of the Navy
EHO	Environmental Health Officer
EPA	Environmental Protection Agency
EPCRA	Emergency Planning and Community Right-to-know Act
FGS	Final Governing Standards
FHP	Force Health Protection
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
IAP	Internal Assessment Plan
INRMP	Integrated Natural Resources Management Plan
IPM	Integrated Pest Management
IPMP	Integrated Pest Management Plan
M&O	Maintenance and Operations
MFH	Military Family Housing
MIL-HDBK	Military Handbook
MRTFB	Major Range and Test Facility Base
MSDS	Material Safety Data Sheet
MTF	Medical Treatment Facilities
NAVFAC	Naval Facilities Engineering Command
NAVFAC Atlantic	Naval Facilities Engineering Command Atlantic
NEC	Navy Enlisted Classification
NECE	Navy Entomology Center of Excellence
NEX	Navy Exchange
NREAO	Natural Resources and Environmental Affairs Office
NUWCDETAUTEC	Naval Undersea Warfare Center Detachment AUTEC
OPNAVINST	Chief of Naval Operations Instruction
ORM	Operational Risk Management

OSH	Occupational Safety and Health
PAR	Performance Assessment Representative
PCPAR	Pest Control Performance Assessment Representative
PMC	Pest Management Coordinator
PMQAE	Pest Management Quality Assurance Evaluator
PMSP	Pest Management Service Provider
PMT	Preventive Medicine Technician
POC	Point of Contact
PPMC	Professional Pest Management Consultant
PPU	Planned Pesticide Use Sheets
PSI	Pounds Per Square Inch
QAE	Quality Assurance Evaluator
RDT&E	Research, Development, Test and Evaluation
SCBA	Self-Contained Breathing Apparatus
SOP	Standard Operation Procedure
SOUTHNAVFACENGCOM	Southern Division Naval Facilities Engineering Command
TG	Technical Guide
ULV	Ultra Low Volume
US or U.S.	United States
USC	United States Code
USF	United States Forces

Definitions

Acaricide	An agent used to kill mites and ticks.
Applied Biology Program	A network of NAVFAC Pest Management Consultants (PMCs) in the Environmental Business Line that assist Navy and Marine Corps installations with FIFRA and Final Governing Standards-based compliance and provide Integrated Pest Management solutions that protect operations, war-fighters, quality of life, property, materiel and the environment from the adverse effects of living organisms.
Arachnid	An arthropod that has eight legs and two body segments in the adult stage.
Arthropod	Invertebrate animals (insects, arachnids and crustaceans) that have jointed appendages and a segmented body.
Avicide	An agent used to kill or repel birds.
Broad spectrum	A classification of pesticide that will kill a wide range of pests.
Broadcast application	The application of a pesticide to a wide area.

Crack and crevice treatment	Application of a pesticide to cracks and crevices where pests are known to live, feed, and/or breed.
DoD-Certified Pesticide Applicator	Military or civilian personnel certified per the "DOD Plan for Certification of Pesticide Applicators" in the pest management categories that are appropriate for their type of work.
Drift	The movement of a pesticide through air, ground, or water out of the control target area.
Exclusion	A pest control method that prevents the entry of a pest into an area to be protected from the pest.
Functional area	Installation personnel, agencies, departments, contractors and facilities that use or store pesticides, conduct pest management operations, provide for safety or security of pest control operations, or have the responsibility of preventing pests.
Fungicide	An agent used to destroy or inhibit growth of fungi.
Herbicide	An agent used to destroy or inhibit plant growth.
Insecticide	An agent used to destroy insects.
Integrated Pest Management (IPM)	A planned program incorporating education, continuous monitoring, 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 habitat modification; biological, genetic, cultural, mechanical, physical, and regulatory controls; and, when necessary, the judicious use of least-hazardous pesticides.
Integrated Pest Management Coordinator	The individual officially designated by the installation commander to coordinate and oversee the installation pest management program and installation IPM plan. IPM coordinators must be certified as pesticide applicators if their job responsibilities require them to apply or supervise the use of pesticides.
Integrated Pest Management Plan	A detailed document for the design, implementation, and maintenance of all pest management and pesticide storage and use on an installation or group of installations.
Invasive species	A species of animal, plant or organism that is not native to a geographic area and can potentially cause harm to native organisms and their habitats.
Leach	The movement of a pesticide through soil.

Material Safety Data Sheet	A document (OSHA form 174, or equivalent) that accompanies a pesticide product, providing the handler with chemical information on ingredients, handling instructions, potential hazards, and manufacturer address and emergency contact information.
Molluscicide	An agent used to kill snails.
Noxious or invasive weed	A weed that, if introduced, into a habitat can cause damage or injury to other organisms in that habitat. They may cause deprivation of water to other plants, physical injury to animals, or increased risk for wild fire.
Personal relief	Pest management control efforts made by DoD personnel or their family members at their own expense for control of pests consistent with DoD and Navy policy.
Pest	Any organism (except for microorganisms that cause human or animal diseases) that adversely affects operations, preparedness, the well being of humans or animals, real property, materiel, equipment or vegetation, or is otherwise undesirable.
Pest Control Performance Assessment Representatives (PCPAR)	Installation personnel trained in contract performance inspection or QA and pest management, whose duties include surveillance of commercial pest management services to ensure performance complies with contract specifications and legal requirements. [Formerly known as Pest Control Quality Assurance Evaluators (PCQAE).]
Pest Management	The prevention and control of disease vectors and pest that may adversely affect the DoD mission or military operations; the health and well-being of people; or structures, materiel, or property.
Pest Management Quality Assurance Evaluator	A quality assurance inspector who is a DoD employee, trained in pest management, who protects the government's interest through on-site performance evaluation of commercial pest management contracts or other contracts that involve the use of pesticides. [Succeeded by and currently known as Pest Control Performance Assessment Representative (PCPAR).]

Pesticide	Any substance or mixture of substances registered by EPA under FIFRA, intended to destroy, repel, or mitigate pests. Includes, insecticides, rodenticides, herbicides, fungicides, plant regulators, defoliants, desiccants, disinfectants, antifouling paints and biocides (such as watertreatment chemicals). NAVFAC PMCs do not approve disinfectants or biocides.
Pesticide applicator	Any individual who applies pesticides.
Pesticide Cancellation	An action by EPA that may limit the use of a pesticide. EPA often issues instructions with the pesticide cancellations providing information on the disposition of cancelled pesticides.
Pesticide Facility	The building and areas designated for handling and storing pesticides.
Professional Pest Management Consultant	Degreed technical specialists, such as NAVFAC civilian entomologists (Applied Biologist) and BUMED commissioned medical entomologists, who have command program oversight responsibilities and provides guidance and information on the management of pest management programs for commands and installations.
Registered Pesticide	A pesticide registered by EPA for sale and use within the United States.
Residual pesticide	The application of a pesticide that will remain effective on to the surface to which it is applied for a long period of time.
Rodenticide	An agent used to destroy rodents.
Space spray	The application of a pesticide as a fine airborne mist to kill flying insects. This includes ultra low volume application and fogging.
Stakeholder	A person, agency, organization, or department that has an interest in the installation's pest management program.
State-Certified Commercial Pesticide Applicators	Personnel certified in accordance with FIFRA by a State (in which the work will be performed) with an EPA-approved certification plan and certified in the category in which a pesticide will be applied.
Subsistence	Stored food items.
Surveillance	The use of surveys over a period of time to monitor the increase and decrease of pest populations over time. Often used as a means of "early warning" of increase in pests or risk of disease and as a means of determining efficacy of pest management operations.
Survey	Observing, collecting, quantifying, identifying and analyzing a pest population.

Ultra low volume (ULV)	A method of applying a pesticide as a space spray. This method involves applying fine droplets of concentrated pesticide.
Uncertified Pesticide Applicators	Individuals who have not successfully completed certification training. Uncertified military and DOD civilian personnel who are in training to become certified pesticide applicators may apply pesticides when under the direct line-of-sight supervision of a DOD-certified pesticide applicator. Uncertified personnel may apply self-help or personal relief pesticides when the operation has been approved by a command pest management consultant.
Vector / Disease Vector	Any animal capable of transmitting the causative agent of human disease; serving as an intermediate or reservoir host of a pathogenic organism; or producing human discomfort or injury, including (but not limited to) mosquitoes, flies, other insects, ticks, mites, snails, and rodents. It is recognized that certain disease vectors are predominantly economic pests that as conditions change may require management or control as a disease vector.
Vector-borne disease	A disease transmitted by a vector.
Zoonosis	A disease that normally occurs in animals that can be transmitted to humans.

Definitions include definitions from OPNAVINST 5090.1C

APPENDIX D

PROGRAM REVIEW

Integrated Pest Management Plan Review Checklist

Semi-annual
1. Pesticide applicator licenses and certification (Appendix G).
• Request and replace copies of licenses and certifications if they have expired.
• Insert copies of licenses or certifications of new applicators.
2. Points of contact (Appendix B).
• Review all points of contact and update names and contact information if necessary.
Annual
1. Approved Pesticide List (Appendix F). Add new list only after approval by NAVFAC Applied Biology.
• Add new pesticides to be purchased.
• Update new pest management operations for pesticides on list.
• Remove pesticides from list.
2. Pest Management Project Sheets.
• Update to reflect changes to current pest management practices.
• Add new sheets for new pests.
• Revise sheets to add new pest management strategies.
3. Contractor Information.
• Update contractor information.
• Replace contractor name and contact information.
• Replace contract specifications.
• Replace contractor pest management plans.
4. Equipment inventory (Appendix E).
• Update list of application equipment stored in pest control shop.
Every Two Years
1. Replace Industrial Hygiene Survey Report.

As Needed
1. Laws, regulations and guidelines (Appendix H).
• Update list of documents if needed.
• Update website links.
• Add or delete Base Orders and Operating Procedures.
• Update list of environmental documents.
• Add new policy letters; delete obsolete ones.
• Replace OPNAVINST 6250.4 series and MCO 5090.2 series as needed.
2. Emergency Vector Control Plan.
• Update points of contact.
• Update list of pesticides and vector control equipment.
• Update procedures.
3. Pesticide Management (Core Plan Section 3.4).
• Update procedures as needed.
4. Records and Reporting (Core Plan Section 2.2).
• Update procedures as needed.
5. Health and Safety (Core Plan Section 4).
• Add new hazards as they are identified.
6. Environmental Considerations (Core Plan Section 5).
• Update and revise each section as needed.

Sample Internal Assessment Plan

Type of Practice	Location	Inspection Frequency	Practice Owner	Local Priority	Compliance Evaluation Frequency	Compliance Evaluation Responsibility	Notes
Maintain a current Integrated Pest Management Plan (IPMP)	Bldg	Annual	IPMC	High	Annual		Copies maintained by IPMCs and on-site
Review and update Integrated Pest Management Plan (IPMP)	Bldg	Annual	IPMC	High	Annual		Copies maintained by IPMCs and on-site
Document pesticide applications by in-house pest control	Bldg	Monthly	IPMC	High	Daily		Recorded on online reporting system
Document pesticide applications by contract pest control personnel	Housing Area	Monthly	PCPAR	High	Daily		Recorded on online reporting system
Report all Center pest control operations / pesticide use	Bldg	Quarterly	IPMC	High	Quarterly		Recorded on online reporting system
Report contract pest control operations / pesticide use	Bldg	Quarterly	PCPAR	High	Quarterly		Reported to IPMC or inputed directly to online reporting system

Type of Practice	Location	Inspection Frequency	Practice Owner	Local Priority	Compliance Evaluation Frequency	Compliance Evaluation Responsibility	Notes
Submit request for approval of new pesticides and continued use of current pesticides to be used on the installation by all Center pest management service providers during the following fiscal year	Bldg	Annual by Oct 1	IPMC	High	Annual		Copies of approved requests to be maintained in IPMP
Compile list of pesticides to be used for grounds maintenance contract and submit to PMC	Bldg	Annual by Oct 1	PCPAR	High	Annual		Copies of approved requests to be maintained in IPMP
Verify current DoD Pesticide Applicator Certification for in-house pesticide applicators	Bldg	Annual	IPMC	High	Annual		Maintain copies of certification / license on-site and in IPMP
Verify current State Pesticide Applicator Licensing for contracted pesticide applicators	Bldg	Annual	PCPAR	High	Annual		Maintain copies of certification / license on-site and in IPMP
Ensure current pest management training of PCPAR	Bldg	Annual	PCPAR Supervisor	High	Annual		Maintain copies of certification of training in IPMP
Submit pest control contract(s) for specification review prior to advertisement for bid	Bldg	Annual	PCPAR	High	Annual		Submitted to NAVFAC Atlantic Applied Biology for approval

Type of Practice	Location	Inspection Frequency	Practice Owner	Local Priority	Compliance Evaluation Frequency	Compliance Evaluation Responsibility	Notes
Ensure that in-house pesticide applicators apply pesticides according to the pesticide label and federal, state, and local supplemental labeling.	Basewide	Daily	IPMC	High	Quarterly		5090.1B CH-2; FIFRA
Ensure that PWD-contracted pesticide applicators apply pesticides according to the pesticide label and federal, state, and local supplemental labeling.	Basewide	Daily	PCPAR	High	Quarterly		5090.1B CH-2; FIFRA; Discrepancies are noted on Inspector's Daily Report form (IDR)
Ensure that in-house pesticide applicators apply pesticides to provide for protection of federal and state listed threatened and endangered species of animals and plants and their habitats.	Basewide	Daily	IPMC	High	Quarterly		5090.1B CH-2; ESA
Ensure contracted pesticide applicators apply pesticides to provide for protection of federal and state listed threatened and endangered species of animals and plants and their habitats.	Basewide	Daily	PCPAR	High	Quarterly		5090.1B CH-2; ESA; Discrepancies are noted on Inspector's Daily Report form (IDR)

APPENDIX E

PESTICIDE AND PESTICIDE DISPERSAL EQUIPMENT INVENTORY

Pest Management Inventory

The following inventory of pest control equipment and chemicals at the Pest Control Shop represents what is normally kept on hand to meet anticipated needs:

Location: **Carderock Pest Control Shop (no longer in use)**

Pesticides	Equipment
	(1) Toro MultiPro 5500 boom sprayer, 300 gallons (1) Toro MultiPro 1250 boom sprayer, 160 gallons

APPENDIX F

AUTHORIZED USE LIST OF PESTICIDES

The following pesticides are currently authorized for use at NSA Washington:
* The most current list of approved pesticides for each installation can be found on the NAVFAC Online Pesticide Reporting System at
https://clients.emainc.com/PestManagementNET/PesticideLogon.aspx *

NSA Washington

Type	Formulation	Trade Name	Active Ingredient	EPA Number
Avicide	Bait	AVITROL WHOLE CORN	4 - AMINOPYRIDINE	11649-7
Bacteriocide	Concentrate	S.W.A.T.	alkyl dimethylbenzyl ammonium chloride	1677-43
Herbicide	Emulsion	2,4-D AMINE WEED KILLER	2,4-D	1386-43
Herbicide	Suspension	DIURON 80 DF	3-(3,4 dichlorophenyl)-1,1-dimethylurea	66222-51-74477
Herbicide	Liquid	Drive XLR8	Quinclorac	7969-272
Herbicide	Suspension	HYVAR X	BROMACIL	352-287
Herbicide	Water Soluble	Krenite S	Ammonium Salt of Fosamine	352-395
Herbicide	Granules	Pendulum 2G	Pendimethalin	241-375
Herbicide	Emulsion	PENDULUM 3.3 EC HERBICIDE	PENDIMETHALIN	241-341
Herbicide	Dust/Granule	PENDULUM WDG	PENDIMETHALIN	241-340
Herbicide	Emulsion	PRAMITOL 25E	PROMETON	66222-22
Herbicide	Emulsion	Ranger Pro	Glyphosate	524-517
Herbicide	Solution	Sahara DG Herbicide	Imazapyr and Diuron	241-372
Insect Growth Regulator	Solution	GENTROL EC IGR	HYDROPRENE	2724-351
Insect Growth Regulator	Concentrate	Nyguard	2-[1-Methyl-2-(4-phenoxyphenoxy) ethoxy] pyridine	1021-1603
Insect Growth Regulator	Concentrate	Precor IGR Concentrate	Methoprene	2724-352
Insecticide	Dust/Granule	Advance Granular Ant Bait Formula 1	Abamectin B1	499-370
Insecticide	Bait	Advion Cockroach Gel Bait	Indoxacarb	352-652
Insecticide	Liquid	Allur Ring Pheromone	german cockroach pheromone	47629-8
Insecticide	Dust/Granule	BORID	BORIC ACID	9444-129
Insecticide	Solution	BP-100	Pyrethrins	499-452
Insecticide	Pellets	Deadline T&O	Metaldehyde	64864-38
Insecticide	Dust/Granule	DELTA DUST	DELTA METHRIN	432-772
Insecticide	Dust/Granule	DELTAGARD G INSECTICIDE GRANULES	DELTAMETHRIN	432-836
Insecticide	Solution	demandCS	Lambda-cyhalothrin	100-1066
Insecticide	Emulsion	Demon Max	Cypermethrin	100-1218
Insecticide	Suspension	Demon WP	Cypermethrin	100-990
Insecticide	Soluble Powder	Demon WP WSP 9.5GM	Cypermethrin	100-1000

Insecticide	Dust/Granule	drione	Pyrethrins	432-992
Insecticide	Bait	ECO 2000-RX FreshBait	boric acid	1677-195
Insecticide	Bait	ECO 2000-XP Freshbait	boric acid	1677-196
Insecticide	Bait	ECO2000-GR	BORIC ACID	1677-191
Insecticide	Solution	ExiteR	Pyrethrins	655-798
Insecticide	Dust/Granule	Intice	Orthoboric Acid	73079-2
Insecticide	Bait	InTice Sweet Ant Gel	orthoboric acid	73079-1
Insecticide	Bait	Larva-Lur	Methylcarbamate	655-802
Insecticide	Bait	Max Force Fly Bait	Imidacleprid	432-1375
Insecticide	Bait	Maxforce	Fipronil	432-1257
Insecticide	Bait	Maxforce Ant Killer Gel	Fipronil	432-1264
Insecticide	Bait	MAXFORCE ANT KILLER/GRANULAR BAIT	HYDRAMETHYLNON	64248-6
Insecticide	Bait	MAXFORCE ANT TRAP	FIPRONIL	432-1256
Insecticide	Granules	Maxforce Fine Granule Insect Bait	Hydramethylnon	432-1262
Insecticide	Bait	Maxforce Granular Bait	Hydramethylnon	432-1255
Insecticide	Bait	Maxforce Roach Killer Bait Gel (Reservoir)	Hydramethylnon	432-1254
Insecticide	Solution	MGK PYROCIDE FOGGING CONCENTRATE 7338	PYRETHRINS/PIPERONYL BUTOXIDE	1021-1424
Insecticide	Dust/Granule	NIBAN-FG	ORTHOBORIC ACID	64405-2
Insecticide	Dust/Granule	ORTHENE PELLETS	ACEPHATE	59639-31
Insecticide	Solution	PHANTOM	Chlorfenapyr	241-392
Insecticide	Aerosol	Pyrocide 300	Pyrethrins,Piperonyl butoxideTechnical,N-Octyl bicycloheptene dicarboximide	1021-1177
Insecticide	Aerosol	SSI-50	Pyrethrins with synergists	47000-73-1677
Insecticide	Bait	STIMUKIL FLY BAIT	METHOMYL	53871-3
Insecticide	Aerosol	Stinger Wasp & Hornet Spray	tetramethrin, premethrin, piperonly butoxide	9444-181
Insecticide	Aerosol	Stingray Wasp & Hornet Jet Spray	tetramethrin, permethrin, PBO	9444-220
Insecticide	Suspension	SUSPEND SC	DELTAMETHRIN	432-763
Insecticide	Dust/Granule	TALSTAR PL	BIFENTHRIN	279-3168
Insecticide	Emulsion	TalstarOne	Bifenthrin	279-3206
Insecticide	Suspension	Tempo SC Ultra	Cyfluthrin	432-1363
Insecticide	Suspension	Tempo Ultra WP	Cyfluthrin	432-1304
Insecticide	Liquid	Temprid SC	Imedacloprid	1432-1483
Insecticide	SOLUTION	termidor	Fiprinol	7969-210
Insecticide	Bait	TERRO ANT KILLER	SODIUM TETRABORATE DECAHYDRATE	149-8
Insecticide	Bait	Terro PCO	Borax	149-8-64405

Insecticide	Aerosol	ULD BP-300	PYRETHRIN/ PIPERONYL BUTOXIDE	499-450
Insecticide	Aerosol	ULTRACIDE	PYRETHRIN/ PERMETHRIN	499-404
Rodenticide	Bait	CONTRAC ALL-WEATHER CAKE	BROMADIOLONE	12455-34
Rodenticide	Tablets	CONTRAC BLOCK	BROMADIOLONE	12455-79
Rodenticide	Bait Blocks	FINAL BLOX	BRODIFACOUM	12455-89
Rodenticide	Bait	LIQUA-TOX II	SODIUM SALT OF DIPHACINONE	12455-61
Rodenticide	Bait	MAKI MINI-BLOCK	BROMADIOLONE	7173-202
Rodenticide	Bait	MAKI RAT AND MOUSE BAIT PACKS	BROMADIOLONE	7173-188
Rodenticide	Bait Pack	Quintox	Cholecalciferol	3240-42-12455
Rodenticide	Bait	TALON-G RODENTICIDE PELLETS	BRODIFACOUM	10182-336
Rodenticide	Bait	Victor V Multi-Kill Blocks	Difenacoum	47629-16
Rodenticide	Bait Blocks	Weather Blox XT	Brodifacoum	100-1055

APPENDIX G

APPLICATOR LICENSES, CERTIFICATIONS, AND APPOINTMENT LETTERS

Insert a copy of all Navy personnel's training records that relate to pesticide compliance behind this page. Relevant training records include Pest Control Performance Assessment Representative training, Pest Management Coordinator training, Pesticide Applicator training, and pesticide technology training.

DoD Certified Applicators

Name	Certification Number	Expiration	Categories
Jackie Pitts	AF850-82-0709	7/31/2012	3,5,6,7,8
Kenneth Coffman	AF130-93-0310	3/31/2013	3,5,6,7,8
Idris Ahmad	A128-02-0808	8/31/2011	3,5,6,7,8

DoD PAR/IPMC Accreditation

Name	Expiration
Susan Paul	5/31/2013
Steve Cool	5/31/2013
Darrell DeMarr	5/31/2013
Nora Gioia	2/28/2012
Heather Huddle	5/31/2014
Dave Pool	5/31/2013
Louis Pope	5/31/2013

Appointment letter, Heather Huddle, Integrated Pest Management Coordinator NSA Washington

DEPARTMENT OF THE NAVY
NAVAL SUPPORT ACTIVITY WASHINGTON
1411 PARSONS AVENUE ST STE. 303
WASHINGTON NAVY YARD DC 20374-5003

5090
Ser N00/130
15 JUN 11

From: Commanding Officer, Naval Support Activity Washington
To: Ms. Heather Huddle, Public Works Department Washington

Subj: APPOINTMENT AS COMMAND INTEGRATED PEST MANAGEMENT COORDINATOR

Ref: (a) OPNAV Instruction 5090.1C Environmental Readiness Program Manual, Paragraph 17-5.4(b)

1. Reference (a) requires Department of Defense installations to formally appoint an Integrated Pest Management Coordinator. By notice of this letter, you are appointed to this position for installations under Naval Support Activity Washington.

2. Your responsibilities are as follows:

a. Develop, coordinate, and ensure the Installation Integrated Pest Management Plan (IPMP) is reviewed and updated annually.

b. Function as the regional entomologists' primary point-of-contact.

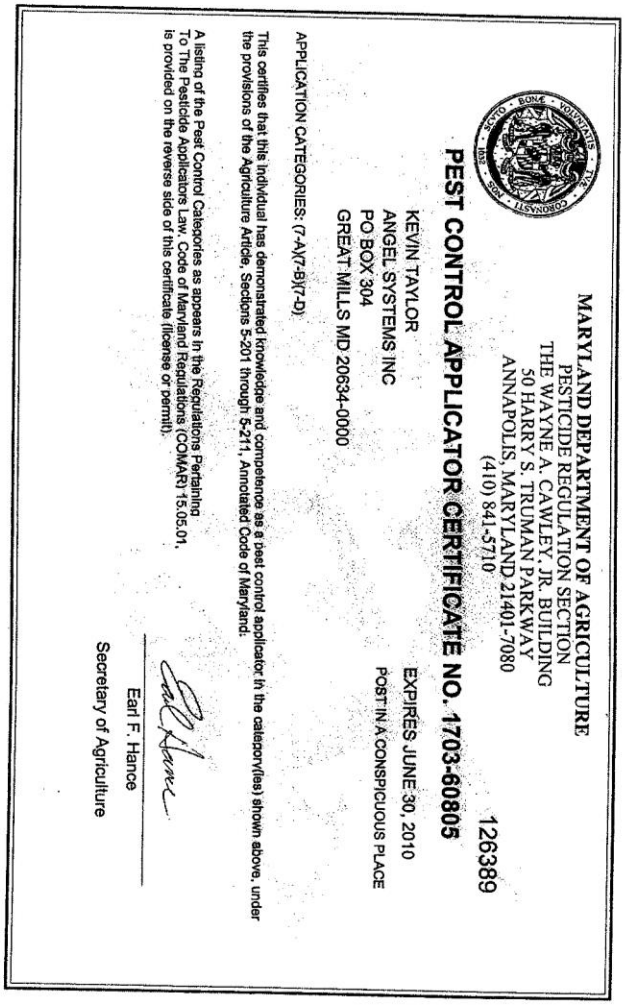
c. Serve as inter-installation liaison for pest management matters with Public Works, Preventive Medicine, Supply, Housing Departments, Tenant Commands, Food Services, Navy Exchange and other activities as appropriate.

d. Complete continuing education every three years.

D. P. BECK
Acting

Copy to:
NAVSUPPACT WASHINGTON DC (PWO)
NAVFAC WASHINGTON ENVIRONMENTAL BLC

Pesticide Applicator Licenses, Angel Systems



MARYLAND DEPARTMENT OF AGRICULTURE
PESTICIDE REGULATION SECTION
THE WAYNE A. CAWLEY, JR. BUILDING
50 HARRY S. TRUMAN PARKWAY
ANNAPOLIS, MARYLAND 21401-7080
(410) 841-5710

126389

PEST CONTROL APPLICATOR CERTIFICATE NO. 1703-60805

KEVIN TAYLOR
ANGEL SYSTEMS INC
PO BOX 304
GREAT MILLS MD 20634-0000

EXPIRES JUNE 30, 2010
POST IN A CONSPICUOUS PLACE

APPLICATION CATEGORIES: (7-A)(7-B)(7-D)

This certifies that this individual has demonstrated knowledge and competence as a pest control applicator in the category(ies) shown above, under the provisions of the Agriculture Article, Sections 5-201 through 5-211, Annotated Code of Maryland.

A listing of the Pest Control Categories as appears in the Regulations Pertaining To The Pesticide Applicators Law, Code of Maryland Regulations (COMAR) 15.05.01, is provided on the reverse side of this certificate (license or permit).

Earl F. Hance
Secretary of Agriculture

VIRGINIA DEPARTMENT OF AGRICULTURE AND CONSUMER SERVICES
OFFICE OF PESTICIDE SERVICES
P O BOX 1163, RICHMOND VA 23218-1163

INVALID IF INSURANCE AND/OR CERTIFICATE OF DESIGNATED APPLICATOR LAPSE BEFORE EXPIRATION DATE

PESTICIDE BUSINESS LICENSE

Issued
03/08/2010

License No.
91000041

Expires
03/31/2011

Fee Paid
$50

Issued in accordance with application duly executed by the business shown below which has agreed to comply with all applicable laws, rules and regulations and has paid the required fee.

Mailing Address
ANGEL SYSTEMS INC
P O BOX 304
GREAT MILLS, MD 20634

Business Location
ANGEL SYSTEMS INC
P O BOX 304
GREAT MILLS, MD 20634

Todd P. Haymore
Commissioner

Liza J. Fleeson
Authorized Representative

GOVERNMENT
OF THE
DISTRICT OF COLUMBIA
Adrian M. Fenty, Mayor

Department of Consumer and Regulatory Affairs
Business License Center- Room 1100
941 North Capitol Street, N.E.
Washington, D.C. 20002

* Date Issued: 02/18/2010 12:01 PM
Business ID/BBL#: 18148XXXX - 54000209
Category: 529
License Period: 02/01/2010-01/31/2012

BASIC BUSINESS LICENSE

Billing Name and Address
ANGEL SYSTEMS INC

P O BOX 304
GREAT MILLS, MD 20634

Premise/Applicant's Name and Address
ANGEL, ANDREW M

20775 OLD GREAT MILLS RD
GREAT MILLS, MD 20634

Registered Agent's Name and Address
CT CORPORATION SYSTEM
1025 VERMONT AVE NW
WASHINGTON, DC 20005

Owner's Name: ANGEL, ANDREW M
Corp. Name: ANGEL SYSTEMS INC
Trade Name:

CofO# / HOP#:	Square:	Lot:	Suffix:	Zone:	Ward:	ANC:

Units: 0	Kitchens: 000(	SQ FT: 0	Perm No.:	Tab First:	Tab Last:	VIN#

ENVIRONMENTAL MATERIALS

PESTICIDE APPLICATOR

---THE LAW REQUIRES THIS LICENSE TO BE POSTED IN A CONSPICUOUS PLACE ON THE PREMISES ---

Linda K. Argo
Director

* License Effective from the later of Issued or Start of License-Period Date

ADDENDUM

It is a violation of the DC regulation 73-22 Human Rights Law to discriminate for any reason other than individual merit, including but not limited to discrimination by reason of race, color, relig' ational origin, sex, age, marital status, personal appearance, sexual orientation, fa sponsibilities, matriculation, political affiliation, physical handicap, source of inc nd pla idence or business. Failure or refusal to comply with the above shall be a prope for the revocation or suspension of this license.

