Final

PROGRAMMATIC ENVIRONMENTAL ASSESSMENT FOR REAL PROPERTY MASTER PLANS ON ARMY INSTALLATION MANAGEMENT COMMAND GARRISONS

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APPROVAL

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ACRONYMS AND ABBREVIATIONS

§	Section
ACHP	Advisory Council on Historic Preservation
ACP	access control point
ACUB	Army Compatible Use Buffer
ADP	Area Development Plan
AIRFA	American Indian Religious Freedom Act
AR	Army Regulation
ARPA	Archaeological Resources Protection Act
AT/FP	Antiterrorism/Force Protection
BGEPA	Bald and Golden Eagle Protection Act
BMP	best management practice
C.F.R.	Code of Federal Regulations
CAA	Clean Air Act
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CO_2e	carbon dioxide equivalent
CUP	Compatible Use Plan
CWA	Clean Water Act
CX	Categorical Exclusion
CZMA	Coastal Zone Management Act
dB	decibel
dBA	A-weighted decibel
DoD	Department of Defense
DOT	Department of Transportation
EA	Environmental Assessment
EIS	Environmental Impact Statement
EISA	Energy Independence and Security Act
EO	Executive Order
EPA	United States Environmental Protection Agency
ESA	Endangered Species Act
ESMP	Endangered Species Management Plan
ESQD	explosives safety quantity distance
FONSI	Finding of No Significant Impact
FY	fiscal year

GHG	greenhouse gas
GIS	Geographical Information System
HAP	hazardous air pollutant
HQDA	Headquarters, Department of the Army
HQ IMCOM	Headquarters, United States Army Installation Management Command
HVAC	heating, ventilation, and air conditioning
ICRMP	Integrated Cultural Resources Management Plan
IMCOM	United States Army Installation Management Command
INRMP	Integrated Natural Resources Management Plan
IPMP	Integrated Pest Management Plan
ISMP	Invasive Species Management Plan
JLUS	Joint Land Use Study
LEED	Leadership in Energy and Environmental Design
MBTA	Migratory Bird Treaty Act
MEC	munitions and explosives of concern
MMPA	Marine Mammal Protection Act
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
NAAQS	National Ambient Air Quality Standard
NAGPRA	Native American Graves Protection and Repatriation Act
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NOAA	National Oceanic and Atmospheric Administration
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
OSHA	Occupational Safety and Health Administration
PA	Programmatic Agreement
PEA	Programmatic Environmental Assessment
RCMP	Range Complex Master Plan
RCRA	Resource Conservation and Recovery Act
REC	Record of Environmental Consideration
ROI	region of influence
RONA	record of non-applicability
RPMP	Real Property Master Plan
RPPB	Real Property Planning Board
SHPO	State Historic Preservation Officer

SIP	State Implementation Plan
SOP	standard operating procedure
SPCC	Spill Prevention, Control, and Countermeasures
SWPPP	Stormwater Pollution Prevention Plan
TCP	traditional cultural property
TMDL	total maximum daily load
Tribe	federally recognized Native American Tribe, including Native Hawaiians and Native Alaskans
U.S.	United States
U.S.C.	United States Code
UFC	Unified Facilities Criteria
USACE	United States Army Corps of Engineers
USFWS	United States Fish and Wildlife Service
WASH	Wildlife Aircraft Strike Hazard

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1.0 PURPOSE OF AND NEED FOR THE PROPOSED ACTION

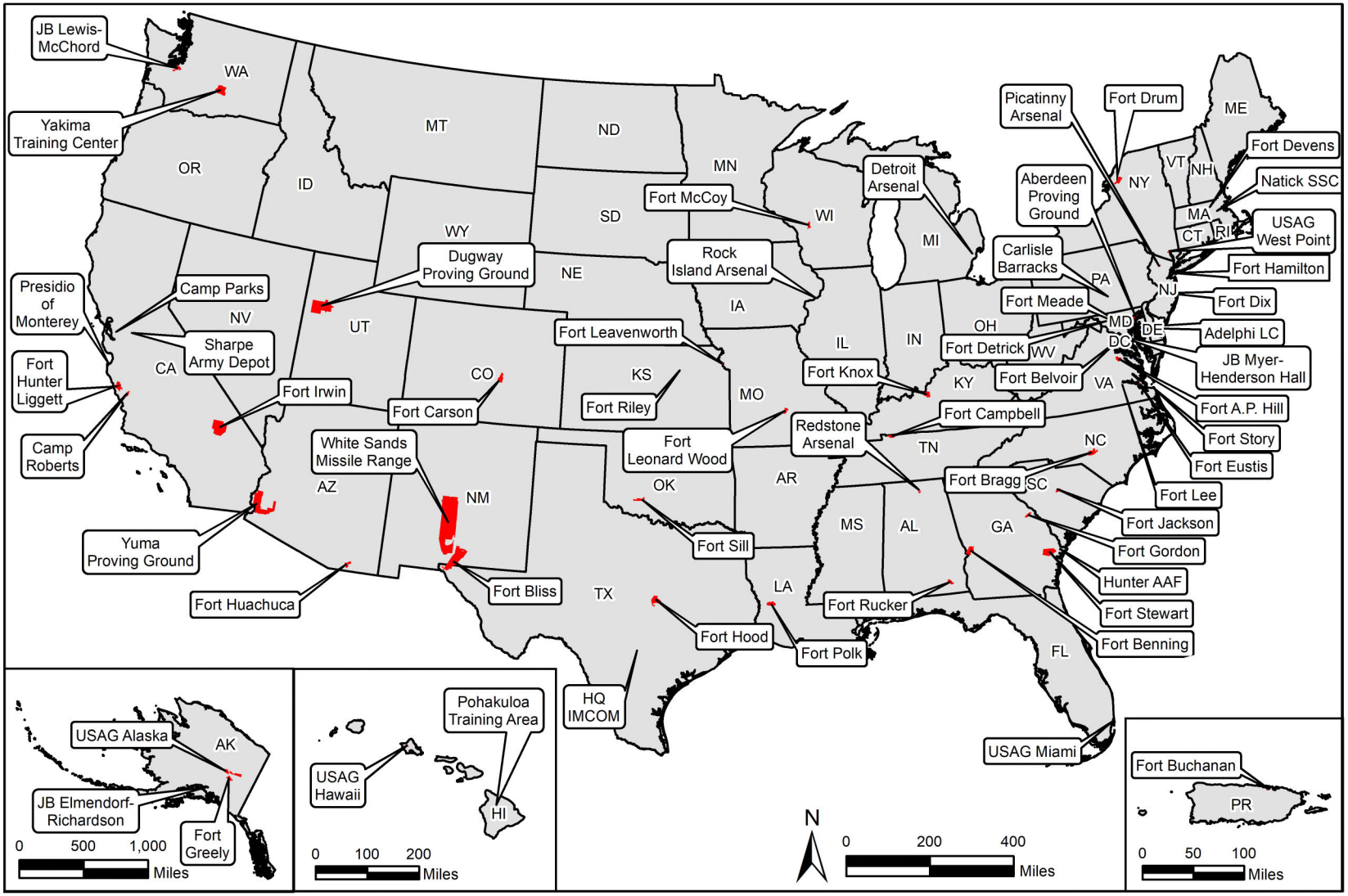
1.1 INTRODUCTION

This Programmatic Environmental Assessment (PEA) has been prepared under the National Environmental Policy Act of 1969 (NEPA) (Title 42 of the *United States Code* [U.S.C.] Section [§] 4321), the Council on Environmental Quality (CEQ) NEPA regulations (Title 40 of the *Code of Federal Regulations* [C.F.R.] Parts 1500–1508), and the Army's NEPA implementing regulation (32 C.F.R. Part 651), *Environmental Analysis of Army Actions*. In general, these regulations require that, prior to implementing any major action, the federal agency must evaluate the proposal's potential impacts on the human and natural environments and involve the public in the agency's decision-making process. In particular, 32 C.F.R. § 651.33(g) identifies the "development and approval of installation master plans" as an action normally requiring the preparation of an Environmental Assessment (EA) under NEPA.

The Proposed Action being evaluated is for United States Army Installation Management Command (IMCOM) garrisons to develop, adopt, implement, and update Real Property Master Plans (RPMPs) and component documents using a standardized process in accordance with Department of Defense (DoD) and Army guidance, and to encourage community partner participation in this process. The PEA evaluates the Proposed Action, which is the Army's preferred alternative, and the No Action Alternative.

The term "IMCOM garrisons" applies only to Army installations or joint bases managed by Headquarters, IMCOM (HQ IMCOM), with all henceforth referred to as "IMCOM garrisons," "IMCOM installations," "garrisons," or "installations". IMCOM installations in the United States and its territories are shown in Figure 1. IMCOM installations located outside the United States and its territories are not subject to NEPA and, therefore, are not addressed in this PEA.

IMCOM manages a global real property portfolio that comprises millions of acres of land and billions of dollars' worth of buildings, facilities, and infrastructure. Real property assets at IMCOM garrisons include houses, training facilities, offices, schools, commissaries (grocery stores), dining facilities (cafeterias), post exchanges (stores), roads, and utilities. These assets combine to form Army communities that are similar to off-post communities found throughout the world. Real property master planning is the continuous process through which planning for long-term management and development of land and real property are comprehensively and thoughtfully analyzed to provide a continuous, sustainable platform for effective and efficient real property decision-making in support of the military mission.



IMCOM Installations in the United States and Its Territories

Figure 1

1.2 PURPOSE OF AND NEED FOR THE PROPOSED ACTION

The purpose of the Proposed Action is for IMCOM garrisons to plan for and manage their real property assets comprehensively and sustainably to permit installation expansion, reduction, and changes in mission over a 20-year planning horizon.

The Proposed Action is needed to provide a standard process to guide sustainable and energy-efficient development across IMCOM installations that supports mission requirements. It is also needed to provide a continuous analytical process to evaluate factors affecting the present and future physical development and operation of an installation. Standardizing the process of developing RPMPs and component documents at IMCOM garrisons is expected to result in each garrison producing a thoughtful and deliberative plan that contains comparable categories of information and is similarly organized across all installations.

The need to develop, adopt, implement, and update RPMPs and their component documents using a standardized process also is driven by multiple regulations, policies, and guidances, as detailed in Section 1.5. This PEA will serve to more efficiently integrate the NEPA process with the master planning process, avoid unnecessary duplicative NEPA analyses (see Section 1.4), better inform decision makers, and encourage active public involvement.

1.3 DECISION-MAKING

A PEA serves to inform the Army decision maker and the public of the potential environmental consequences of the Proposed Action and alternatives. If the analysis in the PEA indicates that implementing the Proposed Action would result in significant adverse environmental impacts, the decision maker would publish a Notice of Intent (NOI) to prepare an Environmental Impact Statement (EIS). If the analysis in the PEA indicates that the impacts of implementing the Proposed Action or alternatives would normally be less than significant, after consideration of any comments submitted during the public review period (see Section 1.6), the decision maker could sign a Finding of No Significant Impact (FONSI). The NEPA process would then be concluded, and the action could proceed. The Army decision maker for this PEA is the Director, G4 Facilities and Logistics, HQ IMCOM.

1.3.1 Decision-Making Based on this PEA

This PEA and the public and stakeholder comments received during the public review period provide the Army decision maker with the information necessary to evaluate the potential environmental and socioeconomic impacts associated with the Proposed Action. The decision maker will consider technical, economic, environmental, and social issues as well as the ability of the Proposed Action to meet the purpose of and need for the action prior to determining the outcome of this NEPA process: either signing a FONSI or publishing an NOI to prepare an EIS.

1.3.2 Decision-Making for Analyses Tiered from this PEA

Each IMCOM garrison will be responsible for considering installation-specific conditions when developing, adopting, updating, or implementing an installation RPMP and component documents. This PEA, assuming it results in a FONSI, will provide information and analysis that can be incorporated by reference into future NEPA reviews. If this PEA covers a proposed action or adjustment to an RPMP component document, the garrison would prepare a Record of Environmental Consideration (REC) that explains why no further NEPA analysis is necessary. If an IMCOM garrison determines that a specific installation RPMP, RPMP component document, or project requires further analysis tiered from this PEA, the garrison would be required to complete the appropriate NEPA documentation prior to implementing any decisions. When completing tiered NEPA documents, installations should ensure that the significance criteria align with those in the document(s) from which they are tiering; however, specific phrasing can be edited as applicable to reflect project-specific context and intensity. The Army decision maker for any subsequent installation-specific NEPA analysis tiered from this PEA would be per IMCOM's NEPA guidance, based on whether the analysis level is an EA or EIS.

1.4 SCOPE OF THE ANALYSIS

This PEA provides a programmatic-level evaluation of the likely direct, indirect, and cumulative effects of implementing the Proposed Action or No Action Alternative. In accordance with 32 C.F.R. Part 651, "Army agencies are encouraged to analyze actions at a programmatic level for those programs that are similar in nature or broad in scope." CEQ regulations encourage the use of programmatic documents, when appropriate, accompanied by "tiered" NEPA documents that focus on site-specific issues, eliminating unnecessary duplication of effort.

Currently, IMCOM garrisons are completing NEPA analyses for RPMPs, component documents, and projects on an ad hoc basis, resulting in multiple, duplicative NEPA documents and the inefficient use of installation time and resources. For example, as a result of updates in master planning processes and component documents specified by DoD and further explained in Section 1.5, without the potential ability to tier from this PEA, a garrison might need to complete numerous EAs for a garrison RPMP. Separate EAs, with the associated public comment periods, would likely be needed for each component of the RPMP: the Vision Plan, various Installation Planning Standards, and each Area Development Plan (ADP), of which larger garrisons may have five to ten. Multiple EAs would also be needed for projects in the Capital Investment Strategy because some of the projects would not be ready for site-specific analysis until years after other projects. This PEA provides a programmatic level of analysis to avoid unnecessary duplicative analyses; in this case, the similar environmental impacts for most resource areas at most garrisons of developing and implementing RPMPs.

This PEA provides IMCOM garrisons with a starting point for complying with NEPA requirements when developing, adopting, implementing, and updating RPMPs and component documents. When considering these actions, installations must determine whether it would be appropriate to tier from this PEA. The PEA provides an Environmental Checklist to help garrisons determine what type of additional site-specific NEPA documentation, if any, is required (Appendix A). For tiering from this PEA, each IMCOM garrison should complete the Environmental Checklist in Appendix A prior to (1) adopting a new or updated RPMP or any of its component documents or (2) implementing a proposed project. When completing the Environmental Checklist, garrison personnel might need to consult subject matter experts to ensure careful and informed consideration of all potential impacts.

Depending on the responses in the Environmental Checklist, a garrison would then complete additional NEPA documentation as follows:

- If the garrison responds “no” to each checklist item, no further NEPA analysis would appear to be required and the action would qualify for a REC indicating that the proposed action is adequately addressed by the analysis in this PEA. If any categorical exclusions (CXs) apply, the REC should cite them.
- If the garrison responds “yes” or “maybe” to any checklist item, the garrison can reconsider the proposed action to see if it can be altered so the impact on the resource can be avoided and the answer changed to “no.”
- If the garrison responds “yes” or “maybe” to any checklist item and the impact(s) cannot be avoided, additional environmental analysis might be required as part of an installation-level NEPA process. The garrison should consider any previous NEPA documentation prepared for the garrison and whether EAs for RPMPs at other garrisons have addressed the same issue(s). If the garrison concludes that additional NEPA analysis is necessary, it is required under 32 C.F.R. Part 651 to prepare the documentation before any irreversible and irretrievable commitments of resources occur for the Proposed Action. The installation-specific NEPA document can focus on resource areas for which “yes” was checked and tier from this PEA for resource areas for which the response was “no.”

If the garrison determines that no further NEPA analysis is required, it should prepare a REC reflecting that determination. If it is relying on this PEA, or any other NEPA analyses, the REC should cite 32 C.F.R. § 651.12(a)(2)—“action is adequately covered within an existing EA or EIS,” name the applicable analyses (e.g., this PEA) and associated FONSI or Record of Decision, and state where the cited NEPA document(s) can be accessed. If the garrison is relying on this PEA, at least in part, the completed Environmental Checklist from this PEA should be attached. If any CXs apply, the REC should also include those citations. Lastly, the REC should discuss any specific issues

that prompted modification of the proposed action or special consideration (e.g., where the initial response was “yes” or “maybe”).

1.5 REGULATORY FRAMEWORK

Military installations are required to have master plans by 10 U.S.C. § 2864, *Master plans for major military installations*. According to this statute, each installation master plan is required to consider planning for compact and infill development; horizontal and vertical mixed-use development; the full life-cycle costs of real property planning decisions; capacity planning through establishment of growth boundaries around cantonment areas to focus development towards the core and preserve range and training space; and energy and climate resilience efforts.

DoD Instruction 4165.70, *Real Property Management*, (August 31, 2018), requires all DoD installations, including IMCOM garrisons, to have RPMPs. The master plans must cover at least a ten-year period, be updated at least every five years, and include a specific annual listing of all construction and major repair and sustainment projects.

DoD Unified Facilities Criteria (UFC) 2-100-01, *Installation Master Planning* (November 28, 2018), specifies minimum requirements for master planning processes and component documents to increase consistency between DoD agencies. UFC 2-100-01 emphasizes ten strategies that, when integrated into master planning processes and component documents, support DoD’s planning philosophy to “develop a sustainable platform to support the effective execution of assigned military missions as efficiently as possible.” The ten strategies are: sustainable planning, natural and cultural resource planning, defensible planning, healthy community planning, area development planning, network planning, form-based planning, capacity planning, facility standardization, and plan-based programming. IMCOM garrisons have been directed by Headquarters, Department of the Army to update Army real property master planning to reflect this DoD guidance (ACSIM 2013). UFC 2-100-01 also states that a master plan must consist of a minimum of five components, which are described in Section 2.2.2: Vision Plan, Installation Planning Standards, Installation Development Plan, Development Program, and RPMP Digest.

Army master planning activities are addressed in Army Regulation (AR) 210-20, *Real Property Master Planning for Army Installations* (May 16, 2005). Once the Army completes the update of its master planning regulations to align with UFC 2-100-01, AR 210-20 will be revised and published in 2020. Army communities should follow AR 210-20, which establishes policies, requirements, and responsibilities for the Army’s current real property master planning process.

1.6 PUBLIC INVOLVEMENT

The Army encourages public, agency, and Tribal participation in the NEPA process. Considering the views of and information provided by all interested persons promotes

open communication and enables better decision-making. All agencies, organizations, and members of the public having a potential interest in the Proposed Action are urged to participate in the decision-making process.

This PEA and Draft FONSI are available for a 30-day public review and comment period starting on the day the Notice of Availability is published in the *Federal Register*. The documents are available for download from the U.S. Army Environmental Command website at https://aec.army.mil/index.php?cID=352. Submit comments to U.S. Army Environmental Command, ATTN: Public Comments, 2455 Reynolds Road, Bldg. 2266, Joint Base San Antonio-Fort Sam Houston, TX 78234-7664, or via email to usarmy.jbsa.aec.nepa@mail.mil. Members of the public also may make inquiries by telephone by calling (210) 466-1590 or toll-free (855) 846-3940. Comments submitted within the 30-day public review period will be made part of the Administrative Record and the decision maker will give them full consideration before making a final decision.

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2.0 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

2.1 OVERVIEW OF GARRISON REAL PROPERTY

As stated in Section 1.1, IMCOM's real property assets (e.g., land, buildings, and infrastructure) form garrisons that are similar to off-post communities in many ways. IMCOM currently manages more than 50 U.S.-based installations across the country, in 30 states, including Alaska and Hawaii, and in Puerto Rico. They range in size from 120 acres to more than two million acres. Nearly 60 percent of the current installations have at least one airfield and some have two or three airfields. Installations are set in urban areas, suburban areas, and rural/remote areas. IMCOM's portfolio is not static; the number of installations and amount of land managed by IMCOM vary over time as the result of internal restructuring, land withdrawals, and other actions.

The current real property inventory is reflected in the annual DoD Base Structure Report (DoD 2018). Typically, buildings on IMCOM installations are clustered in cantonment and operational areas, while relatively few buildings are located in training and other areas. Averaged over total land area, overall building density is low, with one to two buildings for every 10 acres of land. Some installations—generally larger ones—have a large amount of undeveloped land while others—generally smaller ones—may be at or near build-out capacity. Undeveloped areas include training areas, airfield clear zones, surface water and wetlands, restoration sites, and areas managed for natural or cultural resources. Training areas make up less than 30 percent of total land area at some installations, while at other installations, training areas occupy as much as 90 percent of total land area.

IMCOM installations have a variety of natural and cultural resources management programs and needs. Some have many historic buildings and a historic district. Others have critical habitat for federally listed threatened or endangered species. Some are in coastal zones or have lakes, rivers, or wetlands within their borders. Other installations provide public recreational opportunities like hunting and fishing or have golf courses open to the public.

The wide variety of terrains and climates in which IMCOM installations are located pose a range of resiliency challenges, which include severe weather events such as high winds, tornadoes, hurricanes, and hail. Many contain 100- and 500-year flood zones or are near coasts where sea level rise could threaten infrastructure. Others are vulnerable to wildfires or extreme temperatures.

2.2 PROPOSED ACTION

The Proposed Action is for IMCOM garrisons to develop, adopt, implement, and update RPMPs and their component documents using a standardized process in accordance with DoD and Army guidance, and to encourage community partner participation in this process.

The RPMP serves as an installation's road map for short- and long-term development of its real property assets, including land, facilities, and infrastructure. It provides guidelines for sustainable installation development that support mission and environmental requirements and establishes planning standards for the installation. Essentially, the RPMP regulates project siting and ensures sustainable and orderly development that supports the installation's mission.