GOVERNMENT OF THE DISTRICT OF COLUMBIA Adrian M. Fenty, Mayor	Department of Consumer and Regulatory Affairs Business License Center- Room 1100 941 North Capitol Street, N.E. Washington, D.C. 20002	* Date Issued: 07/30/2009 10:48 AM Business ID/BBL#: 15660XXXX-67004398 Category: 529 License Period: 08/01/2009-07/31/2011

BASIC BUSINESS LICENSE

Billing Name and Address	Premise/Applicant's Name and Address	Registered Agent's Name and Address
ANGEL SYSTEMS INC	MACTAGGART, JOHN C	CT CORPORATION SYSTEM
20775 OLD GREAT MILLS RD GREAT MILLS, MD 20634	20775 OLD GREAT MILLS RD GREAT MILLS, MD 20634	1015 15TH ST NW #1000 WASHINGTON, DC 20005

Owner's Name: **MACTAGGART, JOHN C**

Corp. Name: **ANGEL SYSTEMS INC**

Trade Name:

CofO# / HOP#: 000	Square:	Lot:	Suffix:	Zone:	Ward:	ANC:

Units:	Kitchens:	SQ FT:	Perm No.:	Tab First:	Tab Last:	VIN#

ENVIRONMENTAL MATERIALS

PESTICIDE APPLICATOR

---THE LAW REQUIRES THIS LICENSE TO BE POSTED IN A CONSPICUOUS PLACE ON THE PREMISES ---

Linda K. Argo
Director

* License Effective from the later of Issued or Start of License-Period Date

ADDENDUM

It is a violation of the DC regulation 73-22 Human Rights Law to discriminate for any reason other than individual merit, including but not limited to discrimination by reason of race, color, religion, national origin, sex, age, marital status, personal appearance, sexual orientation, family responsibilities, matriculation, political affiliation, physical handicap, source of income, and place of residence or business. Failure or refusal to comply with the above shall be a proper basis for the revocation or suspension of this license.

Virginia Department of Agriculture and Consumer Services

P. O. Box 1163, Richmond, Virginia 23218

PESTICIDE APPLICATOR CERTIFICATE

ISSUED

EXPIRES

CERTIFICATE NUMBER

FEE PAID

Issued in accordance with application duly executed by the person shown below who has agreed to comply with all applicable laws, rules and regulations and has paid the required fee.

COMMISSIONER

AUTHORIZED REPRESENTATIVE

VIRGINIA DEPARTMENT OF AGRICULTURE AND CONSUMER SERVICES

PESTICIDE APPLICATOR CERTIFICATE

EXPIRES

CERTIFICATE NUMBER

PART A

NOT VALID WITHOUT PART B

AUTHORIZED REPRESENTATIVE

(FOLD HERE)

VALID ONLY FOR CATEGORIES LISTED

CERTIFICATE NUMBER

PART B

NOT VALID WITHOUT PART A

SIGN HERE

PESTICIDE APPLICATOR

Virginia Department of Agriculture and Consumer Services

P. O. Box 1163, Richmond, Virginia 23218

PESTICIDE APPLICATOR CERTIFICATE

ISSUED

CERTIFICATE NUMBER

EXPIRES

FEE PAID

Issued in accordance with application duly executed by the person shown below who has agreed to comply with all applicable laws, rules and regulations and has paid the required fee.

COMMISSIONER

AUTHORIZED REPRESENTATIVE

VIRGINIA DEPARTMENT OF AGRICULTURE AND CONSUMER SERVICES

PESTICIDE APPLICATOR CERTIFICATE

EXPIRES

CERTIFICATE NUMBER

PART A

NOT VALID WITHOUT PART B

AUTHORIZED REPRESENTATIVE

(FOLD HERE)

VALID ONLY FOR CATEGORIES LISTED

CERTIFICATE NUMBER

PART B

NOT VALID WITHOUT PART A

SIGN HERE

PESTICIDE APPLICATOR

VIRGINIA DEPARTMENT OF AGRICULTURE AND CONSUMER SERVICES
P O BOX 1163, RICHMOND VA 23219-1163

PESTICIDE APPLICATOR CERTIFICATE

Issued	COMMERCIAL	Fee Paid	Certificate Number
06/08/2009	FOR BL# 41		101087-C
Expires 06/30/2011			

Issued in accordance with application duly executed by the person shown below who has agreed to comply with all applicable laws, rules and regulations

KEVIN M TAYLOR
ANGEL SYSTEMS INC
P O BOX 304
GREAT MILLS,MD 20634

Todd P. Haymore
Commissioner

Liza J. Fleeson
Authorized Representative

Virginia Department of Agriculture and Consumer Services

P. O. Box 1163 Richmond, Virginia 23218

PESTICIDE APPLICATOR CERTIFICATE

ISSUED

CERTIFICATE NUMBER

EXPIRES

FEE PAID

Issued in accordance with application duly executed by the person shown below who has agreed to comply with all applicable laws, rules and regulations and has paid the required fee.

COMMISSIONER

AUTHORIZED REPRESENTATIVE

VIRGINIA DEPARTMENT OF AGRICULTURE AND CONSUMER SERVICES

PESTICIDE APPLICATOR CERTIFICATE

EXPIRES

CERTIFICATE NUMBER

PART A

NOT VALID WITHOUT PART B

AUTHORIZED REPRESENTATIVE

(FOLD HERE)

VALID ONLY FOR CATEGORIES LISTED

CERTIFICATE NUMBER

PART B

NOT VALID WITHOUT PART A

SIGN HERE

PESTICIDE APPLICATOR

VIRGINIA DEPARTMENT OF AGRICULTURE AND CONSUMER SERVICES
P O BOX 1163, RICHMOND VA 23219-1163

PESTICIDE APPLICATOR CERTIFICATE

Issued	COMMERCIAL	Fee Paid	Certificate Number
05/22/2009	FOR BL# 41		75056-C
Expires 06/30/2011			

Issued in accordance with application duly executed by the person shown below who has agreed to comply with all applicable laws, rules and regulations

JOHN C MAC TAGGART
ANGEL SYSTEMS INC
P O BOX 304
GREAT MILLS,MD 20634

Todd P. Haymore
Commissioner

Liza J. Fleeson
Authorized Representative

MARYLAND DEPARTMENT OF AGRICULTURE
PESTICIDE REGULATION SECTION
THE WAYNE A. CAWLEY, JR. BUILDING
50 HARRY S. TRUMAN PARKWAY
ANNAPOLIS, MARYLAND 21401-7080
(410) 841-5710

126384

PESTICIDE BUSINESS LICENSE NO. 1703

EXPIRES JUNE 30, 2010

POST IN A CONSPICUOUS PLACE

ANGEL SYSTEMS INC
PO BOX 304
GREAT MILLS MD 20634-0000

APPLICATION CATEGORIES: (2)(3-A)(3-B)(3-C)(5)(6)(7-A)(7-B)(7-C)(7-D)(8)(10)(11-B)

This license is granted to this business for the application of pesticides, in the category(ies) shown above, within the State of Maryland, in accordance with the provisions of the Agriculture Article, Sections 5-201 through 5-211, Annotated Code of Maryland.

A listing of the Pest Control Categories as appears in the Regulations Pertaining To The Pesticide Applicators Law, Code of Maryland Regulations (COMAR) 15.05.01, is provided on the reverse side of this certificate (license or permit).

Earl F. Hance
Secretary of Agriculture

MARYLAND DEPARTMENT OF AGRICULTURE
PESTICIDE REGULATION SECTION
THE WAYNE A. CAWLEY, JR. BUILDING
50 HARRY S. TRUMAN PARKWAY
ANNAPOLIS, MARYLAND 21401-7080
(410) 841-5710

126388

PEST CONTROL APPLICATOR CERTIFICATE NO. 1703-6029

DANNY MARION STOBER
ANGEL SYSTEMS INC
PO BOX 304
GREAT MILLS MD 20634-0000

EXPIRES JUNE 30, 2010
POST IN A CONSPICUOUS PLACE

APPLICATION CATEGORIES: (6)(7-A)(7-B)(7-D)

This certifies that this individual has demonstrated knowledge and competence as a pest control applicator in the category(ies) shown above, under the provisions of the Agriculture Article, Sections 5-201 through 5-211, Annotated Code of Maryland.

A listing of the Pest Control Categories as appears in the Regulations Pertaining To The Pesticide Applicators Law, Code of Maryland Regulations (COMAR) 15.05.01, is provided on the reverse side of this certificate (license or permit).

Earl F. Hance
Secretary of Agriculture

MARYLAND DEPARTMENT OF AGRICULTURE
PESTICIDE REGULATION SECTION
THE WAYNE A. CAWLEY, JR. BUILDING
50 HARRY S. TRUMAN PARKWAY
ANNAPOLIS, MARYLAND 21401-7080
(410) 841-5710

12879

PEST CONTROL APPLICATOR CERTIFICATE NO. 1703-46928

JESSE D THOMAS
ANGEL SYSTEMS INC
PO BOX 304
GREAT MILLS MD 20634-0000

EXPIRES JUNE 30, 2010
POST IN A CONSPICUOUS PLAC

APPLICATION CATEGORIES: (3-A)(5)(6)(7-A)(7-B)(8)

This certifies that this individual has demonstrated knowledge and competence as a pest control applicator in the category(ies) shown above the provisions of the Agriculture Article, Sections 5-201 through 5-211, Annotated Code of Maryland.

A listing of the Pest Control Categories as appears in the Regulations Pertaini
To The Pesticide Applicators Law, Code of Maryland Regulations (COMAR) 15.05.(
is provided on the reverse side of this certificate (license or permit).

Earl F. Hance
Secretary of Agriculture

APPENDIX H

LAWS/REGULATIONS/PUBLICATIONS

H.1.1

Federal Laws

H.1.2 Federal Insecticide, Fungicide and Rodenticide Act 1976 (FIFRA), Section 136 et seq. of title 7, United State Code, as amended.

H.1.2.1 Requires pesticide and applicator registration with the U.S. EPA, properly labeled containers, maintaining pesticide application records, providing adequate worker safety, and practicing the proper disposal of unused products. Pesticides are also classified under this act as general use or restricted use.

H.1.3 Integrated Pest Management for Federal Agencies, Section 136r-1 et seq. of Title 7, United States Code

H.1.3.1 Requires Federal agencies to use IPM techniques in carrying out pest management activities and promote IPM.

H.1.4 Federal Environmental Pesticide Control Act (FEPCA), Section 136 et seq., Title, United States Code, 1973

H.1.4.1 Discusses the use of restricted use pesticides, applicator requirements, pesticide use record keeping, and development of a program to support IPM.

H.1.5 Occupational Safety and Health Standards, Title 29, Code of Federal Regulations, 1996 revision, Section 1910,.

H.1.6 OSHA Hazard Communication Standard, Title 29 CFR 1910

H.1.6.1 Stipulates the requirements for applicable and adequate training of all employees regarding hazardous substances (including pesticides) and providing access to MSDSs for all chemicals.

H.1.7 School Environmental Protection Act of 2003, H.R. 121

H.1.7.1 This bill amends the Federal Insecticide, Fungicide, and Rodenticide Act to require local educational agencies and schools to implement integrated pest management systems to minimize the use of pesticides in schools and to provide parents, guardians, and employees with notice of the use of pesticides in schools, and for other purposes.

H.1.8 Pesticide Container and Containment Rule

H.1.9 National Environmental Policy Act (NEPA) of 1969, **Sections 4321 to 4370a of title 42, United States code, as amended**

H.1.9.1 Requires a detailed environmental impact statement for any major federal action that can significantly affect the environment. This may include pest management operations that involve large areas of land, application of chemicals to waterways and aerial application of pesticides.

H.1.10 Federal Compliance With Right-to-Know Laws and Pollution Prevention Requirements, Executive Order 12856 of August 3, 1993.

H.1.11 Federal Noxious Weed Act (7 USC 2801) incorporated into the Plant Protection Act

H.1.11.1 Requires federal agencies to develop and implement noxious weed management programs on federal land.

H.1.12 Non-indigenous Aquatic Nuisance Prevention and Control Act, (16 USC 4700 et seq.)

H.1.12.1 Discusses taking preventive management measures nationwide to prevent and control unintentionally introduced non-indigenous aquatic species and prevent further distribution of these species.

H.1.13 Executive Order 13112, Invasive Species

H.1.13.1 Instituted measures to prevent the introduction of invasive species, provide for their control using environmentally sound techniques, and minimize the economic, ecological, and human health impacts caused by invasive species.

H.1.14 Resource Conservation and Recovery Act (RCRA), (42 USC 6901 et seq.), (40 CFR 260-265)

H.1.14.1 Requires proper disposal of waste pesticides and pesticide containers.

H.1.15 Food Quality Protection Act (FPQA), Section 303

H.1.15.1 Mandates that federal agencies use IPM techniques in pest management activities and promote IPM through procurement and regulatory policies. Primarily established safety standards for pesticides applied to foods.

H.1.16 Clean Air Act (CAA), 42 USC 7401 et seq.

H.1.16.1 Mandates the prevention and control of air pollution from toxic emissions including pesticides.

H.1.17 Clean Water Act (Amended the Federal Water Pollution Control Act of 1972), (33 USC 1251-1387)

H.1.17.1 This act calls for the restoration and maintenance of the chemical, physical, and biological integrity of our Nation's waters, including sensitive environments like wetlands. This Act prohibits non-storm water discharges from entering surface waters.

H.1.17.2 Beginning in April 2011, this act requires pesticides used in or near water over a threshold amount to be permitted under the National Pollutant Discharge Elimination System (NPDES). A notice of intent (NOI) and a pesticide discharge management plan is required of installations that exceed the threshold. Additional information can be found at **http://cfpub.epa.gov/npdes/home.cfm?program_id=410**

H.1.18 Animal Damage Control Act, 7 USC 426-426c

H.1.18.1 This Act gives the Secretary of Agriculture broad authority to investigate and control certain predatory or wild animals and nuisance mammal and bird species.

H.1.19 Migratory Bird Treaty Act

H.1.19.1 Requires permits to "take" migratory birds

H.1.20 Endangered Species Act, (16 USC 1531-1544), (50 CFR Part 402)

H.1.20.1 Dictates that all federal agencies must protect listed plants and animals and their habitats from harm. Indicates that pesticide formulations and application methods be reviewed by the U.S. Fish and Wildlife Service to determine whether there could be adverse affects.

H.1.21 Sikes Act Improvement Act (SAIA)

H.1.21.1 Authorizes the Secretary of Defense to develop cooperative plans for conservation and rehabilitation programs on military reservations and modify or improve habitat for endangered species and migratory birds. This includes authorizing the elimination of noxious weeds in efforts to rehabilitate native species.

H.1.22 Toxic Substances Control Act (TSCA), (15 USC 2601 et seq.)

H.1.22.1 Requires that new chemicals, including pesticides, be registered and that testing for human health and environmental hazards be performed.

H.1.23 US Public Health Service (USPHS) / Food and Drug Administration (FDA) Food Code

H.1.23.1 Provides regulations on pest control methods, application of pesticides, removal of dead animal pests from food retail sales establishment and display of pesticides for retail sale. It also provides food inspection guidelines and inspection forms. This is the primary guideline used by Defense Commissary Agency (DeCA) food inspectors for ensuring food safety in the Commissary.

H.1.24 Greening the Government Through Leadership in Environmental Management, Executive Order 13148

H.1.24.1 The head of each Federal agency is responsible for ensuring that all necessary actions are taken to integrate environmental accountability into agency day-to-day decision making and long-term planning processes, across all agency missions, activities, and functions. Each agency shall strive to reduce or eliminate harm to human health and the environment from releases of pollutants, such as pesticides, to the environment.

Department of Defense Regulations, Directives and Memorandums

H.1.25 DODI 4150.07, DoD Pest Management Program, 29 May 2008

H.1.26 DODM 4150.07, Volume 1-Plan For the Certification of Pesticide Applicators, November 2008

H.1.27 DoD Plan 4150.7-M - DoD Pest Management Training and Certification Manual

H.1.28 DoD Directive 4715.1E, Environment, Safety, and Occupational Health (ESOH), March 19, 2005

H.1.29 DoD Directive 4715.1, Environmental Security

H.1.29.1 Establishes the AFPMB, which provides information, guidance, and publications related to pest and pesticide management. Also advocates implementing IPM into DoD acquisition, procurement, maintenance, and repair processes for systems, equipment, facilities, and land.

H.1.30 MOU between DoD and the U.S.EPA with respect to IPM

H.1.30.1 Adoption of integrated pest management strategies to reduce the potential risks to human health and the environment associated with pesticides.

H.1.31 Master MOU between DoD and USDA

H.1.31.1 Indicates that these agencies will work together and meet regularly to discuss such mutual interests such as pest management, forestry, and wildlife activities.

Department of Navy Regulations

H.1.32 Pest Management Programs OPNAVINST 6250.4C

H.1.33 Navy Environmental and Natural Resources Program Manual OPNAVINST 5090.1D - Chapter 24: Pesticide Compliance Ashore

H.1.34 OPNAVINST 5100.23G, Navy Occupational Safety and Health (NAVOSH) Manual, 30 Dec 2005

H.1.34.1 Requires that pest control operations be thoroughly evaluated to identify and quantify potential health hazards.

H.1.35 Marine Corps Environmental Compliance and Protection Manual MCO 5090.2A - Chapter 14: Pesticide Pollution Prevention

H.1.35.1 Generally requires all pesticide applicators to be DoD- or State-certified. In addition, pest management records must be kept and a pest management plan developed, implemented, and maintained that stresses the importance of IPM.

H.1.36 Pesticide Applicator Training and Certification for Medical Personnel BUMEDINST 6250.12C

H.1.37 *NAVFACINST 6250.3H, of 12 Sep 1991, "Applied Biology Program Services, Training, and Reporting Requirements"

H.1.38 *SOUTHNAVFACENGCOM Instruction 6250.10A, "Pesticide Purchase Procedures", 27 February 1992

H.1.39 *SOUTHNAVFACENGCOM Instruction 10321.lC, "Procurement, Inspection and Use of Treated Wood Products for Construction and Maintenance" of 2 July 1987.

H.1.40 *SOUTHNAVFACENGCOM Instruction 11015.6C, "Chemical Control of Weeds", of 13 January 1976 with March 1989 revision of weed control guide.

H.1.41 **NAVMED P-5010-8 Manual of Naval Preventive Medicine Chapter 8: Navy Entomology and Pest Control Technology**, 9 November 2004

H.1.41.1 Guidelines and procedures on the prevention, surveillance, and control of medically important pests.

H.1.42 Integrated Natural Resource Management Plan (INRMP)

H.1.43 Installation Spill Contingency Plan

H.1.44 Hazard Communication Plan (HAZCOM)

Pest Management Operations Manuals / Fact Sheets

H.1.45 Public Health Pest Control Manual from University of Florida Entomology and Nematology Department

H.1.46 Household Pests and Pests of Man, Florida Cooperative Extension

H.1.47 How to Manage Pests, University of California Statewide Integrated Pest Management Project

H.1.48 Model Pesticide Reduction Plan, Air Force Civil Engineer Support Agency

H.1.49 Recognition and Management of Pesticide Poisonings from EPA

Armed Forces Pest Management Board Technical Guides

H.1.50 TG 6 - Delousing Procedures for the Control of Louse-borne Disease During Contingency Operations March 6, 2002 - reviewed October 2005

H.1.51 TG 7 - Installation Pesticide Security, August 2003

H.1.52 TG 11 - Hydrogen Phosphide Fumigation with Aluminum Phosphide, November 1998

H.1.53 TG 13 - Ultra Low Volume Dispersal of Insecticides by Ground Equipment, December 1999

H.1.54 TG 14 - Personal Protective Equipment for Pest Management Personnel, March 1992

H.1.55 TG 15 - Pesticide Spill Prevention and Management, June 1992

H.1.56 TG 16 - Pesticide Fires: Prevention, Control, and Cleanup, June 1981

H.1.57 TG 17 - Military Handbook - Design of Pest Management Facilities, November 1991 (NOTE: also known as: Military Handbook 1028-8A)

H.1.58 TG 18 - Installation Pest Management Program Guide, March 11,2003

H.1.59 TG 20 - Pest Management Operations in Medical Treatment Facilities, November 2005

H.1.60 TG 21 - Pesticide Disposal Guide for Pest Control Shops

H.1.61 TG 22 - Guidelines for Testing Experimental Pesticides on DoD Property, June 2001

H.1.62 TG 24 - Contingency Pest Management Guide May 2, 2006

H.1.63 TG 26 - Tick-Borne Diseases: Vector Surveillance and Control February 2006

H.1.64 TG 27 - Stored-Product Pest Monitoring Methods June 2005

H.1.65 TG 29 - Integrated Pest Management in and around Buildings July 2003

H.1.66 TG 30 - Filth Flies: Significance, Surveillance and Control in Contingency Operations, March 2006

H.1.67 TG 31 - Contingency Retrograde Washdowns: Cleaning and Inspection Procedures, November 2004

H.1.68 TG 34 - Bee Resource Manual with emphasis on The Africanized Honey Bee, November 2005

H.1.69 TG 36 - Personal Protective Techniques Against Insects and Other Arthropods of Military Importance

H.1.70 TG 37 - Guidelines for Reducing Feral/Stray Cat Populations on Military Installations in the United States, January 1996

H.1.71 TG 38 - Protecting Meal, Ready-to-Eat Rations (MREs) and Other Subsistence During Storage, May 2005

H.1.72 TG 39 - Guidelines for Preparing DoD Pest Control Contracts Using Integrated Pest Management, February 1997

H.1.73 TG 40 - Methods for Trapping and Sampling Small Mammals for Virologic Testing, September 1995

H.1.74 TG 41 - Protection from Rodent-borne Diseases with special emphasis on occupational exposure to hantavirus, April 1999

H.1.75 TG 42 - Self-Help Pest Management, September 1999

H.1.76 TG 43 - Guide to Pest Surveillance During Contingency Operations, July 2002

H.1.77 TG 44 - Bed Bugs - Importance, Biology, and Control Strategies, August 2006

H.1.78 TG 45 - Storage and Display of Retail Pesticides, November 2006

State and Local Pesticide Laws and Rules

H.1.79 The Virginia Department of Agriculture and Consumer Services regulates the pest control industry in Virginia (**http://www.vdacs.virginia.gov/index.shtml**).

H.1.80 A listing of Virginia pesticide regulations may be found at: **http://www.vdacs.virginia.gov/pesticides/laws.shtml**

H.1.81 The Maryland Department of Agriculture, Pesticide Regulation Section, regulates the pest control industry in Maryland (**http://www.mda.state.md.us/plants-pests/pesticide_regulation/index.php**).

H.1.82 Information on Maryland pesticide regulations can be found at: **http://www.mda.state.md.us/plants-pests/pesticide_regulation/pesticide_applicator_certification_business_licensing_req.php**

H.1.83 The District of Columbia Department of the Environment, Toxic Substances Division regulates the use of pesticides in Washington, D.C. Information on District of Columbia regulations can be found at: **http://ddoe.dc.gov/ddoe/cwp/view,a,1209,q,494917.asp**

Note: The **Technical Guides** replaced the Military Pest Management Handbook. These Technical Guides can be found at **http://www.afpmb.org/pubs/tims/tims.htm**.

APPENDIX I

PESTICIDE DISCHARGE MANAGEMENT PLAN

Pesticide Discharge Management Plan

This plan is designed to meet the NPDES requirements under the Clean Water Act for discharges or applications of pesticides made in or near water.

Instructions

If you are required to submit an NOI (see Table 1 below), you must prepare a PDMP for your pest management area within the deadlines described below (Table 2). This plan must be kept up-to-date.

http://www.epa.gov/npdes/pubs/proposed_pgp.pdf

Table 1: Annual Treatment Area Thresholds	
Pesticide Use	**Annual Threshold**
Mosquitoes and Other Flying Insect Pests	6400 Acres of treatment area
Aquatic Weed and Algae Control:	
-In Water	80 Acres of treatment area*
-At Water's Edge:	20 linear miles of treatment area at water's edge+
Aquatic Nuisance Animal Control:	
-In Water	80 Acres of treatment area*
-At Water's Edge	20 linear miles of treatment area at water's edge+
Forest Canopy Pest Control	6400 Acres of treatment area

*Calculations should include the area of the applications made to: (1) waters of the U.S. and (2) conveyances with a hydrologic surface connection to waters of the U.S. at the time of pesticide application. For calculating annual treatment area totals, count each pesticide application activity as a separate activity. For example, applying pesticides twice a year to a ten acre site should be counted as twenty acres of treatment area.

+Calculations should include the linear extent of the applications made at water's edge adjacent to: (1) waters of the U.S. and (2) conveyances with hydrologic surface connection to waters of the U.S. at the time of pesticide application. For calculating annual treatment totals, count each pesticide application activity and each side of a linear water body as a separate activity or area. For example, treating both sides of a ten mile ditch is equal to twenty miles of water treatment area.

Table 2: Pesticide Discharge Management Plan Deadlines	
Category	**PDMP Deadline**
Operators not required to submit NOI.	Not applicable.
Operators who know or should have reasonably known, prior to commencement of discharge, that they will exceed an annual treatment area threshold for that year.	Prior to first pesticide application covered under the permit.
Operators who do not know or would reasonably not know until after commencement of discharge, that they will exceed an annual treatment area threshold for that year.	Prior to exceeding an annual treatment area threshold.
Operators commencing discharge in response to a declared pest emergency situation that will cause the operator to exceed an annual treatment area threshold.	No later than 90 days after responding to the declared pest emergency situation

Pesticide Discharge Management Plan
For NSA Washington

Pest Management Area: NSF Carderock

A. Pesticide Discharge Management Team

The following person will be responsible for managing pests in relation to the specified pest management area:

Name	Title	Department/Division	Phone	Email
David Pool	PAR	PWD Washington	301-227-3741	david.w.pool@navy.mil

The above person is responsible specifically for: Oversight of larvicide use in retention ponds

The following person will be responsible for developing and revising the PDMP:

Name	Title	Department/Division	Phone	Email
Steven Godio	IPMC	PWD Washington	202-433-7182	steven.godio@navy.mil

The above person is responsible specifically for: Oversight of all pest management activities

The following person will be responsible for developing, revising, and implementing corrective actions and other effluent limitation requirements:

Name	Title	Department/Division	Phone	Email
Rita Smith	NPDES Permit Manager	PWD Washington	301-227-0001	rita.smith1@navy.mil

The above person is responsible specifically for: storm water/waste water

The following person(s) will be responsible for pesticide applications in the specified pest management area:

Name	Title	Department/Division	Phone	Email

The above person(s) is/are responsible specifically for:

The pesticide applications for the specified pest management area are performed by:

In-House Personnel	☐	Contractor Personnel	X	In-House and Contractor Personnel	☐

If contractor personnel perform the pesticide applications, attach a copy of the contract or other written agreement to this PDMP. Document attached? No - Contact FSC for current copy of contract when required.

B. Pest Management Area Description

1. Pest Problem Description

Target Pest(s): Mosquito Larvae

Source of Pest/Root Cause of Pest Problem: Standing water

Historical information regarding this pest problem in this area: NSF Carderock has three stormwater retention ponds that may become infested with mosquito larvae. Two ponds are in the developed area of the base, and the third is in an undeveloped area near the fence line.

Source and location of historical data: Information obtained by on-site observations and interviews with employees. Ralph Huff, a base employee, was the pest controller on site for decades and is familiar with historical use patterns. Preventive medicine at Bethesda Naval National Medical Center collects and analyses mosquito trapping data for the region, including surveys for mosquito borne disease.

2. Action Threshold

Established Pest Action Threshold (reference IPMP and/or Contract, if applicable): One or more larvae per dip, or observation of mosquito larvae in the ponds. See section 8 of IPMP.

3. Map

Map is in Appendix A of IPMP.

4. Water Quality Standards

Established Water Quality Standards for waters of the U.S. located in this pest management area to which there may be a discharge (provide reference from State or other source):

C. Control Measure Description

Select control measures that you will implement to comply with effluent limitations. Further details will be provided in Section D.

Active Ingredient(s) to be applied to the pest management area (attach pesticide label): methoprene or Bti. Altosid XR briquets or Summit Bti Briquets.

Rate of application (provide rate): 1 per 100 ft^2 per 2 ft of depth (Altosid) or 1 per 100 ft^2 (Summit)

Frequency of application (provide frequency): Once per season (Altosid) or once per month (Summit).

Spill Prevention: Solid formulations only are used, so there is very little risk of a spill. Material spilled on dry ground can just be picked up.

Equipment Maintenance and Calibration: No equipment is used.

D. Schedules and Procedures

1. Control Measures Used to Comply with Effluent Limitations

For all of the following provide justification, procedures and schedules, as appropriate. Reference the IPMP, other installation Plans, SOPs, manufacturer's directions or any other applicable documents. Procedures do not need to be re-written here if they are clearly delineated in another planning document and the document is referenced.

Rate of application: As per product label.

Spill Prevention: Only solid formulations with a minimal spill hazard are used.

Pesticide Application Equipment Maintenance: N/A

Pest Surveillance: Larval dipping survey as described in section 8 of IPMP.

Assess Environmental Conditions Prior to Application (temperature, precipitation, wind speed): N/A

2. Other Actions Necessary to Minimize Discharges

Spill Response Procedures

Provide information on and/or reference existing plans for the following:

Spill Response Procedures: see section 5.2.3 of IPMP on spill management

Spill-related Training/Certification:

Notification Procedures:

Adverse Incident Response Procedures

Provide information on and/or reference existing plans for the following:

Incident Response Procedures:

Notification Procedures:

Locations where Contact Information for Responders can be Found:

Pesticide Monitoring Schedules and Procedures

"Monitoring" includes checking that the amount of pesticide applied is correct, performing regular maintenance on equipment and spot checking for observable adverse incidents. Visual assessments of the application site must be performed during pesticide applications and during post-application surveillance.

Process for determining monitoring locations: Monitoring locations are the three treated ponds.

Schedule for monitoring: Monthly

Person(s) responsible for monitoring: Dave Pool, Rita Smith, Susan Barrett

Procedures for documenting any observed impacts: Any fish kills or observable negative impacts will be noted and reported.

E. Documentation to Support Eligibility Considerations under Other Federal Laws

Have you included a copy of your NOI with this PDMP? No – NOI not required

F. Signature

This PDMP must be signed by "either a principal executive officer or ranking elected official (i.e., a Chief Executive Officer of the Agency or a Senior Executive Officer having responsibility for the overall operations of a principal geographic unit of the agency)."

Signature: _____
Name:
Title:

APPENDIX J

EMERGENCY DISEASE VECTOR CONTROL PLAN

APPENDIX TO Naval District Washington (NDW)
PEST MANAGEMENT PLAN

EMERGENCY VECTOR SURVEILLANCE
AND CONTROL PLAN

November 2003

Ref: (a) OPNAVINST 6250.4B
(b) DOD Directive 4150.7
(c) BUMEDINST 6250.12C

Encl: (l) Personnel to be contacted before implementing Emergency Disease Vector Plan
(2) List of higher echelon commands to be notified of plan implementation
(3) Environmental factors impacting emergency vector control
(4) Vector-borne diseases, anticipated vectors, and non-disease causing nuisance pests
(5) Pesticides/equipment list

1. Purpose: To establish an emergency vector control plan for the Naval District Washington (NDW) to include those installations listed in the 2003 Pest Management Plan.

2. Background:

(a) General: NDW covers a vast range of topographical characteristics. Standard to most installations is that they are all located around or between the Potomac River and the Chesapeake Bay. Climate, disease vectors, and vector borne diseases are fairly similar to all. While certain installations have specific vector control programs, mosquito management is one of the largest control programs in the area. Control measures in the NDW area will be based on mosquito surveillance. Gravid traps will be used for surveillance [specific to West Nile virus (WNV)]) and eliminating breeding sites and larviciding will be the standard methods of control from April through November (or the first freeze). Ultra low volume (ULV) spray should be a last resort for mosquito control.

(b) Pest/Vector Description. The most common disease vector in this area is the mosquito (Culex spp and Aedes spp). There are also incidences of ticks that may carry Lyme disease.

(c) Methods of Control.

(l) The primary method of mosquito control is eliminating their breeding sites and using larvicide in existing and potential breeding sites where elimination is not possible. Ground survey and manually dispensing larvicide is the preferred methods for completing these initiatives.

(2) The primary methods for tick control will be education, avoidance, and personal repellents.

(3) An additional method for controlling vectors is community involvement. Community education on eliminating breeding sites is an effective and important component to controlling vector populations.

3. Action.

a. The Commanding Officer at the National Naval Medical Center (NNMC) upon the advice of the Senior Preventive Medicine Officer will:

(l) Recommend to the Regional Commander that the Emergency Vector Control Plan be initiated.

(2) Inform, via message, the Commanding Officer, Navy Environmental Health Center (NEHC), and the Officer in Charge, Navy Disease Vector Ecology and Control Center (NDVECC) Jacksonville when the Emergency Vector Control Plan is activated.

(3) Ensure the timely submission of a Disease Event Report, utilizing the Navy Disease Reporting System, should there be any suspected or confirmed human case of vector-borne disease.

b. The Senior Preventive Medicine Officer at NNMC shall:

(l) Provide consultation to the medical staff on disease specific symptoms to vector borne diseases to assist in the diagnosis of patients exhibiting symptoms.

(2) Provide appropriate epidemiological surveillance of vector-borne diseases and vector populations prior to, and throughout the emergency. Surveillance will be in cooperation and partnership with local and state public health departments for Washington DC, Virginia and Maryland.

(3) Coordinate overall mosquito abatement activities onboard area military installations in conjunction with the

Public Works Center (PWC), Facilities Department, and pest management personnel.

(4) Utilize departmentally owned gravid traps for surveillance of mosquitoes that can carry WNV and other traps as needed for other disease vectors. Collections will be performed for three trap nights. Traps will also operate Friday - Sunday with collection on Monday and count averaged for 3 days as needed.

(5) Require that Preventive Medicine Technicians maintain certification in DoD pest control Category 8, Public Health. Additional assistance, training, and/or support can be requested from CHPPM, local health departments and/or installation pest management personnel.

(6) Specimens collected will be identified on the day of trap collection. Identification will be at least to genus.

(i) The action level per trap/night will be 25 mosquitoes.

(ii) Trap counts exceeding 25 mosquitoes will be justification for Preventive Medicine to request PWC to distribute larvicide.

(7) NNMC Preventive Medicine will coordinate PWC vector management activities. In the event of plan activation, PWC and Preventive Medicine will, to the extent possible, establish a partnership with the county in a joint effort for mosquito control and eradication.

(8) Notify the Officer in Charge, NDVECC of plan activation and request if appropriate, their assistance in providing consultation, aerial and ground dispersal equipment and personnel certified in aerial application of pesticides.

(9) Provide personnel as may be necessary to conduct an effective, emergency, and mosquito abatement program.

(10) Determine availability of adequate insecticides from local sources.

(11) Maintain liaison with both NDW and NNMC Public Affairs Officers to coordinate press releases and dissemination of information to the public.

(12) Prepare, when required, information sheets to distribute to base personnel advising of personal protective measures, breeding site reduction and procedures for collection and submission of dead or dying birds.

(13) Maintain liaison with County Mosquito Control Officials to share information and to coordinate efforts.

c. The Navy Disease Vector Ecology and Control Center, Jacksonville, FL will if deemed by appropriate authority:

(l) Establish and deploy an Emergency Vector Control Team.

(2) Establish appropriate vector control procedures and direct all vector control activities for the duration of the emergency.

(3) Inform the Commanding Officer at each respective installation of the status of all control activities.

4. Post-Emergency Action. NDVECC and Head of NNMC Preventive Medicine will prepare a detailed After Action Report jointly for submission to NEHC and BUMED. It should include specifics on:

a. Vectors involved and population densities.

b. Control measures taken.

c. Effectiveness of method used and method of determination.

d. Problems encountered and suggestions on corrective action.

PERSONNEL TO BE CONTACTED WHEN IMPLEMENTING THE EMERGENCY PLAN FOR DISEASE VECTOR AND PEST CONTROL

(a) Regional Commander and Commanding Officer, NDW who can authorize additional resources to support Emergency Vector Control:

Name: Jan C. Gaudio, RADM (jan.gaudio@navy.mil)
Phone:

(b) Commanding Officer, NNMC:

Name: Donald Arthur, RADM
Phone: 301-295-5800

(c) Officer in Charge, Branch Clinic, NNMC-BMC:

Name: POC: CDR Brown-Vidal
Phone: 301-295-5732

(d) Environmental Health Officer, NNMC Preventive Medicine:

Name: Ramzy G. Azar, LT
Phone: 301-319-4375 DSN: 269-4375

(e) Pest Control Supervisor, PWC NNMC:

Name: Al Lofton
Phone: 301-295-1011
Pest Control Shop: 301-295-1070

(f) Naval Facilities Engineering Command, Engineering Filed Activity Northeast, Regional Entomologist:

Name: Stephen Kincaid
Phone: (610) 595-0567 x 170 DSN: 443

(g) Base Veterinarian:

Name: CAPT McManus (Forest Glen VTF)
Phone: 301-295-7643/7535

(h) Montgomery County Mental Health and Hygiene Environmental Health:

Name: Richard Helfrish

Phone: 240-777-4251

(i) Montgomery County Mental Health and Hygiene:

Name: Marilyn Piety
Phone: 240-777-1394

(j) State Department of Health, Surveillance Administrator, Bureau of Epidemiology.

Name: Amy Bergman
Phone: 410-767-6252

COMMANDS REQUIRING EMERGENCY NOTIFICATION

1. Navy Environmental Health Center (NEHC)
   2510 Walmer Ave.
   Norfolk, VA 23513-2617
   DSN: 253-5500, Commercial (757) 462-5500
   FAX (757) 444-3672

2. Navy Disease Vector Ecology and Control Center
   Naval Air Station, Box 43
   Jacksonville, FL 32212-0043
   DSN: 942-2424, Commercial (904) 542-2424
   FAX: (904) 542-4324

3. Navy Environmental and Preventive Medicine, Unit No.2
   1887 Powhatan Street
   Norfolk, VA 23511-3394
   DSN: 564-7671, Commercial (757) 444-7671
   FAX: DSN 564-1191, Commercial (757) 444-1191

ENVIRONMENTAL FACTORS RESULTING IN A VECTOR-BORNE DISEASE OUTBREAK OR INCREASE IN VECTOR/PEST POPULATIONS

1. **Tropical Storms, Severe Thunderstorms, and Hurricanes**

(a) Heavy rain may cause flooding and the production of mosquito breeding sites. Flooding may also prevent access by pest controllers to breeding areas for treatment.

(b) Winds may cause structural damage resulting in the disruption of sanitation services. Consequently, fly, rodent and cockroach populations may expand.

(c) Organic debris, generated from a storm, may provide excellent breeding sites for flies and *Culicoides*.

2. **Flooding**

(a) Flooded areas, due to heavy rains, may become breeding sites for mosquitoes.

(b) Restricted access to insect pest populations may prevent pest control activities.

VECTOR-BORNE DISEASES, ANTICIPATED VECTORS, AND NON-DISEASE CAUSING NUISANCE PESTS

West Nile Virus: Febrile illness usually lasting a week or less. Symptoms may mimic the flu. Initial symptoms include fever, headache, malaise, arthralgia or myalgia, and occasionally nausea and vomiting; generally, there is some conjunctivitis and photophobia. Fever may or may not be diphasic (saddleback). Rash is common. Meningoencephalitis is an occasional complication.
Vector Transmission: Bite of infected *Culex* mosquito.
Primary Vectors: *Culex pipiens, Cx. restuans and Cx. salinarius* are thought to be the primary vectors.
Vector Ecology: *Cx.* lays egg rafts in rain barrels, water tanks, cisterns, and temporary pools, but water having high organic content is preferred. Large populations of the species are common in urbanized areas. Adults of *Cx.* feed primarily at night both indoors and out. They readily bite humans but prefer birds.
Control Measures: Restrict outdoor activity, stress personal protective measures. Identify breeding sites through surveillance (light trapping, larval dips). Treat adults with aerial/ground ULV. Treat larvae chemically with larvicides. When feasible, reduce or eliminate breeding sites mechanically. Maintain constant liaison with County Mosquito Control Program Manager and local Health Department Infectious Disease Division and Agriculture officials to obtain area information about disease threat. Include surveillance for dead birds (especially crows). Coordinate veterinary surveillance and submission of dead bird submission for testing with local Army Veterinarian. Enhance human surveillance at all military medical treatment facilities.

Dengue Fever: An acute febrile viral disease characterized by sudden onset, fever for 3-5 days (rarely more than 7 and often biphasic) intense headache, myalgia, arthralgia, retro-orbital pain, anorexia, GI disturbances and rash. HI, CF, IgG and IgM ELISA and neutralization tests are diagnostic aids.
Vector Transmission: Bite of an infective *Aedes* mosquitoes.
Primary Vectors: *Ae. aegypti*
Vector Ecology: Breeds almost exclusively in artificial containers that are found in association with man, such as discarded automobile tires, drums, and animal watering vessels. Also occasionally found in natural containers such as leaf axils. Immatures and adults found indoors and out. Adult female

mosquitoes are diurnally active and will readily feed on man and other animals. The flight range is limited.
Control Measures: Restrict outdoor activity, stress wearing personal protective equipment. Identify breeding sites through surveillance (light trapping, larval dips). Treat adults with aerial/ground ULV. Treat larvae chemically with larvicides. Reduce or eliminate breeding sites, (concentrate on artificial containers) mechanically. Contact DVECC and local Health Department officials to obtain information about disease threat.

Dengue Hemorrhagic Fever: A severe viral illness characterized by abnormal vascular permeability, hypovolemia and abnormal blood clotting mechanisms. Illness is biphasic, beginning abruptly with fever, often anorexia, facial flush and mild GI disturbances. The condition worsens with marked weakness, severe restlessness, facial pallor and often diaphoresis and circumoral cyanosis.
Vector Transmission - See Dengue
Primary Vector – See Dengue
Vector Ecology – See Dengue
Control Measures- See Dengue

Eastern Equine Encephalitis: An acute inflammatory viral disease of short duration involving parts of the brain, spinal cord and meninges. Most infections are asymptomatic; mild cases often occur as febrile headache or aseptic meningitis. Severe infections are usually marked by acute onset, headache, high fever, meningeal signs, stupor, disorientation, coma, tremors, occasional convulsions and spastic paralysis.
Reservoir: Potentially birds, rodents, bats, reptiles, amphibians and *Culex* spp. (Adults and eggs).
Mode of Transmission: Probably *Culiseta melanura* from bird to bird and one or more *Aedes* spp. And *Coquillettidia* spp. From birds or other animals to humans.
Control Measures: Restrict outdoor activity, stress personal protective measures. Identify breeding sites through surveillance (light trapping, larval dips). Treat adults with aerial/ground ULV. Treat larvae chemically with larvicides. Reduce or eliminate breeding sites mechanically. Contact local Health Department officials to obtain information about disease threat.

Malaria: A parasitic disease; the four human malarias can be sufficiently similar in their symptoms to make species differentiation generally impossible without laboratory studies.

Furthermore, the fever pattern of the first few days of infection resembles that seen in early stages of many other illnesses (bacterial, viral and parasitic). Even the

demonstration of parasites, does not necessarily mean that malaria is all that the patient has.
Vector Transmission: Bite of infective *Anopheles* mosquitoes.
Primary Vectors: *An. albimanus*
Vector Ecology: Actual distribution and seasonality of *An. albimanus* is not known, but is expected to be found throughout the year. Larvae breed in fresh or brackish waters such as pools, blocked estuaries, puddles, marshes, ponds, lagoons, especially those containing floating or grassy vegetation. Larvae prefer sunlight. Adult female mosquitoes feed on man and domestic animals, indoors and outdoors. After feeding, adults typically rest mainly indoors.
Control Measures: Restrict outdoor activity, stress wearing personal protective equipment. Identify breeding sites through surveillance (light trapping, larval dips). Treat adults with aerial/ground ULV. Treat larvae chemically with larvicides. Reduce or eliminate breeding sites mechanically. Contact local Health Department officials to obtain information about disease threat.

Rodent Associated Diseases: Natural disasters may result in rodents seeking shelter in buildings occupied by humans. This can potentially result in disease transmission.
Control Measures: Integrated pest management plan should include surveys, exclusion, trapping, sanitation, baiting and trapping.

Fly Associated Diseases: In the aftermath of natural disasters, rapid increases in fly populations can pose a significant health risk. The increase in decaying organic material, possible sewage system malfunction and decreased levels of sanitation provide ideal breeding habitats for flies.
Control Measures: Control measures should focus on rapidly restoring sanitation infrastructure to include solid waste storage and disposal; integrity of sewage systems; exclusion from foodservice areas, baiting and possibly aerosolized pesticides.

AUTHORIZED DISEASE VECTOR MANAGEMENT PESTICIDE USE LIST

NNMC

November 2003

Pesticide	Common Name	Use
Procide	Pipernol butoxide	aerosol
Amdro Fire Ant	Hydramethylnon	fire ants
Award	Fenoxycarb	fire ants
Precor 2000 spray	Methroprene	fleas
Flee	Permethrin	fleas
Kicker	Pyrethrin	fleas
Precor	Methroprene	fleas
Stimukil fly bait	Methomyl	flies
Prentox	Pyrethrin	fogging
Pyrenone 10-1	Pyrethrins	fogging
ULD-BP-50	Pyrethrins	fogging
Malathion 5	malathion	mosquitoes
Octagon Process	Malathion	mosquitoes, flies
Permanone	Permethrin	mosquito repellent
Scourge 4-12	Resmethrin	mosquito fog
Altosid briquettes	Methoprene	mosquito larvae
Aqua Bac	Bti	mosquito larvae
Baytex	Fenthion	mosquitoes
Malathion ULV	Malathion	mosquitoes
Repellent	nn-Diethyl-m-toluamide	mosquitoes
Rozol tracker powder	Chlorophacinone	rat tracker powder
Talon G rat bait	Brodifacoum	rats
Permanone arth. rep.	Permethrin	repellent

EQUIPMENT AVAILABILITY LISTING

NNMC
NOVEMBER 2003

ITEM	MAKE	QUANTITY
FOGGER, BACKPACK	LECO	0
SPRAYER 100 GAL		1
HANDCOMPRESSED SPRAYER	B & G	2

INTEGRATED PEST MANAGEMENT PLAN

Naval Support Activity Washington
Washington, DC

Prepared by:

Naval Facilities Engineering Command

Integrated Pest Management Plan
June 2014 (Update)
Naval Support Activity Washington
Washington, DC

Plan Authorization

Prepared by:

Dr. Denise DeBusk
Entomologist
NAVFAC Atlantic
Applied Biology

Jennifer Pipe
Integrated Pest Management Coordinator
NSA Washington

Technical Approval By:

Sabra Scheffel
Applied Biology
Section Head
NAVFAC Atlantic
Norfolk, Virginia

CDR E. Hoffman
MSC, USN
OIC, NECE
Jacksonville, Florida

Heather Huddle
Natural Resources Program Manager
NAVFAC Washington

Deputy Public Works Officer
PWD Washington

Approved for Implementation by:

Capt Monte Ulmer
Commanding Officer
NSA Washington

Integrated Pest Management Plan Annual Review

Year	Completion Date	Integrated Pest Management Coordinator	Copies of changes to the Pest Management Consultant (Annual) Date Completed
12	5/21/2012	Heather Huddle	1
13	6/11/14	Steve Godio	
14	9/8/14	Jennifer Pipe	
15			
16	Rewrite		

Scheduled On-Site Pest Management Technical Review

Scheduled Date	Integrated Pest Management Coordinator	Pest Management Consultant Date Review Completed

Note: Technical Reviews should be scheduled approximately 18 months apart and in conjunction with an EMS or NECE review if possible.

Table of Contents

Executive Summary ..... **i**

1. Introduction **1-1**

1.1 The Integrated Pest Management Plan *1-1*
1.1.1. Scope 1-1
1.1.2. Authority 1-1
1.1.3. Purpose and Structure 1-1
1.1.4. Plan Implementation 1-1
1.1.5. Plan Maintenance 1-1

1.2. Installation Background *1-3*
1.2.1. Location and Facilities 1-3
1.2.2. Facilities' Descriptions and Missions 1-3

1.3. Pest Management Program Overview *1-4*
1.3.1. Overview 1-4
1.3.2. Pest Management Objectives 1-4
1.3.3. Program Requirements 1-4

2. PROGRAM ADMINISTRATION **2-1**

2.1. Functional Areas, Roles and Responsibilities *2-1*
2.1.1. CNIC and Naval District Washington 2-1
2.1.2. Commanding Officers 2-1
2.1.3. Integrated Pest Management Coordinator (IPMC) 2-1
2.1.4. Facilities Support Contracts 2-1
2.1.5. Washington Navy Yard Branch Health Clinic Preventive Medicine Department 2-2
2.1.6. U.S. Army Veterinary Services 2-2
2.1.7. Environmental Division 2-2
2.1.8. Navy Exchange (NEX) 2-3
2.1.9. Contract Pest Management Service Providers 2-3
2.1.10. Contract Grounds Maintenance 2-3
2.1.11. All Installation Personnel 2-3
2.1.12. Pesticide Approval 2-3
2.1.13. Pesticide Labels and MSDSs 2-3

2.2. Records and Reporting *2-4*
2.2.1. Maintaining pest management operations records 2-4
2.2.2. Reporting pest management operations 2-4

2.3. Training, Certification and Licensing *2-4*
2.3.1. Integrated Pest Management Coordinator and others who are not pesticide applicators 2-5

2.4. Pest Management Contracting *2-5*
2.4.1. Contract Specifications and Review 2-5
2.4.2. Contract Performance Assessment 2-5

3. Operations **3-1**

3.1. Integrated Pest Management (IPM) *3-1*
3.1.1. Federal Regulation and Policy 3-1
3.1.2. What is IPM? 3-1

3.2. Current Operations *3-2*
3.2.1. General Household and Nuisance Pests 3-2
3.2.2. Grounds Maintenance 3-3
3.2.3. Aquatic Weed Control 3-3
3.2.4. Ornamental Pests 3-4

Table of Contents

3.2.5. Structural Pests 3-4
3.2.6. Administration of termite Treatment Contracts and Warrantees 3-4
3.2.7. Stored Products Pests 3-5
3.2.8. Health Related Pests 3-5
3.2.9. Pest Management in Quarters and Housing 3-7
3.2.10. Prohibited Operations and Devices 3-8

3.3. Regulatory Compliance 3-8
3.3.1. Policy 3-8
3.3.2. Pesticide Regulation and Enforcement 3-8
3.3.3. Laws and Regulations 3-9

3.4. Pesticide Management 3-9
3.4.1. Pesticide Selection 3-10
3.4.2. Pesticide Storage 3-10
3.4.3. Mixing 3-10
3.4.4. Application 3-10
3.4.5. Post-application Clean Up 3-11

3.5. Cancelled Pesticides 3-11

4. Health and Safety 4-1

4.1. Pesticide Applicator and Public Safety 4-1
4.1.1. Potential Occupational Hazards 4-1
4.1.2. Hazard Abatement 4-2

4.2. Public Safety 4-3
4.2.1. Potential hazards to public 4-3
4.2.2. Hazard Abatement 4-4
4.2.3. Emergency Planning and Community Right-to-know Act (EPCRA) 4-5
4.2.4. Specific State Laws: 4-5

5. Environmental Considerations 5-1

5.1. Vulnerable Assets 5-1
5.1.1. Mission 5-1
5.1.2. Human health and safety 5-1
5.1.3. Environmental Resources 5-1
5.1.4. Natural Resources 5-1
5.1.5. Public Perception 5-1

5.2. Managing Environmental Impact 5-1
5.2.1. Natural and Cultural Resources Protection 5-2
5.2.2. Hazardous Materials and Hazardous Waste Management 5-2
5.2.3. Spill Prevention 5-2

6. Emergency Pest Management 6-1

6.1. Public Health Emergencies 6-1

6.2. Agricultural Emergencies 6-1

6.3. Emergency Pest Management Resources 6-1

7. Program Resources 7-1

7.1. NAVFAC Atlantic Applied Biology, EV51, Norfolk, VA 7-1

7.2. Navy Entomology Center of Excellence (NECE) 7-1

7.3. University of Maryland Extension Service 7-1

Table of Contents

7.4. Virginia Cooperative Extension Service *7-1*

8. Integrated Pest Management Sheets **8-1**

8.1. NUISANCE ANTS *8-1*

8.2. FILTH FLIES *8-4*

8.3. BED BUGS *8-7*

NON-CHEMICAL CONTROL **8-8**

CHEMICAL CONTROL **8-8**

8.4. STINGING INSECTS *8-10*

8.5. COCKROACHES IN FOOD PREPARATION AREAS *8-13*

8.6. AMERICAN COCKROACHES *8-15*

8.7. FERAL CATS *8-18*

8.8. LANDSCAPE ORNAMENTAL PESTS *8-19*

8.9. LANDSCAPE TURF PESTS *8-21*

8.10. ADULT MOSQUITO CONTROL *8-22*

8.11. LARVAL MOSQUITOES IN PERMANENT AND SEMI-PERMANENT WATER SOURCES *8-25*

8.12. LARVAL MOSQUITOES IN MANMADE STRUCTURES AND CONTAINERS *8-27*

8.13. RODENTS *8-29*

8.14. STORED PRODUCT PESTS IN FOOD STORAGE AREAS *8-32*

8.15. SUBTERRANEAN TERMITES *8-35*

Additional Information: **8-36**

8.16. TICKS *8-37*

Table of Contents

Appendices

Appendix	Content
A	Maps
B	Installation Pest Management Points of Contact
C	Abbreviations and Definitions
D	Program Review
E	Pesticide and Pesticide Dispersal Equipment Inventory
F	Authorized Use List of Pesticides
G	Applicator Licenses, Certifications, and Appointment Letters
H	Laws/Regulations/Publications
I	Pesticide Discharge Management Plan
J	Emergency Disease Vector Control Plan

List of Tables

No.	Description	Pg.
1-1	Pest Management Administration Program Requirements	1-6
1-2	Pest Management Operations Program Requirements	1-7
3-1	Comparison of Traditional Pest Control and IPM Methods	3-1

Executive Summary

This Integrated Pest Management Plan (IPMP) provides a comprehensive, long-range document that captures all the pest management operations and pesticide-related activities conducted at Naval Support Activity Washington (NSA-W) installations. It incorporates pest management practices and the local, State, Federal and Department of Defense regulations conforming to the requirements of DoD Instruction 4150.07 and OPNAVINST 6250.4 series while providing comprehensive information to Base staff and internal and external compliance auditors.

This plan was prepared by Naval Facilities Engineering Command Atlantic Applied Biology Section, from data collected through pest management data collection, on-site observations, and interviews with Base personnel, and document reviews.

NSA-W is composed of six installations further described in section 1.2, each with a unique mission and role in supporting our nation's military. NSA-W hosts many Navy headquarters and supports a number of tenant commands, including Chief of Naval Installations Command, Field Support Activity, Offices of the Naval Inspector General and Judge Advocate General, Military Sealift Command, and NAVFAC Headquarters.

Pest control services are needed to:

(1) Provide services that will prolong the life of the structures through subterranean termite and nuisance pest control;

(2) Maintain the safety and security of industrial and storage areas through weed control;

(3) Provide nuisance pest control to all buildings (except ppv housing) and outdoor areas to insure a good working and living environment;

(4) Control weed and insect pests in all recreational and lawn areas to maintain aesthetics and provide recreational facilities to personnel;

(5) Provide control of mosquitoes, flies and other potential disease vectors to insure the comfort and well-being of all personnel; and

(6) Provide vertebrate pest control, including rodent control, to all areas of the base.

For the current level of work to be accomplished, a sufficient staff of qualified applicators must be maintained. Contract personnel must meet state certification requirements specified by contract. Contracts involving the use of pesticides must be overseen by trained Performance Assessment Representatives (PARs). PARs must successfully take an initial Pest Control PAR Course. To maintain their certification, PARs and DOD pesticide applicators must successfully pass a DOD pest control training and recertification course every three years. Pest Control facilities must comply with current safety standards to provide a safe workplace and to minimize pesticide hazards.

The focus of this Plan is on safe, environmentally sound, and cost-effective control of pests through Integrated Pest Management (IPM). IPM depends on education, proper surveying and identification of pests; non-chemical and chemical control methods, and individual responsibility for pest prevention.

1. Introduction

1.1 The Integrated Pest Management Plan

1.1.1. Scope

The NSA-W Integrated Pest Management Plan (IPMP) is a long-range, comprehensive planning and operational document that establishes the strategy and methods for conducting a safe, effective, and environmentally sound integrated pest management (IPM) program. The IPMP covers all pest management and pesticide-related activities conducted by civilian and military DoD personnel and commercial contractors within all functional areas of NSA-W. A glossary of abbreviations used in this document is found in Appendix C.

1.1.2. Authority

DoD Instruction 4150.07 and OPNAV 6250.4 series require all Navy activities that apply pesticides to have an IPMP. Thus, all references to the OPNAV Instruction refer to the DoD Instruction as well. The Plan is fully implemented upon the review and signature of the NSA-W Installation Commanding Officer.