The Army's NEPA implementing regulation, 32 C.F.R. Part 651, requires that the NEPA process be completed (1) whenever an RPMP component document is adopted or updated and (2) prior to implementing any project.

The remainder of this section describes:

- The master planning process (Section 2.2.1),
- The RPMP component documents (Section 2.2.2), and
- Types of projects common to many RPMPs (Section 2.2.3).

2.2.1 Master Planning Process

Every IMCOM garrison is engaged in an ongoing master planning process. This process is meant to be comprehensive and analytical, involve relevant stakeholders, and be flexible enough to respond to changing conditions and requirements.

2.2.1.1 Phases of the Master Planning Process

The master planning process is executed in the following four primary phases, which are not necessarily linear:

- **Identification**—The identification phase results in a long-term real property vision for the installation, specific goals that support that vision, and measurable planning objectives that support one or more of those goals. The Vision Plan component of the RPMP is produced during this phase.
- **Evaluation and Development**—In the evaluation and development phase, multiple stakeholders prepare and evaluate alternative plans (whether installation-wide or for one specific area) and select the preferred plan as the RPMP. The remaining components of the plan—the Installation Planning Standards, Long-Range Component (including ADPs), and Capital Investment Strategy—are produced during this phase.

- **Implementation**—In the implementation phase, the RPMP is implemented through the execution of specific projects that align with the plan.
- **Monitoring and Amending**—Because change is inevitable, the monitoring and amending phase allows the RPMP, including RPMP components, to be revised and updated as needed to maintain its relevance as a useful planning and management tool.

2.2.1.2 Recent Changes to the Master Planning Process

IMCOM garrisons have had RPMPs for decades, but the promulgation of UFC 2-100-01 has resulted in changes in the master planning process and the format and content of RPMPs. The most significant change is the introduction of ADPs, which go into more detail than previous RPMPs.

Another change is in the relative timing of developing and updating RPMPs and their component documents. In the past, except for actions related to individual projects, most IMCOM garrisons prepared or updated one RPMP every five years. Now the RPMP and its component documents are being developed as multiple documents that are not necessarily prepared or updated at the same time (although each document must still be updated at least once every five years). For example, an installation might first prepare or update a Vision Plan that identifies one or more districts on the installation. Later, an ADP might be developed or updated for each district. For installations with multiple districts, several years might pass before an ADP is completed or updated for all districts.

Another change is in the process of developing RPMPs and component documents, which has become more standardized through the promulgation of UFC 2-100-01. In the past, the process varied widely across IMCOM garrisons. Standardizing this process is needed to ensure the development of a quality RPMP, which, in turn, enables each garrison to be prepared to support military mission requirements. Although UFC 2-100-01 introduces more standardization into the master planning process, including ADPs, it still affords installations the flexibility to develop RPMPs that reflect their unique needs.

Another change that is occurring not only within IMCOM but throughout DoD is a shift in the emphasis of the master plan from cataloguing specific projects to defining development standards that inform the design of specific projects. This change provides flexibility at the project level while ensuring that projects are consistent with the installation's planning standards and long-term vision of development.

2.2.1.3 Stakeholder Involvement

RPMPs and component documents are developed and updated using a collaborative process to ensure relevant stakeholders have a voice in shaping the installation's future development.

Within the installation, stakeholders include the Senior Installation Command, Garrison Command, all other mission commands on the garrison, all directorates of the garrison, the divisions of the garrison's Directorate of Public Works, Army and Air Force Exchange Services, Defense Commissary Agency, Residential Communities Initiative developers, representatives of clubs and other private organizations on the garrison, and garrison tenants. Beyond the installation, garrisons seek input from state, county, and local governments surrounding the installation and federally recognized Native American Tribes, including Native Hawaiians and Native Alaskans, (Tribes) in the area, although the level of involvement of these stakeholders varies between installations.

Because some components of the RPMP entail specialist knowledge (e.g., architecture, transportation engineering, or botany), garrison personnel involve appropriate subject matter experts, as needed, to ensure the proposed plans and projects comply with applicable regulations and standards, to include building and safety codes. Installation natural and cultural resources subject matter experts typically provide input so that current and potential environmental constraints are identified. Sometimes the master planning process triggers the need for new or updated environmental studies to inform identification of environmental constraints.

2.2.1.4 Approvals

The RPMP component documents must be approved by the installation's Real Property Planning Board (RPPB), Senior Installation Commander, and applicable IMCOM Directorate (i.e., IMCOM-Readiness, IMCOM-Sustainment, and IMCOM-Pacific). AR 210-20 requires installations to establish an RPPB, which functions as a "city planning council." According to the regulation, the RPPB oversees the development and update of the RPMP and "ensures the orderly development and management of installation real property."

Additionally, all proposed projects with new footprints, regardless of funding type, must have the proposed site location approved by the installation's RPPB prior to any work being initiated on preliminary designs.

2.2.1.5 Relationship of RPMPs to Other Plans

IMCOM garrisons also prepare other plans to guide the management of installation resources. For example, the Range Complex Master Plan (RCMP) provides guidance for the orderly development of an installation's range complex over time. Other examples include the Integrated Natural Resources Management Plan (INRMP), which guides management of the installation's natural resources, and the Integrated Cultural Resources Management Plan (ICRMP), which guides management of the installation's cultural resources. The garrison must ensure that the RPMP and component documents align with its other management plans.

2.2.1.6 Consideration of the Environment and Resiliency in the Master Planning Process

In general, the trend in master planning at IMCOM and throughout DoD is towards increased consideration of environmental issues and resilient development early in the planning process. By identifying environmental constraints early and planning development to avoid or minimize impacts on the human and natural environments, the installation avoids spending valuable time and resources planning for projects that are ultimately found to have unacceptable environmental impacts. By planning for energy and climate resiliency, the installation protects its real property investments and minimizes operational disruptions.

To be compliant with UFC 2-100-01, an RPMP must address planning for the environment and sustainability in multiple ways. The UFC's ten key strategies for development (listed in Section 1.5) help planners apply many of the latest techniques for integrating environmental sustainability into development. These include the following:

- Land preservation through establishing growth boundaries and planning for compact, infill, and multistory development to reduce the footprint of the built environment and provide a buffer between the installation and off-post civilian communities
- Efficient and multimodal transportation networks through transit-oriented development, mixed-use development, and connected transportation networks that reduce fossil fuel use and air emissions
- Sustainable landscaping that helps control erosion, aids in carbon sequestration, and improves aesthetics
- Stormwater control through low-impact development techniques such as permeable pavers and bioretention
- Energy conservation through measures that reduce demand such as configuring and orienting buildings to incorporate passive lighting, heating, and cooling
- Energy conservation through producing a sustainable supply of energy through wind, solar, geothermal, and other sources
- Water conservation measures such as low-maintenance landscaping and greywater use
- Waste management through adaptive reuse of facilities versus demolition
- Flood protection by siting facilities outside floodplains whenever possible
- Conservation of natural resources to protect federally listed threatened and endangered species and their habitats and sensitive resources such as wetlands

- Conservation of historic properties; archaeological sites; and sites, views, and other resources that are culturally important to Tribes

Environmental considerations are integrated into many components of the RPMP. For example, the Installation Planning Standards (Section 2.2.2.2) incorporate many of the strategies and principles stated above and apply to all development installation-wide. The Green Infrastructure Plan (Section 2.2.2.3) includes areas set aside for outdoor recreation and natural areas that are to remain undeveloped, and the Street and Transit and Sidewalk and Bikeway Plans (Figure 2) inform development of efficient multimodal transportation networks.

1. DEVELOP VISION PLAN		
Vision, Goals, Objectives	Framework Plan	Summary Future Development Plan

2. PREPARE INSTALLATION PLANNING STANDARDS		
Building Standards	Street Standards	Landscape Standards

3. UPDATE LONG-RANGE COMPONENT
Area Development Plans (for each district in the Framework Plan)
Constraints and Opportunities Maps
Network Plans (Illustrative Plan, Regulating Plan, Street and Transit Plan, Green Infrastructure Plan, Sidewalk and Bikeway Plan, and Primary Utility Plan)

4. DOCUMENT CAPITAL INVESTMENT STRATEGY		
Project Lists	Analysis of Requirements	Future Development Plan

5. CREATE RPMP DIGEST			
Vision Plan	Area Development Plans Executive Summaries	Network Plans	Capital Investment Strategy Executive Summary

Figure 2. Real Property Master Plan Process and Components

In addition, the Constraints and Opportunities Maps (Section 2.2.2.3) depict areas with limits on development (constraints) and areas with development potential (opportunities). Constraints include existing infrastructure, surface water and wetlands, contaminated sites, leased areas, areas with steep topography, areas where threatened and endangered species or their habitat occur, antiterrorism/force protection (AT/FP) setbacks, airfield clear zones, and buffer zones around areas that store explosives or other hazardous materials (known as "explosives safety quantity distance [ESQD] arcs"). These maps help the installation avoid spending limited resources proposing development that could have unacceptable environmental impacts.

The master planning process is similar to the NEPA process in several ways. For example, the master planning process includes developing and screening multiple alternatives to arrive at the preferred plan of action, involves multiple stakeholders in identifying critical issues, and identifies environmental constraints and plans to avoid and protect sensitive resources, as does the NEPA process. The master planning process also includes analysis of many resource areas, including biological resources, cultural resources, land use, traffic and transportation, and utilities and infrastructure. While the master planning process does not substitute for or fulfill all the requirements of NEPA analysis, many of its aspects align with NEPA's goal to take a hard look at potential impacts on the human and natural environments.

Energy and climate resilience is an emerging area for IMCOM master planning. Title 10 U.S.C. § 2864 was amended in August 2018 to require that master plans address energy and climate resilience. UFC 2-100-01 was amended in November 2018 to require that anticipated changes in environmental conditions be considered and incorporated into military construction designs and modifications. To meet these requirements, IMCOM installations will first need to identify the degree to which they face various energy and climate risks, such as from extreme weather events, sea level rise, and wildfires, and then update their Installation Planning Standards and other components of their RPMPs as necessary to facilitate development that incorporates an appropriate level of energy and climate resilience. By anticipating future conditions, IMCOM can protect its real property investments by reducing asset vulnerability.

2.2.2 Master Plan Components

In accordance with UFC 2-100-01, the master planning process results in five standard components: Vision Plan, Installation Development Plan, Installation Planning Standards, Development Program, and Plan Summary.

Within IMCOM, some garrisons use the names for the five RPMP components specified in UFC 2-100-01 and others use alternate names. Alternate names recommended by HQ IMCOM are provided in Table 1. Table 1 presents a crosswalk of the five RPMP component names used by HQ IMCOM and within UFC 2-100-01.

Table 1. Real Property Master Plan Components

Component name used by HQ IMCOM	Component name in UFC 2-100-01
Vision Plan	Vision Plan
Installation Planning Standards	Installation Planning Standards
Long-Range Component (including ADPs, Illustrative Plans, and Regulating Plans)	Installation Development Plan (including ADPs, Illustrative Plans, and Regulating Plans)
Capital Investment Strategy	Development Program
RPMP Digest (optional)	Plan Summary

Figure 2 provides a process chart that shows how RPMP component documents are developed and related. The following sections provide further detail on each component document. Appendix B presents examples of some key elements of the documents.

2.2.2.1 Vision Plan

The Vision Plan (#1 in Figure 2) is a decision-support document that details the overall vision, goals, and objectives for the long-term management and development of the installation's real property assets. For an IMCOM garrison, the Vision Plan also contains a Framework Plan and a Summary Future Development Plan.

The vision statement identifies what the installation, as related to real property assets, should look like in 20 years. Once the vision is defined, planning goals that support the vision are established. Next, specific measurable objectives are identified for each of the goals. Although each installation's vision, goals, and objectives are unique, many include themes of sustainability, adaptability, resiliency, support for the mission, preservation of natural and cultural resources, and optimized transportation and utility systems.

The Framework Plan is a high-level plan that serves as a guide for identifying districts within the installation. Districts are portions of the installation where similar functions are clustered, such as in a training district or a community services district. A district can include multiple land uses or activities, but typically has features that distinguish it from neighboring districts. Installations typically identify one to five districts, although some larger installations have identified up to 20 districts. An ADP is then prepared for each district. The Summary Future Development Plan locates known projects on an installation map to identify areas targeted for known requirements and deconflict project siting.

2.2.2.2 Installation Planning Standards

Another component of an RPMP, developed after the Vision Plan, is the Installation Planning Standards component (#2 in Figure 2), called the Installation Design Guide in AR 210-20. These standards define consistency in building types and the spatial

relationships of development and include detailed building, street, and landscape standards. Projects must comply with the Installation Planning Standards just like they must comply with the National Fire Protection Code and the National Electrical Code.

Installation Planning Standards promote visual order, consistent architectural themes and standards, appropriate landscaping, and a well-functioning transportation system that supports alternative modes of transportation. Where applicable, Installation Planning Standards include standards for historic buildings and districts. Each type of standard can be further refined for a given district.

Building standards address exterior and interior design parameters to shape public space and create a sense of security and architectural continuity. They address building design elements, green building and sustainable design, and site planning (i.e., screening of equipment, AT/FP measures, lighting, and gathering spaces). Exterior lighting standards address issues such as minimizing glare, shielding exterior lighting, providing safety and security lighting, and using energy-efficient lighting. Green building and sustainable design standards address passive heating and cooling, incorporating the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) measures into construction, and other similar issues. New construction projects are more easily made to comply with these standards than projects involving renovations of or additions to existing buildings.

Street standards address road configuration, sidewalks and walkways, bicycle trails, bus stops, parking lots, and other transportation features. They address issues such as transit-oriented development, the width of street lanes and sidewalks, parking, amenities such as trash cans and bicycle racks, pavement markings, and signage. Sidewalks and walkways must be accessible in accordance with the requirements of the Americans with Disabilities Act Accessibility Guidelines and the Uniform Federal Accessibility Standards.

Landscape standards address the type and location of landscape features, maintenance parameters for landscaping, the design of walls and fences, screening of equipment and refuse areas, and landscape amenities. Landscape amenities can include outdoor seating, trash and recycling receptacles, bicycle racks, lighting, information kiosks, and play equipment. The landscape standards also define a plant palette appropriate to each garrison that typically emphasizes native, drought-tolerant species.

To address situations in which extenuating circumstances may make compliance with the Installation Planning Standards unreasonable, IMCOM includes a process by which variances can be granted. Site conditions, terrain sensitivity, height requirements, and limited land are four of the general areas in which a variance may be requested. If the project proponent and the garrison master planners cannot reach an agreement on the requested variance, the RPPB decides whether it is granted or not.

2.2.2.3 Long-Range Component

Using the parameters identified in their Vision Plan and Installation Planning Standards, installations update the Long-Range Component of their RPMP (#3 in Figure 2), called the Installation Development Plan in UFC 2-100-01. The Long-Range Component comprises several plans. An ADP is included for each of the districts identified in the Vision Plan and contains the district's vision, goals, and objectives. These generally reflect the installation-wide vision; however, they focus on specific issues relevant to that district. Each ADP also includes an analysis of existing conditions, Constraints and Opportunities Maps, Illustrative Plan, and Regulating Plan.

The analysis of existing conditions informs an ADP by identifying problem areas and constraints. Constraints related to environmental conditions, utilities, and infrastructure should be identified and mapped. Building condition, utilization, type (i.e., permanent, semi-permanent, and temporary), and functionality should be documented. Transportation features should be analyzed to assess the condition of surfaces meant for driving, parking, walking, and bicycling and to identify areas of congestion, confusion, or conflict.

The Constraints and Opportunities Maps depict areas with limits on development and are used to identify areas with development potential (i.e., developable areas). Constraints include existing infrastructure, surface water and wetlands, contaminated sites, leased areas, areas with steep topography, areas where threatened and endangered species and/or associated habitat are known to occur, AT/FP setbacks, airfield clear zones, and ESQD arcs. Areas with minor or no constraints are the installation's developable areas.

The Illustrative Plan is a conceptual view of what the build-out of the district could look like in 20 or more years. Stakeholders develop multiple alternatives for future development within the district and then select one or combine two or more of them to create the preferred plan. Although only conceptual, elements such as buildings can be identified and located on the Illustrative Plan; however, they could change before the project is ready for implementation. The Illustrative Plan includes phasing, indicating for each project whether it is planned for implementation in the short term (0–5 years), mid-term (6–10 years), or long term (more than 10 years in the future). It also depicts a district's capacity to accommodate additional development (i.e., to accommodate having new buildings added if the existing buildings remain for 25 years or more).

The Regulating Plan serves as the installation's "zoning code" for development, although it provides more flexibility than traditional land-use plans. It identifies "regulating zones" and establishes the allowable uses within each zone. HQ IMCOM does not prescribe specific regulating zones; they are identified by each installation. Examples of regulating zone uses include mission operations, administrative,

residential, commercial, medical, industrial, training, mixed-use, community, open space, recreational, and utilities.

An installation's Regulating Plan might designate a regulating zone that is different from its land-use type in the previous RPMP. For example, the plan might designate a family housing area as mixed-use to allow facilities such as schools and community centers to be located within walking distance of residences. Or it might designate an area that was previously undeveloped open space as industrial or training to accommodate new facilities and mission operations.

Garrisons also consider the compatibility of adjacent regulating zones when developing their Regulating Plan. For example, locating a residential zone next to an administrative zone would be acceptable while locating it next to an industrial zone would generally be avoided.

The Green Infrastructure Plan identifies areas set aside for recreation and parks, open areas, natural resource areas that should remain undeveloped because of constraints such as the presence of wetlands or endangered species, and off-street paths and trails. The Transportation Network Plan classifies streets by function and configuration (e.g., number of lanes, medians, bicycle trails, and parking areas) and identifies locations of sidewalks and shuttle/transit stops. Other Network Plans are described in UFC 2-100-01, Section 3-6.4.

2.2.2.4 Capital Investment Strategy

Execution of an RPMP relies on the Capital Investment Strategy component (#4 in Figure 2), called the Development Program in UFC 2-100-01. The Capital Investment Strategy should be updated annually at a minimum to reflect current project prioritization and funding.

The Capital Investment Strategy is a bridge between project ideas and an executable funding program. It integrates Senior Commander-approved priorities and recommendations in the ADPs with tenant projects to illustrate all planned and programmed major repair and construction projects for the next 20 or more years. All proposed projects go through a process of requirements validation, filtering, evaluation, and scoring prior to being included in the Capital Investment Strategy. The resulting project list is divided into short-term (0–5 years), mid-term (6–10 years), and long-term (more than 10 years in the future) projects and appropriate funding requests are submitted. With the completion of the appropriate project-specific NEPA documentation, projects are then executed when funds become available.

The Capital Investment Strategy includes a Future Development Plan, which shows all proposed projects at the installation in both map and table formats. The projects are organized by anticipated year of implementation and priority. The funding source and estimated cost for each project are also identified.

Typically, each project's status is identified as "budgeted," meaning it is funded in the current fiscal year; "programmed," meaning it is included in the Future Year Defense Program but not yet budgeted; or "planned," meaning it is not yet budgeted or programmed but is sited in the relevant ADP. Because Congress approves military funding annually, projects listed as "budgeted" are highly likely to be executed, although various issues could potentially result in a budgeted project being canceled or delayed. Projects listed as "programmed" are reasonably likely to be executed but have a higher probability of being canceled or affected by changes in prioritization, scope, and timing. Longer term "planned" projects have the highest probability of being changed or canceled. The timing of project-specific NEPA documentation should consider the project's status and the likely timing of its execution.

2.2.2.5 RPMP Digest

The final component of the RPMP is the RPMP Digest (#5 in Figure 2), which includes the Vision Plan and executive summaries of the ADPs, Network Plans, and Capital Investment Strategy. The RPMP Digest does not require NEPA analysis because it is simply a compilation and summary of other RPMP component documents that have undergone NEPA analysis.

2.2.3 Projects

The purpose of the planning process and the RPMP is to guide installation development, and the projects implemented as a result will shape the installation's future. As mentioned in Sections 2.2.2.3 and 2.2.2.4, proposed projects are identified in the Illustrative Plan for each district and in the Capital Investment Strategy. The Army expends a considerable amount of resources developing projects that will be consistent with the RPMP. On average, more projects are proposed for short-term (0-5 years) implementation than for mid- and long-term implementation. No project can be implemented, however, until it undergoes the appropriate NEPA review.

2.2.3.1 Project Implementation

Proposals for the projects in the Capital Investment Strategy range from being highly detailed to being conceptual with few specifics. Specific project sites or building footprints might be identified in some proposals while only general project locations are identified in others. Typically, less detail is developed or available for projects not yet requiring architectural or engineering services.

Over time, projects included in the Capital Investment Strategy can be completed, shifted from one timeframe to another, or removed from consideration. New proposed projects might also be added to the Capital Investment Strategy. Proposed projects that were once only conceptual can become more specific in design, especially as a garrison develops a proposed project to the point at which it is ready for implementation.

Final project specifications, however, will remain in compliance with the Regulating Plan, the Installation Planning Standards, and other relevant components of an RPMP.

Some projects proposed in the RPMP are never implemented because they become obsolete as time passes or the installation's needs evolve. Therefore, installations should ensure that expending funds to identify alternative locations for, analyze potential environmental impacts of, or develop preliminary designs for proposed projects is carefully timed to minimize resources being applied against projects that are never executed, while simultaneously recognizing the timelines needed to complete advanced planning efforts to be able to execute approved budgets.

2.2.3.2 Types of Projects

Although project specifics vary widely, certain types of projects commonly proposed in RPMPs can be broadly categorized. For purposes of this analysis, they have been grouped into the following categories: facility renovation, construction, and demolition; transportation; utility; outdoor recreation and open space; energy and climate resilience; and other.

Facility Renovation, Construction, and Demolition: Facility renovation projects include a variety of maintenance and upgrade efforts. Examples include general maintenance and repair, replacing roofs, upgrading facility utility systems, and converting buildings to new uses.

Facility construction projects vary substantially. A construction project may involve an addition to an existing building, building a single new building, or building multiple new buildings (e.g., a family housing project). Facilities can range in size from a few hundred square feet to hundreds of thousands of square feet and the acreage of land disturbed would be similarly variable. Facilities are constructed to meet a wide range of mission requirements, including training, housing, lodging, administrative, operational, educational, maintenance, storage, medical, retail, recreational, and industrial.

Facilities slated for demolition are often inefficiently designed, excess to mission requirements, and expensive to maintain or have renovation costs that are prohibitively expensive. Like construction projects, demolition projects can involve a wide range of square footages and acreages of disturbance. Many demolitions are "paired" with new construction projects, meaning that one facility is demolished and a new facility of similar function is constructed. The old facility could be demolished before or after the new facility is built, depending on installation needs and the location of the new facility in relation to the old one. The CXs in 32 C.F.R. Part 651 apply to demolition of nonhistoric buildings as long as applicable regulations for managing wastes are followed. Historic structures would be subject to additional requirements prior to demolition.

Facility renovation, construction, and demolition projects include constructing not only buildings, but associated infrastructure and amenities such as access roads, parking,

utilities, landscaping, sidewalks, courtyards, and outdoor lighting. Therefore, these projects may include components that could also be classified as transportation, utility, or outdoor projects. They may also include energy- and climate-resilience features such as installing rooftop solar panels on a building.

Generally, facility renovation, construction, and demolition activities make up 60 to 90 percent of the proposed projects in the Capital Investment Strategy of an RPMP. One or more CXs under 32 C.F.R. Part 651 can be applied to some of these proposed projects, especially those affecting a limited land area, to meet a proposed project's NEPA requirement.

Transportation: Transportation projects include repair, maintenance, expansion, and new construction of transportation features and amenities. Transportation projects typically compose up to 20 percent of proposed projects. One or more CXs under 32 C.F.R. Part 651 can be applied to some of these proposed projects, especially those affecting a limited land area or within existing rights-of-way, to meet a proposed project's NEPA requirement. Examples of transportation projects include the following:

- Construct, expand, replace, relocate, reconfigure, or remove transportation features such as roads, parking lots, runways, taxiways, intersections, bridges, and aircraft parking aprons
- Construct, replace, relocate, reconfigure, or remove transportation amenities such as lighting, transit stops, and signage
- Construct, replace, relocate, reconfigure, or remove an access control point (ACP) (i.e., entry gate)
- Pave unpaved surfaces; repave or resurface features such as roads, parking lots, runways, taxiways, and aircraft parking aprons
- Install, replace, relocate, reconfigure, or remove airfield equipment such as runway lighting

Utility: Utility projects include utility maintenance, upgrades, expansion, and new construction. These types of projects typically compose up to 15 percent of proposed projects. One or more CXs under 32 C.F.R. Part 651, including some CXs specific to utilities, can be applied to some of these proposed projects to meet a proposed project's NEPA requirement. Examples of utility projects include the following:

- Construct, expand, replace, relocate, reconfigure, decommission, or remove utility infrastructure such as water lines, electric lines, sewage lines, communications networks, fire hydrants, pump stations, transformers, generators, or wastewater treatment plants
- Relocate an aboveground electrical line underground

- Install, upgrade, relocate, reconfigure, or remove stormwater drainage features such as gutters, retention ponds, and swales

Outdoor Recreation and Open Space: Outdoor recreation and open space projects typically compose up to 5 percent of proposed projects. One or more CXs under 32 C.F.R. Part 651 can be applied to some of these proposed projects, especially those affecting a limited land area, to meet a proposed project's NEPA requirement. Examples of outdoor recreation and open space projects include the following:

- Construct, upgrade, relocate, reconfigure, or remove paths and trails or recreational areas such as golf courses, swimming pools, sports fields, and campgrounds
- Designate, expand, reconfigure, or decommission primarily undeveloped outdoor spaces such as open spaces, parks, and parade fields
- Install, replace, upgrade, reconfigure, or remove landscaping elements such as ornamental trees, plants, courtyards, signs, irrigation systems, benches, and fences
- Install, replace, upgrade, relocate, reconfigure, or remove outdoor fitness courts (e.g., tennis or basketball courts), exercise equipment (e.g., chin-up bars), or playgrounds
- Create, upgrade, reconfigure, or relocate outdoor memorials or other public spaces

Energy and Climate Resilience: The term *energy and climate resilience* is defined in 10 U.S.C. § 2864 as:

> …anticipation [of], preparation for, and adaptation to utility disruptions and changing environmental conditions and the ability to withstand, respond to, and recover rapidly from utility disruptions while ensuring the sustainment of mission-critical operations.

Installation Planning Standards, and often one or more of the goals or objectives of the RPMP, provide guidance for energy and climate resilience measures that should be incorporated into RPMP projects. The resulting energy- and climate-resilience projects could be stand-alone projects or components of other projects.

The real property investments IMCOM makes now should anticipate future conditions to reduce the vulnerability of and achieve the projected longevity of its real property assets. Projects or project components that enhance energy and climate resilience would result in real property assets better able to withstand extremes or potential disruptions, thereby enhancing continuity of operations. Aspects of these projects include the following:

- Construct on-post energy generation facilities such as a solar array
- Modernize or introduce back-up capacity into a utility system such as through emergency generators
- Provide on-site storage for fuel, electricity, or potable water
- Enhance or introduce transportation system redundancy (e.g., by providing multiple access routes)
- Avoid building in flood zones or use raised and reinforced foundations so buildings can withstand flood events
- Design buildings to facilitate passive heating and cooling
- Design buildings and transportation features such as bridges to withstand flooding or high winds
- Design building ventilation systems to accommodate extreme temperatures or compromised air quality (e.g., from wildfire smoke)
- Provide indoor storage areas to protect aircraft and other assets from storm damage
- At coastal facilities, locate buildings, transportation features, or utility systems away from areas of potential sea level rise or tsunami inundation or protect them from storm surges using barriers such as a sea wall, levee, marsh, or wetlands
- Design on-site stormwater features such as swales not only to balance out impervious surfaces but also to accommodate extreme precipitation events
- Manage landscaping to minimize the presence of wildfire fuels near structures

As with all proposed projects, each energy and climate resilience project requires appropriate NEPA documentation before the project is implemented. One or more CXs under 32 C.F.R. Part 651 can be applied to some of these proposed projects, especially those affecting a limited land area, to meet a proposed project's NEPA requirement, even if a CX is not specifically labeled as energy or climate resilience. IMCOM installations considering solar photovoltaic projects might also be able to streamline their NEPA requirements by tiering, if appropriate, from the 2016 *PEA for Construction and Operation of Solar Photovoltaic Renewable Energy Projects on Army Installations* (AEC and PNNL 2016). If an installation wishes to tier from that PEA, they should follow the instructions in that PEA for tiering.

Other: Projects that do not fall into any of the previous categories are typically installation-specific, and thus are not analyzed further in this PEA. Projects of this type cannot tier from this PEA to meet NEPA requirements.

2.3 NO ACTION ALTERNATIVE

The CEQ regulations in 40 C.F.R. § 1502.14(d), and reflected in 32 C.F.R. Part 651, require analysis of a No Action Alternative in all NEPA documents. The No Action Alternative serves as the baseline against which the impacts of implementing the Proposed Action are measured.

Under the No Action Alternative, RPMPs would not be developed, adopted, implemented, or updated using a standardized process across all IMCOM garrisons in the United States and its territories in accordance with DoD and Army guidance. The existing RPMP process would remain in effect, so ad hoc master planning and associated NEPA analysis would continue.

Selection of the No Action Alternative would mean that IMCOM installations would be unable to tier from the PEA analysis and would have to continue to conduct repetitive analyses for each installation RPMP component.

2.4 SCREENING CRITERIA

The Army's NEPA regulation requires reasonable alternatives to be evaluated. HQ IMCOM established the following screening criteria to identify alternatives that would meet the purpose of and need for the Proposed Action (Section 1.2). To be considered a reasonable alternative, alternatives must meet the screening criteria below. As the goal of this programmatic approach is to eliminate repetitive, duplicative NEPA analyses for IMCOM RPMPs, all but the last of the following screening criteria also apply to proposed actions whose NEPA documentation tiers from this PEA. The screening criteria are:

- **Mission Compatibility**—The alternative must appropriately incorporate and support the military missions, to include training, occurring at the IMCOM garrison.
- **Short- and Long-Range Considerations**—The alternative must provide a 20 or more year focus for real estate assets, enabling installations to maintain the desired path forward while also enabling anticipation of and response to current and short-term (0–5 years) missions and requirements.
- **Safety**—The alternative must enable consideration of safety and installation security factors in plan development and site planning.
- **Environmental Factors**—The alternative must enable consideration of environmental factors so that development decisions appropriately minimize impacts to sensitive natural and cultural resources. The alternative must reflect the principles of low-impact development and sustainable planning.
- **Financial Stewardship**—The alternative must enable a holistic perspective of installation development such that master planners can recognize and take

advantage, as appropriate, of options that will enable reduced life-cycle costs of real estate assets, to include reduced utility costs (e.g., energy, water, waste). The alternative must reflect the principle of energy efficiency and sustainable planning.

- **Aesthetic Compatibility**—The alternative must enable consideration of aesthetics into plan development and site planning, especially for residential and historic areas.
- **Compliance with Federal Mandates and DoD or Army Goals**—The alternative must enhance compliance with government mandates and DoD and Army goals and objectives regarding master plans for IMCOM garrisons.
- **Master Planning Efficiency**—The alternative must provide for efficiencies within IMCOM, enabling reduced costs and efforts associated with the development of master planning documents or associated requirements, such as NEPA for master plans.

2.5 ALTERNATIVES ELIMINATED FROM FURTHER CONSIDERATION

As part of the NEPA process, potential alternatives to the Proposed Action must be evaluated. For alternatives to be considered reasonable and warrant further detailed analysis, they must meet the purpose of and need for the action (Section 1.2) and the screening criteria (Section 2.4) and be affordable and implementable.

A reasonable alternative to the Proposed Action would be to analyze only the development, adoption, and updating of RPMP component documents and not analyze the implementation of any projects proposed in the RPMP. That alternative is essentially a subset of the Proposed Action and addressed by the analysis in this PEA. The Army determined that limiting the PEA in this way would not do as much as the Proposed Action to minimize the preparation of multiple, duplicative NEPA documents and reduce the inefficient use of installation time and resources and thus determined it was appropriate to expand the Proposed Action to include analysis of the implementation of projects proposed in the RPMP.

IMCOM did not identify any other alternatives that meet the criteria for detailed analysis, and, therefore, no other alternatives are analyzed in this PEA.

3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

3.1 APPROACH TO ANALYZING IMPACTS AND IDENTIFYING MITIGATIONS

This section presents the impacts of implementing the Proposed Action and alternatives. The resource areas analyzed are air quality and greenhouse gases (GHGs), biological resources, cultural resources, hazardous materials and waste, human health and safety, land use, noise, socioeconomics, transportation and traffic, utilities, and water resources. Topics discussed for some resource areas are more expansive than their titles indicate.

A region of influence (ROI) is defined for each resource area based on the region potentially influencing or influenced by the resource. The ROI is generally IMCOM garrisons, unless otherwise noted.

For each resource area, the potential significance of impacts has been evaluated based on context and intensity as defined in 40 C.F.R. § 1508.27. Impacts have been distinguished as beneficial or adverse. The severity, duration, and directness of impacts have been characterized as follows:

- **Severity**—*Negligible, minor, moderate*, or *significant*. *Negligible* impacts are barely perceptible. A *minor* impact would be detectable but slight or otherwise limited. A *moderate* impact would be readily apparent but clearly not as severe as a significant impact. *Significant* impacts meet or exceed the significance thresholds defined for the resource area.
- **Duration**—*Short-term* impacts would occur for a limited amount of time, and *long-term* impacts would be persistent.
- **Directness**—*Direct* impacts are caused by the action and occur at the same place and time as the action. *Indirect* impacts are caused by the action and occur at a different place or later time.

Mitigation measures are those measures that reduce the severity of impacts anticipated to result from implementing the Proposed Action and alternatives. If a significant impact is able to be mitigated to a less-than-significant impact, the measures necessary to reduce the impact are clearly defined and must be implemented to support a FONSI determination, if such a determination is made by the decision maker. Best management practices (BMPs) are standard business practices to reduce adverse impacts. The development of a specific BMP may have been initiated to address workforce safety or protect the health of the humans and the environment, with some BMPs identified as requirements under a regulatory permit or Army regulation. As

implementation of many BMPs is routine within IMCOM, with those BMPs considered part of the Proposed Action and not a mitigation to reduce the impacts of the Proposed Action, BMPs are generally not classified as mitigations within this PEA. BMPs are discussed in resource areas' Environmental Consequences sections.

3.2 AIR QUALITY AND GREENHOUSE GASES

3.2.1 Definition of the Resource

Air quality describes the levels of air pollutants in an area. Air pollutants are chemicals or particles that are harmful to human health or the environment. Airborne dust, often called "fugitive dust," is also an air pollutant. GHGs are gases that trap heat in the atmosphere, contributing to the greenhouse effect and climate change. The primary GHGs are carbon dioxide, methane, nitrous oxide, and fluorinated gases (EPA 2019). Many GHGs occur naturally in the atmosphere, but human activities such as burning fossil fuels and clearing trees and other vegetation also contribute to GHGs. Tree removal reduces the environment's ability to naturally remove carbon dioxide from the atmosphere through photosynthesis. The ROI for air quality and climate change comprises the counties and Air Quality Control Regions in which IMCOM installations are located.

3.2.2 Regulatory Framework

EPA and state governments regulate air quality. The Clean Air Act (CAA) (42 U.S.C. §§ 7401–7671q) requires the U.S. Environmental Protection Agency (EPA) to establish National Ambient Air Quality Standards (NAAQS) (40 C.F.R. Part 50) that specify acceptable concentrations of air pollutants harmful to human health and the environment. EPA has established NAAQS for six criteria pollutants: particulate matter (measured as both particulate matter less than 10 microns in diameter [PM10] and particulate matter less than 2.5 microns in diameter [PM2.5]), sulfur dioxide, carbon monoxide, oxides of nitrogen, ozone, and lead. Most states accept the federal NAAQS, but some states have adopted stricter standards for some criteria pollutants and/or set standards for pollutants that do not have a federal standard.

Areas with levels of all criteria pollutants below the NAAQS are designated as "attainment areas," those with a concentration of one or more criteria pollutants in excess of the NAAQS are designated as "nonattainment areas," and those that were classified as nonattainment areas but have reduced the concentration of the pollutant(s) that had been in excess to below NAAQS are "maintenance areas." IMCOM installations are located in all three types of areas.

The CAA requires that federal agencies do not adopt, approve, or fund activities that are inconsistent with state air quality goals as set forth in an approved State Implementation Plan. The General Conformity Rule (40 C.F.R. Part 93) provides the framework for meeting that CAA requirement. An air conformity applicability analysis, and possibly a

formal air Conformity Determination, are required for federal actions in nonattainment and maintenance areas unless the projected emissions would be below thresholds considered to be *de minimis*, or of minimal importance.

Section 112 of the CAA lists other air pollutants referred to as "hazardous air pollutants" (HAPs) that are regulated by EPA through the National Emission Standards for Hazardous Air Pollutants.

Chapter 4 of AR 200-1, *Environmental Protection and Enhancement* (December 13, 2007) specifies the Army's air resources program requirements. It requires installations to comply with those and all other applicable regulations and permit requirements related to air resources.

Climate change is expected to have potential effects such as more frequent and intense temperature extremes and extreme weather events (e.g., more frequent storms of increasing intensity), longer fire seasons and more frequent and severe wildfires, higher sea levels, reduced snowpack and lower stream flows, and longer and more severe droughts. Executive Order (EO) 13834, *Efficient Federal Operations*, directs the federal government to enhance the resiliency of its infrastructure and operations. While EO 13834 does not require a formal planning process for evaluating and managing climate change, federal agencies are nonetheless directly involved in addressing climate resilience and adapting to its implications across their services, programs, and assets (FedCenter 2019). For example, DoD identifies climate change as a national security concern and reduced its GHG emissions by approximately 12 percent between fiscal year (FY) 08 and FY 15 (DOE 2016).

3.2.3 Planning Considerations

UFC 2-100-01 includes the following planning strategies relevant to air quality and climate change:

- *Compact, infill, mixed-use, and transit-oriented development (Sections 2-2.1, 2-2.2, and 2-2.3)*, *connected transportation networks (Section 2-2.6)*, and *healthy community planning (Section 2-4)*, which encourage development that reduces the number of vehicle trips.
- *Sustainable landscape elements (Section 2-2.7),* which directs planners to incorporate vegetation into installation landscaping to (among other things) improve air quality and reduce energy consumption.
- *Building orientation and configuration (Section 2-2.10),* which directs planners to locate and design buildings to leverage natural ventilation to reduce energy consumption.

- *Energy conservation (Section 2-2.11),* which directs planners to make energy conservation—including producing more renewable energy and enhancing energy efficiency—part of the installation's planning goals.

AR 210-20, Appendix C directs installations to consider the following factors relevant to air quality and climate change when developing an RPMP:

- Reduce negative impacts on air quality, including reducing ozone-depleting chemicals in heating, ventilation, and air conditioning (HVAC) and refrigeration equipment
- Increase energy efficiency
- Increase production and use of renewable energy
- Reduce automobile use
- Conserve and restore natural areas

In accordance with the Army's Sustainable Design and Development Policy (DA 2017a), all new vertical construction projects and comprehensive building renovations meeting the thresholds in UFC 1-200-02, *High Performance and Sustainable Building Requirements*, (September 7, 2018), shall be certified at the LEED Silver level at a minimum.

3.2.4 Affected Environment

All IMCOM installations generate air emissions from everyday operations. Typical sources of air emissions include fuel dispensing, facility heating and cooling equipment, vehicle and aircraft operation and maintenance, generators, storage tanks, degreasing operations, surface-coating operations, welding, refrigeration, construction and demolition, and smoke generation from prescribed burns or military training activities. All IMCOM installations maintain an air program that reviews actual and potential sources of air contaminants and is required to be in compliance with all applicable federal, state, and local regulations related to air emissions and permitting.

Many IMCOM installations are considered major sources of air pollutants as defined by Title V of the CAA. Those installations are required to obtain and operate under an installation-wide Title V permit, which lists the permitted emission sources at the installation and specifies applicable limits on their operation and emissions. The installation is required to inventory its emissions from those sources and report them to the state regulatory agency annually to demonstrate compliance with the permit.

State air regulations may require permits for sources that emit smaller amounts of air pollutants than those defined as major sources. Multiple states also regulate other activities such as fugitive dust from construction activities or smoke from burning.

Some IMCOM installations fall under the GHG Reporting Program (40 C.F.R. Part 98), which requires that certain types of facilities that generally emit 25,000 metric tons of carbon dioxide equivalent (CO_2e) (a common measurement for GHG emissions) or more per year report their GHG emissions to EPA.

3.2.5 Environmental Consequences

3.2.5.1 Significance Criteria

An alternative would be expected to have a significant adverse impact if it would (1) result in a NAAQS attainment area becoming a nonattainment area, (2) produce emissions within a nonattainment or maintenance area that exceed the General Conformity Rule *de minimis* threshold values, or (3) generate nationally substantial GHG emissions by producing more than 75,000 tons of CO_2e from non-exempt sources per year.

3.2.5.2 Impacts of the Proposed Action

Implementing the Proposed Action would have short-term minor-to-moderate adverse impacts and long-term impacts ranging from minor beneficial to moderate adverse as described in this section.

3.2.5.2.1 Developing, Adopting, and Updating RPMP Component Documents

Developing, adopting, and updating RPMP component documents involve the establishment of goals and procedures for real property management that would not generate air emissions and thus would have no direct impacts on air quality or climate change. Careful consideration of air quality and climate change during the planning process, however, would aid in minimizing adverse impacts on the installation's future air emissions.

By incorporating the UFC 2-100-01 and AR 210-20 planning strategies presented in Section 3.2.3, the RPMP would plan for development that would reduce automobile use, in turn reducing emissions from automobile exhaust. It would plan for development that would increase energy efficiency and reduce consumption of conventionally sourced energy, lowering the emissions associated with producing that energy. UFC 2-100-01 also directs planners to conserve undeveloped land and natural areas and incorporate vegetation into landscaping plans. Through the photosynthesis process, vegetation removes carbon dioxide—the most abundant GHG—from the atmosphere, improving air quality. As a result of implementing these planning strategies, developing, adopting, or updating an RPMP component document would result in long-term minor beneficial impacts on air quality and climate change.

3.2.5.2.2 Implementing RPMP Projects

Implementing RPMP projects would result in short-term minor-to-moderate adverse impacts and long-term impacts ranging from minor beneficial to moderate adverse.

Project Construction. All RPMP projects would produce emissions during construction activities (including renovation and demolition), with adverse impacts ranging from minor to moderate adverse. Construction, renovation, and demolition activities would produce emissions of criteria pollutants, HAPs, and GHGs from ground disturbance, use of on- and off-road construction equipment and vehicles, worker trips, paving, and surface coating (e.g., painting). Activities that would disturb asbestos or lead-based paint would comply with applicable regulations for controlling emissions from those activities.