1.1.3. Purpose and Structure

The IPMP provides a comprehensive overview of pest management and pesticide related operations on NSA Washington, and can be used as a reference by all installation personnel. The Plan is structured as follows:

- Section 1 addresses the purpose of the Plan and its maintenance and implementation. It also provides background on the installation and an overview of the current pest management program and requirements.
- Section 2 describes the organization and responsibilities of the functional area of the program and the administrative requirements and documentation.
- Section 3 describes the field operation of pest management including integrated pest management (IPM), pesticide management, contracting, and current practices.
- Section 4 provides lists and descriptions of hazards and hazard abatement practices associated with pest management.
- Section 5 addresses the environmental considerations of the program including regulatory compliance, the application of environmental management systems to pest management.
- Section 6 describes emergencies that are the result of infestations.
- Section 7 provides a list of resources available to the installation.
- The Appendices provide references and supporting documents.

1.1.4. Plan Implementation

The Plan must be reviewed and approved by installation stakeholders and professional pest management consultants from Naval Facilities Engineering Command (NAVFAC) Atlantic and Navy Bureau of Medicine and Surgery (BUMED). The Plan is implemented upon signature of the installation commanding officers. The Integrated Pest Management Coordinator (IPMC) has the task of implementing, coordinating and executing the Plan among each of the functional areas of the installation.

1.1.5. Plan Maintenance

Once the IPMP has been developed and implemented, it must be reviewed annually and updated as necessary. The installation IPMC is responsible for maintaining the Plan.

1.1.5.1. Internal Review

An internal review is conducted annually by the IPMC in coordination with the pest management service providers (PMSP) and other functional area points of contact (POC). The review should include updating contract information, applicator certifications, pesticides and pest management operations to be used on the installation, and updating pesticide use records. The internal assessment plan (IAP) for the pesticide program should be used to review compliance issues.

1.1.5.2. Off-site Review

The IPMC may request a review by a NAVFAC Atlantic Applied Biology pest management professional (PMP) for review of regulatory requirements, reporting and pesticide approval procedures.

1.1.5.3. On-site Review

An on-site review of the entire pest management program shall be performed by the NAVFAC Atlantic Applied Biology PMP every 18 to 36 months to ensure compliance with the Plan. The review may be performed more frequently if extensive program problems exist.

1.1.5.4. Plan Rewrite

The Plan should be rewritten every 5 years to reflect new contracts, personnel, pest management practices, and regulatory changes.

1.2. Installation Background

1.2.1. Location and Facilities

NSA-W encompasses the Washington Navy Yard (WNY), Naval Support Facility Naval Research Laboratory (NRL), NSF Arlington, NSF Suitland (National Maritime Intelligence Center), NSF U.S. Naval Observatory, NSF Potomac Annex, and NSF Carderock.

The largest site is the WNY, located in Washington D.C. near the intersections of M and 11th streets. Most administrative personnel for NSA-W, including the Commanding Officer, are located at WNY. Each of the separate facilities that compose NSA-W have their own Commanding Officers, with the facilities and pest control all falling under the responsibility of the NSA-W CO. Located on WNY are a NEX store, a "town center" with a food court, small NEX store, conference center, and exercise facility. There are two coffee shops and a Subway restaurant on base. The NAVSEA building also has a cafeteria.

1.2.2. Facilities' Descriptions and Missions

1.2.2.1. Washington Navy Yard

The primary mission of WNY is to administer assigned personnel, maintain and operate facilities and to provide services and materials to support Naval enterprises. The secondary mission is to support tenant and supported Unit Commands.

1.2.2.2. NSF Naval Research Laboratory

NRL operates as the Navy's full-spectrum corporate laboratory, conducting a broadly based multidisciplinary program of scientific research and advanced technological development directed toward maritime applications of new and improved materials, techniques, equipment, systems and ocean, atmospheric, and space sciences and related technologies.

In addition to space for research and offices the facility has an MWR gymnasium, restaurants, and a coffee shop. Bellevue Housing, a 188 unit PPV housing development consisting of two and three bedroom townhouses is also located on NRL property.

1.2.2.3. NSF Arlington

NSF Arlington is located between South Courthouse Road and Washington Boulevard in Arlington, Virginia. The site consists of 31.48 acres of land. Commercial, residential, and government buildings occupy surrounding properties.
.

1.2.2.4. NSF Suitland (National Maritime Intelligence Center)

NSF Suitland offers a united source for maritime intelligence at the national level, and provides support to warfighters of the Navy, Marine Corps, and Coast Guard, as well as to the Department of Defense and other national agencies requiring maritime intelligence. The facility is located on a 226 acre site, and includes a large cafeteria.

1.2.2.5. NSF Naval Observatory

The Naval Observatory provides precise time, time interval measurements, and astronomical reference data to government agencies. The facility is located on a 72 acre tract of land. It is also the official residence of the Vice President of the United States, and houses a library of books on astronomy.

1.2.2.6. NSF Potomac Annex

The Potomac Annex consists of seven buildings on 13.2 acres. It is located at E and 23rd streets in Washington D.C. The sole tenant is the Bureau of Medicine and Surgery (BUMED). There is an MWR fitness facility on the site.

1.2.2.7. NSF Carderock

NSF Carderock is the location for the headquarters of Naval Surface Warfare Center (NSWC) Carderock Division. NSWC Carderock performs research, development, testing and evaluation, design, and operational support for various naval platforms, primarily ships.

NSF Carderock includes office and research space, a small dispensary/health clinic, and a large cafeteria.

1.3. Pest Management Program Overview

1.3.1. Overview

General pest control services in indoor and outdoor areas, including mosquito abatement, are provided by contract on all NSA Washington installations. Grounds maintenance and vegetation control applications are done by contract.

1.3.2. Pest Management Objectives

The objectives of the NSA Washington integrated pest management program are:

1. **The prevention of pest-related health and safety problems that affect the mission.** Prevention of pest-borne disease and injury is a component of Force Health Protection (FHP). FHP seeks to maintain a healthy and fit military and civilian force in order to maintain the highest levels of readiness. Pest management is a "Force Multiplier" for construction battalions, aircraft squadrons, and other deployable units. Additionally, the military and civilian infrastructure on the installations must be protected in order to provide the necessary support to these units as well. Readiness also means ensuring that all installation personnel, including dependents, are provided with healthy work and living conditions that will contribute to a high quality of life.
2. **The prevention of pest damage to equipment and subsistence used to support the operational mission of the activities and tenant commands.** Millions of dollars of military equipment is maintained and stored on NSA Washington. These materials are susceptible to physical damage by pests. Rodents, for example, can cause considerable damage to an aircraft's electronic equipment through gnawing on wires and electrical components.
3. **Vegetation management to protect the local environment.** The introduction of non-native species of plants can increase the risk of fire and degrade the surrounding native environment that is home to a number of endangered and threatened animal and plant species.
4. **The protection of government real property, materiel and aesthetics.** Buildings and roads that form the infrastructure of the installations are susceptible to pests. Termites can cause extensive damage to wood structures if not adequately prevented and controlled. Weeds can cause damage to roadways and increase the risk of fire.
5. **Reduce the use and dependence on pesticides.**

1.3.3. Program Requirements

1.3.3.1. Administration

Table 1-1 outlines the pest management administrative program requirements.

1.3.3.2. Operations

Pest management on NSA Washington includes the following categories of operations:

- **Ornamental and turf -** Control and management of pests of landscape plants and turf, including arthropods, fungi, and weeds.
- **Right-of-way -** Control and management of vegetation along roadways and railways. It also includes vegetation control near fuel farms to reduce fire risk and along fence lines to enhance security.
- **Aquatic Weed Control –** Control of vegetation in ponds and ditches.
- **Industrial, Institutional, Structural, and Health-Related -** Control and management of pests in and around buildings. Pests may include cockroaches, termites, bees, venomous animals, stored product insects, rodents, and feral animals.
- **Mosquito Abatement -** Control and management of mosquito and disease vector pests.
- **Nuisance Pest Control** – Control of insect pests that are nuisance or annoyance to base personnel but do not present a health risk.
- **Invasive weeds -** Removal of non-native species of plants that are detrimental to native plant and animal habitats.
- **Vertebrate Control –** Control of animal predators that prey upon endangered or threatened animals and their habitats, or infest food and material storage.

Requirement	Description	Reference	Responsibility
PLANNING	Review and revise the Integrated Pest Management Plan annually.	OPNAV 6250.4 series; DoDINST 4150.07.	IPMC
RECORDING	Record all pest management operations conducted on the Base after each operation.	OPNAV 6250.4 SERIES; DoDINST 4150.07.	All pesticide applicators
MAINTAINING	Maintain records of all pest management operations conducted on Base on-site indefinitely	OPNAV 6250.4 SERIES; DoDINST 4150.07.	IPMC in coordination with PMPARs.
REPORTING	Compile and report all pest management operations to the NAVFAC Atlantic Applied Biology monthly.	OPNAV 6250.4 SERIES; DoDINST 4150.07.	IPMC in coordination with PMPARs.
PESTICIDE APPLICATOR QUALIFICATION	Ensure that all personnel applying pesticides on installations have current DoD pesticide applicator certification if in-house or state commercial applicator certification if contracted.	OPNAV 6250.4 SERIES; DoDINST 4150.07.	IPMC in coordination with PMPARs.
COMPLIANCE	Ensure that all program elements are in compliance with all Federal regulations. The Base is also encouraged to comply with County and State regulations.	OPNAV 6250.4 SERIES; DoDINST 4150.07.	IPMC in coordination with PMPARs.
PESTICIDE APPROVAL	Compile and submit list of new pesticides to the NAVFAC Atlantic Applied Biology for approval for use on the Base.	OPNAV 6250.4 SERIES; DoDINST 4150.07.	IPMC in coordination with PMPARs.
CONTRACT REVIEW	Review pest management contract specifications for compliance with the Integrated Pest Management Plan and submit to the NAVFAC Atlantic Applied Biology for final review and approval prior to advertising.	OPNAV 6250.4 SERIES; DoDINST 4150.07.	Facilities Support Contracts, PMPARs.

Table 1-1 IPMP Administrative Program Requirements

Requirement	Description	Reference	Responsibility
INTEGRATED PEST MANAGEMENT	"Federal agencies shall use Integrated Pest Management techniques in carrying out pest management activities and shall promote Integrated Pest Management through procurement and regulatory policies, and other activities."	USC Title 7, Chapter 6, Subchapter II, Sec. 136r-1	IPMC
STORAGE	Pesticides kept on installations must be procured and stored in accordance with installation Base and Federal regulations. The Base is also encouraged to comply with County and State regulations.	OPNAV 6250.4B MIL-HDBK-1028/8A;	Pest Control Contractor
CONTAINERS	All containers used to store or transport a pesticide must have the original or copy of the original label attached; Service containers must have attached label identifying person responsible for the container, name of chemical and signal word.	OPNAV 6250.4 SERIES; DoDINST 4150.07.	Pesticide applicators
VEHICLES	Must carry pesticide spill kits and properly secure pesticides and pesticide application equipment when not in use.	OPNAV 6250.4 SERIES	Pesticide applicators / vehicle operators
APPLICATION	Only registered pesticides will be used. Applications of pesticides must be performed to ensure safety and protection of the environment. A copy of the pesticide label shall be available at the application site.	OPNAV 6250.4 SERIES; DoDINST 4150.07.	Pesticide applicators
APPLICATOR SAFETY	Procedures, medical support, equipment and supplies to ensure the safety of DoD pesticide applicators during pest control operations must be provided by the installation.	OPNAV 6250.4 SERIES	Naval Ambulatory Care Clinic, Safety Department
OCCUPATIONAL HAZARDS MONITORING	Workplace monitoring shall be conducted by the medical department to ensure a safe and healthful environment for pest management personnel.	OPNAV 6250.4 SERIES OPNAVINST 5100.23D	Naval Ambulatory Care Clinic
CLEANING AND DISPOSAL	Equipment shall be cleaned to prevent health and environmental hazards due to chemical residues. Rinsate from container and equipment rinsing should be prevented from entering storm drains and water bodies. Dispose of empty containers properly.	OPNAV 6250.4 SERIES; 40 CFR 165	Pesticide applicators
SPILL PREVENTION	Spill kits should be maintained in pest control shops and on pest control vehicles. Pest management personnel should be familiar with the installations spill contingency plan.	OPNAV 6250.4 SERIES.	Pesticide applicators

Table 1-2 IPMP Operational Program Requirements

2. PROGRAM ADMINISTRATION

2.1. Functional Areas, Roles and Responsibilities

The integrated pest management program is comprised of functional areas that are involved with pest and/or pesticide management. Functional areas perform the following in the program: 1) administer pest management operations, 2) store and/or display pesticides, 3) mix and apply pesticides, 4) conduct non-chemical pest management practices, 5) monitor or inspect pest prevention or control operations, 6) dispose of pesticides, 7) conduct pest surveillance, and 8) maintain application equipment. The success of the pest management program depends largely on a clear understanding by the personnel of the functional areas of their roles and responsibilities.

2.1.1. CNIC and Naval District Washington

- Ensure that adequate funding is available for the Commanding Officers to properly support their pest management programs.

2.1.2. Commanding Officers

- Designate an Integrated Pest Management Coordinator in writing;
- Approve and support the IPMP;
- Ensure that installation personnel performing pest control receive adequate training, and achieve pest management certification as required; and
- Ensure that all pest management operations are conducted safely and have minimal impact on the environment.

2.1.3. Integrated Pest Management Coordinator (IPMC)

The appointed IPMC is currently employed by NAVFAC Washington.

- Coordinate the integrated pest management program including implementation, maintenance, and annual update of the installation IPMP;
- Coordinate revision of the IPMP every 5 years;
- Promote integrated pest management (IPM) in the pest management program to cost-effectively and safely manage pests and to prevent adverse environmental impact;
- Receive and consolidate pest management records from all Base pesticide applicators and submit monthly to NAVFAC Atlantic Applied Biology;
- Ensure current certification and continuing pest management training of pesticide applicators and PMPARs;
- Receive and compile lists of new pesticides and uses from all pest management service providers (PMSP) on the Base and submit to NAVFAC Atlantic Applied Biology for review and approval;
- Maintain current list of approved pesticides;
- Act as liaison between the Base and NAVFAC Atlantic Applied Biology and local, States of Virginia and Maryland, Washington D.C., and Federal agencies for pest management and pesticide regulatory issues;
- Ensure that the Base Contracting Officer submits pest management contract specifications to the Preventive Medicine Department and NAVFAC Atlantic Applied Biology PPMC for review prior to advertising; and
- Act as the Commanding Officer's advisor for pest management issues.

2.1.4. Facilities Support Contracts

Personnel in this Division monitor the performance of the contracted PMSPs. The responsibilities of this Division are to:

- Provide pest management performance assessment representatives (PMPARs) to monitor and evaluate the performance of the contract-provided service to ensure that pest control measures are being properly applied;
- Coordinate pest management contract specifications prior to bidding with the IPMC for review prior to submittal to the NAVFAC Atlantic Applied Biology PPMC for review and final approval;
- Submit copies of pest control contracts to the Preventive Medicine Department;
- Maintain copy of each contract on file;
- Monitor commercial pest management contractors ensuring effective and safe pest management practices and identify and document discrepancies and seek corrective action with contractor in accordance with the contract;
- Document and maintain accurate records of all contractors' pesticide applications and report actual pesticide use to the IPMC;
- Note pest situations and seek advice for corrective actions; and
- Maintain liaison with the IPMC.

2.1.5. Washington Navy Yard Branch Health Clinic Preventive Medicine Department

Personnel in preventive medicine have the overall responsibility for ensuring prevention of vector-borne diseases and other health threats due to animals on the installation. Environmental health support is provided by the medical clinic. Responsibilities include:

- Act as medical department liaison to Commanding Officer for public health pest management;
- Conduct food service sanitation and habitability inspections at Base facilities;
- Provide support for pest management operations involving medically-important pests;
- Conduct surveys and surveillance for pests of medical importance, such as mosquitoes, ticks, cockroaches, bedbugs, etc;
- Preventive Medicine Technicians (PMT; NEC 8432) shall maintain current DoD pesticide applicator certification in Category 8: public health pest management;
- Establish and maintain liaison with local health agencies as they pertain to pest management;
- Provide occupational health and safety support for pesticide applicators;
- Maintain a record of pest management operations including food handling area surveys, mosquito trap surveys, mosquito control applications, and other disease vector surveys. This data should be provided to the IPMC to provide station wide IPM coordination and data management;
- Develop, maintain and implement an emergency plan for vector-borne disease control during a vector-borne disease outbreak or disaster.

2.1.6. U.S. Army Veterinary Services

The primary mission of the Army Veterinary Techs is to:

- Ensure protection of food from pests at the Commissary;
- Report pest infestations that require professional pest management services;
- Conduct surveillance for pests which damage, destroy and contaminate food stored in the Commissary and installation facilities.

2.1.7. Environmental Division

The Environmental Division provides oversight on environmental protection and compliance regarding pest management operations. Responsibilities include:

- Provide technical assistance to IPMC on matters relating to endangered and threatened animal and plant species;
- Provide environmental review and approval of the IPMP.

2.1.8. Navy Exchange (NEX)

The NEX at Washington Navy Yard does not currently sell pesticide products to private consumers.

2.1.9. Contract Pest Management Service Providers

Depending on where they perform work, contract PMSPs at NSA Washington are required to be certified as pesticide applicators by the State of Virginia, State of Maryland, or Washington D.C. Unlicensed individuals are not allowed to apply pesticides on base. Responsibilities include:

- Conduct pest management operations in accordance with the contract specifications;
- Comply with all DoD, federal, state and local pest management regulations;
- Report pesticide usage to the IPMC on a monthly basis; and
- Cooperate fully with and communicate all pest management issues and requirements via the contract PAR.

2.1.10. Contract Grounds Maintenance

Grounds contractors that apply herbicides or pesticides are required to be certified as pesticide applicators by the State of Virginia, State of Maryland, or Washington D.C. Unlicensed individuals are not allowed to apply pesticides on base. Responsibilities include:

- Comply with all DoD, federal, and state regulations;
- Vegetation control on right-of-way, road sides, utilities, and ditches.
- Report pesticide usage to the IPMC on a monthly basis; and
- Cooperate fully with and communicate all pest management issues and requirements via the contract PAR.

2.1.11. All Installation Personnel

- Apply appropriate sanitary and pest exclusionary practices to prevent pest infestations; and
- Attempt to control minor pest infestations through mechanical or other means before requesting a PMSP; and
- Coordinate and cooperate fully with PMSPs in scheduling pest management and preparing the areas for pesticide treatment.

2.1.12. Pesticide Approval

Only pesticides approved by both the EPA and the state shall be used. Additionally, DoD and DoN directives require installations to submit a list of all pesticides that will be used during control operations to the cognizant PPMC for review and approval (OPNAVINST 6250.4 series). The purpose of this approval process is to ensure that only registered pesticides will be properly used on the installation. The IPMC will compile a list of pesticides anticipated for use, which will then be submitted to NAVFAC Atlantic Applied Biology. New pesticides may also be added to the list and submitted for approval as needed, but may not be applied without prior approval. Pesticides currently approved for use on the installation are listed in Appendix F.

2.1.13. Pesticide Labels and MSDSs

A copy of the manufacturer's label and an MSDS for each pesticide on the approved pesticide list shall be maintained by the IPMC and pest control contractor. The IPMC may choose to store those copies with the PMPARs and/or the PMSPs. Electronic versions of the labels may also be maintained.

2.2. Records and Reporting

"All shore installations, ships and units performing pest management operations shall maintain records of pesticide applications and report pesticide use as required by DoDINST 4150.07." (OPNAVINST 6250.4 series)

2.2.1. Maintaining pest management operations records

Daily records shall be submitted to the IPMC by each PMSP monthly. The IPMC will compile and maintain the records on an electronic database. The records will include the following data: kinds, amounts, uses, dates, places of application, and applicators names and certification. Pest surveys and inspections should also be included and maintained at the preventive medicine department. Records shall be maintained separately from other files, including contracts files.

Reports should be made by the activity on the NAVFAC online pesticide reporting system at https://clients.emainc.com/dcs/pestmanagement/pesticidelogon.asp.

The following operations are excluded from the reporting requirement:

- Personal use of insect repellent.
- Application of repellent by deployable units during mass treatment of clothing and tentage.
- Application of pesticides for personal relief by residents of military housing.
- Application of pesticides for flea and tick control to pets by pet owners and veterinary services.
- Application of pesticides for flea and tick control to military working dogs by veterinary services.
- Minute applications of flushing agents used as an inspection tool.

2.2.2. Reporting pest management operations

All pest management operations shall be reported by the IPMC to NAVFAC Atlantic Applied Biology monthly. The report will consist of data from records received by the IPMC from installation pest management service providers during the previous month. NOTE: Contractors applying pesticides can enter data electronically with an approved online account from the NAVFAC Atlantic Applied Biology Center. The report must be submitted to the PPMC within 10 working days of the end of the month. Submit to:

(1) Via the online system at: https://clients.emainc.com/dcs/pestmanagement/pesticidelogon.asp

(2) Via e-mail: denise.debusk@navy.mil or current PPMC.

(3) Via diskette: NAVFAC Atlantic Applied Biology, Code EV51, 6506 Hampton Blvd, Norfolk, VA 23508.

Reports will be reviewed by the PPMC to provide program oversight to the installation and to generate data for tracking overall DoN pesticide usage.

2.3. Training, Certification and Licensing

IPM requires personnel who are properly trained to investigate and diagnose pest problems, select the appropriate pest management method, apply the appropriate pesticide, perform these operations so that they are safe to humans and the environment, and educate and advise their customers on pest prevention methods. Copies of certifications and licenses of pesticide applicators currently conducting pest control operations on NSA Washington should be placed in Appendix G.

2.3.1. Integrated Pest Management Coordinator and others who are not pesticide applicators

Personnel with no previous experience in pest management may be assigned as the installation IPMC or environmental department pesticide program manager and are given administrative and/or environmental oversight of the pesticide program. These personnel shall attend a DoD pest management course to familiarize themselves with the administrative and operational requirements of installation pest management. The four-day initial PMPAR training course provides sufficient familiarization. DoD certification is required if the IPMC is to select or apply pesticides. A copy of the current IPMC's appointment letter should be placed in Appendix G.

2.4. Pest Management Contracting

Contracts requiring the use of pesticides must be reviewed and approved by NAVFAC Atlantic Applied Biology. This includes contracts issued by non-appropriated activities and tenant commands on base. Pest control contracts are required to be monitored by a trained PMPAR (OPNAV 6250.4 Series).

2.4.1. Contract Specifications and Review

To ensure cost-effective pest control, contract specifications must be carefully written. The trained PMPAR should provide guidance to the specification writer to ensure contract requirements are described in a manner that enables the Government to objectively assess the contractors' performance. The basis of the contractors' performance is measured by the cessation of damage or reductions in the number of pests counted after the contractor has performed the work.

NAVFAC Atlantic Applied Biology is required to review the specifications prior to advertising the contract for bidding (OPNAV 6250.4 SERIES). The FSC/BOS template for pest control contracts can be found on the NAVFAC Portal at https://portal.navfac.navy.mil/portal/page/portal/ev/ev_southwest/ev2_pc/ab_pest_mgmt/library (requires login).

2.4.2. Contract Performance Assessment

All aspects of pest management contracts must be monitored by a trained PMPAR to assure compliance with OPNAV and contract specs.

3. Operations

3.1. Integrated Pest Management (IPM)

3.1.1. Federal Regulation and Policy

By Presidential executive order of October 5, 2009, federal agencies are required to "promote pollution prevention and eliminate waste by: …implementing integrated pest management and other appropriate landscape management practices." US Code states "Federal agencies shall use Integrated Pest Management techniques in carrying out pest management activities and shall promote Integrated Pest Management through procurement and regulatory policies, and other activities." (7 USC Title 7, Chapter 6, Subchapter II, Sec. 136r-1) It is DoD policy to "Incorporate sustainable Integrated Pest Management (IPM) philosophy, strategies, and techniques in all aspects of DoD and Component vector control and Integrated Pest Management Planning, training, and operations including installation Integrated Pest Management Plans and other written guidance to reduce pesticide risk and prevent pollution." OPNAV 6250.4 SERIES.

3.1.2. What is IPM?

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" (OPNAV 6250.4 SERIES). There are significant differences between IPM and "traditional" pest control methods. Table 3-1 lists some of the differences.

Table 3-1. Comparison of Traditional Pest Control and IPM Methods

Pest Management	Traditional Pest Control	IPM
Program Strategy	Reactive	Preventive
Customer Education	Minimal	Extensive
Potential Liability	High	Low
Emphasis	Routine pesticide application	Pesticides used when exclusion, sanitation, and other non-chemical methods are inadequate
Inspection and Monitoring	Minimal	Extensive
Pesticide Application Frequency	By schedule	By need
Pesticide Application Target	Area-wide spraying	Spot treatment of areas where pests are found

In IPM programs, treatments are not made according to a predetermined schedule. Rather, 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 hazardous to non-target organisms and the general environment.

Under an IPM program, execution of individual pest management practices involves the following steps:

- **Identify** pests and possible natural enemies;
- **Develop plans/strategies**, an integration of treatment methods, that are effective against the pest, least disruptive to natural controls and least hazardous to human health and the environment;
- **Establish action thresholds**, or the size of the pest population correlated with a threshold, sufficient to warrant treatment. In determining threshold levels, the amount of aesthetic or economic damage that can be tolerated must be correlated with the population size of pests, natural enemies, time in the season, and/or life stage of the pest or host;
- **Monitor pest population** for regular sampling of pest and natural enemy populations. Monitoring is an ongoing activity;
- **Control pest** (optional);
- **Document results**; and
- **Evaluate/redesign plan** to determine the outcome of treatment actions.

Controlling pests has traditionally been the responsibility of the pest control operator. **In IPM, preventing and controlling pests is the responsibility of all personnel on the installation.**

3.2. Current Operations

3.2.1. General Household and Nuisance Pests

Pest control, for the purposes of this Plan, is the control of arthropod and vertebrate pests in and around buildings. Sanitation, glue traps and exclusion are the primary means of non-chemical control in and around structures. Low toxicity insecticidal baits are used effectively for cockroaches and ants. Most pesticide applications involve the application of contact chemicals or those that have short residual efficacy.

3.2.1.1. Cockroaches

German cockroaches are a common problem in the U.S. The general adaptability of the German cockroach may make it an important pest problem in activity food service areas. An integrated approach of using both preventive and corrective techniques is the only practical means of controlling this pest. American cockroaches are also a common pest in older buildings.

3.2.1.2. Rodents

Rodents are a common problem in buildings and installations in the Naval District Washington region. Primary means of control are exclusion, sanitation, and mechanical means including sticky and snap traps. Rodenticide baits may also be used outdoors in tamper-resistant bait stations. Baits are used inside occupied buildings on a temporary basis only when other control measures have failed to adequately control rodent infestations.

3.2.1.3. Preventive Control Measures

Preventive control measures including inspection, interior and exterior facility sanitation and exclusion methods such as closing harborage areas by caulking or other modifications, reduce the chances for pest survival by limiting needed food, water, and shelter. In buildings that are most susceptible to pest infestation, services are performed on a scheduled basis. Service includes inspection, recommendations

on pest proofing and sanitation and chemical control, if needed. Common use areas and food consumption areas of other buildings, i.e., areas used by people as a group, such as heads, coffee messes, lounge areas, and vending machine rooms, are serviced on a monthly basis with response to call-backs as necessary. This also includes common use areas of the barracks, warehouses, and administration buildings. Buildings where there is no food and where problems occur only occasionally such as shops and storage buildings, are handled on a service call basis. Pesticide treatments in food handling areas shall be confined to crack and crevice placement when using residual aerosol or dust formulations. Insect Growth Regulators and baits are used to complement other control measures. Self-contained light traps may also be utilized in these areas. Low odor formulations are used in offices and in other spaces where a pesticide odor would be objectionable.

3.2.2. Grounds Maintenance

Grounds maintenance is performed on improved or landscaped grounds. Pest management during grounds maintenance may involve weed control, control of pests and disease on plants, trees and turf, and control of vertebrate animals (i.e. squirrels, moles) that may destroy plants and turf. Mechanical removal of weeds and mowing are routinely performed. Grounds maintenance also includes weed control in drainage ditches that may contribute to mosquito control and bird habitat removal. Weed control is performed along roadways, railways, fence lines, and around utilities where they pose fire and visibility concerns.

3.2.2.1. Turf and Ornamental Pests

Turf and ornamental pests include insects, fungi and nematodes. White grubs, mole crickets and ants infest the soil and roots of plants. Japanese beetles, bagworms, tent caterpillars, sod webworms, and army worms feed on the leaves of plants. Chinch bugs, leaf hoppers, scale insects, and aphids are referred to as plant sucking insects and feed on the fluids inside of plants. Oak borers and bark beetles are boring insects and damage plants by destroying the ability of the plant to transport nutrition and water. Various plant diseases including brown patch, dollar spot, and fusiform rust are also possible problems that may be encountered.