Individual projects that would have short construction periods or few pieces of equipment operating simultaneously, or disturb smaller areas of ground would have short-term minor adverse impacts. Individual projects that would have long construction periods or many pieces of equipment operating simultaneously, or disturb larger areas of ground would have short-term moderate adverse impacts.

The General Conformity Rule is distinct and separate from NEPA and must be addressed for RPMP projects regardless of the level of NEPA analysis conducted (i.e., CX, EA, or EIS). Construction emissions for RPMP projects within nonattainment or maintenance areas require an applicability analysis to compare their total direct and indirect emissions to the *de minimis* thresholds outlined in the General Conformity Rule. If emissions would not exceed the *de minimis* thresholds, the rule would not apply and a record of non-applicability (RONA) would be prepared. If emissions would exceed the *de minimis* thresholds, a formal conformity determination would be prepared, the RPMP project would have the potential for significant adverse effects, and additional NEPA analysis might be required.

Industry-standard BMPs—which in some areas are required by applicable state or local law or are already standard practice at many IMCOM garrisons—would be implemented to reduce emissions from construction vehicles and equipment and limit fugitive dust. The following construction BMPs would be implemented, as applicable:

- During ground-disturbing activities, apply water or soil stabilizers to or cover exposed soil to suppress dust. Limit or halt soil-disturbing activities during high-wind conditions when work is in soil classified as highly erodible.
- Limit driving on unpaved surfaces to necessary vehicles only and drive slowly on unpaved surfaces.
- Cover soil stockpiles and trucks transporting soil or other materials that could cause airborne dust.
- Use electricity from established power sources rather than generators whenever possible.
- Service equipment in accordance with the manufacturer's recommendations and repair equipment promptly to prevent excess emissions.

- Minimize vehicle and equipment idling times.
- Clean excess soil from heavy equipment and trucks leaving the work zone to prevent off-site transport.

Project Operation and Maintenance. Once construction is complete, some RPMP projects would have no or negligible impacts on air quality and climate change. For example, projects such as sidewalks, trails, stormwater drainage features, outdoor courtyards and memorials, and parks would not produce ongoing emissions, so there would be no long-term impact.

Some RPMP projects would reduce air emissions compared to the baseline, resulting in a long-term minor beneficial impact. For example, demolishing a facility and removing its HVAC system, back-up generator, or other emissions-producing equipment would reduce air emissions. Renovating a facility and replacing its equipment with lower emission equipment would also reduce air emissions. Projects that would provide mass transit or walking and bicycling facilities would reduce automobile use, thereby reducing air emissions.

Implementing energy and climate resilience measures—both as standalone projects or as components of other projects—would reduce the installation's contribution to climate change by minimizing GHG emissions and prepare it to withstand the effects of climate change through resilient siting and design of buildings and infrastructure, resulting in long-term minor beneficial impacts. Section 2.2.3.2 provides examples of energy and climate resilience measures.

Some RPMP projects—specifically most new buildings and some utility infrastructure projects—would increase emissions; for example, by introducing new emissions sources to the installation such as HVAC systems, back-up generators, transformers, and refrigeration units or increasing vehicle emissions. Any new stationary sources of air emissions would be reviewed by the installation's air program staff to determine if they would be subject to air permitting regulations, and any required permits would be obtained or modified accordingly prior to installation and operation. In accordance with AR 210-20, planners would consider low-emission options for all emissions-producing equipment. Vehicle emissions are unlikely to increase substantially due to implementing UFC 2-100-01 development strategies to reduce the number and length of vehicle trips. Therefore, long-term impacts would not exceed moderate adverse.

Under the General Conformity Rule, a proposed RPMP project in a nonattainment or maintenance area that would introduce new emission sources would require an applicability analysis to ensure that its total direct and indirect emissions would not exceed the *de minimis* thresholds. If emissions would not exceed the *de minimis* thresholds, the rule would not apply and a RONA would be prepared. If emissions would exceed the *de minimis* thresholds, a formal conformity determination would be

prepared, the RPMP project would have the potential for significant adverse effects, and additional NEPA analysis might be required.

As described above, some RPMP projects would increase emissions somewhat while others would decrease them. As the RPMP is implemented over time, the installation's portfolio of pollutant-generating equipment and operations would change. Whether future overall level of emissions would be higher or lower than baseline emissions would vary from installation to installation depending on the exact mix of projects implemented; however, guided by DoD's policies to increase energy efficiency, energy conservation, and energy and climate resilience and reduce automobile use, many garrisons' future overall emissions would likely be less than current baseline levels, resulting in a long-term minor beneficial impact.

3.2.5.2.3 Mitigation Measures and Best Management Practices

No mitigation measures would be necessary to reduce adverse impacts to below significant levels. Under the Proposed Action, IMCOM installations would implement the following BMPs, as applicable, many of which are already standard practice at IMCOM installations, to manage air emissions:

- Consider low-emission options for all emissions-producing equipment (e.g., HVAC systems, generators, transformers, and refrigeration units).
- To suppress dust during ground-disturbing activities, cover or apply water or soil stabilizers to soil. Limit or halt soil-disturbing activities during high-wind conditions.
- Limit driving on unpaved surfaces to necessary vehicles only and drive slowly on unpaved surfaces.
- Cover soil stockpiles and trucks transporting soil or other materials that could cause airborne dust.
- Use electricity from established power sources rather than generators whenever possible.
- Service equipment in accordance with the manufacturer's recommendations and repair equipment promptly to prevent excess emissions.
- Minimize vehicle and equipment idling times.
- Clean excess soil from heavy equipment and trucks leaving the work zone to prevent off-site transport.

3.2.5.3 Impacts of the No Action Alternative

Under the No Action Alternative, each garrison would continue to use its existing process to conduct master planning. Individual garrisons' processes, although not standardized, would be conducted in accordance with UFC 2-100-01 and AR 210-20,

and installation RPMPs would be in compliance with NEPA. Furthermore, each garrison's RPMP would identify and implement projects in compliance with all applicable laws and regulations, including the CAA and NEPA. Therefore, the impacts on air quality and climate change from implementing the No Action Alternative would be similar to those expected under the Proposed Action and would include short-term minor-to-moderate adverse impacts and long-term impacts ranging from minor beneficial to moderate adverse.

3.3 BIOLOGICAL RESOURCES

3.3.1 Definition of the Resource

Biological resources include plants, animals (including insects), and microorganisms and the habitats in which they reside. They include both common and rare species and habitats and vary widely depending on location. Certain plants, animals, and habitats are less common or more sensitive to disturbance than others. Species can be present at a location year-round or only during certain times such as during migration or breeding periods.

Military installations restrict human access due to safety and security concerns and many of them have large areas of undeveloped land. Because they are relatively undisturbed, many IMCOM garrisons and other military installations have become important locations for plants and animals and their habitats and host endangered, threatened, or otherwise unique or sensitive species and their habitats (DoD 2017b; NatureServe 2011). IMCOM garrisons are the ROI for biological resources.

3.3.2 Regulatory Framework

Federal regulations applicable to biological resources include, but are not limited to, the Endangered Species Act (ESA) (16 U.S.C. § 1531 *et seq.*), Marine Mammal Protection Act (MMPA) (16 U.S.C. § 1361 *et seq.*), Migratory Bird Treaty Act (MBTA) (16 U.S.C. § 703 *et seq.*), Bald and Golden Eagle Protection Act (BGEPA) (16 U.S.C. § 668 *et seq.*), Magnuson–Stevens Fishery Conservation and Management Act (16 U.S.C. § 1801 *et seq*.), Coastal Zone Management Act (CZMA) (16 U.S.C. § 1451 *et seq*.), and Sikes Act (16 U.S.C. § 670 *et seq.*). The ESA, MMPA, MBTA, and BGEPA make it illegal to kill or harm (i.e., "take") species that they protect except under the terms of a permit issued by the applicable federal agency. The ESA protects about 1,400 species of plants and animals. The MMPA protects all marine mammal species, including cetaceans (whales, dolphins, and porpoises), all sirenians (manatees and dugongs), and several marine carnivores (seals, otters, walrus, and polar bears). The MBTA protects more than 1,000 species of migratory birds, and the BGEPA protects two species of birds (bald and golden eagles).

In accordance with Section 7 of the ESA, IMCOM garrisons are required to determine if protected species might be present in the area of a proposed action and might be

affected by that action. IMCOM garrisons comply with Section 7 of the ESA through coordinating or consulting with the U.S. Fish and Wildlife Service (USFWS) during project planning. For potential impacts on marine and anadromous species protected by the ESA and/or MMPA, IMCOM coordinates or consults with the National Oceanic and Atmospheric Administration (NOAA) Fisheries (previously known as the National Marine Fisheries Service).

The Sikes Act and DoD Instruction (DoDI) 4715.03, *Natural Resources Conservation Program* (August 31, 2018) require all DoD installations with substantial natural resources to prepare and implement an INRMP that describes the installation's biological resources and how they will be managed to comply with applicable regulations. To support preparation and update of the INRMP, each IMCOM garrison conducts appropriate surveys to document biological resources on their installation.

AR 200-1 is the primary Army regulation related to biological resources. It provides guidance on ensuring the sustainability, conservation, and protection of biological resources on Army installations to enable compliance with applicable federal regulations.

3.3.3 Planning Considerations

UFC 2-100-01 includes the following planning strategies that support the conservation and preservation of biological resources:

- *Conservation of natural resources (Section 2-3)*, which directs planners to consider natural resources in the planning process, including protection of federally listed threatened and endangered species and their habitats and sensitive resources such as wetlands, forests, and undisturbed land.
- *Land preservation (Section 2-3.1)*, which directs planners to preserve undeveloped and minimally developed land to the maximum extent possible.
- *Growth boundary (Section 2-6.2)*, which directs planners to define a growth boundary around the cantonment area and focus development within it, preserving areas outside it for ecological functions, training, and other appropriate uses.
- *Sustainable landscape elements (Section 2-2.7)*, which directs planners to incorporate planted areas into project designs and select species appropriate to that ecoregion.
- *Low-impact development and stormwater management (Section 2-2.8)*, which directs planners to minimize runoff that can adversely affect aquatic habitats.
- *Compact, infill, and multistory development (Sections 2-2.1, 2-2.2, and 2-2.9)*, which directs planners to develop land efficiently for human convenience and land preservation purposes.

UFC 2-100-01 and AR 210-20 require that data on biological resources be collected and used to inform the master planning process. Both documents direct planners to coordinate with installation natural resource managers early in the planning process to identify biological resource constraints (e.g., critical habitat, threatened or endangered species habitat, and wetlands) and avoid proposing projects that would be detrimental to those resources.

IMCOM installations might also have one or more planning documents related to biological resources, including INRMPs, Endangered Species Management Plans (ESMPs), Wildlife Aircraft Strike Hazard (WASH) plans, Invasive Species Management Plans (ISMPs), Integrated Wildland Fire Management Plans, and Integrated Pest Management Plans (IPMPs). These plans should inform and be informed by the RPMP.

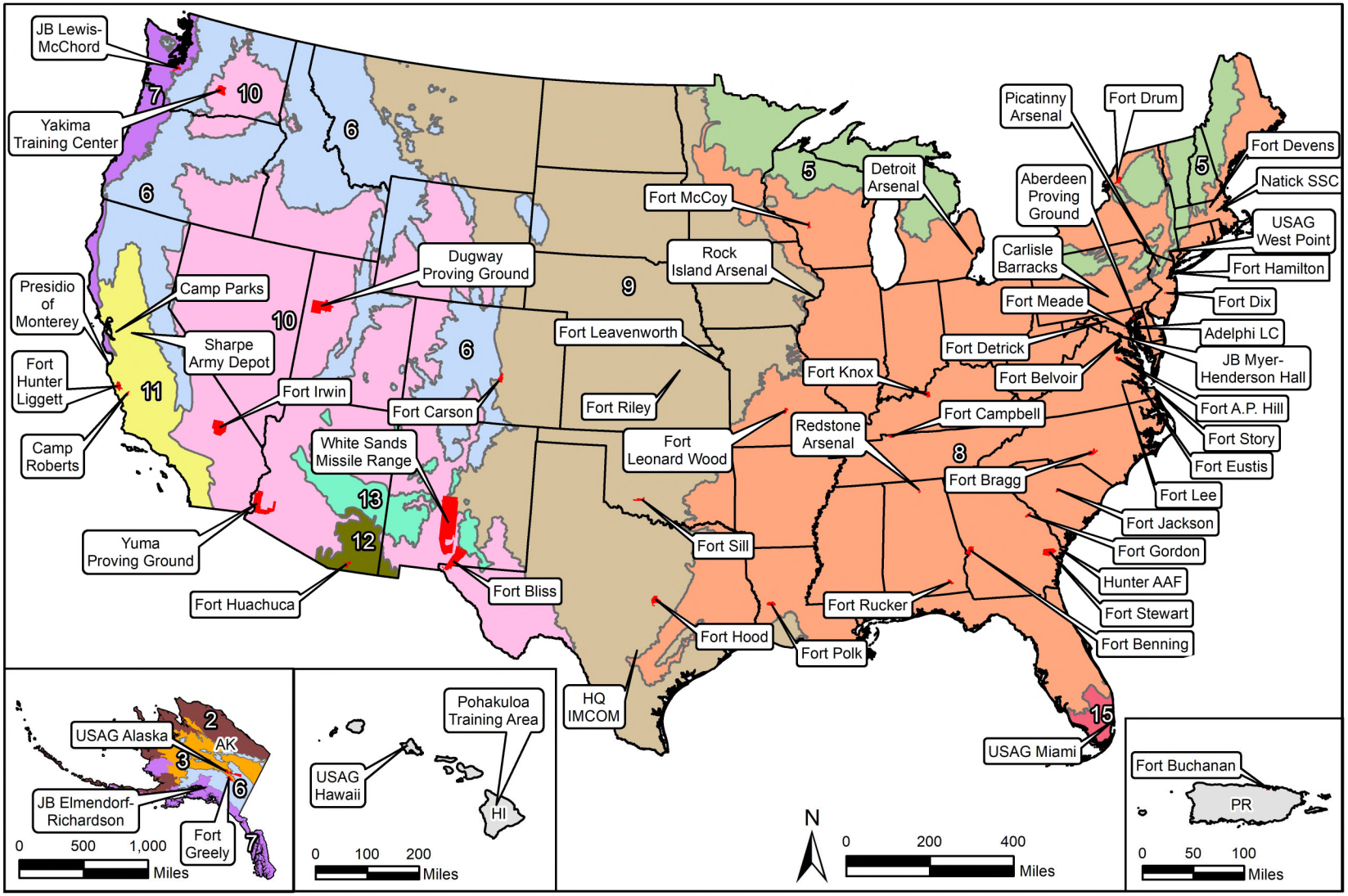
3.3.4 Affected Environment

Biological resources vary by location, as shown in Figure 3, which depicts ecoregions in the United States. Each ecoregion is an area in which ecosystems are generally similar. As shown in Figure 3, IMCOM installations are located in a variety of ecoregions ranging from deserts to temperate forests. In addition, localized variations in biological resources occur within a single IMCOM installation. For example, a single installation might have forests, aquatic habitats, and grasslands, with different species of plants and animals inhabiting each area.

Although the native vegetation and wildlife can vary greatly across and within IMCOM garrisons, the developed cantonment areas of all the installations are similar in that each one has been converted to a landscape of managed vegetation, characterized by lawns and ornamental trees and shrubs, some of which are not native to the location.

The cantonment areas provide limited habitat value for wildlife, attracting mostly common species that tolerate human activity.

ESA-listed species are found on some IMCOM installations, and a few installations contain ESA-designated critical habitat. Marine mammals such as whales and seals, which are protected by the MMPA, occur in the waters off some IMCOM installations with coastal areas. IMCOM is required to consult with the USFWS or NOAA Fisheries if a proposed action at any of its installations could adversely affect species or habitats protected by the ESA or MMPA. Per DoDI 4715.03, procedures for complying with federally listed threatened and endangered species management and recovery efforts on garrisons with ESA-listed species are included in a garrison's INRMP and emphasize military mission requirements and interagency cooperation during consultation, species recovery planning, and management activities.



LEGEND

- 2 - Tundra
- 3 - Taiga
- 5 - Northern Forests
- 6 - Northwestern Forested Mountains
- 7 - Marine West Coast Forest
- 8 - Eastern Temperate Forests
- 9 - Great Plains
- 10 - North American Deserts
- 11 - Mediterranean California
- 12 - Southern Semi-Arid Highlands
- 13 - Temperate Sierras
- 15 - Tropical Wet Forests

Level I Ecoregions of the United States

Figure 3

Source: USEPA 2019. Note: Hawaii and Puerto Rico are not included in Level 1 Ecoregion classifications.

Migratory birds, which are protected by the MBTA, are found at all IMCOM installations and bald and golden eagles, which also are protected by the MBTA as well as the BGEPA, are found at some. The MBTA also protects nests occupied by eggs or young birds and the BGEPA protects both active and inactive nests from disturbance. Under the BGEPA, nest avoidance zones must be sized as indicated in the *National Bald Eagle Management Guidelines* (USFWS 2007) or through consultation with the USFWS. In a 2014 Memorandum of Understanding (MOU) between the DoD and USFWS, the agencies agreed to promote the conservation of migratory bird populations while sustaining the use of military lands and airspace (DoD and USFWS 2014). In the MOU, DoD agreed to review best practices outlined in USFWS guidance and to consult with USFWS, as needed, when conducting development on military lands.

Birds nest in trees, shrubs, and on the ground. To avoid adversely impacting nesting birds protected by the MBTA, most garrisons make it standard practice to avoid removing vegetation during the bird breeding season and, if vegetation must be removed during that time, to have a qualified biologist conduct a survey no more than a few days prior to vegetation removal to determine if any active nests (i.e., nests with eggs or young) are in the affected area. If a nest is found, an appropriate buffer would be established and the nest would not be disturbed until the young have fledged or the nest is no longer in use.

Most IMCOM garrisons host species that are not protected by federal law but that research indicates warrant active conservation. These include candidates for listing on the ESA, species protected by state laws, and Birds of Conservation Concern identified by the USFWS pursuant to the Fish and Wildlife Conservation Act (16 U.S.C. §§ 2901-2911). IMCOM installations take steps to conserve these species to the maximum extent possible without compromising the military mission through procedures established in an installation's INRMP in accordance with DoDI 4715.03.

Noxious, invasive, and nuisance plants and animals also occur at IMCOM garrisons. These species can harm the environment by degrading habitat and outcompeting native species and can harm human health by causing injury or disease. They are managed in accordance with EO 13112, *Invasive Species*, which includes federal agency responsibilities for preventing the introduction of invasive species and controlling populations of the species in a cost-effective and environmentally sound manner. As applicable, IMCOM installations prepare ISMPs and/or IPMPs to document species of concern and the methods that will be used to address them.

3.3.5 Environmental Consequences

3.3.5.1 Significance Criteria

An alternative would be expected to have a significant adverse impact on biological resources if it would result in (1) an unpermitted take of a federally protected species (e.g., under the ESA, MBTA, MMPA, or BGEPA); (2) detrimental alteration of USFWS-

designated critical habitat; (3) local extirpation of a sensitive nonfederally listed species; (4) substantial detrimental effect on the amount or diversity of common native wildlife or plant communities; or (5) high probability of increasing the spread of nonnative or invasive species.

3.3.5.2 Impacts of the Proposed Action

The Proposed Action would have short-term impacts ranging from minor to moderate adverse and long-term impacts ranging from minor beneficial to minor adverse on biological resources as described in this section.

3.3.5.2.1 Developing, Adopting, and Updating RPMP Component Documents

Developing, adopting, and updating RPMP component documents involve the establishment of goals and procedures for real property management that would have no direct impact on biological resources. Careful consideration of biological resources during the planning process, however, would aid in minimizing adverse impacts on them in the future. Viewed in this light, the impacts of developing, adopting, or updating an RPMP component document would range from minor beneficial to minor adverse.

Driven by compliance with UFC 2-100-01, AR 210-20, and DoDI 4715.03, IMCOM garrisons would fully consider measures to protect biological resources during the master planning process, and implement appropriate measures to the extent practicable in relation to the military mission. Master planners would be required to gather and analyze data about protected species, their habitats, and other important biological resources and locate projects to avoid them to the maximum extent practicable. To identify biological resource-related constraints, planners would refer to the garrison's Geographical Information System (GIS) data, INRMP (prepared in compliance with DoDI 4715.03), ESMP, floodplain maps, other biological survey data, and any previously agreed-upon mitigation actions for guidance on protecting biological resources (e.g., actions agreed upon through consultation or coordination with USFWS or NOAA Fisheries and/or included in a Biological Opinion).

Developing or updating an RPMP component document might trigger the need for a new or updated study of biological resources to more accurately understand the presence or absence of a protected species, the extent and condition of specific types of habitat (e.g., critical habitat, wetlands, floodplains), or the health of a population. Studies that might need to be conducted or updated include a threatened and endangered species survey or a wetland delineation.

By following the UFC's guidance on low-impact development, RPMPs would plan to minimize stormwater runoff, which would reduce soil erosion and protect water quality in surface waters, minimizing impacts on aquatic biota and habitat. Sustainable landscape elements would result in landscaped areas, even in areas with high human presence,

that are more similar to local native habitats than traditional ornamental landscaping, resulting in a long-term minor beneficial impact on vegetation and wildlife habitat.

Developing, adopting, and updating an RPMP component document would have long-term minor beneficial impacts on biological resources. These impacts would result from implementing UFC 2-100-01 Section 2-3.1, *Land Preservation*, which directs planners to preserve undeveloped and minimally developed land in order to have land to meet future mission requirements critical to training, sustaining, and deploying our forces. Land preservation would support IMCOM military missions by providing for training and security, serving as a visual and noise buffer with surrounding areas, and conserving biological resources. Establishing growth boundaries and planning for compact, infill, and multistory development would minimize the footprint of the built environment and concentrate development in the installation core, which is already impacted by development and human presence to the extent that it provides low-value habitat for plants and animals. Identifying facilities for demolition and planning for redevelopment on previously disturbed land would minimize impacts to undisturbed land whose functioning ecological processes are unaltered by human activity.

3.3.5.2.2 Implementing RPMP Projects

Implementing RPMP projects would result in short-term impacts ranging from minor to moderate adverse impacts and long-term impacts ranging from minor adverse to minor beneficial impacts on biological resources.

Project Construction. Short- and long-term impacts from construction activities (including renovation and demolition) would range from no impact to moderate adverse.

Construction activities would involve ground disturbance, sometimes disturbance of aquatic habitats such as wetlands, and vegetation removal unless the construction is on a developed or previously-developed site where vegetation is predominantly absent. In vegetated areas in which construction occurs, it would reduce the amount of vegetation and available habitat for wildlife. Construction would be expected to be focused toward the garrison's core, much of which has already been transformed to an ornamental landscape with frequent human activity that consequently provides low-value habitat for most species. Common species of plants and animals would be displaced; however, areas around facilities would be revegetated following construction, so the impact would be short term and would not have a substantial detrimental effect on the amount or diversity of common plant and animal species. Depending on the mix of projects to be implemented, construction in one location could be offset by demolition and habitat restoration in other parts of the garrison. New construction may also take place on the site of a recent demolition activity, thereby avoiding impacts to vegetation and natural habitat. Therefore, the overall short- and long-term impacts of construction would range from minor to moderate adverse.

IMCOM installations that have protected species have specific procedures in their INRMP and ESMP to avoid unpermitted takes of these species or detrimental alteration of their designated critical habitat. For example, most garrisons make it standard practice to conduct a preconstruction survey to determine if protected species or their nests, roosts, or dens are in the area prior to conducting vegetation removal, ground disturbance, or renovation or demolition activities. Implementing those practices would minimize the potential for an unpermitted take of a protected species or local extirpation of a sensitive nonfederally listed species. Therefore, short- and long-term impacts on these species would range from no impact to moderate adverse.

If the project has the potential to adversely impact protected species, formal or informal project-specific consultation with the USFWS or NOAA Fisheries would be initiated and any required take permit would be obtained prior to construction. Any additional conservation measures identified through consultation or included as conditions of the permit would be implemented to minimize impacts on protected species or their critical habitat. By implementing the measures agreed upon through the consultation, short- and long-term adverse impacts would not exceed moderate.

Ground-disturbing activities associated with construction would also increase the potential for establishment of noxious, invasive, or pest plants (e.g., weeds). Construction vehicles and equipment might bring in or spread noxious, invasive, or pest plants. Also, those types of species are often the first to establish themselves in disturbed areas. Most garrisons have standard practices to wash construction vehicles when they enter or exit bare soil areas and to revegetate areas with species from the garrison's approved plant list promptly after construction is complete. These BMPs would minimize the potential for the spread of noxious, invasive, or pest plants, so short- and long-term adverse impacts would be minor.

Some garrisons have policies that prevent designated trees from being removed and/or require that new trees be planted to replace any trees that are removed. Contracts would require construction contractors to obtain garrison approval prior to removing any trees, so no trees that the garrison wishes to preserve would be removed without approval. Contracts would also require construction contractors to plant replacement trees using species from the garrison's approved plant list when necessary, so the long-term adverse impact of tree removal would be minor.

Aquatic habitats in surface waters (e.g., ponds, streams, and wetlands) are vulnerable to sedimentation, which could be exacerbated by ground-disturbing activities near watercourses if adequate protections are not implemented. Construction contractors would be required to prepare and implement a Stormwater Pollution Prevention Plan (SWPPP) for construction projects near surface waters that would disturb one acre or more. The SWPPP would contain appropriate BMPs to protect surface waters. For projects near surface waters that would disturb less than one acre, most garrisons still require that construction contractors implement BMPs similar to those found in an

SWPPP, which could include silt fences and revegetation (see earth resources [Section 3.5] and water resources [Section 3.13]). The BMPs would minimize the potential to adversely impact aquatic habitats, including wetlands, so short- and long-term adverse impacts would be minor.

Project Operation and Maintenance. Long-term impacts would result from habitat modification in areas in which new or additional development would occur and facility maintenance activities would be periodically conducted, with impacts ranging from minor adverse to minor beneficial.

Project operations and maintenance would be conducted in compliance with the ESA, MBTA, and other laws protecting biological resources. For example, personnel responsible for project operations would avoid take of migratory birds, protected bat species, or other protected species by scheduling maintenance activities such as painting or making minor repairs to avoid migratory birds or protected bat species nesting or roosting on or in facilities. Operations and maintenance activities in and around airfields and helipads are also guided by installation WASH plans, plans that adhere to compliance requirements while ensuring aviation safety. Therefore, operations and maintenance would not result in the unpermitted take of a protected species.

Activities such as mowing or other vegetation maintenance can displace or kill small wildlife species. Garrisons with property requiring those activities implement seasonal mowing or vegetation maintenance restrictions to reduce potential impacts on protected species such as ground-nesting migratory birds. Installations with those restrictions would continue their practices when conducting grounds maintenance activities; therefore, impacts would be minor.

Activities involving pest control—such as spraying weeds—could impact biological resources. All pest control would be conducted in accordance with the installation's IPMP and ISMP, as applicable. By following those plans, applicable regulations, and manufacturers' instructions for applying pesticides, adverse effects on nontarget species would be minimal, so adverse impacts would be minor.

Long-term minor beneficial impacts would result from incorporating UFC 2-100-01 guidance on sustainable landscaping into projects. Sustainable landscaping elements would offset vegetation removed during construction or even increase the amount and/or diversity of native vegetation at a project site. For example, an area that was a lawn with a mix of native and nonnative grasses prior to construction, but after construction, contained real property improvements that included a variety of native grasses, shrubs, and trees arranged to resemble local native conditions would represent improved habitat conditions compared to the baseline, resulting in a minor beneficial impact.

The primary purpose of some RPMP projects would be to have a long-term minor beneficial impact on biological resources. For example, a project to restore a stream would enhance the aquatic and riparian habitat along the stream. Projects to designate or expand open space and parks, and projects to improve wildlife habitat would conserve or enhance biological resources in those areas.

RPMP operation and maintenance activities would have no impact on biological resources on undisturbed land, which includes designated buffer areas created to meet safety requirements or to minimize military noise impacts to neighboring communities. In areas not slated for near-term redevelopment, in which existing facilities or activities would be removed or relocated, native vegetation would be restored, resulting in a minor beneficial impact.

IMCOM garrisons would be responsible for ensuring project operations comply with all applicable laws, ordinances, and regulations, including the ESA, MBTA, BGEPA, and, when applicable, the related state requirement. They also would be responsible for ensuring compliance with any previously agreed-upon conservation measures intended to protect biological resources (e.g., those included in a Biological Opinion) as well as with applicable garrison plans, including the INRMP, ESMP, ISMP, and IPMP.

Real property operations and maintenance projects would implement BMPs for other resources areas such as earth resources (Section 3.5), noise (Section 3.9), and water resources (Section 3.13). Those BMPs would also benefit biological resources by protecting aquatic habitats, preventing sediments and other contaminants from being released into water or soil, and limiting outdoor noise levels so long-term adverse impacts on biological resources would be minor.

3.3.5.2.3 Mitigation Measures and Best Management Practices

No mitigation measures would be necessary to reduce adverse impacts to below significant levels. Under the Proposed Action, IMCOM garrisons would manage impacts on biological resources by implementing the following BMPs, most of which are already standard practice at IMCOM garrisons, as applicable:

- Avoid vegetation removal (e.g., tree removal, tree trimming, brush removal, or disturbance of vegetated ground) during the migratory bird breeding season and protected bat roosting season (typically spring to late summer). Specific dates would depend upon the species present locally and would be specified in the garrison's INRMP. If vegetation must be removed during that time, have a qualified biologist conduct a preconstruction survey to identify nests, maternity roosts, burrows, and other wildlife shelters of concern and determine the most appropriate action to take to comply with species protection requirements (e.g., establishing buffers around nests or rescheduling construction activities). The preconstruction survey would be conducted close enough to the start of

construction activities that no substantial changes in the interim period would be likely.

- Inspect and/or wash vehicle tires prior to vehicles entering and exiting construction areas with disturbed ground to reduce the potential spread of invasive species.
- Promptly revegetate disturbed areas with native plant species from the garrison's approved plant list.
- Comply with any installation tree removal and replacement policies.
- For construction projects, implement an approved SWPPP and/or appropriate erosion and sedimentation control BMPs such as silt fences, straw bale dikes, diversion ditches, limiting total area of disturbance, and sedimentation ponds.

3.3.5.3 Impacts of the No Action Alternative

Under the No Action Alternative, each garrison would continue to use its existing process to conduct master planning. Actions with a potential to adversely affect biological resources would continue to be evaluated through project- and site-specific NEPA analysis and would comply with UFC 2-100-01; AR 210-20, AR 200-1, the ESA, MBTA, MMPA, BGEPA, and other applicable laws, EOs, and regulations; consultation outcome requirements (e.g., Biological Opinions); permitting requirements; and BMPs of any garrison-specific plans such as an INRMP, ESMP, ISMP, or IPMP. Garrisons' existing master planning processes would plan for real property development to avoid an unpermitted take of a federally protected species or detrimental alteration of its designated critical habitat, avoid local extirpation of a sensitive nonfederally listed species, avoid a substantial detrimental effect on the amount or diversity of common wildlife or plant communities, and prevent increasing the spread of nonnative or invasive species. Biological resources would continue to be managed in compliance with garrison-specific management plans and applicable federal, state, and local laws and regulations. Therefore, the impacts on biological resources from implementing the No Action Alternative would be similar to those expected under the Proposed Action and would include short-term impacts ranging from minor to moderate adverse and long-term impacts ranging from minor beneficial to minor adverse.

3.4 CULTURAL RESOURCES

3.4.1 Definition of the Resource

Cultural resources are physical manifestations of human culture and history such as archaeological sites, historic properties and districts, traditional cultural properties (TCPs), and sacred sites. They include physical structures and objects, locations of important historic events, and aspects of the natural environment such as natural features of the land or biota that are part of traditional ways of life. The ROI for cultural

resources is IMCOM installations and off-post properties to the extent that on-post undertakings have the potential to effect the integrity of off-post cultural resources.

3.4.2 Regulatory Framework

Cultural resources include historic properties as defined by the National Historic Preservation Act (NHPA) (54 U.S.C. § 300101 *et seq.*); cultural items as defined by the Native American Graves Protection and Repatriation Act (NAGPRA) (25 U.S.C. § 3001 *et seq*.); archaeological resources as defined by the Archaeological Resources Protection Act (ARPA) (16 U.S.C. §§ 470aa–mm); sacred sites as defined in EO 13007, *Indian Sacred Sites*, to which access is provided under the American Indian Religious Freedom Act (AIRFA) (42 U.S.C. § 1996); and collections as defined in 36 C.F.R. Part 79, *Curation of Federally Owned and Administrated Archaeological Collections*. Cemeteries are included in this analysis, although they are not necessarily cultural resources as defined in the NHPA.

DoD is required to take into account the potential effects of its actions on historic properties eligible for or listed on the National Register of Historic Places (NRHP) and areas that are considered sacred sites by Tribes. Historic properties include buildings, structures, archaeological and historic sites, districts, and objects. Generally, resources evaluated for eligibility are 50 years old or more, although there are exceptions, particularly for resources associated with the Cold War era. Resources of undetermined eligibility are treated as historic properties until a determination is made.

In accordance with Section 106 of the NHPA, codified in 36 C.F.R. Part 800, federal agencies must take into account the potential effects of their proposed actions on historic properties. The NHPA does not mandate preservation of historic properties, but it does ensure that federal agencies' decisions concerning the treatment of those properties result from meaningful consideration of cultural and historical values, and identification of options available to protect the properties. As part of the Section 106 process, agencies are required to consult with the State Historic Preservation Officer (SHPO), Tribes, and other relevant consulting parties (e.g., state and local historic preservation commissions or local historical societies).

Programmatic Agreements (PAs) and Program Comments allow IMCOM installations to proceed with actions addressed in them without further action to comply with Section 106 of the NHPA. Examples of these include the following:

- World War II Temporary Buildings Demolition Programmatic Agreement
- Program Comment for Cold War Era (1946–1974) Unaccompanied Personnel Housing
- Program Comments for World War II and Cold War (1939–1974) Ammunition Storage Facilities, Production Facilities, and Plants

As a federal agency, DoD has a trust responsibility to Tribes to protect tribal cultural resources and to consult with Tribes on a government-to-government basis regarding those resources. The regulations mandate that federal agencies consult with any Native American Tribe or Native Hawaiian or Alaskan organization that attaches religious and cultural significance to historic properties that may be affected by an undertaking (36 C.F.R. § 800.2(ii)). DoD Instruction 4710.02, *Department of Defense Interactions with Federally Recognized Tribes*, outlines tribal consultation protocols and actions to respect the significance that Tribes ascribe to resources of traditional cultural or religious importance.

3.4.3 Planning Considerations

UFC 2-100-01 includes the following planning strategies relevant to cultural resources:

- *Infill development* and *multistory construction (Sections 2-2.2 and 2-2.9)* direct planners to consider impacts on historic properties and districts when planning infill and multistory construction.
- *Natural, historic, and cultural resource management (Section 2-3)* directs planners to coordinate with the installation Cultural Resources Manager early in the planning process, identify the location of known cultural resources (e.g., historic districts, historic properties, and archaeological sites), and take into account the potential impacts of the Proposed Action on historic properties eligible for or listed on the NRHP and on sacred sites. When historic properties or districts have the potential to be affected, planning will comply with the NHPA and avoid, minimize, reduce, or mitigate any adverse effects on historic properties or districts in consultation with the SHPO, Tribes, and other relevant consulting parties.

UFC 2-100-01 and AR 210-20 require that historic properties and districts be preserved to the maximum extent possible and that, when these resources have the potential to be affected, planning must comply with Section 106 of the NHPA and avoid, minimize, reduce, or mitigate any adverse effects on historic properties or districts in consultation with the SHPO, Tribes, and other relevant consulting parties.

The Army is authorized to use the Army Alternate Procedures, a streamlined process Army installations can elect to follow to satisfy NHPA consultation requirements. The Army Alternate Procedures approaches the installation's management of historic properties programmatically, instead of on a project-by-project review basis. It allows installations whose Historic Properties Component plans have been certified by the Advisory Council on Historic Preservation (ACHP) to operate under standard operating procedures (SOPs) that were developed in consultation with their stakeholders. A few Army installations have received their ACHP certifications and use the Army Alternate Procedures.

Cultural resources on IMCOM installations are managed through an ICRMP that includes SOPs to enable the installation to meet its legal responsibilities pertaining to cultural resources. The RPMP should inform and be informed by the ICRMP.

3.4.4 Affected Environment

Cultural resources vary from installation to installation depending on the cultural history of the installation. As of the end of FY 2017, Army installations (a broader category that includes IMCOM installations) collectively had the following known cultural resources:

- 88,371 archaeological sites with 50 percent of lands surveyed
- 58,120 buildings subject to the NHPA, approximately 12,000 of which are officially designated as historic properties
- 21 national historic landmarks
- 120 sacred sites and 18 TCPs (DA 2017b)

Areas of installations that remain relatively undisturbed might contain archaeological sites and resources (e.g., natural features or biota) that have traditional cultural or sacred significance that have not yet been identified. Intact and previously unidentified archaeological deposits might also be found in areas of the built environment, depending on the types and location of ground disturbance that have occurred.

TCPs are eligible for inclusion in the NRHP if they are rooted in a living community's history and are important to maintaining the continuing cultural identity of that community (NPS 1998). In such cases, they are considered historic properties and are subject to Section 106 consultation. In addition, culturally sensitive sites that pertain to Tribes' distinct values, beliefs, and ways of living, even if they do not meet the criteria for historic properties, might be protected by other cultural resources laws and EOs, such as AIRFA and EO 13007. These properties can be assessed only through consultation with Tribes and/or Native Hawaiian or Alaskan organizations.

3.4.5 Environmental Consequences

3.4.5.1 Significance Criteria

An alternative would be expected to have a significant adverse impact on cultural resources if it would (1) result in adverse effects, as defined by the NHPA, on a historic property listed or eligible for listing on the NRHP that are not resolved through a Memorandum of Agreement (MOA) with the SHPO, and possibly with the ACHP or (2) create conditions that would stop the traditional use of sacred or ceremonial sites or resources by a Tribe or Tribes, without discussions on a government-to-government level with the affected Tribe(s).

3.4.5.2 Impacts of the Proposed Action

The Proposed Action would have short-term minor adverse impacts and long-term impacts ranging from none to moderate adverse as described in this section.

3.4.5.2.1 Developing, Adopting, and Updating RPMP Component Documents

Developing, adopting, and updating RPMP component documents involve the establishment of goals and procedures for real property management that would have no direct impact on cultural resources. When developed in accordance with UFC 2-100-01 and AR 210-20, RPMPs would carefully consider development constraints related to cultural resources. As required by UFC 2-100-01, master planners would coordinate with the garrison Cultural Resources Manager early in the planning process to ensure that proposed development would be sited appropriately given those constraints.

Master planners would refer to the garrison's ICRMP and related GIS data to gather data about cultural resources and develop the RPMP to avoid them to the maximum extent possible. The RPMP would also reflect any previously agreed-upon mitigation actions for cultural resources (e.g., actions agreed upon through consultation or coordination with the SHPO, ACHP, and Tribes).

Developing or updating an RPMP component document might trigger the need for a new or updated study of cultural resources to determine if archaeological sites are present in an area, a building or other object is a historic property, an area is a historic district, or a resource has cultural significance to a Tribe. If such a study is needed, it would be conducted in a timely manner to inform the development or updating of an RPMP.

When historic properties or districts have the potential to be affected, planning would comply with the NHPA and avoid, minimize, reduce, or mitigate any adverse impacts on historic properties or districts in consultation with the SHPO, Tribes, or other relevant consulting parties. By following the UFC's guidance on infill and multistory construction, the RPMP would avoid or mitigate potential impacts of those types of development on historic properties and districts. Through appropriate coordination of Installation Planning Standards' developments and updates, master planning activities could address applicable elements of historic properties and districts. Although some RPMPs would propose changes with the potential to affect a historic property or district, because those impacts would be avoided or appropriately mitigated through compliance with NHPA and consultation with the SHPO, Tribes, or other relevant consulting parties, the long-term adverse impacts of developing, adopting, and updating RPMP component documents would not exceed moderate.

3.4.5.2.2 Implementing RPMP Projects

Implementing RPMP projects would have short-term minor adverse impacts and long-term impacts ranging from none to moderate adverse.

Project Construction. The potential for project construction activities (i.e., construction, demolition, and renovation) to affect cultural resources would depend primarily on their proposed location in relation to those resources. Construction activities on sites containing cultural resources would primarily impact those resources by physically altering the building characteristics or damaging archaeological sites through ground disturbance. Similarly, construction activities near cultural resources would primarily impact the setting of those resources. Construction could also impact cultural resources by preventing access to them (e.g., by preventing Tribes from accessing ceremonial sites).

Avoidance of impacts—both to the resource itself and its setting—is the preferred action for construction activities. Avoidance would be accomplished through site selection and design and engineering. Physically impacting cultural resources would be avoided to the maximum extent possible by siting projects as a whole and ground disturbance associated with project construction to avoid cultural resources. For example, a project that would develop a site on which an archaeological site is present could prevent impacts by avoiding that area and an appropriate buffer around it. Impacting the setting of a cultural resource would be avoided to the maximum extent possible by designing projects so they would not impact the integrity of the cultural resource. For example, a new or renovated building in a historic district would be designed so the cultural integrity of the historic district would be maintained. Where avoidance is not feasible or reasonable, impacts would be reduced through measures that can be related to project siting, size, and design.

Construction could also impact cultural resources by preventing access to them (e.g., by preventing Tribes from accessing sacred or ceremonial sites). That adverse impact would usually be temporary and thus would be minor. Construction would also introduce temporary noise and visual elements that would affect the setting of nearby cultural resources; however, those adverse impacts would be temporary and thus would be minor.

For projects near a cemetery, site design would ensure that substantive direct impacts on the cemetery would be avoided. An appropriate buffer around the cemetery would be established prior to project construction. Additionally, access to the cemetery for visitation and maintenance would be maintained during the construction period to the maximum extent possible.

Many installations have installation-specific PAs covering one or more types of activities, which reduces the number of occurrences for which project-specific consultation is required. When project construction has the potential to have an adverse impact on a historic property, the garrison would follow the procedures contained in any relevant PA or ACHP Program Comment that applies to the type of undertaking or type of historic property involved. If no PA or Program Comment applies, then undertaking-specific consultation would be conducted with the SHPO, Tribes, and other relevant

consulting parties to identify and mitigate the impact as required by Section 106 of the NHPA. Through the Section 106 process, the consulting parties would develop an MOA to document agreed-upon measures to reduce adverse impacts to a less-than-significant level. The Section 106 process would be completed prior to approving the expenditure of funds on the undertaking.

When project construction has the potential to result in an adverse impact on cultural resources, construction practices that would minimize the potential for impacts would be implemented. They would include minimizing areas of ground disturbance and establishing buffer zones around existing cultural resources to avoid impacts. Proposed projects requiring ground disturbance in areas not yet surveyed for cultural resources would require surveys prior to construction. Projects that include changes or additions to historic buildings or structures would minimize adverse effects through project design and use of historically appropriate materials and construction methods.