3.2.2.2. Weed Control

A wide variety of herbicides are available for controlling unwanted vegetation. Herbicides are used around mowing obstacles such as signs, fire hydrants and manholes. Herbicides are used to control weeds along cracks in sidewalks and asphalt parking areas, along fence lines, around buildings, and along ditch banks. Selective herbicides are used to control various weeds that occur in lawns. Various cultural and chemical controls can be used to deal with these and other weed control problems. When chemical control is necessary, either selective or non-selective herbicides may be used depending on the situation and the desired result.

3.2.2.3. Fire Ant Prevention

In order to prevent the introduction of imported fire ants on base, all grounds maintenance activity is required to comply with the fire ant quarantine established by the USDA. Regulated articles may not be brought onto base from counties that are under quarantine. Regulated articles include soil, used soil-moving equipment and plants and sod with roots and soil attached.

3.2.3. Aquatic Weed Control

Aquatic weed control work should be performed in accordance with INRMP recommendations to limit the spread of invasive species of plants, and to protect native aquatic plant species. The common reed, *Phragmites*, is a problem invasive species in aquatic areas and wetlands.

3.2.4. Ornamental Pests

3.2.4.1. Mole Cricket Control

Mole crickets are rarely a problem on installation lawn areas. The nymphal stage is very destructive because it feeds on the roots of grass. Mole crickets are best controlled at the nymphal (feeding) stage with insecticidal baits and residual insecticides. Control of the adult stage is done only when damage levels are excessive. Proper timing, weather conditions and the stage of the insect are important considerations in obtaining effective treatment. An area-wide treatment of all continuous lawn areas is much more effective than scattered spot treatments. This treatment should be performed once a year when mole crickets are in the nymphal stage, and repeated only if the population builds back up.

3.2.4.2. Other Pests

Turf insects such as armyworms, sod webworms, and chinch bugs may occasionally be a problem in turf areas. Turf diseases such as pythium, fusarium blight, brown spot, dollar spot and helminthosporium are potential problems as well. However, these diseases are unusual in the NDW region and are usually avoided by appropriate cultural practices, i.e. watering and fertilizing. Inspections during periods when pest problems are likely to occur should detect problems before significant damage is done. Natural controls are maximized when chemical control operations are based on need instead of schedule. The careful use of chemical control can help avoid environmental problems and pest resistance caused by overuse of pesticides. The only exemption to need based control is the preventive treatment for pythium and dollar spot.

3.2.5. Structural Pests

Structural pests which have an impact on activity operations include termites, powder post beetles, wood borers, and wood destroying fungi. Of these, subterranean termites and wood destroying (decay) fungi cause the most damage.

3.2.5.1. Structural Control Program

A well managed structural pest control program includes inspection, prevention and chemical treatments when needed. All susceptible structures that contain wood or wooden structural members should be inspected on an annual basis. Records should note when a building was inspected, the location of any infestation found, and the description of any treatment performed.

3.2.6. Administration of termite Treatment Contracts and Warrantees

Various control techniques including: (1) the use of construction practices which protect wood from attack; (2) controlling moisture through proper drainage and ventilation; (3) the use of termiticides for barrier treatment of soil and hollow masonry units of building foundations, and (4) the use of treated wood and or metal and concrete supporting structures, are part of an integrated approach to structural pest control. The major structural pest at this activity is the subterranean termite. Corrective chemical treatments should be performed when termites are found actively damaging wood. Control operations should be based on annual inspections of buildings and reports of termite swarming from building occupants. Top priority is given to preventive control treatments, such as preconstruction termite soil treatments and the use of treated wood to protect wood from attack. Care must be taken to prevent disruption of the treated soil barrier within one foot of the foundation (if moved by gardening activity or covered when raised flower beds are installed against a building). This can be a serious problem in Family Housing where people are encouraged to beautify their yards. Disturbance of treated soil within one foot of the foundation cannot be allowed. Raised beds must be four-sided (i.e. not using

the foundation as one side) and soil within one foot of the foundation should not be cultivated for planting.

All wood that is damaged by termites or wood rot fungi should be replaced with treated wood to prevent future damage.

3.2.7. Stored Products Pests

Stored product pests are a potential problem at installation food facilities. Receipt inspection and rejection of obviously infested materials generally prevents heavily infested material from being placed in the storage area.

3.2.7.1. Dermestid Beetle

If the dermestid beetle *Trogoderma* is found in a commodity, the whole lot of food must be condemned. The pointed hairs on the larvae will cause digestive problems if the contaminated food is eaten. An accurate identification of *Trogoderma* is required to condemn the lot. For the most part, sanitation (keeping storage areas clean) and stock rotation minimize or prevent pest infestation. If an infestation is found, the most effective way to control *Trogoderma* is through deep cleaning, vacuuming and discarding or segregating the infested product while surveying adjacent areas. ULV space treatments and residual sprays are used to stop movement of an infestation to clean stock within the food storage areas of the food handling areas.

3.2.7.2. MRE Stores

More stringent controls are required for prevention of stored products pests. Guidance on this program can be found in AFPMB Technical Guide #38.

3.2.8. Health Related Pests

Mosquitoes and filth flies constitute the most important insect groups from the standpoint of both disease transmission and general annoyance. Ticks are rarely a problem due to the urban location of most installation sites. Operations directed at controlling potential disease vectors must be based on a thorough knowledge of the target pest. Survey operations are essential in determining the species present, the population level involved and the potential hazard of disease transmission. Surveys also serve as a valuable tool in evaluating control operations.

3.2.8.1. Mosquito Surveillance

Adult mosquito surveys are the responsibility of the Preventive Medicine Technicians. However, if a Preventive Medicine Technician is not available a pest control provider should conduct the adult mosquito surveillance. Mosquito surveillance should have two basic activities. These are identifying and mapping larval habitats and monitoring adult activity. Both activities provide useful information in a proactive surveillance program. Mapping and monitoring larval habitats gives early estimates of future adult densities and, under some conditions, provides the information necessary to eliminate mosquitoes at the source. Light traps can be used to locate larval habitat. A high proportion of males in a light trap usually indicates a nearby larval breeding site (CDC, Guidelines for Arbovirus Surveillance Programs in the US, April 1993). If male count numbers are proportionally high, a survey of the area should be done to locate possible breeding sites. Surveys include the collection and identification of adult mosquitoes and are performed using specialized light traps. There are three gravid traps at the Station.

Entomologists with the Navy Entomology Center of Excellence (NECE) can provide disease vector management consultation, identification services for installation medical departments, and assistance in vector-borne disease risk assessment and prevention.

3.2.8.2. Mosquito Control

Larviciding is the most effective way to control mosquitoes. Larvicides should be applied when results of mosquito dip counts exceed two larvae per dip. Larvicides should be applied to areas where water stands for longer than 7 days. Biological control can be accomplished by the introduction of mosquito fish (*Gambusia* sp.) into waters which do not drain into the Chesapeake Bay. *Gambusia* are surface feeding fish which are predacious on mosquito larvae. To decrease the amount of standing water it is important to have a drainage system allowing proper runoff of rain water from roadways. Ditches should be maintained free of weed growth. This increases water flow in the ditch allowing access of natural mosquito predators.

When female adult mosquito counts from the baited CDC Light Traps exceed 20 per night per trap, Ultra Low Volume (ULV) insecticide treatments should be initiated. An exhaustive survey of the area covered by the trap should be done to identify and treat the active breeding site. Mosquito activity is greatest from dusk to dawn. These treatments must be made during peak mosquito activity. ULV operations will be conducted in the early morning hours before the sun warms the ground, or in the evening after the ground has cooled. Regular testing of ULV aerosol droplet dispersal is required to assure maximum control, minimum insecticide use, and prevention of automobile finish spotting caused by droplets that are too large. This testing must be done at the beginning of each spray season and for every 50-100 hours of operation, or when the pesticide is changed. More information is included in the Armed Forces Pest Management Board Technical Guide #13, Ultra Low Volume Dispersal of Insecticides by Ground Equipment. Slides for aerosol droplet size testing can be obtained from and analyzed by the Testing and Evaluation Department at the Navy Entomology Center of Excellence, Jacksonville. If adult numbers are extremely high, aerial control by helicopter or fixed wing airplane may be necessary.

NSF Carderock has three retention ponds that are treated with larvicide at least once a year during the warm season to prevent development of mosquitoes.

3.2.8.3. Filth Fly Management

Filth flies (houseflies, blow flies, flesh flies, bottle flies, etc.) can be a problem during the warm summer months if high sanitation levels are not maintained. Timely disposal of garbage and routine cleaning of garbage cans and dumpsters helps to minimize the problem. Garbage cans and dumpsters should be placed on concrete pads at least 100 feet from facilities to reduce breeding under and around the containers and to minimize access to the facilities. Continuous monitoring of sanitation conditions in and around food service areas helps assure that significant fly breeding will not occur.

The choice of fly control techniques must be based on an on-site evaluation of the problem. Pest control personnel inspect areas where garbage is handled and may treat these locations with approved insecticides when flies exceed control limits. Preventive Medicine personnel also inspect these areas and report significant findings to appropriate people for corrective action. Exclusion devices such as screens and air curtains help prevent the entrance of flying insects into buildings when installed and properly maintained. Aerosol insecticide treatments are provided when adult flies become a problem in indoor spaces. Automated pesticide misting devices are not allowed by DOD instruction. Light trap devices are also helpful for filth fly control in food handling areas, but only when they are placed inside of the building. Use only non-contaminating light traps with some way of containing the dead insects. For more information on this, see AFPMB Technical Guide No. 29, "Integrated Pest Management in and around buildings".

3.2.8.4. Rodent Management

Rodent control work is an ongoing program to eliminate the causes of rodent infestations. Major emphasis is placed on sanitation and exclusion to limit the amount of food and harborage available to rodents. Tamper-proof bait stations should be maintained in high

infestation areas. There are new EPA requirements for first generation anticoagulant products (warfarin, chlorophacinone, and diphacinone), second generation anticoagulant products (brodifacoum, bromadiolone, difenacoum, and difethialone) and non-anticoagulants (bromethalin, cholecalciferol and zinc phosphide). Bait stations are required for all outdoor, above-ground placements and are also required indoors if exposure to children, pets, or non-target animals is possible. All outdoor above ground use must be in a bait station and be applied within 50 feet of buildings. Mechanical traps (snap traps, glue traps, etc.) are another effective control method. **Notification of the Preventive Medicine Department is required for any use of rodenticides inside of occupied buildings on NSA Washington.** Trapping is an effective way of quickly reducing a large mouse population.

3.2.8.5. Bird Management

Pigeons are the primary bird pests on Navy installations, especially in aircraft hangars. Pigeons, English sparrows, and starlings can be controlled without a permit. Other bird species require special permits before any control measures can be taken. Bird control methods vary according to the situation. Sparrows are an occasional problem in hangars, where they nest and roost on the overhead beams. Bird droppings are corrosive to aircraft and equipment in hangars. The droppings also pose a health hazard and may cause histoplasmosis and other respiratory problems. Bird ectoparasites, such as mites, can also fall on workers in the hanger. Ultrasonic devices and plastic owls and snakes, etc. are not effective for bird control. The best alternative for bird control is "bird proofing" or the exclusion of birds by closing up all openings. Because of its permanency, bird proofing (i.e., the placing of hardware cloth and chicken wire over potential roosts) is considered the most cost effective means of control. One method is to install plastic or nylon netting over the ceiling beams in the hanger. The netting must be hung around the lights so that they can be accessed for changing light bulbs. Population reduction techniques (i.e., destruction of nests accessible by a ladder or "cherry picker") can sometimes be used effectively. Repellent chemicals which produce alarm reactions and cause a flock to leave or avoid an area are often used. Control personnel should continually monitor bird population levels and take appropriate control actions when required.

3.2.8.6. Feral Cat Management

Cats are usually not a problem at NSA Washington. They may occasionally be found near food handling areas or dwelling in crawl spaces under buildings where they can cause flea problems inside of the buildings. The elimination of available food by keeping garbage cans and dumpsters sealed will decrease to appeal of the area to the cats. Elimination of shelter is also a good means of control. The activity should discourage people from feeding stray cats. Live traps are used for the capture and subsequent transport of these cats to the local animal shelter. Guidance on this control plan can be found in AFPMB Technical Guide # 37.

3.2.9. Pest Management in Quarters and Housing

3.2.9.1. Overview

Flag housing at WNY and Bellevue Housing at NRL are managed by a PPV partner, Lincoln Military Housing. The partner is responsible for maintenance and pest control in the housing units as outlined in the Partners plan for pest control. Other housing units, such as barracks and dormitories, are the responsibility of military housing offices and pest control is done by contract or in-house pest controllers. Base pest control may conduct mosquito control in housing areas, including ULV spraying and applying larvicides.

3.2.9.2. Pet Management

Pet dogs and cats released or lost by owners on base can become a pest problem. Feral cats and dogs are susceptible to and can carry disease, damage natural habitats, harm protected wild animals, become an aircraft or vehicle strike hazard, and attack and injure personnel. Pet owners are encouraged to microchip their pets. Microchipping is a permanent pet identification system using a computer chip implant in the skin of the animal. This allows a lost pet to be identified even if the collar tag is missing.

3.2.10. Prohibited Operations and Devices

3.2.10.1. Application of liquid and dust formulations in occupied spaces

Installations shall not permit liquid spray and dust pesticide formulations in any space occupied by unprotected personnel. However, pesticides contained in gel or paste bait formulation may be applied in occupied spaces.

3.2.10.2. Preventive or Scheduled Pesticide Treatments

"DoD policy prohibits the use of regularly scheduled, periodic pesticide applications except in situations where the installation Integrated Pest Management Plan clearly documents that no other technology or approach is available to protect personnel or property of high value." (DOD 4150.07)

3.2.10.3. Electrically Operated Devices

It is DoD policy to not use electromagnetic exclusion or control devices, ultrasonic repellent or control devices, and outdoor devices for electrocuting flying insects on DoD installations, except as noted in AFPMB TG 29: Integrated pest management in and around buildings. However, indoor devices for electrocuting flying insects can be used when selected, purchased, located, and used in accordance with AFPMB TG 29.

3.3. Regulatory Compliance

3.3.1. Policy

Department of Defense policy is to ensure DoD pest management programs achieve, maintain, and monitor compliance with all applicable Executive Orders and applicable Federal, State, and local statutory and regulatory requirements. When there is a conflict between Federal and local regulations, the installation will comply with the more stringent of the two. This may occur with pesticides limited for use by the states of Virginia or Maryland, which are not necessarily restricted by the EPA. In this case, the base must comply with state regulations.

3.3.2. Pesticide Regulation and Enforcement

3.3.2.1. Pesticide Regulation

The EPA has the primary authority to regulate pesticides in the U.S. The EPA delegates pesticide enforcement authority to states through cooperative agreements. OPNAV 6250.4 SERIES requires Navy and Marine Corps installations to comply with state and local pesticide use regulations.

3.3.2.2. Enforcement

The responsibility for compliance and enforcement lies with the installation CO. As the CO's pest management advisor, the IPMC shall be familiar with federal, state and local pesticide use regulations and ensure that all applicators conduct operations in compliance with these regulations.

- **Commercial contractor applicators:** PMPARs shall provide assistance by monitoring contract PMSPs on compliance with all applicable regulations as specified in the contract and will recommend appropriate actions to the contracting officer if the

contractor does not comply. PMTs conducting inspections of food service facility pest management programs may also be utilized to ensure compliance.

- **DoD applicators:** Per DoD 4150.07-M, Volume 1, the DoD may deny, suspend, or revoke the certificate of any DoD employee who violates any provision of FIFRA or falsifies records. In accordance with DoD 4150.07-M, Volume 1, the installation CO may initiate a formal review if FIFRA violations are suspected. Violations shall be reported through appropriate command channels to the NAVFAC Atlantic Applied Biology certifying authority for review. The certifying authority shall determine if further action is required. That action may include suspension of the applicator's certification.

NAVFAC Atlantic Applied Biology shall provide the installation IPMC with assistance with compliance and enforcement issues and clarification of regulations. The senior pest management consultant is the certifying official for DoD certified pesticide applicator on the installation.

3.3.3. Laws and Regulations

3.3.3.1. Primary Pesticide Regulations

- **Federal**: U.S. Code of Federal Regulations (CFR) at 40 CFR 152-180 (http://www.epa.gov/agriculture/tpes.html).
- **DoD, Navy and Marine Corps:** DOD 4150.07. DoD Pest Management Program, OPNAV 6250.4 SERIES: Pest Management Programs; OPNAVINST 5090.1B: Environmental and Natural Resources Program Manual
- **Virginia**: The Virginia Department of Agriculture and Consumer Services, Office of Pesticide Services regulates the Pest Control Industry (http://www.vdacs.virginia.gov/pesticides).
- **Maryland**: The Maryland Department of Agriculture, Pesticide Regulation Section regulates the pest control industry (http://www.mda.state.md.us/plants-pests/pesticide_regulation/index.php).
- **District of Columbia**: The Department of the Environment Toxic Substance Division regulates pesticide use (http://ddoe.dc.gov/ddoe/cwp/view,a,1209,q,494917.asp).

The primary source of pesticide regulations for the pesticide applicator is found on the pesticide label in accordance with 40 CFR 156. Virginia, Maryland, or the District of Columbia may add supplementary labels which are regulations that must be complied with in the respective state or district. It is a violation of Federal and/or State law to use a pesticide in a manner inconsistent with the label. Note, however, that the pesticide label does not provide specific information for each site where the pesticide may be applied. For example, the pesticide label may allow application of an herbicide to unimproved grounds, but if those grounds are within a ringed map turtle habitat, then pesticide use may be restricted under the Endangered Species Act. Pesticide applicators should be aware of environmentally sensitive areas before beginning any new pesticide application and should consult the installation's Environmental Office. For more on the pesticide label, see http://www.epa.gov/pesticides/label/.

3.4. Pesticide Management

Chemical control of pests using pesticides can be an integral part of an IPM program. Proper management of pesticides will ensure a safe and cost-effective pest management program. Management of pesticides includes the proper selection of pesticides, pesticide approval, procurement, storage, mixing, use of pesticide application equipment, and clean-up. The pesticide

label provides all of the information needed to manage pesticide use and must be affixed to the container at all times.

3.4.1. Pesticide Selection

The following criteria should be used when selecting a pesticide:

- **Determine the need for a pesticide.** Is a chemical pesticide really needed? In some situations non-chemical control methods may be more effective or less costly and time-consuming in the long term. Will exclusion or habitat elimination take care of the problem?
- **Choose a pesticide with a low toxicity.** Can the pest be sufficiently controlled with a pesticide that has a low toxicity to humans?
- **Choose pesticides and pesticide formulations with minimal environmental impact.** Avoid using "Restricted Use" pesticides if possible. The environmental impact of pesticide spills is reduced when using a granular pesticide formulation rather than a liquid. Can attractant bait stations be used instead of broadcast application of a pesticide?
- **Choose pesticides that provide a long-term or sustainable solution.** Example: Contact insecticides applied to ant trails will only temporarily halt the infestation, and may cause the colony to bud and form new colonies while baits can eliminate the entire colony.

3.4.2. Pesticide Storage

3.4.2.1. Pesticide Storage Facilities

NSF Carderock also has a pest control building, which is not currently in use. It meets the requirements of AFPMB Technical Guide 17 for the design of pest management facilities.

3.4.2.2. Retail Sale Pesticide Storage

Household, pet and garden pesticides displayed and sold at the BX or commissary shall be stored in their original, sealed containers.

3.4.2.3. Vehicles

Pest control vehicles must carry pesticide spill kits in accordance with OPNAV 6250.4 SERIES. Pesticides shall not be transported in the vehicle's passenger compartment and pesticide containers shall be secured to vehicles to prevent spillage.

3.4.3. Mixing

Pest control operators must mix pesticides in accordance with the pesticide label. Persons mixing pesticides with water shall protect the water supply from back-siphoning of the pesticide mixture. They shall also ensure accurate measurement of concentrated pesticide to ensure proper application rate. Precautions must be taken to minimize the risk of a pesticide spill. See Section 5.2.3 for pesticide spill prevention. Spill kits must be maintained on pest control vehicles and must be available at the mixing site.

3.4.4. Application

3.4.4.1. Service containers

Containers other than the original pesticide container that are used for transporting pesticides to the job site must have a copy of the label attached. Service containers used for the application of a pesticide must have the following information on a tag attached to the container: name of party responsible for the container, the identity of the chemical in the container, and signal word of the chemical. Containers commonly used for food, drink, or household products shall not be used to hold pesticides.

3.4.4.2. Equipment

Only pest control equipment that is in good repair and safe to operate shall be used by PMSPs. The equipment should be in good condition, free from corrosion, clean and free from leaks. The PMPAR shall inspect equipment used by contract applicators. Applicators shall also ensure that they use equipment suitable to ensure proper application of pesticides.

3.4.4.3. Pesticide Application

All pesticides shall be applied in accordance with Federal and State label directions. Application of pesticides are timed to ensure contact with and maximum kill of the pest and to prevent use under adverse weather conditions that can cause drift of the chemical outside the target area. See section 4.2.2.2 for more information on timing and drift prevention

3.4.5. Post-application Clean Up

All pest control equipment shall be properly cleaned. Contract PMSPs are not allowed to dispose of excess pesticide, used containers, or residues on the installation per contract specifications; they must conduct all cleaning off-base.

3.5. Cancelled Pesticides

In recent years several common organophosphate pesticide registrations have been cancelled or restricted. Chlorpyrifos (i.e. Dursban®, Lorsban®) and diazinon were widely use pesticides by private and commercial pesticide users that have been cancelled. The following actions are allowed with these pesticides:

- End users (e.g. PMSPs and private, residential users) should check with NAVFAC Applied Biology or state/local regulatory agencies for guidance. Some cancelled pesticides are allowed to be used until stocks are depleted, while others are under a stop use order.
- PMPARs should monitor the use of the pesticides by contractors to ensure that they are not using an increased amount of cancelled pesticides as a means of using up their stock.

4. Health and Safety

4.1. Pesticide Applicator and Public Safety

To ensure the safe use of pesticides, DoD personnel shall handle and apply pesticides in accordance with the product's label directions and AFPMB Technical Guides concerning safety. (OPNAV 6250.4 SERIES)

4.1.1. Potential Occupational Hazards

These hazards may be encountered by pesticide applicators. They may also be encountered by PMPARs that may be exposed while inspecting pest management operations. Occupational Safety and Health guidance is found in the OPNAVINST 5100.23G CH 1: The Navy Occupational Safety and Health Program Manual.

4.1.1.1. Direct Contact Toxic Chemical Exposure

Many chemicals used as pesticides are also harmful to humans. The three routes of exposure to applicators are dermal, inhalation and ingestion. For applicators the most common route of exposure is dermal; frequently due to not wearing the appropriate personal protective equipment. Severity of the harmful effects is determined by duration of exposure and toxicity of the chemical. The effects can be acute (rapid onset due to high dosage, high toxicity) or chronic (slow or delayed onset; due to long term exposure to low dosage, low toxicity chemicals). The highest risk for severe chemical exposure occurs during pouring and mixing of concentrated pesticide.

4.1.1.2. Heat

The use of protective equipment such as respirator, goggles, gloves and coveralls increases the risk of heat injury especially in warm climates.

4.1.1.3. Noise

Some pesticide application equipment use gas powered air compressors or pumps. Powered backpack sprayers are particularly hazardous.

4.1.1.4. Eye Hazards

Eye hazards may result from chemical splashed into the eyes causing corrosive, toxic, or impact injury. Highest risk occurs during pesticide pouring, mixing and application. Injury may also occur during equipment cleaning.

4.1.1.5. Blood-borne Pathogens (Disease Hazards)

Rodents may carry human diseases such as plague and hantavirus. These diseases may be transmitted from the animal to humans through body fluid exposure. Pest management providers are exposed when handling rodent carcasses after trapping. Feral dogs, cats, skunks, raccoons and bats may carry and transmit rabies through a bite.

4.1.1.6. Inhalation Hazards

Many pesticides release hazardous vapors and are particularly hazardous in enclosed spaces. Personnel may be exposed during mixing, application and cleaning. Dried animal feces of infected animals are a source of disease transmission. Enclosed spaces increase the probability of transmission.

4.1.1.7. Electrical and Fire Hazards

Spot and crack and crevice applications may require application of a pesticide to areas near motors of refrigerators, compressors and other machinery where it can become an electrical shock hazard. They may also be applied to areas near pilot lights resulting in an explosion and/or fire hazard.

4.1.1.8. Head Impact, Falls, and trip Hazards

Surveys and pest control procedures may be done in attics, crawl spaces, basements and other areas with low overheads where head impact hazards exist. Special permits are required to enter areas determined to be a "Confined Space." Some pest control operations may involve climbing ladders or walking on roofs or other elevated surfaces where fall protection is required. Some devices used for bird roosting exclusion and rodent control have sharp edges and can cause cuts, puncture wounds, and abrasions.

4.1.1.9. Exposure to Harmful Animals

Venomous animals such as bees, wasps, rattlesnakes and scorpions are potential hazards when attempting to control them. Some of these are very dangerous to those who are allergic. Feral dogs, cats, coyotes, raccoons and other large pest animals can inflict serious wounds. A Rabies vaccination is recommended for pest controllers.

4.1.1.10. Fumigation Hazard

Fumigation of structures or materiel is particularly hazardous to the applicator due to the high toxicity of many fumigants. Vikane® (sulfuryl fluoride) is the most frequently used fumigant for structural fumigation and is an odorless, colorless gas; thus it gives no warning as to its presence in the air. Fumigation is done in an enclosed space. This usually means placing a tarp over the structure or commodity to be fumigated. Due to the lethal concentrations it is very hazardous when trapped in an enclosed space. The gas may be transported and applied from cylinders under high pressure which pose a hazard in itself.

4.1.2. Hazard Abatement

4.1.2.1. Operational Risk Management

Operational Risk Management (ORM) is a decision making tool to reduce the risk of mishaps, whether in military contingency or support operations. Pest management operations pose risks to human health and the environment that affect the installation's mission that can be reduced and minimized by ORM. Pest management ORM uses the following process to minimize hazards:

- **Identify hazards** – the hazards may involve the pesticide or the application equipment (see list of hazards above)
- **Assess hazards** – determine the degree of risk based on the probability and severity of these hazards. For example, the risk may be high if a highly toxic pesticide is used daily.
- **Make risk decisions** – Develop risk control options. Decide whether benefits of control outweigh the risks involved.
- **Implement controls**
  - Engineering controls – Example: use a less toxic pesticide for controlling the pest
  - Administrative controls – Example: place warning placards around pesticide vehicles and pesticide storage areas
  - Personal protective equipment – Example: wear a respirator when an inhalation hazard exists
- **Supervise** – Follow-up to determine effectiveness of controls and monitor changes to hazards.

For more information on ORM go to the Navy Safety website at http://www.public.navy.mil/navsafecen/Pages/orm/ORM.aspx.

4.1.2.2. Training and education

Pesticide safety is a core requirement for DoD and civilian pesticide applicator certification and licensing programs. Topics included in the DoD training are included

in DoD 4150.07-M, Volume 1 DoD Pest Management Training: The Plan for the Certification of Pesticide Applicators. Safety topics are also given during recertification courses. See section 2.3.1 for specific training information. Information on pesticides and other hazardous materials are communicated through the chemical Material Safety Data Sheets (MSDS) which are maintained by the PMSPs.

4.1.2.3. Personal Protective Equipment

Personal protective equipment or PPE should always be used when applying pesticides. The type and level of protection needed will be determined by the toxicity, formulation and method of application of the pesticide. The pesticide label provides guidance on what PPE to use. PPE must be appropriate for the type and application of the pesticide being used. It is the applicator's responsibility to maintain the PPE.

4.1.2.4. Medical Surveillance Program

DoD pesticide applicators are required to be in a medical surveillance program depending on their hazard exposure. Medical surveillance is conducted by the occupational health clinic at the Naval Hospital in accordance with Navy Environmental Health Center Technical Manual (NEHC-TM-OEM) 6260.1: Occupational and Environmental Medicine Field Operations Manual and Medical Matrix.

4.1.2.5. Fumigation project safety

Due to the hazards posed by fumigants, specific precautions must be taken and are required by regulation and/or are listed on the pesticide label. This includes the use of a warning agent such as chloropicrin, having a minimum of two persons on the fumigation site, donning of self-contained breathing apparatus (SCBA) before entering a fumigated building, monitoring of fumigant level, and posting of warning signs. DOD applicators are no longer certified in fumigation, and any fumigation requires specialized contractor expertise. Contractors must be certified in the appropriate categories necessary for fumigation.

4.2. Public Safety

4.2.1. Potential hazards to public

4.2.1.1. Direct contact with pesticides

Pesticide exposure can occur through dermal contact with a pesticide on a surface, inhalation of vapors, or ingestion of pesticide contaminated food or eating utensils. This type of exposure can occur if pesticide applications are done while unprotected building occupants are present, occupants are allowed entry into buildings before the pesticide has dried, or food and food preparation and serving equipment were not properly protected or cleaned after an application.

4.2.1.2. Pesticide drift

Pesticide drift occurs when a pesticide leaves the target area and affects unprotected persons outside the area. A drift can occur during routine application of a pesticide or from a spill. The most common form of drift is when winds can carry the pesticide off site. Pesticide applications that involve highly volatile chemicals or small pesticide droplets, such as fogging or ultra low volume (ULV) application, or dusts are most susceptible to drift.

4.2.1.3. Contact with contaminated water

Some pesticides can move through soil and contaminate groundwater used for drinking. Others, if applied in or close to surface water, can cause contamination of recreational waterways.

4.2.1.4. Injury due to animals

The use of an inappropriate pesticide may cause collateral injury due to an insufficient "knockdown" of the target pest. This can occur with bees and wasps. Some insecticides do not knockdown the insects rapidly and may actually excite them causing them to become more aggressively defensive in behavior. Unprotected persons blocks away from the pesticide application may become the target of their aggression. Injury can also occur when persons get too close to or try to release a trapped animal or try to capture feral animals by themselves.

4.2.1.5. Fumigation hazards

The fumigation hazards that pose a health risk to the applicators also pose a health risk to personnel, particularly children, in the area surrounding the fumigation site. Vikane® requires 24 hours in which to circulate in the covered structure in order to effectively control pests. During this time, there is potential for someone to open up the tarp and enter the structure.

4.2.2. Hazard Abatement

4.2.2.1. Proper timing of pest control operations

Most indoor application of pesticides should be conducted when building occupants are not present. An exception to this is the application of pesticide baits that do not normally allow exposure to occupants or pets. Liquid pesticides must be allowed to dry before occupants reenter the building. Some pesticide labels are specific about re-entry times (time after application that occupants are allowed back into the treated building). Some pesticides such as fumigants provide specific directions on aeration of spaces to remove pesticide prior to re-entry. Certain operations, such as bee and wasp control or removal are best conducted after the area has been cleared of unprotected persons.

4.2.2.2. Preventing pesticide drift

Pesticide drift from target areas to areas where humans, animals and plants can be affected can be reduced through the following means (adapted from University of Nebraska publication G1773: Spray Drift of Pesticides).

- Select low or nonvolatile pesticides.
- Read and follow the pesticide label. Apply a pesticide only if an application is warranted.
- Use spray additives that decrease drift within label guidelines. This will increase the droplet sizes and pesticide effectiveness.
- Use larger spray nozzle orifice sizes. This will give larger droplets and will increase the number of tank refills, but will improve coverage and effectiveness.
- Avoid high pressure. High pressure creates finer droplets; 45 PSI should be considered maximum for conventional broadcast spraying.
- Use drift-reduction nozzles. They will produce larger droplets when operated at low pressures.
- Use wide angle nozzles, low boom heights, and keep the boom stable.
- Drift is minimal when wind velocity is under 10 mph. Do not spray when wind is greater or blowing towards sensitive crops, gardens, dwellings, livestock or water sources.
- Use shielded spray booms. When banding, use shroud covers to keep chemical from drifting.

4.2.2.3. Water protection

Apply in accordance with Label directions or state environmental regulations. Pesticide use or discharges in or near water may require reporting under the National Pollutant Discharge Elimination System (NPDES).

4.2.2.4. Prevent tampering with animal traps

Caged animals can be very aggressive. Traps should be placed in areas where they will not be tampered with by humans or pets. Warning signs can be placed on the traps and area occupants can be warned of the injury risks.

4.2.2.5. Protection of fumigation sites

Warning signs should be posted at the fumigation site warning of the hazards. Some installation contracts require the contractor to provide a 24-hour roving watchperson to patrol the fumigation site to prevent entry by unauthorized personnel.

4.2.3. Emergency Planning and Community Right-to-know Act (EPCRA)

Executive Order 12856 requires all Federal agencies, including DoD, to comply with the provisions of EPCRA. EPCRA is intended to 1) encourage and support emergency planning between the installation and the surrounding community, 2) provide the community with information about potential chemical hazards stored and used on the installation, and 3) establish a framework for local and state emergency planning. Chemical lists and applicable EPCRA sections and threshold quantities are found in the EPA List of Lists.

4.2.3.1. Section 302: Emergency Planning Notification

Some pesticide active ingredients are extremely hazardous substances (EHSs), and storage of them over a threshold planning quantity requires the installation to submit a facilities profile form to the state's emergency response commission (SERC) and/or a local emergency planning committee (LEPC). However, typical pesticide storage does not incur an additional regulatory burden, because the installation stores other extremely hazardous substances that would require notification under this section.

4.2.3.2. Section 304: Emergency Release Notification

EHSs or CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act) listed hazardous substances that are accidentally released at or above their reportable quantity **must be reported** to local, state and federal authorities. Pesticides applied in accordance with the pesticide label are exempt from this requirement. Pesticide spills are not exempt. The amount of pesticides stored, used and transported on the installation should be minimized to prevent accidental spills.

4.2.3.3. Section 311 and 312: Hazardous Chemical Inventory Reporting

This applies to OSHA hazardous chemicals which are any chemicals with an MSDS. Nearly all the pesticides used on the installation have MSDSs. This applies to pesticide storage and pesticides in spray tanks. Although it is unlikely that pesticide amounts in storage will exceed the threshold quantity at any given time, stored pesticides must be reported to the IPMC because reporting is cumulative.

4.2.3.4. Section 313: Toxic Chemical Release Reporting

40 CFR 372.38 (c)(2) exempts the use of toxic chemicals contained in products for routine janitorial and installations grounds maintenance. The routine maintenance exemption is intended to cover janitorial or other custodial maintenance and all other installation grounds maintenance activities using substances such as cleaning supplies, fertilizers, pesticides, fungicides, herbicides, rodenticides, and insecticides similar in type and concentrations to consumer products.

4.2.4. Specific State Laws:

Information specific to Maryland can be found at http://www.mda.state.md.us/plants-pests/pesticide_regulation/index.php.
Information specific to Virginia can be found at http://www.vdacs.virginia.gov/pesticides/index.shtml.

5. Environmental Considerations

5.1. Vulnerable Assets

5.1.1. Mission

Pest management practices affect the installation's mission through protection of resources that are needed to support personnel and tenant commands. NSA Washington depends heavily on their people to accomplish their missions. Both installations maintain, store, and move valuable equipment and supplies. When pests affect human or material assets the financial costs can be high. Pest management practices must be managed in such a way as to prevent expenditures on unnecessarily expensive or unproven pest control methods, or mishaps due to improper handling of pesticides or equipment.

5.1.2. Human health and safety

The Navy depends on the readiness of its military members and invests resources on the quality of life for those members and their dependents. Force health protection includes protecting them from pests that cause impacts to their health and well-being. Pest management practices can effectively protect or adversely effect human health. Proper pest management and use of pesticides to control disease vectors and nuisance pests can lead to health protection and an enhanced quality of life. However, accidents involving pesticides and inappropriate or illegal use of pesticides can cause human poisoning or allergic reactions leading to acute or chronic health problems.

5.1.3. Environmental Resources

Air, water and soil risk contamination from pesticides. Drift of pesticides outside the target application area is the primary cause of contamination. Pesticides that pose the highest risk of contamination are herbicides applied to improved and unimproved grounds. Structural pest control chemicals are usually applied in small quantities indoors and pose a minimal risk. Mosquito larval control operations, although using a water-applied pesticide, pose a minimal risk due to the target-specific nature of the pesticide, (*Bti*).

5.1.4. Natural Resources

The mission of the natural resource program at NSA Washington is to support the Navy through responsible stewardship of the installation's natural resources. The mission is achieved using integrated natural resources management and the principles of adaptive ecosystem management to ensure viability and biodiversity in the ecosystem while supporting compatible multiple uses. The recommendations developed by the natural resource programs and the INRMPs serve as the media for the bases to ensure compliance with both federal and state environmental regulations as well as Department of Defense (DoD) and Navy policies, including pest management regulations.

No Federally listed threatened or endangered wildlife species occur on NSA Washington.

5.1.5. Public Perception

Misuse of pesticides that lead to animal or human injury can lead to negative publicity for the installation. This is also the case with accidental pesticide spills, especially if they occur off-base or cause contamination of a local natural or cultural resource.

5.2. Managing Environmental Impact

Many procedures to reduce the impact of pest management practices on vulnerable assets are already in place. Many of these are contained within existing environmental management plans.

5.2.1. Natural and Cultural Resources Protection

5.2.1.1. Pest management impact on natural resources

The following pest management operations can potentially impact natural resources.

- Pesticides in the water may harm and deplete marine invertebrate animals that serve as food sources for protected animals.
- Herbicides that drift off-target may kill plants that are critical to animal habitats or kill protected plants.
- Direct pesticide exposure may cause acute or chronic injury to animals.
- The noise of pesticide application equipment (i.e. powered sprayers, aircraft) may disturb and cause harassment of animals.
- Pest management personnel intrusion into critical habitats may disturb, injure, or destroy plants or animals.
- Use of non-chemical control methods such as noise-makers and traps may disturb or harm non-target organisms.
- Pesticides can contaminate water and soil.

5.2.1.2. Minimizing impact risks

The following IPM methods may be utilized to minimize the impact of pest management operations on natural resources:

- Use of non-chemical methods, such as tidal marsh restoration, that minimize pesticide use and enhance the environment.
- A comprehensive pest surveillance program that uses mapping to identify pest infestations and breeding.
- Apply biological control methods where possible; such as mosquito fish, *Gambusia affinis*, or enhancement of native predators to control mosquito larvae.
- Use non-chemical control methods for weeds such as mechanical removal of plants.
- Use of less toxic and target pest specific pesticides such as *Bti* and methoprene.
- Precision targeting of pesticide applications to put pesticide where the pest is located. An example is herbicide application equipment that applies pesticide only to target vegetation (e.g. Weedseeker®).

5.2.2. Hazardous Materials and Hazardous Waste Management

Pesticides, being hazardous materials, shall be managed in accordance with the installation's Hazardous Material Management Plan. Proper inventory management and planning will prevent waste generation. The appropriate use of pesticides produces very little hazardous waste. Rinsates containing pesticide residues usually have very small quantities of chemical and are often applied to the target pest site. In general, pesticides that are not applied must be disposed of as hazardous waste. Large quantities of hazardous waste may be produced when a pesticide is not used by its expiration date. It may also be produced if a pesticide is not used up before the registration for that pesticide is cancelled and the stop-use date has occurred. These pesticides may be disposed of as Universal Waste only when allowed by the Standards for Universal Waste Management found in 40 CFR Part 273.

5.2.3. Spill Prevention

Installation spill prevention guidelines shall be followed. The following spill prevention actions shall be taken:

- Spill kits shall be readily accessible in all pest management vehicles, mixing sites and pesticide storage facilities.
- Pesticides shall only be stored in an area with containment to hold a spill and without a floor drain.
- Portable mixing pads shall be used when appropriate.
- All pesticide applicators shall be familiar with the installation spill contingency plan.

All pesticide applicators are trained on spill response procedures as part of their initial pest management certification/licensing training. Spills will be managed as described in the Base spill

contingency plan. Further information on preventing and controlling pesticide spills is contained in the AFPMB TG #15: Pesticide Spill Prevention and Management.

6. Emergency Pest Management

6.1. Public Health Emergencies

Pests become a public health emergency when the pests increase in number and/or are found to carry human disease pathogens. A public health emergency, or potential emergency, requiring pest management action, may be indicated in several ways:

1. Natural or manmade disaster – This includes earthquakes, floods, vehicle accidents and terrorist attacks. Usually pest problems do not develop immediately. Public health pest problems may be the result of increased amounts of refuse, collapse of local infrastructure (i.e. lack of garbage pick up), decaying human and animal bodies, and accumulation of standing water. The potential consequences are disease outbreaks, particularly food-borne illness.
2. Vector-borne or zoonotic disease as indicated by the following:
    a. Reports of human cases – Many human cases of vector-borne and zoonotic disease identified in local medical facilities. Immediate vector control may be necessary to prevent further transmission.
    b. Detection of Infected mosquitoes or sentinel animals – Routine surveillance for vector-borne or zoonotic diseases are conducted by local and State health agencies. These agencies report testing results through the public health system. This surveillance program is an early warning system that indicates when vector control should be initiated or increased to prevent human disease.

6.2. Agricultural Emergencies

Agricultural emergencies are the result of the introduction of insects or other animals that can cause extensive damage to agriculture or forestry in the State. Examples of introduced agricultural pests include the Mexican fruit fly and gypsy moth.

6.3. Emergency Pest Management Resources

PMSPs maintain pesticides and equipment to manage most emergencies, but emergency services must be included in the contract specifications. The base should develop an Emergency Vector-borne Disease Control Plan (EVDCP) to manage public health emergencies, and include additional Navy and local government contingency vector surveillance and control resources.

7. Program Resources

The Base has access to the following support agencies and organizations for pest management assistance. Contact information is located in Appendix B.

7.1. NAVFAC Atlantic Applied Biology, EV51, Norfolk, VA

NAVFAC Atlantic Applied Biology is staffed by six full time civilian DoD entomologists/applied biologists in Norfolk, VA. All are certified in DoD pesticide applicator categories 3,5,6,7,8 and 11. These personnel are assigned the following responsibilities:

- Review and approve the IPMP in accordance with DoD and Navy policy;
- Provide technical assistance to the installation IPMC, environmental manager, safety officer, medical officer and other regional and installation personnel regarding pest management and pesticide regulatory compliance;
- Review and approve or reject pesticides and equipment to be used on the installation;
- Conduct on-site program reviews and environmental compliance program external assessments (EA) to ensure compliance with the regulations and the IPMP; and
- Compile and report actual pesticide use and pest management operations to appropriate DoD agencies.
- Consultation including IPM recommendations and pest identification.
- Recertification training for DoD certified applicators and PARs.

7.2. Navy Entomology Center of Excellence (NECE)

NECE is currently staffed by full-time active duty Navy entomologists. The entomologists are certified in DoD pesticide applicator categories 3,5,6,7,8 and 11 and are assigned the following responsibilities:

- Act as Navy Medicine (BUMED) Professional Pest Management Consultant to provide BUMED review and approval of IPMP;
- Provide technical assistance to the Base on the surveillance and control of vectors on installation;
- Provide vector-borne disease risk assessments and disease prevention recommendations when requested; they are capable of providing contingency pest management in the event of a disaster or disease outbreak. Contingency requests must be made through the Navy-Marine Corps Public Health Center, Portsmouth, VA.http://www.nmcphc.med.navy.mil/

7.3. University of Maryland Extension Service

The University of Maryland Extension Service provides expertise in the area of agriculture and natural resources to citizens and groups in Maryland. http://extension.umd.edu/

7.4. Virginia Cooperative Extension Service

Virginia Cooperative Extension responds to the needs of individuals and organizations in the State of Virginia by providing information and guidance in the areas of agriculture, natural resources, and consumer sciences.
http://www.ext.vt.edu

8. Integrated Pest Management Sheets

The following sheets provide guidance for control of common pests. They should be used as a basis for pest management action but should not be considered "regulations" for the job. They should be used as guidelines to help implement reasonable, cost effective, safe, environmentally responsible control of pests. The IPMC or other pest control personnel may choose to establish different thresholds and use IPM methods that are more appropriate to their local circumstances. Any new ideas or programs should be written in to maintain a document that will remain applicable over time. Any suggested pesticides from these sheets are required to be approved before use.

8.1. NUISANCE ANTS

TARGET PEST(S)	Pharaoh ants, Argentine ants, black ants, and other species that invade structures
TARGET AREA(S)	Offices, food preparation areas, and other spaces invaded by ants
IMPACT ON MISSION	▪ Control of ants that are nuisance in offices and eat and contaminate food.
SCOPE	▪ Basewide.
RESPONSIBILITY	▪ All personnel: Ensure proper sanitation in all living and working spaces. ▪ Installation Preventive Medicine Technicians (PMTs): Conduct facilities sanitation inspections, enforce food handling regulations, provide quality assurance for pest control, and provide pest management recommendations ▪ Pest management service provider (PMSP): Conduct integrated pest management to control infestations. ▪ PCPAR: Ensure contractor pest management service provider performs work in accordance with contract specifications. ▪ Grounds maintenance provider (GMP): Control aphids and similar insects on ornamental plants that attract and feed ants. ▪ Facilities maintenance provider (FMP): Perform facilities repairs and improvements that exclude and minimize pest infestations as requested.
REPORTING	▪ Report all pest management operations to the Integrated Pest Management Coordinator

SURVEY TECHNIQUES	▪ Visual inspections
	  ▪ Observation of foraging scout ants or ant trails
	  ▪ Follow ant trails to entryways into building and to food source.
	  ▪ Follow ant trails to nests.
	▪ Personnel complaints: including information on when pests were observed, where, and how many.
	▪ Conduct pre and post treatment surveys to determine whether control operation was effective

SURVEY FREQUENCY/ SCHEDULE	▪ Daily observation by building occupants ▪ Monthly inspections outdoors around buildings to identify ant nests.
ACTION THRESHOLD	▪ Visual sighting of ants indoors.

NON-CHEMICAL CONTROL

TYPE	PROCEDURES	RESPONSIBILITY
SANITATION	▪ Thorough cleaning of potential food sources in buildings, especially coffee messes and food preparation areas. ▪ Thoroughly clean food preparation surfaces, countertops, and stoves. ▪ Remove and discard food that that is attractive to ants. ▪ Clean up food and drink spills as soon as possible. ▪ Do not leave dirty dishes on countertops or in sinks. ▪ Some ants are attracted to moisture. Fix leaky plumbing and remove other sources of water.	All personnel
MECHANICAL REMOVAL	▪ Use a wet sponge or cloth to wipe up ants. ▪ Spray ant trail with household cleaner or soap water, then wipe up.	All personnel; PMSP
PEST PROOFING	▪ Put food in tightly sealed containers. ▪ Seal holes in walls with caulk or temporarily with petroleum jelly.	All personnel; PMSP; FMP
CONTROL OF PLANT INSECTS	▪ Ants live in cooperation with some plant-infesting insects such as aphids. These insects produce sugars that are food for the ants, while the ants provide protection for the plant-sucking insects. ▪ Control aphids and other plant-sucking insects on plants	GMP
PROHIBITIED PRACTICES	▪ Use of ultrasonic pest repelling devices is prohibited.	

CHEMICAL CONTROL

METHOD OF DISPERSAL	▪ Baits: Bait stations can be used indoors or outdoors. Granular baits can be applied outdoors near nests. Baits are very specific to the species of ant. Most effective since it is effective in killing the egg-producing queen of the colony. Barrier Spraying: Application of a residual outdoors around a building may be necessary if there are many nests and entryways into the building. May also be necessary if nests are difficult to find. Usually requires periodic reapplication if ant nests are not destroyed. Dusts: Boric acid dust is an effective low toxicity insecticide that can be applied to wall voids where ants may be nesting. The treatment area should remain dry after the application to avoid washing the dust away. Granular insecticide: Acute toxicant in granular form. Only effective if applied directly to the nest. Baseboard spraying for preventive treatment is prohibited**.**
APPLICATION SITE	**Pesticides shall be applied as required based on survey information to areas where ants nest or travel.**
SITE PREPARATION	Pre treatment procedures:

	▪ Visual inspections. ▪ Pesticide applicator shall contact building occupants prior to pesticide applications. ▪ All food should be removed from exposed areas and processing equipment and utensils covered or stored. Post treatment procedures: ▪ Thoroughly clean all food preparation surfaces. ▪ Do not remove bait stations or other bait placements.
SENSITIVE AREAS	▪ Exposed food products, food containers, counter tops, on any surface where food may be stored or prepared, or any food storage area. ▪ Outdoors where children or pets may be exposed to pesticides. ▪ Streams, lakes, other water sources

Comments:

For most people ants become a problem and require action when they enter a building. Sometimes ants may be nesting in walls, especially if there is moisture in those areas; particularly bathrooms and kitchens. Surveys need to determine if the source of the infestation is indoors or outdoors. Control of ant nests outdoors during the spring and early summer may reduce ant problems later in the season. The most effective ant baits are slow acting so give worker ants enough time to carry small amounts of bait back to the nest where they will feed other ants and eventually kill the entire colony. For this reason it may take several days to see results.

Additional Information:

http://www.ipm.ucdavis.edu/PMG/PESTNOTES/pn7411.html
http://pep.wsu.edu/pestsense/
http://www.p2pays.org/ref/14/13177.pdf

Argentine Ant

8.2.FILTH FLIES

TARGET PEST(S)	House flies (*Musca domestica*), face flies (*Musca autumnalis*), stable flies (*Stomoxys calcitrans*), little house flies (*Fannia* spp.), and other fly species that breed in garbage, compost, manure, or other organic debris.
TARGET AREA(S)	▪ Animal kennels or stables ▪ Refuse storage areas ▪ Any places where organic debris may accumulate
IMPACT ON MISSION	▪ Reduce populations of flies that are a nuisance and may mechanically transmit pathogens.
SCOPE	▪ Basewide
RESPONSIBILITY	▪ Food service personnel (FSP): Ensure compliance with food handling regulations that prevent pest infestations ▪ Installation Preventive Medicine Technicians (PMTs): Conduct food service inspections, enforce food handling regulations, provide quality assurance for pest control, and provide pest management recommendations ▪ Pest management service provider (PMSP): Conduct integrated pest management to control infestations. ▪ Janitorial services (JS): Ensure that refuse containers are frequently emptied and sanitized. ▪ PMQAE: Ensure contractor pest management service provider performs work in accordance with contract specifications. ▪ Facilities maintenance provider (FMP): Perform facilities repairs and improvements that exclude and minimize pest infestations as requested.
REPORTING	▪ Report all pest management operations to the Integrated Pest Management Coordinator

SURVEY TECHNIQUES	▪ Visual sighting
	  ▪ Flies that enter buildings will congregate around windows
	  ▪ Flies may be seen crawling on or flying around organic debris
	▪ Bites
	  ▪ Adult stable flies will painfully bite humans, dogs, and livestock.
	  ▪ Stable flies may be surveyed by counting the flies on all four legs of livestock animals.
	  ▪ Most filth flies do not bite.
	▪ Trapping
	  ▪ Light traps: these traps can be used to control adult flies as well as monitor populations. Flies are attracted to ultraviolet light and trapped on a sticky pest strip.
	  ▪ Sticky traps: these traps placed around areas where filth flies are known to be a problem. Many types contain visual lures.
	  ▪ Pheromone traps: use a fly pheromone (muscamone) to attract flies to a container. Go to http://ohioline.osu.edu/b853/b853_4.html for directions on constructing a baited jug trap.
	▪ Spec counts
	  ▪ 3X5 index cards may be placed around areas to be monitored. Flies that land on the cards will leave vomit or fecal specs that can be counted. Though inexpensive and simple, this technique gives no indication of fly species, and may overestimate fly

	numbers since a single fly may leave multiple specs.
SURVEY FREQUENCY/ SCHEDULE	▪ Traps should be inspected weekly. More frequent inspection may be necessary if sticky traps are placed in areas where they will quickly become covered with dust, insects, or other debris. ▪ Counts of flies on animals should be conducted weekly
ACTION THRESHOLD	▪ The presence of biting flies in numbers constituting a nuisance for people or animals indicates a need for control. ▪ For counts on livestock, an average of 10 stable flies per animal indicates a need for control. ▪ For counts on sticky traps, 100 flies per week indicates a need for control

NON-CHEMICAL CONTROL

TYPE	PROCEDURES	RESPONSIBILITY
BIOLOGICAL CONTROL	▪ Several species of parasitic wasps can be purchased for use against filth flies. ▪ Biological control agents do not kill adult flies. Wasps lay their eggs in fly pupae, where the wasp larvae consume the developing fly, preventing it from emerging. ▪ Biological control agents will not sting or otherwise harm humans or animals. ▪ Biological control agents are not compatible with chemical insecticides. ▪ Release timing, climatic conditions, release frequency, and number of agents released are all critical for biological control success. ▪ Contact pest management consultants for additional information before instituting a biological control program.	Kennel operator; stable manager; PMSP
TRAPPING	▪ Ultraviolet light traps may be used to reduce adult fly populations in buildings invaded by flies. ▪ Exercise caution when placing traps; if the trap is visible from outside the structure, it may attract flies into the building. ▪ Traps by themselves are unlikely to control heavy fly infestations. ▪ Do not use bug zappers that electrocute flies in food-preparation areas or eating facilities	PMSP; FMP
SANITATION TO ELIMINATE BREEDING SITES AND FLY ATTRACTANTS	▪ Eliminating breeding sites is critical for effective filth fly control. ▪ Filth flies often breed in neglected refuse containers. ▪ Cover outdoor trash containers with tight-fitting lids. ▪ Empty trash containers frequently. ▪ Sanitize trash containers that have accumulated organic material. ▪ Steam clean dumpsters regularly. ▪ Do not allow animal manure to build up. ▪ Maintain compost piles to promote rapid decay of organic material. ▪ Do not place compost piles near areas where flies	JS; FMP; stable manager

	are likely to become a nuisance. ▪ Hydrated lime may be applied to stable floors to speed manure decomposition and render stables less suitable for fly breeding.	
PEST PROOFING	▪ Seal cracks and other openings around doors and windows. ▪ Use tight-fitting screens. ▪ Air-screens may be installed in commercial facilities.	FMP
PROHIBITED PRACTICES	▪ Use of ultrasonic pest repelling devices is prohibited. ▪ Use of aerosols, dusts and other insecticide formulations that can become airborne are prohibited in occupied spaces.	

CHEMICAL CONTROL

METHOD OF DISPERSAL	▪ Non-residual space spray or aerosol: may temporarily control adult fly populations in buildings. Will not provide long-term control unless breeding sites are eliminated. ▪ Residual insecticides: may be applied to areas outside where adult flies rest. Will not provide long-term control unless breeding sites are eliminated. ▪ Baits: may be used around refuse containers and other places to which flies are attracted. Do not use baits indoors or in other areas where flies are not already present. Baits may attract flies to an otherwise fly-free area. ▪ Impregnated strips: paper strips impregnated with insecticides will kill adult flies that contact the strips. ▪ Insect repellents: may be used on humans or animals for temporary prevention of stable fly bites. Will not provide long-term control of fly populations, and must be frequently re-applied. ▪ Oral larvicides: may be administered to livestock. Will render manure unsuitable for fly breeding.
APPLICATION SITE	▪ Fly resting areas ▪ Livestock (repellents and oral larvicides)
SITE PREPARATION	▪ Do not apply residual insecticides during high temperatures, high winds, or if precipitation is expected.
SENSITIVE AREAS	▪ Filth fly infestations often occur in food-preparation areas. Ensure that the insecticide is labeled for use in food preparation areas, and that foods are not contaminated during application. ▪ Emphasize non-chemical control in areas frequented by children. ▪ Ensure that insecticides do not enter drains, streams, lakes and other surface water.

Comments:

The numbers of products available for filth fly monitoring and control is overwhelmingly large. The efficacy of a given product often depends on local climatic characteristics, the severity of the infestation, the species comprising the infestation, and other localized conditions. Also, many products are available that do not work or whose efficacy is unproven. Pest management consultants or county or state extension personnel can assist with choosing fly control methods that are most appropriate for a given area.

Additional Information:
http://www.ipm.ucdavis.edu/PMG/PESTNOTES/pn7457.html
http://pep.wsu.edu/pestsense/

8.3.BED BUGS

TARGET PESTS:	Bed bugs (*Cimex* spp.)
PURPOSE:	Control of bed bugs that can cause bites, allergic reactions, and be a nuisance.
SCOPE:	▪ Primarily berthing areas, especially transient quarters in bachelor enlisted and officer quarters.
RESPONSIBLE PARTY:	▪ Berthing quarters managers: • Establish rules and regulations to prevent establishment and propagation of pests. • Prevent movement of furniture between rooms when bedbugs identified ▪ Berthing quarters residents: • Comply with quarters rules and regulations. • Maintain sanitation and cleanliness of personal items such as bedding. ▪ Cognizant military unit leadership: The command leadership, from the CO to NCOs, is responsible for their personnel and must enforce public health measures to protect their health and well-being. Sanitation and other pest prevention measures should be enforced through room inspections if necessary. ▪ Installation Preventive Medicine Technicians (PMTs): • Conduct berthing inspections • Enforce berthing regulation per NAVMED P-5010 • Provide informal quality assurance for pest control • Provide pest management recommendations ▪ Pest management service provider: Conduct integrated pest management to control infestations. ▪ PCPAR: Ensure contractor pest management service provider performs work in accordance with contract specifications. ▪ Facilities maintenance provider: Perform facilities repairs and improvements that exclude and minimize pest infestations as requested.
REPORTING:	• Report all pest management operations to the Integrated Pest Management Coordinator • Report infestations to PMT to assist medical department in identifying further bed bug infestations.
TECHNIQUES:	▪ Personnel complaints: Complaints are commonly received when a patient goes to medical commonly complaining of itching or dermatitis due to bites. ▪ Visual inspections • Look for pests in mattresses, box springs, bed frames and headboards. Less commonly on baseboards and on walls behind furniture.

	• Application of a flushing agent to cracks and crevices ▪ Sticky trap surveys ▪ Vacuum surveys of harborages ▪ Conduct pre and post treatment surveys to determine whether control operation was effective
SURVEY FREQUENCY / SCHEDULE	▪ Daily observation by residents. ▪ Observation during zone inspections by unit command leadership personnel. ▪ Monthly observation and/or sticky trap monitoring by PMT.
ACTION THRESHOLD:	▪ Detection of 1 bedbug.