Cultural resources might be inadvertently discovered during construction. For all projects involving ground disturbance, the installation's ICRMP policy on inadvertent discovery of cultural resources would apply. If an inadvertent discovery of human remains or other cultural resources occurs during construction, work would stop, the garrison Cultural Resource Manager would be notified, and project personnel would comply with the applicable legal and regulatory requirements governing such a finding. For construction in an area of high cultural sensitivity, the garrison Cultural Resource Manager might require or a Tribe might request the presence of an archaeologist to monitor ground-disturbing activities.

Programmatically, the impacts of construction on cultural resources would range from none to moderate adverse. No impacts would occur if the project site contains no cultural resources and is not a culturally sensitive location. Impacts up to long-term moderate adverse would occur when cultural resources are present on or near the site, even though mitigation measures to avoid and minimize impacts would be implemented.

Project Operation and Maintenance. Most adverse impacts on cultural resources would be the result of altering a cultural resource or its setting. Those impacts would occur during the construction phase but would be long-term since they would endure during the project's operation and maintenance phase. Any potential impacts from project operation and maintenance would be addressed through the NHPA Section 106 process, which would be completed prior to implementing the project and would include agreed-upon measures to reduce adverse impacts to a less-than-significant level. For installations with PAs in place to address real property operations and maintenance, and for which NHPA Section 106 consultation is therefore complete, PA-specified measures to reduce adverse impacts would be implemented and adverse impacts would be less than significant. Therefore, long-term adverse impacts would not exceed moderate.

3.4.5.2.3 Mitigation Measures and Best Management Practices

For projects that would not impact an NRHP-listed or -eligible historic property or district, no mitigation measures would be necessary to reduce adverse impacts to below significant levels.

For projects that would impact an NRHP-listed or -eligible historic property or district, the installation Cultural Resources Manager would follow the procedures contained in any relevant PAs or Program Comments applicable to the undertaking or resource to mitigate the impact. If no relevant PA or Program Comment exists, then the garrison would consult with the SHPO and other relevant consulting parties through the NHPA Section 106 process to identify possible adverse impacts on historic properties, modifications to the project to avoid or minimize those impacts, and appropriate measures to mitigate the adverse impacts. The specific mitigation measures would be determined on a case-by-case basis and implementing them would be sufficient to reduce adverse impacts to below significant levels.

No BMPs other than compliance with applicable laws and regulations; permits; and Army and installation programs, policies, and plans would be necessary, including those in the ICRMP such as its procedure for inadvertent discovery of archaeological resources.

3.4.5.3 Impacts of the No Action Alternative

Under the No Action Alternative, each garrison would continue to use its existing process to conduct master planning. Actions with a potential to adversely affect cultural resources would continue to be evaluated through project- and site-specific NEPA analysis and would comply with UFC 2-100-01, AR 210-20, AR 200-1, NHPA, NAGPRA, ARPA, EO 13007, AIRFA, other applicable laws and regulations, and the SOPs in each garrison's ICRMP. Garrisons' existing master planning processes and compliance with applicable laws and regulations—including consultation with SHPO, ACHP, and Tribes, as necessary—would be sufficient to plan for real property development and management that appropriately protects and preserves cultural resources. Therefore, impacts on cultural resources from implementing the No Action Alternative would be similar to those expected under the Proposed Action and would include short-term minor adverse impacts and long-term impacts ranging from none to moderate adverse.

3.5 EARTH RESOURCES

3.5.1 Definition of the Resource

Earth resources include geology, soils, topography, geologic hazards, mineral resources, paleontological resources, and unique landforms. The geology of an area is its rocks, land, and processes of land formation. Soils are a mixture of organic materials, clay, rock, and other minerals that form the Earth's upper layer. Topography

is the shape of the land's surface, including its relief and the position of its natural and man-made features. Geologic hazards include earthquakes and subsidence (i.e., sinkholes) and can endanger human lives and threaten property. Mineral resources are substances formed naturally in the ground that can be extracted for a useful purpose such as iron ore or gravel. Paleontological resources are the fossilized remains of plants and animals. Unique landforms such as rock outcroppings can be valuable aesthetic or cultural resources. The ROI for earth resources is IMCOM installations.

3.5.2 Regulatory Framework

Relevant regulations for earth resources include those that regulate soil erosion to limit its impact on air and water quality. The National Pollutant Discharge Elimination System (NPDES) program requires that construction site operators obtain a construction site stormwater runoff permit for projects that disturb one or more acres of land. The permit requires an Erosion and Sedimentation Control Plan as part of a site-specific SWPPP to limit soil loss from construction-related stormwater runoff.

Section 438 of the Energy Independence and Security Act of 2007 (EISA) (42 U.S.C. § 17001 *et seq*.) requires any federal development or redevelopment project exceeding 5,000 square feet to maintain the site's predevelopment hydrology and prevent a net increase in stormwater runoff. On IMCOM installations, low-impact development techniques are applied in accordance with UFC 3-210-10, *Low Impact Development*. UFC 2-100-01 also requires low-impact development techniques to manage stormwater.

Scientifically significant paleontological resources are regulated by the Antiquities Act of 1906 (16 U.S.C. § 431–433).

Building codes (the International Building Code, and state and local modifications) set minimum standards for building design and intended use relative to the topography, soils, and geologic hazards of an area.

3.5.3 Planning Considerations

UFC 2-100-01 includes the following planning strategies relevant to earth resources:

- *Low-impact development and stormwater management (Section 2-2.8)* directs planners to minimize impervious surfaces and manage stormwater on-site to minimize runoff and soil erosion.
- *Sustainable landscape elements (Section 2-2.7)* directs planners to incorporate vegetation into project designs. Vegetative cover slows and absorbs stormwater, limiting erosion.
- *Compact and infill development (Sections 2-2.1 and 2-2.2)* direct planners to focus development toward the installation core and on-site projects on previously developed land when possible.

- *Building orientation and configuration (Section 2-2.10)* directs planners to consider topography to preserve solar access and natural ventilation.
- *Land preservation (Section 2-3.1)* and *growth boundaries (Section 2-6.2)* direct planners to preserve undeveloped and minimally developed land to the maximum extent possible.

UFC 2-100-01 and AR 210-20 state that data for earth resources should be collected during the planning process so installation personnel can properly consider related constraints on land use and development during the RPMP process.

Information about earth resources, including hazards such as earthquakes and geological formation shifts resulting from earthquakes, and standard BMPs for soil erosion are documented in a garrison's INRMP, and information about paleontological resources and unique landforms with cultural significance is documented in the garrison's ICRMP. The RPMP should inform and be informed by those plans.

3.5.4 Affected Environment

Earth resources vary from installation to installation, and from place to place within a single installation. As previously stated, installation-specific information about earth resources is documented in the installation's INRMP and ICRMP as well as in the installation's geographic information system data. Some installations have conducted specific surveys for earth resources, particularly if they have identified or have a high potential for unique earth resources. Data about earth resources are also publicly available from the U.S. Geological Survey and Natural Resources Conservation Service Web Soil Survey. This section provides general information about earth resources at IMCOM installations.

Geology, Geologic Hazards, and Unique Landforms. The geology of an area—including geologic hazards and unique landforms—can influence the area's development potential, contaminant distribution and migration, groundwater occurrence and movement, and what vegetation and habitats are viable there. Some installations have very steep slopes and unique landforms such as rock outcroppings or sand dunes that constrain development while others do not. Likewise, some installations have moderate or high potential for geologic hazards such as earthquakes or subsidence while others have little or none.

Earthquake potential is estimated based on the location of fault lines and seismic hazard zones. Alaska is the most earthquake-prone state, followed by Oklahoma, California, Nevada, Wyoming, and Hawaii (USGS 2019a, 2019b). From 2010 to 2015, only 10 states had no recorded earthquakes of magnitude 3 or higher: Delaware, Florida, Georgia, Iowa, Massachusetts, New Jersey, Pennsylvania, Rhode Island, Vermont, and Wisconsin (USGS 2019b). In areas with high seismicity, building codes

provide guidance on how to design and construct structures to limit seismic risk (FEMA 2014).

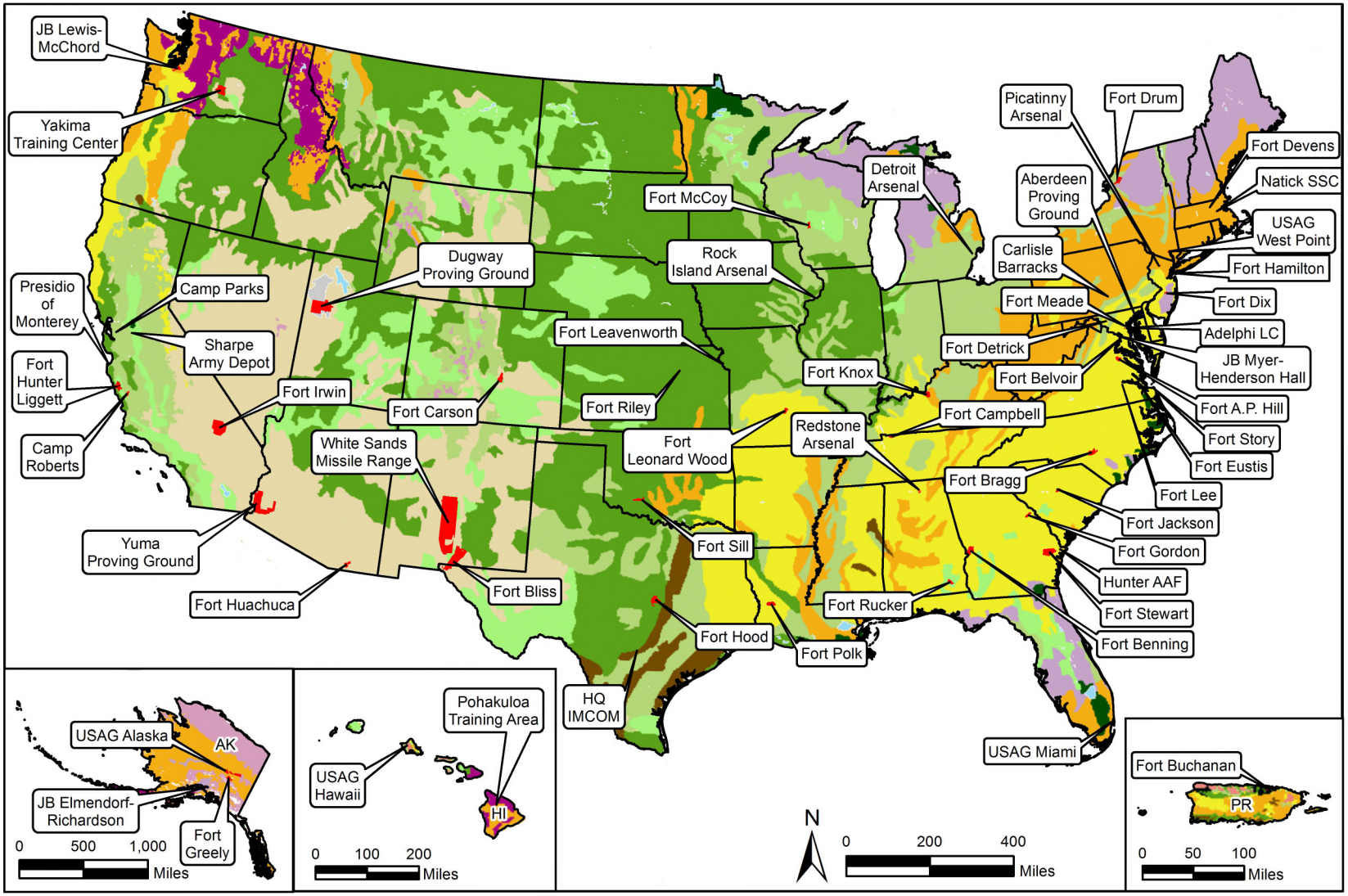
Subsidence in the form of sinkholes is most common in karst terrain, where underground rock can naturally be dissolved by water, creating underground spaces. The most damage from sinkholes tends to occur in Alabama, Florida, Kentucky, Missouri, Pennsylvania, Tennessee, and Texas (AGI 2019; USGS 2019c). IMCOM installations in karst terrain or with high subsidence potential for other reasons have established measures for designing and building structures to limit the risk of subsidence.

When necessary, IMCOM installations conduct geotechnical studies to assess subsurface geology and geologic hazards. The results of the studies provide the basis for design and construction recommendations specific to a site's geology and soil conditions and to limit risk when geologic hazards are identified.

Soils. Soils at IMCOM installations represent a wide variety of types, from sand to loam to clay, as well as combinations of those types. Figure 4 depicts soil types across the United States. Each type of soil has different physical characteristics such as texture, permeability, and erosion potential that affect its ability to support certain applications or uses, including building construction and agriculture. Different soil types also support different types of vegetation, with soils containing more nutrients (i.e., topsoil) generally supporting more vigorous plant growth.

When soil erosion occurs, it not only can adversely impact surface waters and air quality, it can reduce the soil's ability to support vegetation and, in severe cases, affect structural foundations. Although natural processes such as wind and rain cause erosion, human development can accelerate it by increasing soil exposure to those processes.

Soils that have the best combination of physical and chemical characteristics to support agriculture are called prime farmland (including unique farmland and farmland of statewide or local importance). The Farmland Protection Policy Act (7 U.S.C. § 4201–4209) was established to minimize the contribution of federal programs to the unnecessary and irreversible conversion of farmland to nonagricultural uses. In general, restrictions on development because of the presence of prime farmland are not applicable to DoD lands per 7 U.S.C. § 4208(b) and 7 C.F.R. § 658.3(b). Some IMCOM garrisons, however, have agricultural and grazing leases and use a portion of their lands for those purposes.



LEGEND

Dominant Soil Order

- Alfisols
- Andisols
- Aridisols
- Entisols
- Gelisols
- Histosols
- Inceptisols
- Mollisols
- Oxisols
- Spodosols
- Ultisols
- Vertisols

Soils of the United States

Figure 4

Source: USDA NRCS 2019.

Topography. Topography at the IMCOM installations is variable and ranges from coastal lowlands and flat plateaus to rolling hills and steeply sloped terrain. The topography of an area—primarily slope and aspect—can influence the area's development potential and stormwater runoff patterns. IMCOM installations make it standard practice to assess topographic suitability and identify topographic constraints when planning and designing proposed projects. Garrisons avoid building on steep or unstable slopes to the maximum extent possible and, if building in those areas is necessary, ensure that projects are designed to minimize impacts and risk.

Mineral and Paleontological Resources. Although mineral deposits are present on some IMCOM installations and can be economically valuable, mining of mineral resources on installations is typically limited. The predominant mining operations that do occur are in support of on-post gravel and fill requirements. Some IMCOM installations have identified paleontological resources or the potential for the existence of these resources, which are valuable for scientific study. Those garrisons have documented measures to manage and preserve those resources and procedures for inadvertent discovery of them in their ICRMP.

3.5.5 Environmental Consequences

3.5.5.1 Significance Criteria

An alternative would be expected to have a significant adverse impact on earth resources if it would (1) induce waterborne soil erosion resulting in sedimentation that would violate federal or state water quality laws; (2) induce windborne soil erosion that would violate federal or state air quality laws; or (3) expose people or structures to substantial earth-related hazards by locating structures on a geologic unit or soil that is unstable or that would become unstable as a result of the project, potentially resulting in a landslide, lateral spreading, subsidence, liquefaction, or collapse.

3.5.5.2 Impacts of the Proposed Action

The Proposed Action would have short- and long-term impacts on earth resources ranging from minor beneficial to minor adverse as described in this section.

3.5.5.2.1 Developing, Adopting, and Updating RPMP Component Documents

Developing, adopting, and updating RPMP component documents involve the establishment of goals and procedures for real property management that would have no direct impacts on earth resources. When developed in accordance with UFC 2-100-01 and AR 210-20, RPMPs would carefully consider constraints and opportunities related to earth resources including geology, topography, soil, and earth-related hazards (such as sinkholes and earthquakes). Master planners would coordinate with environmental personnel to site proposed development to avoid constraints and take advantage of opportunities. Earth resource management measures in the garrison's INRMP and ICRMP would continue to be protective of earth resources. Therefore,

developing, adopting, and updating RPMP component documents would have no adverse impacts on earth resources.

Incorporating guidance on low-impact development techniques would minimize stormwater runoff, which would reduce soil erosion, protecting the soils themselves and water quality in nearby surface waters. Sustainable landscape elements would be planned for vegetated areas that would further stabilize soils. These planning strategies would result in RPMPs that would realize minor beneficial impacts on earth resources.

By incorporating guidance on land preservation, establishing growth boundaries, and planning for compact and infill development, the RPMP would result in minimizing the footprint of the built environment and preserving undeveloped land, which would aid in conserving earth resources. That approach would minimize impacts on previously undisturbed soils and limit creation of new impervious surfaces. These planning strategies would result in no or negligible impacts on earth resources.

By incorporating guidance on building orientation and configuration, the RPMP would site new facilities, particularly buildings, to take advantage of existing topography for natural lighting and ventilation and, when applicable, for solar arrays. Leveraging existing topography in this way would not adversely impact topography, so no adverse impacts on earth resources would result.

Developing, adopting, and updating RPMP component documents would have no adverse planning-level impacts on the remaining earth resources—geology, mineral and paleontological resources, and unique landforms. The RPMP would identify relevant features and propose development that would not significantly impact those resources.

3.5.5.2.2 Implementing RPMP Projects

Implementing RPMP projects would have short- and long-term minor adverse impacts on earth resources.

Project Construction. Nearly all RPMP projects would include construction activities (including demolition and renovation) that would disturb soils through vegetation removal, excavation, grading, trenching, drilling, and/or soil compaction. The soil disturbance would increase the potential for erosion by removing topsoil or other native soil types, mixing native and nonnative soil types, and exposing soil to wind and water.

Some applicable state and local laws require construction site operators to control windborne erosion (e.g., fugitive dust). Even in areas without such laws, it is standard practice at IMCOM installations to implement BMPs to control or minimize fugitive dust. Examples of those BMPs include applying water or other stabilizers to exposed soils, limiting vehicle speeds on unpaved surfaces, minimizing or temporarily stopping ground-disturbing activities during periods of high wind speeds, and training staff on fugitive dust control practices. In some cases, construction contractors would be

required to prepare and implement a Fugitive Dust Control Plan. RPMP projects would not induce windborne soil erosion that would violate federal or state air quality laws; therefore, short-term adverse impacts would be minor.

For each RPMP project of one acre or more, the construction site operator would be required to obtain a NPDES permit and prepare a site-specific SWPPP specifying BMPs to minimize erosion caused by stormwater runoff. Examples of those BMPs include silt fences, inlet protection, diversion ditches, and training staff on erosion and sediment control practices. In some cases, construction contractors would also be required to prepare and implement an Erosion and Sedimentation Control Plan. RPMP projects would not induce soil erosion that would result in sedimentation that would violate federal or state water quality laws; therefore, short-term adverse impacts would be minor.

It is standard practice at IMCOM installations to require construction site operators to promptly establish permanent ground cover using native vegetation, mulch, or other appropriate cover materials after ground-disturbing activities are complete. It is also a common construction practice to minimize the amount of grading a project would require and to use soil excavated from higher areas as fill for lower areas (referred to as "balanced cut-and-fill") to minimize the need to import or export earthen material. Those practices would limit impacts on soils, topography, and geology, so short- and long-term adverse impacts on these resources would be minor.

Ground-disturbing activities would be sited to avoid known scientifically significant paleontological resources; however, they could inadvertently uncover such resources. In accordance with standard practice at IMCOM installations, if a construction contractor inadvertently discovers scientifically significant paleontological resources, work would stop, and the installation's Cultural Resource Manager would be notified and would assess the discovery before work could proceed. Therefore, long-term adverse impacts on scientifically significant paleontological resources would be minor.

Construction would not significantly impact geology, mineral resources, or unique landforms, as RPMP projects would be sited to avoid those resources or would not penetrate the earth deeply enough over a large enough area to have a substantial impact.

Project Operation and Maintenance. New, expanded, or reconfigured facilities such as buildings, roads, and parking lots built on undeveloped land would introduce impervious surfaces to areas where they did not previously exist. Examples of those projects include construction of new buildings, roads, sidewalks, and hard-surface courtyards. This action would change stormwater runoff patterns in those areas.

As required by the EISA, DoD policy, UFC 2-100-01, and UFC 3-210-10 (see Section 3.5.2), RPMP projects would incorporate low-impact development techniques to

maintain the predevelopment hydrologic conditions through infiltrating, filtering, storing, evaporating, and detaining stormwater runoff close to its source. These techniques would allow for on-site stormwater retention and management, offsetting the impact of impervious surfaces and limiting the potential for erosion and sedimentation. For some projects, implementing low-impact development techniques for stormwater management would represent improved conditions compared to the baseline. Therefore, long-term impacts from these types of projects would range from minor beneficial to minor adverse.

Some IMCOM installations are in areas with earth-related hazards such as karst terrain or other areas where subsidence could occur, areas with steep or unstable slopes, or seismically active areas. It is standard practice at IMCOM installations to conduct a geotechnical survey when a site has or may have these or other earth-related hazards. The results of the studies provide the basis for recommendations of appropriate design and engineering parameters to minimize risk or indicate that the site was unsuitable for the proposed project. Because IMCOM installations would conduct a geotechnical survey when earth-related hazards exist or need further study and implement the survey's recommendations, RPMP projects would not expose people or structures to substantial earth-related hazards, and short- and long-term adverse impacts would not exceed moderate.

Operation and maintenance of some RPMP projects would involve ground disturbance; for example, repairs of parking lots, roads, sidewalks, airfield surfaces, and underground utility infrastructure. When applicable, these activities would require plans and permits to comply with applicable regulations. For example, some activities would require dig permits, NPDES permits, SWPPPs, Fugitive Dust Control Plans, and/or Erosion and Sedimentation Control Plans. Those permits and plans would specify the control measures and BMPs required to be implemented to avoid or minimize adverse impacts, and impacts would be limited to the duration of the activity. Therefore, short-term adverse impacts would be minor.

Projects that would remove or reduce the footprint of existing facilities would reduce the amount of impervious surface in an area, minimizing the potential for erosion by allowing stormwater to percolate into the ground and resulting in a long-term minor beneficial impact. As a BMP, soils in areas where impervious surfaces are removed should be "scarified" (broken up) to reduce soil compaction and allow precipitation to naturally infiltrate. Vegetation should be established promptly to prevent erosion.

RPMP operation and maintenance activities would have no impact to geological resources on undisturbed land, which includes land deemed unsuitable for development (e.g., steep slopes, geological hazards) and designated buffer areas created to meet safety requirements or to minimize military noise impacts to neighboring communities.

3.5.5.2.3 Mitigation Measures and Best Management Practices

No mitigation measures would be necessary to reduce adverse impacts to below significant levels. IMCOM garrisons would implement the following BMPs, as applicable, most of which are already standard practice at IMCOM installations, to manage impacts on earth resources:

- Minimize soil erosion that could result in fugitive dust by implementing appropriate control measures such as applying water or other stabilizers to exposed soils, limiting vehicle speeds on unpaved surfaces, minimizing or temporarily stopping ground-disturbing activities during high-wind conditions, and training staff on fugitive dust control practices.
- Minimize soil erosion that could result in sedimentation of surface water during ground-disturbing activities by implementing appropriate control measures such as silt fences, inlet protection, diversion ditches, and training staff on erosion and sediment control practices.
- After finishing ground-disturbing activities, promptly establish permanent ground cover using native species from the garrison's approved plant list, mulch, and/or other appropriate cover materials (e.g., rock, gravel).
- Scarify soils in areas where impervious surfaces have been removed to reduce soil compaction and allow precipitation to infiltrate naturally.
- To the extent possible, limit construction in areas with earth-related hazards such as karst terrain or other areas where subsidence could occur, areas with steep or unstable slopes, or seismically active areas. When construction in such areas is necessary, conduct a geotechnical study and implement its recommended measures to limit risk.

3.5.5.3 Impacts of the No Action Alternative

Under the No Action Alternative, each garrison would continue to use its existing process to conduct master planning. Actions with a potential to adversely affect earth resources would continue to be evaluated through project- and site-specific NEPA analysis and would need to comply with AR 200-1, AR 210-20, UFC 2-100-01, garrison-specific management plans and standard BMPs, and other applicable regulations and permitting requirements. Construction site operators would need to obtain NPDES permits and prepare erosion and sediment control plans, fugitive dust control plans, and SWPPPs when required by applicable federal, state, and local regulations. Therefore, impacts on earth resources from implementing the No Action Alternative would be similar to those expected under the Proposed Action and would include short- and long-term minor adverse impacts.

3.6 HAZARDOUS MATERIALS AND WASTE

3.6.1 Definition of the Resource

Hazardous materials and waste are substances that could present substantial danger to public health or the environment if released or improperly managed. They can be solid, semi-solid, liquid, or gas. Military munitions, explosives, and petroleum products are addressed in this section. The ROI for hazardous materials and waste is IMCOM garrisons and their surrounding communities to the extent that hazardous materials and waste might affect those communities.

3.6.2 Regulatory Framework

Hazardous materials and waste are regulated by the following federal laws: CAA; Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) (42 U.S.C. § 9601), also known as Superfund; Federal Insecticide, Fungicide, and Rodenticide Act (7 U.S.C. § 136 *et seq.*); Occupational Safety and Health Act (29 U.S.C. § 651 *et seq.*); Resource Conservation and Recovery Act (RCRA) (42 U.S.C. § 6901 *et seq.*); Solid Waste Disposal Act (42 U.S.C. § 82), as amended by RCRA; and Toxic Substances Control Act (15 U.S.C. § 2601 *et seq.*). Businesses and agencies are required to adhere to these and other applicable federal, state, and local laws and regulations to minimize the possibility of harm to humans and the environment from the use, transport, and disposal of these materials.

The primary Army regulation for hazardous materials and waste on IMCOM installations is AR 200-1. AR 200-1 implements applicable federal, state, and local laws and DoD policies guiding the use, storage, transport, and disposal of these materials.

3.6.3 Planning Considerations

As required by UFC 2-100-01, AR 210-20, and AR 200-1, the master planning process must identify constraints posed by hazardous materials and waste and plan real property development accordingly. Proposed projects in or close to restoration sites, in areas with land-use controls, or in or near explosive safety arcs (e.g., ESQD arcs) must recognize the limitations placed on land use in those areas and plan accordingly. Planning must be coordinated with installation environmental and safety personnel to determine which projects are suitable for those areas.

IMCOM installations have multiple management plans related to hazardous materials and waste, including Hazardous Materials and Waste Management Plans; Restoration Site Cleanup and Monitoring Plans; Spill Prevention, Control, and Countermeasures (SPCC) Plans; Asbestos and Lead-Based Paint Management Plans; and Integrated Solid Waste Management Plans. The RPMP should inform and be informed by these plans.

3.6.4 Affected Environment

IMCOM garrisons use hazardous materials and generate hazardous waste daily in support of mission operations and readiness. Typical hazardous materials used on IMCOM installations include cleaning supplies, antifreeze, gasoline, diesel fuel, oil, lubricants, degreasers, solvents, batteries, pesticides, and explosive and pyrotechnic devices. The installations manage hazardous materials and waste and the facilities in which they are used or generated in accordance with applicable regulations and DoD and Army policies.

As a result of past practices and activities, hazardous materials and waste have been released to soil and groundwater in certain areas at many IMCOM installations. Those sites, called “restoration sites,” have been or are being investigated and remediated in accordance with CERCLA and RCRA and are included in the DoD’s Defense Environmental Restoration Program, which includes the Army’s Installation Restoration Program and Military Munitions Response Program. Examples of restoration sites include liquid disposal sites, unregulated dumps, soil contamination areas, closed firing ranges, industrial facilities, and landfills.

In some cases, restoration sites are not restored to their original condition and are managed through land-use controls. Land-use controls are any physical, legal, or administrative mechanism that restricts the use of, or limits access to, real property to prevent or reduce risks to human health, safety, and the environment. Common land-use controls include restricting the property’s future use to nonresidential use, not allowing digging, and not allowing groundwater to be used for drinking.

Older facilities at IMCOM installations might contain hazardous building materials such as asbestos and lead-based paint that require special management and disposal.

3.6.5 Environmental Consequences

3.6.5.1 Significance Criteria

An alternative would be expected to have a significant adverse impact on hazardous materials and waste if it would (1) expose people or substantially increase their risk of exposure to hazardous substances, including explosives, without adequate protection; (2) substantially increase the risk of spills or releases of hazardous substances; (3) disturb restoration sites or the progress of cleanup activities at those sites so that adverse effects on human health or the environment could result; (4) conflict with established land-use controls; or (5) result in noncompliance with applicable federal, state, or local laws and regulations; or with permits related to hazardous materials and waste.

3.6.5.2 Impacts of the Proposed Action

The Proposed Action would have short- and long-term minor adverse and minor beneficial impacts on hazardous materials and waste as described in this section.

3.6.5.2.1 Developing, Adopting, and Updating RPMP Component Documents

Developing, adopting, and updating RPMP component documents involve the establishment of goals and procedures for real property management that would have no direct impact on hazardous materials and waste. When developed in accordance with UFC 2-100-01 and AR 210-20, RPMPs would carefully consider constraints on land use because of restoration sites, land-use controls, explosive safety arcs, and operations involving hazardous materials and waste. Master planners would coordinate with environmental personnel to ensure that proposed development would be sited and implemented appropriately within those constraints. Therefore, developing, adopting, and updating RPMP component documents would have no adverse impacts on hazardous materials and waste.

3.6.5.2.2 Implementing RPMP Projects

Implementing RPMP projects would result in short- and long-term minor adverse impacts and long-term minor beneficial impacts on hazardous materials and waste.

Project Construction. Short-term minor adverse impacts would result from the use of hazardous materials and the generation of hazardous waste during project construction (including renovation and demolition). Use of hazardous materials and management of hazardous waste would entail some risk of spills and human exposure. Those risks would be managed by complying with established installation management plans for hazardous materials and waste management; spill prevention and response; and applicable federal, state, and local laws and regulations.

Short-term minor adverse impacts would also result from RPMP projects in which renovation or demolition of structures could expose materials that require special handling such as asbestos-containing materials, lead-based paint, and polychlorinated biphenyls. Those structures for which the presence or absence of hazardous materials is not already documented in installation asbestos, lead-based paint, or other management plans would be surveyed for potentially hazardous building materials prior to disturbance or, in lieu of a survey, be treated as if those materials were present. RPMP projects during which hazardous building materials are removed and disposed of would result in long-term minor beneficial impacts because those materials would no longer pose a threat to human health or the environment.

Installation environmental and safety personnel would be consulted during project planning to ensure that proposed construction, renovation, or demolition projects would not disturb known subsurface contamination, interfere with remedies to address contamination, conflict with established land-use controls, or expose people to risks

from explosives. Should contaminated soils or groundwater be encountered during construction, installation or contractor personnel would manage it in accordance with established installation procedures and applicable federal, state, and local laws and regulations. Therefore, there would be no adverse impacts associated with those risks.

Project Operations and Maintenance. Some RPMP operations and maintenance activities would involve the ongoing use and management of hazardous materials and waste generation. For example, industrial facilities and vehicle and equipment maintenance shops would use a variety of hazardous materials and petroleum products and generate hazardous waste. Swimming pools would store and use chlorine. Utility infrastructure such as electrical substations, generators, and wastewater treatment plants would use and store hazardous materials and petroleum products. Pesticides would be applied when needed to manage undesirable vegetation or nuisance animals.

Long-term minor adverse impacts would result from those RPMP operations and maintenance activities because of the inherent risks of spill and exposure associated with those hazardous materials and waste. However, compliance with established installation management plans and BMPs; applicable federal, state, and local laws and regulations; and permit requirements would manage those risks at an acceptable level; therefore, long-term adverse impacts would be minor.

3.6.5.2.3 Mitigation Measures and Best Management Practices

No mitigation measures would be necessary to reduce adverse impacts to below significant levels. No BMPs other than compliance with applicable laws and regulations; permits; and Army and installation programs, policies, and plans would be necessary. In particular, each garrison has established BMPs for spill prevention and response contained in its SPCC or other management plans. All contractors working on the garrison must also implement these and other BMPs.

3.6.5.3 Impacts of the No Action Alternative

Under the No Action Alternative, each garrison would continue to use its existing process to conduct master planning. Actions with a potential to adversely affect hazardous materials and waste would continue to be evaluated through project- and site-specific NEPA analysis and would comply with UFC 2-100-01, AR 210-20, AR 200-1, applicable laws and regulations and permitting requirements, and any garrison-specific hazardous materials and waste management plans. Garrisons' existing master planning processes would plan for real property development so as not to increase risks or result in incompatibilities with hazardous material and waste management. Hazardous materials and waste would continue to be managed in compliance with installation management plans and programs; and with applicable federal, state, and local laws and regulations. Therefore, the impacts on hazardous materials and waste from implementing the No Action Alternative would be similar to those expected under

the Proposed Action and would include short- and long-term minor adverse and long-term minor beneficial impacts.

3.7 HUMAN HEALTH AND SAFETY

3.7.1 Definition of the Resource

Human health and safety involve managing and protecting people. It encompasses occupational hazards to workers, risks associated with military activities, and risks to the general public of exposure to unsafe or unhealthful environments. Although many activities involve some degree of risk, there are numerous ways to enhance safety and minimize risk. This section focuses on those risks and risks associated with planning constraints such as AT/FP restrictions, surface danger zones, airfield clear zones, ESQD arcs, areas where munitions and explosives of concern (MEC) might be present, and restoration sites. Other aspects of human health and safety are addressed in other resource sections including air quality and GHGs (Section 3.2), hazardous materials and waste (Section 3.6), noise (Section 3.9), and transportation and traffic (Section 3.11). The ROI for human health and safety is IMCOM garrisons.

3.7.2 Regulatory Framework

The Occupational Safety and Health Act of 1970 is the primary federal law concerning health and safety. The Occupational Safety and Health Administration (OSHA) is the federal agency that implements that law.

IMCOM Regulation 385-10, *IMCOM Safety Program*, prescribes IMCOM-specific safety policies, procedures, and responsibilities that are implemented to meet Army and OSHA requirements for human health and safety. The objective of the IMCOM Safety Program is to institutionalize safety and risk management processes in garrison operations to protect the force, protect against accidental loss, conserve resources, and establish a proactive safety culture.

3.7.3 Planning Considerations

UFC 2-100-01 addresses *defensible planning (Section 2-5)*, which directs planners to implement planning strategies that ensure military installations and the people on them are safe and secure. UFC 2-100-01 also requires that data related to human health and safety be considered when preparing RPMPs and their component documents. Data that would assist master planners in defining development constraints related to human health and safety include information about AT/FP restrictions, surface danger zones, airfield clear zones, safety barriers, ESQD arcs, areas where MEC might be present, and restoration sites.

AR 210-20 requires that conditions that can affect human health and safety on the installation, contributing to safety and health, be identified and existing land-use patterns be analyzed to identify constraints.

3.7.4 Affected Environment

Conditions that can affect human health and safety on IMCOM garrisons include unidentified or unmanaged risks associated with a wide range of occupational and military activities. In relation to real property planning, construction and operation of buildings and infrastructure must adhere to applicable UFC, OSHA, Army, and IMCOM regulations and policies. Master planning and project implementation must be compatible with existing land uses such as surface danger zones, airfield clear zones, and restoration sites and avoid or comply with health and safety constraints such as AT/FP restrictions, safety barriers, ESQD arcs, and areas where MEC might be present.

IMCOM installations define surface danger zones and ESQD arcs to keep personnel and/or equipment a safe distance from military activities such as weapons firing, demilitarization, and explosives storage that could endanger them. MEC could be present on closed training ranges and other portions of IMCOM installations. Entry to and ground-disturbing activities within areas where MEC might be present are limited and subject to specific procedures that help minimize safety hazards.

All new construction and major renovations of inhabited DoD buildings must meet appropriate AT/FP standards to provide minimum levels of protection against terrorist attacks for DoD buildings. Measures include appropriate standoff distances from buildings to parking, roads, and other infrastructure and protective design and construction considerations for buildings and other structures. UFC 4-010-01, *DoD Minimum Antiterrorism Standards for Buildings*, and UFC 4-020-01, *DoD Security Engineering Facilities Planning Manual*, provide the primary standards to be implemented.

3.7.5 Environmental Consequences

3.7.5.1 Significance Criteria

An alternative would be expected to have a significant adverse impact on human health and safety if it would (1) substantially increase human exposure to a health hazard or safety risk, or (2) result in noncompliance with or a violation of laws and regulations governing human health and safety.

3.7.5.2 Impacts of the Proposed Action

The Proposed Action would have short-term minor adverse and long-term minor beneficial impacts on human health and safety as described in this section.

3.7.5.2.1 Developing, Adopting, and Updating RPMP Component Documents

Developing, adopting, and updating RPMP component documents involve the establishment of goals and procedures for real property management that would have no impact on human health and safety. When developed in accordance with UFC 2-100-01 and AR 210-20, RPMPs would carefully consider constraints on land use

necessary to protect health and safety, including AT/FP restrictions, surface danger zones, airfield clear zones, safety barriers, ESQD arcs, areas where MEC might be present, and restoration sites. Master planners would coordinate with security, air operations, and environmental personnel to ensure that proposed development would be sited and implemented appropriately with those constraints. Therefore, developing, adopting, and updating RPMP component documents would have no adverse impacts on human health and safety.

3.7.5.2.2 Implementing RPMP Projects

Implementing RPMP projects would result in short-term minor adverse impacts and long-term minor beneficial impacts on human health and safety.

Project Construction. Short-term minor adverse impacts would be expected because of workplace hazards associated with construction, renovation, and demolition activities. To manage those hazards, contractors would be required to comply with OSHA and IMCOM safety regulations and conduct activities in a manner that does not pose any undue risk to human health and the environment. Contractors would be required to prepare project-specific Health and Safety Plans that analyze the risks and hazards associated with their activities and identify how they would be controlled for the duration of the construction period. Although some risk would remain, it would be no greater than the risks normally associated with construction, renovation, or demolition activities and would cease when construction activities were complete, so adverse impacts would be short term and minor.

Project Operations and Maintenance. Long-term minor beneficial impacts would be expected during RPMP operations and maintenance activities. Activities would be located on a secure military installation and would include AT/FP measures. Workforce personnel would adhere to applicable SOPs, Health and Safety Plans, and other safety requirements to eliminate or minimize occupational hazards and risks. Projects such as adding outdoor lighting or enhancing vehicular or pedestrian safety would increase safety and security.

3.7.5.2.3 Mitigation Measures and Best Management Practices

No mitigation measures would be necessary to reduce adverse impacts to below significant levels. No BMPs other than compliance with applicable codes such as National Fire Protection Association, National Electric Code, etc.; laws and regulations; permits; and Army and installation programs, policies, plans, and SOPs would be necessary.

3.7.5.3 Impacts of the No Action Alternative

Under the No Action Alternative, each garrison would continue to use its existing process to conduct master planning. Actions with a potential to adversely affect human health and safety would continue to be evaluated through project- and site-specific

NEPA analysis and would comply with UFC 2-100-01, AR 210-20, AR 200-1, IMCOM Regulation 385-10, applicable federal and state laws and regulations, the garrison's safety program, and project health and safety plans. Garrisons' existing master planning processes would be sufficient to plan for real property development so as not to result in undue risks to human health and safety. Therefore, the impacts on human health and safety from implementing the No Action Alternative would be similar to those expected under the Proposed Action and would include short-term minor adverse and long-term minor beneficial impacts.

3.8 LAND USE

3.8.1 Definition of the Resource

Land use refers to the ways in which land is used or might be developed. Examples of categories of land use include residential, commercial, industrial, military, agricultural, natural, recreational, and mixed-use. In addition to land use, this section also addresses land ownership. Owners and managers of land in the United States include federal, tribal, state, and local governments and private organizations or individuals. The ROI for land use is IMCOM garrisons and adjacent off-post land that might affect or be affected by on-post activities.

3.8.2 Regulatory Framework

To ensure compatible land use and orderly development, communities limit allowable land uses in certain areas by implementing zoning codes and general plans. IMCOM installations use the RPMP to guide land use and development.

AR 210-20 requires Army installations to document environmental factors that could constrain allowable land use such as the location of contaminated sites, natural and cultural natural resources, floodplains, coastal management areas, or noise zones and proximity to high-risk areas (e.g., runways or explosives storage).

3.8.3 Planning Considerations

One of the purposes of the master planning process and the resulting RPMP is to define the conceptual and spatial layout and standards that will guide efficient and compatible land use and development at an IMCOM garrison. The planning process helps installation personnel determine if there is sufficient area for proposed development and identify applicable constraints on development (e.g., sensitive natural or cultural resources or incompatibilities with existing land uses).

With the alignment to UFC 2-100-01, DoD master planning is moving away from applying traditional land-use categories to land areas. Instead, master planners are looking at an installation as a whole and dividing it into districts of compatible use based on geographical features, land-use patterns, building types, and transportation networks. Each district's Regulating Plan addresses acceptable uses and building form

(e.g., height, entry locations, and parking and roadway configurations) together, providing specific information on permitted development within that district.

UFC 2-100-01 includes the following planning strategies relevant to land use:

- *Compact and infill development (Sections 2-2.1 and 2-2.2)*, which directs planners to focus development toward the installation core and site projects on previously developed land when possible.
- *Horizontal and vertical mixed-use development (Sections 2-2.4 and 2-2.5),* which places compatible land uses near each other (e.g., housing and shopping).
- *Transit-oriented development (Section 2-2.3), connected transportation networks (Section 2-2.6),* and *planning for walking, running, and biking (Section 2-4.1),* which require planners to plan for well-connected transportation infrastructure that promotes alternative modes of transportation such as walking, bicycling, and shared ride transit options.
- *Land preservation (Section 2-3.1)* and *growth boundaries (Section 2-6.2)*, which direct planners to preserve undeveloped and minimally developed land to the maximum extent possible.
- *Capacity planning (Section 2-6.1)*, which directs planners to define and not to exceed the development capacity of the installation.
- *Defensible planning (Section 2-5)*, which directs planners to consider security of critical infrastructure and address AT/FP requirements.

Other installation planning documents identify conditions that would constrain allowable land use. For example, the INRMP and ICRMP contain information about the presence of natural and cultural resources and the Installation Action Plan contains information about contaminated sites. Those plans should inform and be informed by the RPMP.

A Preconstruction Environmental Survey and Characterization Report must be completed prior to site approval for applicable projects. This document assesses environmental conditions that could affect the suitability of a site for a proposed project.

3.8.4 Affected Environment

On-Post Land Use. Land at IMCOM installations is under Army management and has a variety of land uses. Land uses that support the day-to-day functions of working and living on the installation are usually concentrated in the cantonment area. Cantonment areas can include administrative buildings, troop housing (barracks) and family housing, retail and commercial businesses (e.g., the commissary, bank, and gas station), medical centers, schools for children living on-post, recreation areas (e.g., playgrounds, ballfields, and fitness centers), airfields, heliports, motor pools, and other mission

support facilities. The density of development is typically higher in the cantonment area than elsewhere on the installation.