NON-CHEMICAL CONTROL

TYPE	PROCEDURES	RESPONSIBLE PARTY
SANITATION:	▪ Thorough cleaning (field day) shall be performed in each room.	Residents; Command leadership enforce.
WASHING/ CLEANSING:	• Thoroughly wash bedding • Clean mattresses, box springs, frames, headboards with soap and water.	Residents, berthing manager
MECHANICAL REMOVAL:	• Vacuum bedbugs from their harborages on mattresses, headboards and other surfaces where they are found. Use a wet/dry vacuum cleaner filled with water or empty and dispose of vacuum bag immediately.	Residents, berthing manager.
ISOLATION AND EXCLUSION:	• Prevent removal of furniture from rooms found to be infested until they are cleaned. • Remove debris from around outside of buildings • Repair cracks in walls • Caulk windows and doors	Berthing manager

CHEMICAL CONTROL

METHOD OF DISPERSAL:	▪ Flushing Agents: The pest management service provider may use aerosol contact pesticides directed into potential harborage areas to flush out and kill pests as needed. ▪ Crack and Crevice Residuals: The pest management service provider may apply (by crack and crevice technique) a residual pesticide spray to all known or suspected harborages. ▪ Spot Treatment Residuals: A residual pesticide may be applied as a "spot treatment" to indicated areas. **Preventive baseboard spraying in the absence of a pest is prohibited.**
APPLICATION SITE:	Pesticides shall be applied as required based on survey information to areas where bedbugs are known to harbor.
SITE PREPARATION:	Pre treatment procedures: ▪ All pesticide applications shall only be done when the space is unoccupied.

	▪ Pesticide applicator shall contact berthing manager prior to pesticide applications. ▪ All bedding and personal items should be removed from exposed areas.
PROHIBITED PRACTICES	▪ Use of ultrasonic pest repelling devices is prohibited. ▪ Use of aerosols, dusts and other insecticide formulations that can become airborne are prohibited in occupied spaces.
SENSITIVE AREAS:	▪ Some persons may be sensitive to some pesticides. Pesticide applications should be avoided if possible and be made only to areas where pests have been observed. ▪ Ensure that insecticides do not enter drains, streams, lakes and other surface water.

Remarks and Comments:
For more information go to http://www.ipm.ucdavis.edu/PMG/PESTNOTES/pn7454.html or http://pep.wsu.edu/pestsense/ .

Bed bug

8.4.STINGING INSECTS

TARGET PEST(S)	Bees, wasps, and yellowjackets
TARGET AREA(S)	Outdoors
IMPACT ON MISSION	▪ Control of stinging insects that can cause painful stings, massive envenomization, or serious allergic reactions. ▪ Removal of bee hives that can cause property damage and attract other unwanted pests.
SCOPE	▪ Outdoors where stinging insects are a threat to people. ▪ In occupied buildings and outbuildings where bees nest.
RESPONSIBILITY	▪ Installation Preventive Medicine Technicians (PMTs): Evaluate medical threat of stinging insects if necessary ▪ Pest management service provider (PMSP): Conduct inspections and integrated pest management to control infestations through killing or removal. Arrange for removal of beehives in buildings. ▪ PCPAR: Ensure contractor pest management service provider performs work in accordance with contract specifications. ▪ Facilities maintenance provider (FMP) and grounds maintenance provider (GMP): Report any stinging insect nest sightings.
REPORTING	▪ Report all pest management operations to the Integrated Pest Management Coordinator. ▪ Unusually aggressive bee colonies should be reported to the PMT.

SURVEY TECHNIQUES	▪ Visual inspections:
	  ▪ Observation of insect nesting or swarming.
	  ▪ Routinely examine buildings for openings where bees or other stinging insects appear to be entering and exiting.
	▪ Personnel complaints: including information on when pests were observed, where, and how many.
	▪ Identify whether bees are swarming or nesting. (see remarks below)

SURVEY FREQUENCY/ SCHEDULE	▪ As observed by personnel.
ACTION THRESHOLD	▪ Nesting bees, wasps, or yellowjackets near populated areas require immediate response. ▪ Swarming bees, especially near areas where few people are found, should be left alone. ▪ Swarming bees in areas that cannot be avoided by people and appear to be a threat should be controlled. ▪ Individual bees are foraging and are docile, but may be nesting nearby.

NON-CHEMICAL CONTROL

TYPE	PROCEDURES	RESPONSIBLE PARTY
DISCOURAGE AND ELIMINATE NESTS	▪ Nests should be removed by trained personnel	PMSP
AVOIDANCE	▪ Stay away from stinging insects if possible.	All personnel

TYPE	PROCEDURES	RESPONSIBLE PARTY
ELIMINATE FOOD SOURCES	▪ Keep pet foods indoors. ▪ Cover trash cans.	All personnel
ELIMINATE STANDING WATER	▪ Some stinging insects are attracted to water. ▪ Repair leaking outdoor faucets and other mechanical water sources. ▪ Eliminate standing water.	FMP; GMP

TRAPS (WASPS AND YELLOWJACKETS)	▪ Wasps and yellowjackets:
	  ▪ Trapping should start in the spring and be continued through the summer. Early elimination of queen will reduce the size of populations later in the year.
	  ▪ Lure traps – baited with a chemical attractant or with meat.
	  ▪ Water traps – Meat hung on a string hung 1-2 inches over a bucket of soapy water. Cover bucket with mesh to exclude other animals.
	▪ Bees
	  ▪ Swarming bees can be lured into a trap that mimics a nesting site.
		PMSP

MECHANICAL REMOVAL	▪ Wet/dry vacuums may be used to remove bees, but should only be done by trained personnel.	PMSP
PEST PROOFING	▪ Seal holes in exterior walls of buildings. Request support from facilities maintenance provider if necessary. ▪ Remove debris that can serve as nesting areas. ▪ Cover tree holes.	FMP; GMP

CHEMICAL CONTROL

METHOD OF DISPERSAL	▪ Aerosol knockdown agents: High pressure aerosols that can be applied from a long distance can be used. Application of these insecticides result in a rapid knockdown of the insects. ▪ Dusts: Dusts can be applied to nesting areas. ▪ Baits: Baits mixed with a toxicant can be used for wasps and yellowjackets
APPLICATION SITE	Pesticides shall be applied as required based on survey information to areas where stinging insects are known to harbor or rest.
SITE PREPARATION	Pre treatment procedures: ▪ Determine the extent of nesting in buildings to determine whether hive removal will be necessary after removing bees. ▪ Ensure the safety of people in the immediate area of the treatment area. Do not allow unprotected bystanders to watch control procedures. ▪ Pest management personnel should don protective bee suits. Post treatment procedures: ▪ Remove dead bees and hive material from buildings. The melting of hive materials can cause extensive damage to building structures as well as attract other pests.

SENSITIVE AREAS	▪ Personnel that may be harmed by bees or pesticide application. ▪ Buildings that may be damaged by hives. ▪ Ensure that insecticides do not enter drains, streams, lakes and other surface water.

Comments:

Notes regarding Africanized Honey Bees (AHB)

Africanized Honey Bees (AHB), or "killer bees" have colonized most of the southwestern United States. Distribution in the eastern United States is limited, and they are not known to have colonized Virginia, Maryland, or the D.C. area.

AHB are often mistaken to be more venomous than their European counterparts that are raised for honey production and pollination. The venom that AHB produce is not more toxic. In fact, AHBs inject less venom than EHBs because they are smaller. AHB are more dangerous than EHB because they exhibit a more aggressive response to a disturbance of their nest or colony. An "attack" usually involves a large number of bees resulting in a large number of stings; often ranging into the hundreds. Injuries in these types of attacks are the result of massive envenomation. Massive envenomation for small children, elderly and disabled persons and pets can be very serious and sometimes fatal.

Precautions that should be taken when dealing with any feral bee colony include:

1. Hiring a professional pest controller to kill or remove the bees.
2. Be aware of hives in the area. AHB are easily disturbed by loud noises or vibrations caused by lawn mowers and other machinery.
3. Warn people not to disturb hives or swarming bees.
4. Do not leave pets tied up in areas where they may be attacked by bees.
5. If attacked by bees, run and/or cover yourself up with a coat or heavy blanket or seek shelter in a building or a car immediately. Do not stop to swat at the bees or jump into water.
6. Call 911 or other emergency phone number in the event of an aggressive bee attack on a human.

Refer to Technical Guide 34 "Bee Resource Manual with Emphasis on the Africanized Honey Bee" on the Department of Defense Armed Forces Pest Management Board web site at http://www.afpmb.org/content/technical-guides.

Notes Regarding Fire Ants

The red imported fire ant (RIFA) is a very destructive pest that is well established along the southern tier of the United States. They have recently begun colonizing areas of Virginia. These ants are reddish brown and 1/8" to 1/4" long. RIFA nests are generally constructed in open, sunny areas such as lawns and around yard plants and trees. These ants can invade utility vaults and structures. The sting from the RIFA is very painful and in certain cases may require medical attention. Never use gasoline to burn out any ant nest. Gasoline is a soil and groundwater contaminant, and is very hazardous. Contact your pest control service provider. For more information on red imported fire ants, go to http://fireant.tamu.edu/

http://www.ipm.ucdavis.edu/PMG/PESTNOTES/pn7450.html
http://pep.wsu.edu/pestsense/

8.5.COCKROACHES IN FOOD PREPARATION AREAS

TARGET PEST(S)	Cockroaches (primarily German cockroach, *Blatella germanica*)
TARGET AREA(S)	Food service facilities
IMPACT ON MISSION	▪ Control of cockroaches that may cause food contamination, allergic reactions, or be a nuisance.
SCOPE	▪ All government dining facilities including galleys, sculleries, bakeries, storage, and mess decks. ▪ All MWR facilities including clubs, restaurants, and storage. ▪ All commercial lessees.
RESPONSIBILITY	▪ Food service personnel (FSP): Ensure compliance with food handling regulations that prevent pest infestations. ▪ Installation Preventive Medicine Technicians (PMTs): Conduct food service inspections, enforce food handling regulations, provide quality assurance for pest control, and provide pest management recommendations. ▪ Pest management service provider (PMSP): Conduct integrated pest management to control infestations. ▪ Pest Control Performance Assessment Representative (PCPAR): Ensure contractor pest management service provider performs work in accordance with contract specifications. ▪ Facilities maintenance provider (FMP): Perform facilities repairs and improvements that exclude and minimize pest infestations as requested.
REPORTING	▪ Report all pest management operations to the Integrated Pest Management Coordinator

SURVEY TECHNIQUES	▪ Visual inspections
	  ▪ Observation of pests in harborages
	  ▪ Application of a flushing agent
	▪ Sticky trap surveys
	▪ Vacuum surveys of harborages
	▪ Personnel complaints: including information on when pests were observed, where, and how many.
	▪ Conduct pre and post treatment surveys to determine whether control operation was effective

SURVEY FREQUENCY/ SCHEDULE	▪ Daily observation by food service personnel ▪ Monthly observation and/or sticky trap monitoring by cognizant preventive medicine personnel
ACTION THRESHOLD	▪ Visual sighting of 3 or more cockroaches (all life stages) per room per survey. Flushing agents or sticky traps may be used. ▪ Sighting of 1 egg capsule per survey

NON-CHEMICAL CONTROL RECOMMENDATIONS

TYPE	PROCEDURES	RESPONSIBILITY
SANITATION	▪ Cleaning of floors and all surfaces to include debris and grease removal. ▪ Clean up spills. ▪ Store food in sealed containers. ▪ Remove cardboard boxes from storage areas. ▪ Keep garbage in containers with tight-fitting lids and use liners.	FSP
ELIMINATE	▪ Fix leaking plumbing especially around	FSP; FMP

STANDING WATER	sinks, faucets and dishwashers. ▪ Remove standing water from floors after daily cleaning.	
MECHANICAL REMOVAL	▪ Vacuum cockroaches from their harborages. Use a wet/dry vacuum cleaner filled with water or empty and dispose of vacuum bag immediately.	FSP
PEST PROOFING	▪ Seal holes in walls and ceilings and other areas that may serve as cockroach harborage as required. Request support from facilities maintenance provider if necessary.	FMP
PROHIBITED PRACTICES	▪ Use of ultrasonic pest repelling devices is prohibited. ▪ Use of aerosols, dusts and other insecticide formulations that can become airborne are prohibited in occupied spaces.	

CHEMICAL CONTROL RECOMMENDATIONS

METHOD OF DISPERSAL	▪ Flushing Agents: The pest management service provider may use aerosol contact pesticides directed into potential harborage areas to flush out and kill pests as needed. ▪ Crack and Crevice Residuals: The pest management service provider may apply (by crack and crevice technique) a residual pesticide spray to all known or suspected harborages, feeding sites, or passageways. ▪ Spot Treatment Residuals: A residual pesticide may be applied as a "spot treatment" to indicated areas (such as under dishwashers and refrigerators or behind stoves). ▪ Baits: Cockroach baits (station or injectable style gel baits) will be used as much as possible. ▪ Growth Regulators: Insect growth regulators will always be mixed with "knock-down" pesticides. **Preventive baseboard spraying in the absence of a pest is prohibited.**
APPLICATION SITE	Pesticides shall be applied as required based on survey information to areas where cockroaches are known to harbor or travel.
SITE PREPARATION	Pre treatment procedures: ▪ Visual inspections (without flushing agents) or placement of sticky traps may be placed while the space is occupied. All pesticide applications shall only be done when the space is unoccupied. ▪ Pesticide applicator shall contact food service officer or manager prior to pesticide applications. ▪ All food should be removed from exposed areas, processing equipment and utensils covered or stored, and ventilation turned off. Post treatment procedures: ▪ Thoroughly clean all food preparation surfaces. ▪ Do not remove bait stations or bait gel placements.
SENSITIVE AREAS	▪ Exposed food products, food containers, counter tops, on any surface where food may be stored or prepared, or any food storage area. ▪ Ensure that insecticides do not enter drains, streams, lakes and other surface water.

German Cockroach

Additional Information:
http://www.ipm.ucdavis.edu/PMG/PESTNOTES/pn7467.html
http://pep.wsu.edu/pestsense/

8.6.AMERICAN COCKROACHES

TARGET PEST(S)	American cockroaches (*Periplaneta americana*)
TARGET AREA(S)	Office buildings, warehouses, residences; storm sewers
IMPACT ON MISSION	Control of cockroaches that may cause food damage through contamination, affect human health through allergic reactions or "entomophobia" or be a nuisance.
SCOPE	▪ Basewide in buildings and in sewers.
RESPONSIBILITY	▪ All personnel: Ensure proper sanitation in all living and working spaces. ▪ Installation Preventive Medicine Technicians (PMT): Conduct facilities sanitation inspections, enforce food- handling regulations, provide quality assurance for pest control, and provide pest management recommendations. ▪ Pest management service provider (PMSP): Conduct integrated pest management to control infestations. ▪ PCPAR: Ensure contracted pest management service providers perform work in accordance with contract specifications. ▪ Facilities maintenance provider (FMP): Perform facilities repairs and improvements that exclude and minimize pest infestations as requested.
REPORTING	Report all pest management operations to the Integrated Pest Management Coordinator

SURVEY TECHNIQUES	▪ Visual inspections
	  ▪ Observation of pests in harborages
	  ▪ Application of a flushing agent
	  ▪ Inspect floor drains
	▪ Sticky trap surveys
	▪ Vacuum surveys of harborages
	▪ Personnel complaints: including information on when pests were observed, where, and how many.
	▪ Conduct pre and post treatment surveys to determine whether control operation was effective

SURVEY FREQUENCY/ SCHEDULE	▪ Daily observation by building occupants ▪ Monthly observation and/or sticky trap monitoring by cognizant pest management or preventive medicine personnel
ACTION THRESHOLD	▪ Visual sighting of 1 or more cockroaches (all life stages) per room per survey. Flushing agents or sticky traps may be used. ▪ Sighting of 1 egg capsule per survey

NON-CHEMICAL CONTROL

TYPE	PROCEDURES	RESPONSIBILITY
SANITATION	▪ Thorough cleaning of potential food sources in buildings, especially coffee messes and food preparation areas. ▪ Spills should be cleaned up as soon as possible. ▪ Clean out floor drains by rinsing with hot water or using cleaners specifically designed to remove sludge from pipes.	All personnel; food service personnel
ELIMINATE STANDING WATER	▪ Fix leaking plumbing especially around sinks, faucets and dishwashers. ▪ Remove standing water from floors after daily cleaning.	All personnel; FMP
MECHANICAL REMOVAL	▪ Vacuum cockroaches from their harborages. Use a wet/dry vacuum cleaner filled with water or empty and dispose of vacuum bag immediately.	All personnel; PMSP
PEST PROOFING	▪ Seal holes in walls and ceilings and other areas that may serve as cockroach harborage as required. Request support from facilities maintenance provider if necessary. ▪ Screen floor drains if possible.	FMP
PROHIBITED ITEMS	▪ Use of ultrasonic pest repelling devices is prohibited.	

CHEMICAL CONTROL

METHODS OF DISPERSAL	▪ Flushing Agents: The pest management service provider may use aerosol contact pesticides directed into potential harborage areas to flush out and kill pests as needed. ▪ Crack and Crevice Residuals: The pest management service provider may apply (by crack and crevice technique) a residual pesticide spray to all known or suspected harborages, feeding sites, or passageways. ▪ Spot Treatment Residuals: A residual pesticide may be applied as a "spot treatment" to indicated areas (such as under dishwashers and refrigerators or behind stoves). ▪ Baits: Cockroach baits (station or injectable style gel baits) will be used as much as possible. Gel bait can be applied to a sheet of hardware cloth and hung in manholes. ▪ Dusts: Boric acid dust is an effective low toxicity insecticide that can be applied to wall voids and into manholes of storm sewers. The treatment area should remain dry after the application to avoid washing the dust away. ▪ Growth Regulators: Affect the growth of the insect and prevents them from developing into egg-laying adults. Insect growth regulators will always be mixed with "knock-down" pesticides. ▪ **PREVENTIVE BASEBOARD SPRAYING IN THE ABSENCE OF A PEST IS PROHIBITED.**
APPLICATION SITE	▪ Pesticides shall be applied as required based on survey information to areas where cockroaches are known to harbor or travel.

SITE PREPARATION	Pre treatment procedures: ▪ Visual inspections (without flushing agents) or placement of sticky traps may be placed while the space is occupied. All pesticide applications shall only be done when the space is unoccupied. ▪ Pesticide applicator shall contact building occupants prior to pesticide applications. ▪ All food should be removed from exposed areas and processing equipment and utensils covered or stored. Post treatment procedures: ▪ Thoroughly clean all food preparation surfaces. ▪ Do not remove bait stations or bait gel placements.
SENSITIVE AREAS	▪ Exposed food products, food containers, counter tops, on any surface where food may be stored or prepared, or any food storage area. ▪ Minimize application of pesticides directly into drains. ▪ Use care in selecting pesticides for use in storm sewers as this can lead to pollution problems.

Additional Information:
http://www.ipm.ucdavis.edu/PMG/PESTNOTES/pn7467.html
http://pep.wsu.edu/pestsense/

American Cockroach

8.7. FERAL CATS

SURVEILLANCE and CONTROL	
responsible parties	• Army Veterinary Detachment • Pest Control Personnel
techniques	• Visual inspections • Customer complaints
action threshold	• Any wild/feral animals capable of transmitting rabies and acting sick or aggressive, or damaging property shall be managed. • Any animal (capable of carrying rabies) that has bitten or scratched someone shall be managed and analyzed for rabies.

PEST MANAGEMENT PROCEDURES		
technique	**procedures**	**responsible party**
Live traps	Cats that require extensive care will be taken to the local humane society or Society for the Prevention of Cruelty to Animals (SPCA), cats that are rejected by the SPCA will be euthanized.	Army Veterinary Detachment

NON-CHEMICAL PEST MANAGEMENT PROCEDURES	
PROCEDURES	**RESPONSIBLE PARTY**
Food Source reduction (sanitation) Food source removal (cover trash cans/dumpsters)	facility managers
Education Keep personnel who eat outdoors from feeding the feral cat population.	
Habitat management by removal of available harborage sites	facility managers, PMD
Prohibit feeding of feral cats	Command

COMMENTS

Toxic baits shall not be used for feral cat management.

8.8. LANDSCAPE ORNAMENTAL PESTS

SURVEILLANCE	
Building/Facility	**Frequency**
Grounds that contain landscape plants	at least monthly
Responsibility:	* Landscape grounds maintenance personnel
Techniques:	* Visual inspections; Signs include browned leaves, mildew or other molds growing on plant tissue, chewed leaves, speckled leaves, dead branches, and plant decline. * Customer complaints
Action Threshold:	• Chewing insects: 15% of visible leaf tissue is chewed. • Sucking insects: 5 or more insects on any one leaf or speckling of more than 15% of leaves. • Burrowing insects: Only burrowing insects that cause decline or death of the plant should be treated; any sign of these burrowing insects justifies action. • Leaf mining insects: 15% of leaves infested with mining insects. • Fungi: Apparent decline in plant health, individual leaf fall does not signify plant health decline. • Bacteria: 5% or more of plant tissue shows sign of infection. • Other diseases: 10% or more of plant tissue shows sign of infection. • Weeds: More than 4 weeds per square meter.

NON-CHEMICAL PEST MANAGEMENT PROCEDURES	
PROCEDURES	**RESPONSIBLE PARTY**
Sanitation: Plants that are severely infested should be removed to prevent the spread of the infestation.	landscape grounds maintenance personnel and PCPAR
Pest Proofing: Ensure that all plants brought onto site for landscaping are free from visible signs and symptoms of pest infestation.	landscape grounds maintenance personnel and PCPAR
Cultural control: Ensure that plants are adequately, but not overly, watered and fertilized to optimize plant health and vigor. Healthy plants will often deal with pest problems without the need for chemicals.	landscape grounds maintenance personnel
Trapping: Sticky traps, pheromone traps, and other trapping devices will only be used to monitor. Traps will not be considered a control tactic as they often attract more pests than they kill.	landscape grounds maintenance personnel and PCPAR

PESTICIDE USE	
Method Of Dispersal	Spot treatments will be the primary application method. Depending on the pest (insect, fungi, bacteria, weeds, etc.) different chemicals will be used. All chemicals must have approval by NAVFAC Atlantic Entomologists prior to their use. Whenever practical, liquid pesticides will be spot sprayed at the source of the infestation to prevent the spread of the pest. Chemicals will be selected based on high efficiency and low risk.
Safety Precautions	Special care shall be taken in outdoor areas frequented by children, wildlife, domestic animals, or other non-target organisms. Pesticides will be used only as a last resort in these areas.

COMMENTS

Surveillance and monitoring programs must be in place when a pest is suspected prior to the use of pesticides.

Proper plant health maintenance will be the primary method of deterring unwanted harm caused by pests. Healthy plants can often fend for themselves. Growing conditions should ensure strong plant vigor.

8.9. LANDSCAPE TURF PESTS

SURVEILLANCE	
Building/Facility	**Frequency**
Grounds that contain landscape turfgrass	at least monthly
Responsibility:	* Landscape grounds maintenance personnel
Techniques:	* Visual inspections; Signs include browned leaves, mildew or other molds growing on grasses, chewed leaves, speckled leaves, and general turf decline. * Customer complaints
Action Threshold:	• Chewing insects: 20% of visible leaf tissue is chewed. • Sucking insects: 2 or more insects on any one leaf or speckling of more than 15% of leaves. • Root feeders: 10% or more of turf showing signs of root feeding. • Fungi: Apparent decline in plant health. • Bacteria: 5% or more of plant tissue shows sign of infection. • Other diseases: 10% or more of plant tissue shows sign of infection. • Weeds: More than 6 weeds per square meter.

NON-CHEMICAL PEST MANAGEMENT PROCEDURES	
PROCEDURES	**RESPONSIBLE PARTY**
Pest Proofing: Ensure that all turf sod brought onto site for landscaping is free from visible signs and symptoms of pest infestation.	landscape grounds maintenance personnel and PCPAR
Cultural control: Ensure that turf is adequately, but not overly, watered and fertilized to optimize plant health and vigor. Healthy plants will often deal with pest problems without the need for chemicals. Ensure that turf decline is not caused by environmental stresses before pest management tactics are implemented.	landscape grounds maintenance personnel
Trapping: Sticky traps, pheromone traps, and other trapping devices will only be used to monitor. Traps will not be considered a control tactic as they often bring in more individual pests than kill.	landscape grounds maintenance personnel and PCPAR

PESTICIDE USE	
Method Of Dispersal	Small area treatments will be the primary application method. However, depending on the pest, larger areas may require treatment to prevent the spread of an existing pest. Depending on the pest (insect, fungi, bacteria, weeds, etc.) different chemicals will be used. All chemicals must have approval by NAVFAC Atlantic Entomologists prior to their use. Whenever practical, liquid pesticides will be spot sprayed at the source of the infestation to prevent the spread of the pest before larger pesticide applications are implemented. Chemicals will be selected based on high efficiency and low risk.
Safety Precautions	Special care shall be taken in outdoor areas frequented by children, wildlife, domestic animals, or other non-target organisms. Pesticides will be used only as a last resort in these areas.

COMMENTS

Surveillance and monitoring programs must be in place when a pest is suspected prior to the use of pesticides.

Proper turf health maintenance will be the primary method of deterring unwanted harm caused by pests. Healthy plants can often fend for themselves. Growing conditions should ensure strong plant vigor.

8.10. ADULT MOSQUITO CONTROL

TARGET PEST(S)	Flying adult pest mosquito species.
TARGET AREA(S)	Industrial and residential areas
IMPACT ON MISSION	▪ Transmission of mosquito-borne diseases to installation personnel ▪ Nuisance biting interfering with occupational and recreational activities
RESPONSIBILITY	▪ Housing Residents: • Use personal protective measures to prevent mosquito bites. • Ensure maintenance of window and door screens. • If screens not available, then keep doors and windows closed when mosquitoes are present. ▪ Installation Preventive Medicine Technicians (PMTs): • Conduct adult mosquito trapping to identify problem areas and mosquito species. • Map locations of trapping sites. • Conduct disease risk assessments including pathogen testing if available. • Provide information to housing residents on how to prevent mosquito biting. ▪ Mosquito control provider: • Conduct surveys to verify presence of adult mosquitoes at site to be treated. Treat only when and where adult mosquitoes are present. • Use pesticides in accordance with the label. ▪ Pest control performance assessment representative (PCPAR): • Ensure contractor pest management service provider performs work in accordance with contract specifications. • Conduct pre- and post treatment surveys to monitor efficacy of control measures ▪ Natural resources manager: Review and approve mosquito control operations conducted adjacent to sensitive areas to ensure minimal impact on the environment.

	▪ Housing Director: • Ensure that residents keep premises clear of clutter that can hold water and become breeding sites. • Ensure distribution of mosquito prevention and control information to residents. ▪ Integrated Pest Management Coordinator: • Coordinate with PMTs, control provider, PCPAR, and natural resource manager to identify mosquito-breeding sites that can be permanently eliminated by non-chemical methods. • Maintain mosquito control operation records.
REPORTING	▪ PMTs report surveillance results to mosquito control provider. ▪ Report all pest management operations to the Integrated Pest Management Coordinator.
SURVEY TECHNIQUES	▪ Conduct surveys using visual assessments (i.e. landing counts) and/or traps at sites where personnel complain about mosquito bites to verify presence of mosquitoes. ▪ Record sites of verified complaints on a map. Use GPS receiver if available. ▪ Use traps weekly at same locations to reveal seasonal trends in mosquito abundance. Can be used in subsequent years to plan mosquito control program. ▪ Trap mosquitoes for virus testing. ▪ PMTs will continue to conduct adult mosquito surveys.
SURVEY FREQUENCY/ SCHEDULE	▪ Ongoing surveys by residents. ▪ Survey prior to application of adulticide. For visual surveys, post treatment surveys may be conducted immediately after the treatment. For traps, within 24 hours after application.
ACTION THRESHOLD	▪ light traps: 20 biting females or 1 vector species in an unbaited trap ▪ landing counts: 15 per hour ▪ thresholds may be changed on the advice of a BUMED Entomologist
Vector Species of Concern *Culiseta melanura* *Culex pipiens* complex *Culex nigripalpus*	**Primary Diseases of Concern** Eastern equine encephalitis (EEE), West Nile virus EEE, St. Louis encephalitis, West Nile virus EEE, St. Louis encephalitis, West Nile virus

NON-CHEMICAL CONTROL

TYPE	PROCEDURES	RESPONSIBILITY
PERSONAL PROTECTION	▪ Encourage use of repellents when outdoors in mosquito-infested areas. Products with the active ingredient diethyl toluamide (DEET) are most effective. ▪ Avoid outdoor activities at dusk and during the evening hours to lessen chances of being bitten. ▪ Wear long-sleeved shirts and pants when outdoors in mosquito infested areas.	Personnel
EXCLUSION/ PEST PROOFING	▪ Window and door screens ▪ Remove tall weeds and overgrowth to remove possible resting areas for mosquitoes.	Housing residents; Housing maintenance

TRAPS	▪ Propane powered trapping devices that use heat and a chemical attractant have been shown to be effective for small to moderate area control of certain species of mosquitoes.	

PESTICIDE APPLICATIONS

CHEMICALS Note: Apply all pesticides in accordance with label directions.	▪ Organophosphates (i.e. malathion, naled). Apply with ULV or fog generating equipment. Some chemicals may be corrosive. Resistance to these chemicals is widespread. ▪ Pyrethrum and Pyrethroids. Apply with ULV equipment. Safer for humans and mammals. May be toxic to non-target insects and fish.
SITE PREPARATION	▪ Survey treatment site prior to application to ensure presence of flying mosquitoes. ▪ Ensure building occupants are given warning of spray operations if they will be in the area during treatment. They should be advised to stay indoors and keep doors and windows closed during spraying. ▪ Check for thermal inversion to ensure pesticide stays close to ground. ▪ Check for light wind (3-5 mph) perpendicular to path of vehicle travel to maximize swath width. ▪ Check direction of wind and ensure pesticides do not drift into environmentally-sensitive areas. The pesticide label will indicate what animal species are at risk for pesticide poisoning. ▪ Survey area surrounding treatment area to ensure that bee hives will not be in the path of pesticide drift.
SENSITIVE AREAS	▪ All ULV applied pesticides may affect aquatic organisms especially fish. Care should be taken to ensure proper insecticide droplet size, timing of application, environmental conditions and calibration of equipment.

Comments:

- Emergency control operations as the result of a disease outbreak may require large area application of an adulticide. Aerial spraying using an appropriately labeled pesticide and application equipment may be used. However, all aerial spraying operations must be reviewed and approved by a professional pest management consultant. Aerial spray operations must also be reviewed and approved by the installation's operations officer.
- See AFPMB Technical Guide No. 13 for more information on ULV application of pesticides.

8.11. LARVAL MOSQUITOES IN PERMANENT AND SEMI-PERMANENT WATER SOURCES

TARGET PEST(S)	*Culex, Culiseta, and Anopheles* mosquito larvae that live in permanent or semi-permanent water sources.
TARGET AREA(S)	Drainage ditches, ponds, freshwater marshes
IMPACT ON MISSION	Development into adults that cause: ▪ Transmission of mosquito-borne diseases to installation personnel ▪ Nuisance biting interfering with occupational and recreational activities
RESPONSIBILITY	▪ Installation Preventive Medicine Technicians (PMTs): • Survey and identify larval breeding sites in ditches, ponds and marshes • Map locations of breeding sites • Conduct disease risk assessments ▪ Mosquito control provider: • Conduct surveys to verify presence of larvae at site to be treated • Use integrated pest management methods to control mosquito larvae. • Use pesticides in accordance with the label. ▪ Pest control performance assessment representative (PCPAR): • Ensure contractor pest management service provider performs work in accordance with contract specifications. • Conduct pre- and post treatment surveys to monitor efficacy of control measures ▪ Natural resources manager: Review and approve mosquito control operations conducted sensitive areas to ensure minimal impact on the environment. ▪ Integrated Pest Management Coordinator: • Coordinate with PMTs, control provider, PCPAR and natural resource manager to identify mosquito-breeding sites that can be permanently eliminated by non-chemical methods. • Maintain mosquito control operation records.
REPORTING	▪ PMTs report surveillance results to mosquito control provider. ▪ Report all pest management operations to the Integrated Pest Management Coordinator.
SURVEY TECHNIQUES	▪ Maps should be used to identify water-holding sites. Conduct ground truthing to verify presence of sites. ▪ Record all water-holding sites on a map or on a GPS receiver regardless of whether larvae are found or not. ▪ Survey water-holding sites for larvae. Use a dipper to take water samples. Dip as follows: o 1 dip/10 ft in linear sources o 1 dip/100 ft^2 in wide sources o 2 dips/ source when small source (i.e. catch basin) For the first two sources dip until larvae are found, then record number of dips after that; do not count negative dips prior to this. ▪ Record quantity as # larvae / dip. Record negative sources. ▪ Mark locations for treatment or treat immediately. ▪ All positive larval sites will be identified on the map as larval sampling stations. These stations will be used in the ongoing surveillance program to detect the presence of mosquitoes after a high tide and when the action threshold for that

	site is exceeded, then control will be initiated. ▪ PMTs will continue to look for and identify additional water-holding and breeding sites.
SURVEY FREQUENCY/ SCHEDULE	▪ Weekly survey of permanent or semi-permanent sites. ▪ Survey prior to application of larvicide and within 24 hours after application. (method cannot be used after application of methoprene)
ACTION THRESHOLD	▪ One or more larvae per dip

NON-CHEMICAL CONTROL

TYPE	PROCEDURES	RESPONSIBILITY
VEGETATION REMOVAL/ IRRIGATION	▪ Aquatic vegetation encourages mosquito breeding by slowing down water movement in ditches and streams and by providing larvae with protection from predators. Emergent and floating vegetation can be removed mechanically. ▪ Carefully irrigate lawns and gardens in order to prevent water from standing for several days.	Grounds Maintenance
MOSQUITO FISH	▪ *Gambusia affinis*, or mosquito fish, feed on mosquito larvae and other small aquatic animals and can eliminate and prevent mosquito breeding. ▪ Mosquito fish are often introduced into a water source after treatment with a larvicide.	
DRAINAGE	▪ Ponds and marshes may be drained to eliminate breeding sites	Grounds Maintenance

PESTICIDE APPLICATIONS

CHEMICALS Note: Apply all pesticides in accordance with label directions**.**	▪ Bti. Apply by hand (granules), hand compressed sprayer and hydraulic sprayer (liquid), as briquets, or manual and powered granule spreader. Liquid cost-effective when applied to open water; granules effective when water is covered by heavy vegetation. ▪ Methoprene. Apply by hand or manual or powered granule spreader (granules and pellets), as briquets, or hand-compressed and hydraulic sprayer (liquid). Methoprene slow-release briquets can be applied as a pre-flood application to dry water-holding areas that have been surveyed and are known to produce mosquitoes. Risk assessments for methoprene's effects on non-target aquatic invertebrates mixed and may require trials in test plots before using in environmentally sensitive areas. ▪ Surface Films. Apply by hand compressed sprayer. ▪ Herbicides. Herbicides labeled for aquatic sites may be used to remove vegetation where removal by mechanical means is not feasible or practical.
SITE PREPARATION	▪ Survey treatment site prior to application of Bti and methoprene to ensure that majority of mosquitoes are in larval stage. Both are not effective on pupae.
SENSITIVE AREAS	▪ Some permanent and semi-permanent water sources may be habitats for birds, fish and other animals. Alterations, such as vegetation removal or drainage, introduction of fish or herbicide application may have significant impact on these habitats. ▪ Some drainage channels drain into environmentally sensitive habitats and pesticide use may have adverse effects.

Comments: For further information go to **http://pep.wsu.edu/pestsense/** .

8.12. LARVAL MOSQUITOES IN MANMADE STRUCTURES AND CONTAINERS

TARGET PEST(S)	*Culex, Culiseta,* and *Aedes* mosquito larvae that prefer to live in manmade structures and containers.
TARGET AREA(S)	Catch basins, culverts, backyard ponds, planters, and gutters
IMPACT ON MISSION	Development into adults that cause: ▪ Transmission of mosquito-borne diseases to installation personnel ▪ Nuisance biting interfering with occupational and recreational activities
RESPONSIBILITY	▪ <u>Housing Residents</u>: • Eliminate backyard mosquito breeding sites. • Keep gutters and backyard ponds clean. ▪ <u>Installation Preventive Medicine Technicians (PMTs)</u>: • Survey and identify larval breeding sites in catch basins and culverts. • Map locations of breeding sites • Conduct disease risk assessments • Provide information to housing residents on how to prevent mosquito breeding and biting. ▪ <u>Mosquito control provider</u>: • Conduct surveys to verify presence of larvae at site to be treated. • Use integrated pest management methods to control mosquito larvae. • Use pesticides in accordance with the label. ▪ <u>Pest Control Performance Assessment Representative (PCPAR)</u>: • Ensure contractor pest management service provider performs work in accordance with contract specifications. • Conduct pre- and post treatment surveys to monitor efficacy of control measures ▪ <u>Natural resources manager</u>: Review and approve mosquito control operations conducted adjacent to sensitive areas to ensure minimal impact on the environment. ▪ <u>Housing Director</u>: • Ensure that residents keep premises clear of clutter that can hold water and become breeding sites. • Ensure distribution of mosquito prevention and control information to residents. ▪ <u>Integrated Pest Management Coordinator</u>: • Coordinate with PMTs, control provider, PCPAR and natural resource manager to identify mosquito-breeding sites that can be permanently eliminated by non-chemical methods. • Maintain mosquito control operation records.
REPORTING	▪ PMTs report surveillance results to mosquito control provider. ▪ Report all pest management operations to the Integrated Pest Management Coordinator.
SURVEY TECHNIQUES	▪ Maps should be used to identify non-residential water-holding sites. Conduct ground truthing to verify presence of sites. ▪ Record all non-residential water-holding sites on a map or on a GPS receiver regardless of whether larvae are found or not. ▪ Survey non-residential water-holding sites for larvae. Use a dipper to take water samples. Dip as follows: o 1 dip/10 ft in linear sources o 1 dip/100 ft^2 in wide sources

	o 2 dips/ source when small source i.e. catch basin For the first two sources dip until larvae are found, then record number of dips after that; do not count negative dips prior to this. ▪ Record quantity as # larvae / dip. Record negative sources. ▪ Mark locations for treatment or treat immediately. ▪ All positive larval sites will be identified on the map as larval sampling stations. These stations will be used in the ongoing surveillance program to detect the presence of mosquitoes after a high tide and when the action threshold for that site is exceeded, then control will be initiated. ▪ PMTs will continue to look for and identify additional non-residential water-holding and breeding sites.
SURVEY FREQUENCY/ SCHEDULE	▪ Ongoing surveys by residents. ▪ Survey prior to application of larvicide and within 24 hours after application. (method cannot be used after application of methoprene)
ACTION THRESHOLD	▪ One or more larvae per dip

NON-CHEMICAL CONTROL

TYPE	PROCEDURES	RESPONSIBILITY
MOSQUITO FISH	▪ *Gambusia affinis*, or mosquito fish, feed on mosquito larvae and other small aquatic animals and can eliminate and prevent mosquito breeding. ▪ Can be placed into large ornamental ponds. ▪ Mosquito fish are often introduced into a water source after treatment with a larvicide.	
DRAINAGE	▪ Ponds may be drained to eliminate breeding sites. ▪ Containers such as pet food dishes, garbage cans, garden pots, and wheel barrels should be emptied of water and prevented from collecting water.	Housing residents; Grounds maintenance

PESTICIDE APPLICATIONS

CHEMICALS Note: Apply all pesticides in accordance with label directions.	▪ Bti. Apply by hand (granules), hand compressed sprayer and hydraulic sprayer (liquid), as briquets, or manual and powered granule spreader. Liquid cost-effective when applied to open water; granules effective when water is covered by heavy vegetation. ▪ Methoprene. Apply by hand or manual or powered granule spreader (granules and pellets), as briquets, or hand-compressed and hydraulic sprayer (liquid). Methoprene slow-release briquets can be applied as a pre-flood application to dry water-holding areas that have been surveyed and are known to produce mosquitoes. Risk assessments for methoprene's effects on non-target aquatic invertebrates mixed and may require trials in test plots before using in environmentally sensitive areas. ▪ Surface Films. Apply by hand compressed sprayer.
SITE PREPARATION	▪ Survey treatment site prior to application of Bti and methoprene to ensure that majority of mosquitoes are in larval stage. Both are not effective on pupae.
SENSITIVE AREAS	▪ Some catch basins and culverts drain into environmentally sensitive habitats and pesticide use may have adverse effects.

8.13. RODENTS

Target Pest(s):	Commensal: Norway rats, roof rats, house mice Peridomestic: Field mice (i.e. deer mice) Landscape: gophers, ground squirrels
Target Area(s):	Buildings and landscaped areas
Impact on Mission:	▪ Control of rodents that may cause food contamination, disease transmission, property damage or be a nuisance.
Scope:	▪ All structures where rodents can potentially be a problem; Landscaped areas.

Responsibility:	▪ Building occupants: Ensure sanitation and other measures to prevent introduction and propagation of pests.
	▪ Installation Preventive Medicine Technicians (PMTs):
	  ▪ Conduct surveys where rodents pose a adverse health or safety risk
	  ▪ Provide informal quality assurance for pest control
	  ▪ Provide pest management and disease prevention recommendations.
	▪ Pest management service provider (PMSP): Conduct integrated pest management to control infestations.
	▪ PCPAR: Ensure contractor pest management service provider performs work in accordance with contract specifications.
	▪ Facilities maintenance provider (FMP): Perform facilities repairs and improvements that exclude and minimize pest infestations as requested.
	▪ Grounds maintenance provider (GMP): Perform removal of potential food sources (i.e. fruit on trees) and creation of barriers (i.e. vegetation removal) around buildings that promote rodent invasion.

Reporting:	▪ Report all pest management operations to the Integrated Pest Management Coordinator ▪ Report rodent infestations to PMT if rodents pose an adverse health or safety risk.
Survey Techniques:	▪ Visual inspections: observations of rodents or signs of rodents, such as nests, rubmarks, gnawing, earth mounds, holes, etc. ▪ Use of tracking powder ▪ Personnel complaints: including information on when pests were observed, where, and how many. ▪ Conduct pre and post treatment surveys to determine whether control operation was effective ▪ Use of ultraviolet inspection lights (rodent urine and hair will fluoresce under UV light)
Survey Frequency / Schedule	▪ Daily observation by building occupants. ▪ Routine facilities inspections by cognizant PMT or pest control service provider.
Action Threshold:	▪ Sighting of any rodent or sign of rodent in or immediately surrounding the building.

NON-CHEMICAL CONTROL RECOMMENDATIONS

TYPE	PROCEDURES	RESPONSIBILITY
Sanitation	▪ Remove or prevent access to all potential food and harborage sources inside and outside of buildings.	Building occupants, GMP
Eliminate Standing Water	▪ Fix leaking plumbing around buildings	FMP
Pest Proofing	▪ Trim ornamental plants and trees to prevent harborage. ▪ Seal holes in exterior walls that may serve as entryways. ▪ Trim tree limbs so that they are at least 6 feet from the building. ▪ Trim vegetation around buildings. ▪ Clean up debris from inside and around buildings. ▪ Request support from facilities maintenance and/or grounds maintenance provider if necessary.	FMP
Habitat Destruction	▪ For field mice: vegetation removal and disking of soil in a barrier 50 ft around buildings will prevent rodent invasion. This is usually done after area wide rodenticide application. ▪ Use of native landscaping will tend to reduce peridomestic and landscape rodent infestations. Avoid heavy ground covers that provide harborage and cover for rodents to move into buildings from unimproved grounds.	GMP
Trapping	▪ Glue boards, snap traps, or other mechanical trapping devices. (see health precautions below)	PMSP; may be done by occupants
Prohibited Items	▪ Use of ultrasonic pest repelling devices is prohibited. ▪ Use of rodenticides indoors requires approval of Preventive Medicine Department.	

CHEMICAL CONTROL

Method of Dispersal:	▪ <u>Anticoagulant bait:</u> Multi or single dose blocks or pellets; toxicant effect is delayed. ▪ <u>Single dose acute toxicant bait:</u> Acute toxicant effect; often broadcast outdoors on ground. ▪ <u>Liquid bait:</u> Used in areas where water sources are scarce. ▪ When used in occupied spaces or outdoors where there is a risk of exposure to humans and non-target animals, the bait should be contained in a tamper-proof bait station. ▪ Baits can be applied directly into burrows. ▪ <u>Fumigation</u>: Used for control of rodents in burrows. Consult a NAVFAC pest management consultant if necessary.

Application Site:	▪ Pesticides shall be applied as required based on survey information to areas where rodents are known to harbor, feed or travel.
Site Preparation:	Pre treatment procedures: ▪ Pesticide applicator shall contact building occupants prior to pesticide applications. ▪ All bait locations must be mapped. ▪ Bait stations should be secured to prevent removal. ▪ Bait stations must be properly labeled and marked with the date on which they were placed. Post treatment procedures: ▪ Bait stations should be checked to ensure that stations are filled, intact and no bait has fallen from them. ▪ Remove bait stations once post treatment surveys indicate that rodents have been eliminated.
Sensitive Areas:	▪ Areas where humans and non-target animals may come into contact with the rodenticide, particularly childcare centers. ▪ Areas where endangered or threatened rodent species occur and may consume bait. ▪ Areas where rodents may be primary food source for an endangered or threatened animal. ▪ Habitat destruction to reduce food sources or harborage may also be destructive to critical habitats of endangered or threatened species. ▪ The pest management coordinator shall consult the environmental compliance office before any pest management operations are conducted outdoors on unimproved grounds or wildlands.

Comments:

a. Precautions on indoor rodent control:

- Most rodents are infested with ectoparasites (fleas, mites, lice) that may also infest or transmit disease to humans. Ectoparasite control should be conducted prior to eliminating (trapping or rodenticides) rodents.
- Rat control indoors using rodenticides should be avoided. The most commonly used rodenticide baits have a delayed toxic effect that do not kill the rodent until hours (or days for multi-dose) after they have consumed the bait. Rodents may die in walls and other voids where the carcass is difficult to retrieve leading to odor problems due to the decaying carcass.

b. Disease Prevention:

Rodents can harbor a number of human disease agents; among them are hantavirus and plague. Precautions must be taken when working in rodent infested areas. Rodent feces and dried urine may contain hantavirus that is transmitted when these waste materials are inhaled. Precautions should also be taken when handling dead rodents in traps and when found after rodenticide use. The following precautions should be taken:

- Avoid disturbing feces and other rodent waste when entering enclosed spaces. Use a fitted respirator with high efficiency particulate air (HEPA) filter if necessary.
- Soak rodent waste and dead rodents with a household disinfectant or bleach solution before removing.
- Wear gloves when cleaning or picking up rodent carcasses. Put material in a double plastic bag and dispose of in regular trash.

Norway Rat

8.14. STORED PRODUCT PESTS IN FOOD STORAGE AREAS

TARGET PESTS	Beetles and moths that infest food products
PURPOSE	Control of SPPs that may cause food contamination, medical problems, or be unsightly.
SCOPE	▪ Includes food items for human and animal consumption. ▪ All food storage areas in food service facilities. ▪ Fleet food storage and distribution warehouses. ▪ Commissary and NEX food storage areas.
RESPONSIBLE PARTY	▪ Food service personnel: Ensure compliance with food handling regulations that prevent pest infestations; report infested food items to appropriate authority. ▪ Installation PMT: Conduct food service inspections, enforce food handling regulations, and provide pest management recommendations. ▪ Pest management service provider: Conduct integrated pest management to control infestations. ▪ PCPAR: Ensure contractor pest management service provider performs work in accordance with contract specifications. ▪ US Army Veterinary Services: Perform food quality inspections of storage facilities including surveys for SPPs.
REPORTING	▪ Report all pest management operations to the Integrated Pest Management Coordinator ▪ Report infestations to PMT or US Army veterinary technician for possible reporting to Defense Supply Center Philadelphia (DSCP) as a Suspected Hazardous Food Item per NAVSUP P-486 Volume 1.
SURVEY TECHNIQUES	▪ Visual inspections of food items before and during storage. Conduct in accordance with MILSTD 904B. ▪ Attractant traps may be used to monitor movement and spread of SPPs in storage areas. They are inefficient as a means of control. Guidelines for the use of traps are found in AFPMB TG

	#27, Stored Product Pest Monitoring Methods ▪ Personnel complaints
SURVEY FREQUENCY/ SCHEDULE	▪ Particular attention should be given to animal feed which are a common source of infestation. ▪ Daily observation by food service personnel ▪ Monthly observation by cognizant preventive medicine personnel. ▪ Routine food inspections by US Army veterinary technicians.
ACTION THRESHOLD	▪ Observation of any number of SPP (whole insect, webbing, droppings, skins) inside or immediately outside of package. This should initiate a more thorough survey and control if necessary. ▪ Observation of one SPP on a monitoring trap.

NON-CHEMICAL CONTROL

TYPE	PROCEDURES	RESPONSIBLE PARTY
SANITATION	▪ Maintain thorough sanitation of food storage area ▪ Clean up all spills immediately	Food service or storage officer or manager
PACKAGING AND STORAGE	▪ Ensure all packages are intact. Place in sealed insect proof containers if available ▪ Repair any torn packages ▪ Rotate food items: “first-in-first-out”; do not allow food to remain stored for long periods of time ▪ Store on pallets off the floor. ▪ Maintain adequate ventilation and lighting in storerooms.	Food service or storage officer or manager
ISOLATION	▪ Remove infested items from the storeroom if they can’t be disposed of immediately.	Food service or storage officer or manager
MECHANICAL REMOVAL	▪ Vacuuming, sweeping, mopping of floors on which SPPs are found may be used. Ensure that a wet/dry vacuum filled with water is used or remove, empty, and dispose of vacuum bag immediately.	Food service or storage officer or manager
FREEZING/ HEATING	▪ SPPs may be killed by freezing or cooking. Insects can be removed from food item by sifting	Food service or storage officer or manager
SURVEY (DISPOSAL)	▪ Dispose of infested food items (see MILSTD 904B for guidance)	Food service or storage officer or manager

CHEMICAL CONTROL

METHOD OF DISPERSAL	▪ Since many infestations are confined to the food packages, non-chemical methods are the preferred control method. ▪ <u>Crack and Crevice Applications:</u> The pest management service provider may apply (by crack and crevice technique) a contact or residual pesticide spray to areas in storerooms where insects may be found after leaving infested packages. ▪ <u>Insect Growth Regulators:</u> Insect growth regulators (IGR) prevent

	immature insect larvae from developing into mature adults. IGRs may be useful for chronic SPP problems, but cannot be applied to food or cause immediate kill of the pest. It must be used in conjunction with other forms of control. ▪ Fumigation: Consult a NAVFAC pest management consultant before considering fumigation. Fumigation can be performed on pallets of food items. It will penetrate most materials to kill insects inside the food without harming or making inedible the food item. **PREVENTIVE BASEBOARD SPRAYING OF A RESIDUAL PESTICIDE IN THE ABSENCE OF A PEST IS PROHIBITED.**
APPLICATION SITE	Pesticides shall be applied to cracks and crevices and building surfaces as required based on survey information. Pesticides, except fumigants labeled for food package treatment, shall not be applied to food or food packages.
SITE PREPARATION	▪ Remove food items from storeroom before pesticides are applied.
PROHIBITED PRACTICES	▪ Use of aerosols, dusts and other insecticide formulations that can become airborne are prohibited in occupied spaces.
SENSITIVE AREAS	▪ Exposed food products, food containers, counter tops, on any surface where food may be stored or prepared, or any food storage area. ▪ Ensure that insecticides do not enter drains, streams, lakes and other surface water.

Remarks and Comments:

Review TG 29 "Integrated Pest Management In And Around Buildings" and TG 27 “Stored Product Pest Monitoring Methods” at http://www.afpmb.org/content/technical-guides

Sawtoothed Grain Beetle

8.15. SUBTERRANEAN TERMITES

TARGET PEST(S)	Several species of termites in the family Rhinotermitidae, particularly the western subterranean termite, *Reticulitermes hesperus*
TARGET AREA(S)	Structures containing wood
IMPACT ON MISSION	▪ Control of termites that reduce the aesthetics and integrity of real property.
SCOPE	▪ Basewide
RESPONSIBILITY	▪ All personnel: Report termite damage and signs to the Pest Management Coordinator. ▪ Pest management service provider (PMSP): Conduct integrated pest management to control infestations. ▪ Facilities maintenance provider (FMP): Provide facility repairs and modifications needed for termite exclusion. ▪ PCPAR: Ensure contractor pest management service provider performs work in accordance with contract specifications.
REPORTING	▪ Report all pest management operations to the Integrated Pest Management Coordinator.
SURVEY TECHNIQUES	Visual inspections ▪ Inspect wood that is touching or near the soil surface. ▪ Pay particular attention to wood that is damp ▪ Look for shelter tubes in crawl spaces and in walls. ▪ Termite galleries will be filled with excrement and other debris ▪ Infested wood may be discolored (darkened) and can often be easily punctured by a knife or screwdriver. ▪ The surface of a severely damaged piece of wood may appear blistered or peeled.
SURVEY FREQUENCY/ SCHEDULE	▪ Annually in most regions ▪ Biannually in arid regions
ACTION THRESHOLD	▪ Presence of termites indicates a need for treatment

NON-CHEMICAL CONTROL

TYPE	PROCEDURES	RESPONSIBILITY

BUILDING DESIGN AND MAINTENANCE	▪ Several design and construction techniques can help prevent subterranean termite infestations
	  ▪ Use wood species that are resistant to termite attack
	  ▪ Keep all wooden components at least 12-inches above the surface of the soil
	  ▪ Replace soil around the foundation of the building with sand (particle size ranging from 10 to 16 mesh)
	  ▪ Provide adequate ventilation in crawl spaces to keep wood dry.
	▪ Reduce excess moisture in the building by correcting leaky plumbing and moisture associated with air conditioning condensate
		Facilities planning, design, and construction personnel; FMP

PEST PROOFING	▪ Use screening over vents and other openings to discourage entry by winged reproductives.	FMP

PROHIBITED PRACTICES	▪ Use of ultrasonic pest repelling devices is prohibited.	

CHEMICAL CONTROL

METHOD OF DISPERSAL	▪ Chemically Treated Lumber: Lumber to be used near the soil surface is impregnated (pressure treated) with a variety of repellent/fungicidal/insecticidal chemicals prior to construction. Some of these products are also available to topical application to wood after construction. These products are not effective for controlling pre-existing termite infestations. ▪ Pre-Construction Soil Treatment: The soil under and around the perimeter of a slab is treated with an insecticide prior to construction. The insecticide acts as a barrier, either by killing termites that contact the treated soil or repelling foraging termites. ▪ Soil Insecticide Injection: This is the most common method for controlling termites if a pre-construction chemical barrier fails or was never applied. Holes are drilled through the foundation of the building, and insecticides are injected into the soil. Insecticides will kill termites already infesting the building and prevent future infestations for several years. A licensed professional is recommended, applying pesticide to the wrong place can cause contamination in the pluming or heating ducts. ▪ Baits: Bait stations containing a slow acting insecticide are placed around the building. Termites feed on the bait, then return to the colony where they share the bait with other members of the colony. Some baits are available to the general public whereas others are available only to licensed pest management personnel. Proper bait placement is critical to the success of the procedure, and is therefore best performed by pest management personnel with experience in termite baiting.
APPLICATION SITE	▪ Construction sites determined to be good candidates for pre-treatment. ▪ Structures infested with termites.
SITE PREPARATION	Pre-treatment procedures ▪ Visual inspection of crawl spaces and review of structural plans to determine the best locations for insecticide injections. ▪ Cover furnishings and surfaces to protect from dust generated during drilling. Post treatment procedures ▪ Thoroughly clean surfaces and furnishings that may have been covered with dust during drilling ▪ Plug drill holes with cement, caulking, or other appropriate material and repair any other damages associated with drilling and termite survey.
SENSITIVE AREAS	▪ If properly applied, insecticide pre-treatments and injections should pose little risk of unwanted insecticide exposure. ▪ Bait stations should be placed to minimize the chances that children or facilities maintenance personnel will disturb them. ▪ Ensure that insecticides do not enter drains, streams, lakes and other surface water.

Additional Information:
http://www.ipm.ucdavis.edu/PMG/PESTNOTES/pn7415.html
http://pep.wsu.edu/pestsense/

8.16. TICKS

RESPONSIBILITIES	
Preventive Medicine Division:	• Tick surveillance • identification of any collected ticks • contact point for disease emergencies • respond to complaints of tick bites
PW/Pest control personnel	pesticide applications
NAB Little Creek Environmental Department:	recommendations and approval for land modifications near improved areas to eliminate tick harborage

ACTION LEVELS	
Adults	5 or more vector species captured in a 5 minute drag near training or encampment areas
Disease Emergencies Declared	adults or nymphs: one or more individuals that have been identified as carrying RMSF disease within 5 miles of base.

NOTE: action thresholds can be changed on advice of a BUMED entomologist

Vector species of concern	Primary diseases of concern
Dermacentor variabilis	Rocky mountain spotted fever (RMSF)
Ixodes scapularis	Lyme Disease
Amblyomma americanum	Ehrlichiosis

SURVEILLANCE	
Type	**Responsible Party**
Cloth drag surveys	Preventive Medicine Division

NON-CHEMICAL PEST MANAGEMENT PROCEDURES	
PROCEDURES	**RESPONSIBLE PARTY**
Eliminate brush and high grass from improved and high traffic area	Public Works

PESTICIDE USE	
Method Of Dispersal	Barrier spray: Vegetation surrounding training areas and encampments may be sprayed with a pesticide that leaves a residual barrier to ticks. Dispersal is done with a truck mounted power sprayer.

SUGGESTED PESTICIDES
(Must be approved prior to use)

COMMON NAME	TRADE NAME
DEET (personal use)	Ultrathon, others
Permethrin (clothing)	Permanone, others
Permethrin (barrier spray)	