Outside of the cantonment are lands used to support the installation's military mission and can include training grounds, airfields, heliports, firing ranges, industrial areas, and storage areas. Undeveloped or minimally developed lands might be used for training, have restricted access for natural or cultural resources protection, and/or serve as buffer zones between military operations and the off-post communities.

Many installations have outgrants in the form of rights-of-way, easements, leases, or permits. Examples include a right-of-way easement for a utility line that grants the utility service provider access to the line for maintenance, or an enhanced use lease under which a property is leased to a private developer who can make improvements to it (e.g., privatized housing or lodging) and lease them to tenants. In addition, some installations lease lands for agriculture or grazing in accordance with AR 405-80, *Management of Title and Granting Use of Real Property*.

Off-Post Land Use. Land use in communities around IMCOM installations varies as does the density of development. Lands adjacent to IMCOM installations include residential areas; commercial retail and office buildings; industrial facilities; local, state, or interstate roads; railroads; agricultural or grazing land; city or state parks; state game lands; and undeveloped public lands managed by the Bureau of Land Management or U.S. Forest Service. Development density ranges from undeveloped to densely developed urban areas.

Most installations were originally established in minimally developed areas; however, land around many of them has and continues to undergo development, leading to potential conflicts. IMCOM installations work with their neighboring communities to identify and resolve encroachment issues that could compromise military training, testing, and readiness.

To address encroachment issues and limit incompatible land use, an installation can prepare a Compatible Use Plan (CUP) (formerly known as a Joint Land Use Study [JLUS]) or implement an Army Compatible Use Buffer (ACUB) program. A CUP identifies encroachment and land-use issues and identifies measures agreeable to all parties to enhance current and future compatibility with no net loss to the military mission. Under the ACUB program, an IMCOM installation can enter into agreements with and provide funds to partners with mutual conservation objectives to establish buffer lands. About 351,400 acres of off-post land are in the ACUB program (DA 2017b).

3.8.5 Environmental Consequences

3.8.5.1 Significance Criteria

An alternative would be expected to have a significant adverse impact on land use if it would (1) substantially conflict with established land uses in the area or create a major land-use incompatibility, (2) physically divide an established community, or (3) be inconsistent with adopted land-use control plans that required regulatory agency acceptance, to include land-use controls for restoration sites and habitat conservation plans to protect endangered species.

3.8.5.2 Impacts of the Proposed Action

The Proposed Action would have no short-term impacts on land use and long-term impacts ranging from none to minor beneficial as described in this section.

3.8.5.2.1 Developing, Adopting, and Updating RPMP Component Documents

Developing, adopting, and updating RPMP component documents involve the establishment of goals and procedures for real property management that would have no direct impacts on land use. The process of developing and updating RPMPs that conform with UFC 2-100-01 and AR 210-20 is designed to result in adopting an RPMP that has already identified land-use constraints, made plans to reduce or resolve existing land-use conflicts, and established a framework for siting new projects to avoid creating land-use incompatibilities. Therefore, developing, adopting, and updating RPMP component documents would have no adverse impacts on land use and would have long-term minor beneficial impacts where existing land-use conflicts are reduced or resolved.

When developed in accordance with UFC 2-100-01 and AR 210-20, RPMPs would carefully consider constraints and opportunities related to land use and coordinate with relevant stakeholders to plan for future land use that would be efficient, site compatible land uses together, and ensure that the Army has land to meet future mission requirements critical to training, sustaining, and deploying our forces. They would identify areas where off-post land use is encroaching or could encroach on the execution of the military mission, and plan to minimize the effects of encroachment with no net loss to the military mission. Planning for on-post land use along installation boundaries would also consider adjoining off-post land uses to avoid creating new conflicts.

By following the UFC's guidance on compact and infill development; horizontal and vertical mixed-use development; transit-oriented development; connected transportation networks; planning for walking, running, and bicycling; and defensible planning, the RPMP would use land efficiently and site compatible uses in proximity to each other while implementing AT/FP measures. Those planning strategies would have no adverse

impacts on land use and would have long-term minor beneficial impacts where existing land-use conflicts are reduced or resolved.

By following the UFC's guidance on land preservation, growth boundaries, and capacity planning, the RPMP would preserve undeveloped and minimally developed land to provide buffers, protect natural and cultural resources, support military training, and allow the installation to meet its future needs. Those planning strategies would have no adverse impacts on land use.

3.8.5.2.2 Implementing RPMP Projects

Implementing RPMP projects would have no short-term impacts and would have long-term impacts ranging from none to minor beneficial on land use.

Project Construction. No impacts would be expected. Project construction (including renovation and demolition) would, by its nature, be a temporary activity, not an enduring land use. Therefore, construction would have no impact on land use.

Project Operation and Maintenance. Long-term impacts ranging from none to minor beneficial impacts would be expected. Some RPMP projects would not change a site's land use, although structures built on the site might change. Since there would be no change to the baseline land use, operation and maintenance activities for those projects would have no impact.

Other RPMP projects would change the land use at a site. For example, a commercial area might become a mixed-use area where commercial, residential, and community facilities are co-located or a road might be constructed in an undeveloped area to enhance the connectivity of the installation's transportation network. The impact of those changes is assessed based on whether they would conflict with established land uses in the area; one type of land use is not considered better or worse than another. Where the land use does change as a result of siting and construction of an RPMP project, RPMP operation and maintenance activities would differ from pre-project operation and maintenance activities, but operation and maintenance, in and of itself, does not change a site's land use.

An RPMP is designed to avoid land use conflicts, integrate compatible land uses, and conserve an installation's limited land resources. As specified in UFC 2-100-01, all implemented projects must be sited in accordance with an approved Master Plan, must meet all guidelines and objectives in the RPMP Regulating Plan and Installation Planning Standards component documents, and must have their sites approved before project design can begin. Because land use, development density, and building form (e.g., size and height) would conform to UFC 2-100-01 and the RPMP, RPMP projects would not create land-use conflicts, would integrate compatible land uses, and would help conserve the installation's limited land resources. Therefore, changing a site's land use would have no long-term adverse impacts.

Some RPMP projects would reduce or resolve existing land-use incompatibilities, resulting in a minor beneficial impact. For example, a project that relocated a noisy facility that is near housing to a part of the installation where such facilities are appropriate would have a beneficial impact by resolving this land-use incompatibility. In addition, RPMP projects that implement the recommendations of a JLUS or CUP or implement an ACUB program would reduce or avoid encroachment issues, resulting in a minor beneficial impact.

In accordance with the CZMA, applicable garrisons would be required to complete a Federal Coastal Zone Consistency Determination prior to implementing a proposed project in a coastal zone. The determination would be submitted to the appropriate state agency for review and approval. Project planners would comply with federal coastal programs before implementing projects, so there would be no significant impact on land use.

3.8.5.2.3 Mitigation Measures and Best Management Practices

No mitigation measures would be necessary to reduce adverse impacts to below significant levels. No BMPs other than compliance with applicable laws and regulations; permits; and Army and installation programs, policies, and plans would be necessary.

3.8.5.3 Impacts of the No Action Alternative

Under the No Action Alternative, each garrison would continue to use its existing process to conduct master planning. Actions with a potential to adversely affect land use would continue to be evaluated through project- and site-specific NEPA analysis and would comply with UFC 2-100-01, AR 210-20, AR 200-1, other applicable laws and policies, and any installation-specific management plans. Garrisons' existing master planning processes would plan for real property development so that no significant adverse impacts on land use would result. In addition, long-term minor beneficial impacts would result from planning for development that would address existing land-use incompatibilities or conflicts. Therefore, the impacts on and use from implementing the No Action Alternative would be similar to those expected under the Proposed Action and would include long-term minor beneficial impacts.

3.9 NOISE

3.9.1 Definition of the Resource

Noise is defined as unwanted sound. Whether a sound is perceived as noise varies depending on factors that include the time of day, source of the sound, distance between the sound source and the receiver, and sensitivity of the receiver. Although exposure to high noise levels has been demonstrated to cause hearing loss, the principal human responses to environmental noise are annoyance and stress.

Sound is measured in decibels (dB) on a logarithmic scale. It also can be expressed as A-weighted decibels (dBA), which approximates how the human ear responds to different frequencies of sound by giving lower weights to low frequency sounds to which humans are less sensitive. A change in sound level of 3 dB or less is barely perceptible by the human ear, while a 10-dB increase or decrease in sound level is perceived as a doubling or halving of sound level. Sound travels differently depending on conditions such as climate, topography, vegetation, and the built environment, but in general sound lessens, or "attenuates," by approximately 6 dB with each doubling of the distance from the source (FTA 2006).

The ROI for noise is the distance from the source at which the noise would attenuate to levels similar to ambient noise levels.

3.9.2 Regulatory Framework

The Noise Control Act of 1972 (42 U.S.C. § 4901 *et seq.*) and the subsequent Quiet Communities Act of 1978 direct federal agencies to comply with state and local noise control regulations in off-post areas. State and local noise ordinances commonly address topics such as noise from construction activities and maximum permissible ambient noise levels for different land-use types (e.g., residential, commercial, and industrial). Noise from construction activities is often exempt from maximum permissible ambient noise levels during certain hours, typically daylight hours on weekdays.

Chapter 14 of AR 200-1 contains the Army's operational noise policy. The regulation defines acceptable noise levels associated with aircraft and small arms and directs installations to prepare noise maps showing contours of the four noise zones to assist in land-use compatibility decisions. Table 2 lists the four noise zones defined in AR 200-1 and their compatibility with noise-sensitive land uses.

Table 2. Army Noise Zones and their Compatibility with Noise-Sensitive Land Uses

Army noise zone	Perceived noise level	Recommended uses
Land-Use Planning Zone	Low	Noise-sensitive land uses acceptable
Zone I	Low	Noise-sensitive land uses acceptable
Zone II	Moderate	Noise-sensitive land uses normally not recommended
Zone III	High	Noise-sensitive land uses not recommended

Source: AR 200-1, Chapter 14.

3.9.3 Planning Considerations

The only direct reference UFC 2-100-01 makes to noise or sound is in Appendix G, which lists an installation's noise contours as one of the typical data layers planners

should use when preparing a constraints map. UFC 2-100-01 includes the following planning strategies relevant to the noise environment:

- *Compact, infill, and horizontal and vertical mixed-use development (Sections 2-2.1, 2-2.2, 2-2.4, and 2-2.5)*, which encourages relatively dense development in some areas, facilitating walking, bicycling, and other alternative modes of transportation.
- *Transit-oriented development (Section 2-2.3), connected transportation networks (Section 2-2.6),* and *planning for walking, running, and biking (Section 2-4.1)*, which encourage development that facilitates alternative modes of transportation such as walking, bicycling, and transit.
- *Capacity planning (Section 2-6.1)*, which directs planners to define and not to exceed the development capacity of the installation.

AR 210-20 states that noise-related data should be collected during the planning process so installation personnel can properly consider noise-related constraints on land use and development as part of the RPMP process.

Many IMCOM installations have Installation Operational Noise Management Plans, which provide a methodology for the installation to apply when analyzing exposure to noise associated with military operations and land-use guidelines for achieving compatibility between the Army and surrounding communities. The plans discuss noise and vibration, mitigation techniques, noise abatement procedures, encroachment/training issues, recommendations for working with local communities, and noise modeling.

The ACUB program is a tool used by some IMCOM installations to prevent or reduce conflicts with off-post land users. The ACUB program enables an installation to work with surrounding landowners to conserve land adjacent to the fenceline so that it will not be developed in ways that would limit the Army's ability to conduct the training and testing operations necessary to fulfill its mission. Noise from aircraft, military training, and other activities often extend off-post, and the ACUB program helps reduce the potential for development of off-post land uses that might be incompatible with noise from military operations.

3.9.4 Affected Environment

Table 3 lists expected background noise levels at IMCOM garrisons by land use type. These levels are typical of the maximum permissible ambient noise levels found in local noise ordinances. Background noise levels vary across installations and are generally reflective of the type of land use in an area. Background noise levels also are higher in busy, highly developed areas and in industrial areas where more machinery is operating, and lower in residential and open space areas where there is less activity. Training areas, airfields, and the areas around them experience periodic increases in

noise levels when training activities such as firing or aircraft flights occur. Construction activities also generate temporary noise, primarily during daylight hours on weekdays.

Table 3. Typical Background Noise Levels at IMCOM Installations

Land use	Maximum sound level (dBA)	
	Daytime	Nighttime
Residential or rural	50–60	45–55
Commercial, administrative, or suburban	60–65	55–60
Industrial or urban	70–75	70–75

Noise-sensitive receptors—areas where occupants are more sensitive to noise—such as homes, schools, childcare facilities, and hospitals exist on IMCOM installations and in the communities around them. In some areas, off-post residences or other sensitive receptors are just outside the installation's boundary. Wildlife species protected from disturbance by law may also be considered noise-sensitive receptors and also might be disturbed by noise.

3.9.5 Environmental Consequences

3.9.5.1 Significance Criteria

An alternative would be expected to have a significant adverse impact on the noise environment if it would result in (1) a violation of an applicable noise ordinance, (2) site incompatible land uses near existing on- or off-post noise-sensitive receptors, or (3) the location of new noise-sensitive receptors in incompatible noise environments (i.e., noise zone II or III).

3.9.5.2 Impacts of the Proposed Action

The Proposed Action would have short-term minor-to-moderate adverse and long-term minor beneficial to minor adverse impacts on noise as described in this section.

3.9.5.2.1 Developing, Adopting, and Updating RPMP Component Documents

Developing, adopting, and updating RPMP component documents involve the establishment of goals and procedures for real property management that would not generate any noise and thus would have no direct impact on the noise environment. Careful consideration of noise during the planning process, however, would aid in minimizing adverse impacts on the installation's future noise environment. Viewed in this light, the long-term indirect impacts of developing, adopting, or updating an RPMP component document would range from minor beneficial to minor adverse.

To comply with the Army's operational noise policy as presented in AR 200-1, master planners, in coordination with other stakeholders, would craft the RPMP so that noisier

facilities and operations are not placed too close to on- or off-post noise-sensitive receptors and new noise-sensitive receptors are not located in incompatible noise environments (i.e., noise zone II or III), so there would be no adverse impact.

When developing or updating RPMP component documents, master planners and other subject matter experts would refer to the installation's noise map and/or Operational Noise Management Plan and craft the RPMP to ensure land-use compatibility and appropriate consideration of noise-sensitive receptors. For installations that have an ACUB program, Operational Noise Management Plan, or other plans or programs that address noise, master planners would ensure that the RPMP does not conflict with those plans or programs.

By following the UFC 2-100-01 guidance on capacity planning, development proposed in the RPMP would not exceed the capacity of the installation and that overall noise levels resulting from real property changes would not increase substantially. Whether noise levels increase, decrease, or stay the same in specific areas would depend on the specific projects proposed in those areas.

UFC 2-100-01 also promotes compact, infill, and mixed-use development, which would support the RPMP envisioning relatively dense development in certain parts of an installation. That level of development would correspond to increases in ambient noise levels in those areas. Noise levels, however, would remain typical of suburban or urban areas. People in those areas would not perceive the noise levels as unusual or inappropriate for a developed area, so the long-term adverse impact would be minor. As a BMP, in densely developed and/or mixed-used areas, engineers should incorporate appropriate levels of sound-dampening construction materials into the design of buildings in which a quiet interior is important such as homes, hospitals, lodging, schools, childcare facilities, offices, and classrooms.

In accordance with UFC 2-100-01, the RPMP would promote transit-oriented development, connected transportation networks, and planning for walking, running, and bicycling. Developing an installation in accordance with these planning strategies would correspond to fewer trips by privately owned vehicles, reducing the overall amount of noise from vehicle traffic, resulting in a minor beneficial impact.

3.9.5.2.2 Implementing RPMP Projects

Implementing RPMP projects would result in short-term minor-to-moderate adverse impacts and long-term minor beneficial to minor adverse impacts. Short-term impacts would be caused by noise associated with construction, and long-term impacts would be caused by additional vehicle traffic, human activity, and noise-producing equipment such as HVAC systems.

Project Construction. All RPMP projects would produce noise during construction activities (including renovation and demolition), with impacts ranging from minor to

moderate adverse. Individual projects that would have shorter construction periods or few pieces of equipment operating simultaneously, or would be located more than 800 feet from sensitive receptors would have minor adverse impacts. Individual projects that would have longer construction periods and many pieces of equipment operating simultaneously, or would be located less than 800 feet from sensitive receptors would have moderate adverse impacts.

Table 4 presents typical noise levels that EPA has estimated for the main phases of outdoor construction activity at distances of 50 feet and 800 feet. The zone of relatively high construction noise would extend up to 800 feet from the site of major equipment operations. Because noise attenuates by approximately 6 dB with each doubling of distance from the noise source, locations farther than 800 feet from construction sites would not experience noteworthy levels of construction noise (FTA 2006).

Table 4. Noise Levels Associated with Outdoor Construction

Construction phase	Sound level (dBA at 50 feet)	Sound level (dBA at 800 feet)
Ground clearing	84	60
Excavation, grading	89	65
Foundations	78	54
Structural	85	61
Finishing	89	65

Source: EPA 1971.

All construction activities would comply with applicable local noise ordinances, including limiting hours of construction to those allowed by the ordinance. If no ordinance exists, as a BMP, construction would still primarily occur during daylight hours on weekdays. All construction activities would implement the industry standard practice of operating construction equipment in accordance with the manufacturer's specifications and with standard mufflers and other noise-reducing equipment in proper operating condition.

On- and off-post sensitive receptors and others more than 800 feet from construction site would not experience noise levels any higher than typical community sounds such as traffic and the operation of landscaping equipment (e.g., lawn mowers) and thus would have no adverse impact. Although on- and off-post sensitive receptors and others within 800 feet of construction sites would experience appreciable noise, because construction would be temporary in duration, audible in a limited area, and primarily done during daylight hours on weekdays when higher sound levels are more tolerable, adverse impacts would not exceed moderate.

For construction activities within 800 feet of on- or off-post noise-sensitive receptors, the following BMPs would be implemented:

- Use equipment mufflers and/or other sound-shielding devices as appropriate.
- Shut down noise-generating equipment when not in use.
- If complaints about noise are received, increase sound-reducing measures appropriately.

Construction traffic would also generate noise while traveling to and from the site; however, it would not add substantially to existing traffic volumes or noise levels, so that adverse impact would be minor.

Noise levels in areas where little or no development occurs would remain similar to baseline levels, so there would be no impact in those areas. Noise levels would decrease in areas where existing facilities or activities are removed or relocated, resulting in a minor beneficial impact.

Project Operation and Maintenance. Long-term impacts would range from minor beneficial to minor adverse impacts and would result from additional vehicle traffic, human activity, and noise-producing equipment (e.g., HVAC systems and generators) in areas where new or additional development occurs.

Noise levels would remain similar to baseline conditions in areas where no RPMP projects would occur, so there would be no impact in those areas. Noise levels would decrease in areas where existing facilities or activities are removed or relocated, resulting in a minor beneficial impact.

Once construction was complete, many RPMP projects would have no perceptible impact on noise levels. For example, use or operation of projects such as sidewalks, trails, stormwater drainage features, outdoor courtyards and memorials, and underground utility lines would have no perceptible impact on noise levels, so there would be no impact. Maintenance activities associated with RPMP projects would be similar to existing maintenance activities (e.g., mowing, snow removal, painting, repair), with noise impacts ranging from no impacts to short-term minor adverse impacts.

Most RPMP projects that would reconfigure an existing feature—such as widening a road, increasing the size of a parking lot, or adding onto a building—would not appreciably change the baseline noise level, so this long-term adverse impact would be minor.

Most new buildings and some utility infrastructure projects would introduce new noise sources such as HVAC systems, back-up generators, and transformers. The noise output of the equipment would vary by size and manufacturer but typically would not exceed 74 dB at 100 feet (Daikin 2019; EPA 1971; Schneider 2019). As a BMP, noise-producing equipment would be positioned away from areas where quiet is important and shielded with walls or other enclosures as appropriate to reduce noise transmission. With appropriate positioning and shielding, noise levels from operation activities would

not appreciably exceed background levels (see Table 3), so this long-term adverse impact would be minor. Maintenance activities for these types of RPMP projects, depending on the machinery needed to conduct maintenance and its associated noise levels, would range from no impacts to short-term minor adverse impacts.

New or relocated infrastructure for vehicle travel (e.g., roads, intersections, parking lots, and ACPs) would introduce noise from vehicle traffic in new places. Noise from a freeway is approximately 70 dB at 50 feet (CHC 2019) and would be substantially less on garrison roads where traffic volumes are much lower. Therefore, noise from vehicle traffic would not appreciably increase baseline levels (see Table 3), so this long-term adverse impact would be minor.

3.9.5.2.3 Mitigation Measures and Best Management Practices

No mitigation measures would be necessary to reduce adverse impacts to below significant levels. IMCOM garrisons would implement the following BMPs as applicable, most of which are already standard practice at IMCOM garrisons, to manage noise impacts:

- In densely developed, mixed-use areas, incorporate appropriate levels of sound-dampening construction materials into the design of buildings where a quiet interior is important such as homes, hospitals, lodging, schools, childcare facilities, offices, and classrooms.
- Where no local noise ordinance applies, limit construction to daytime hours on weekdays to the maximum extent practicable.
- For all construction activities, implement the industry standard practice of operating construction equipment in accordance with the manufacturer's specifications and with standard mufflers and other noise-reducing equipment in proper operating condition.
- For construction activities within 800 feet of on- or off-post noise-sensitive receptors, use equipment mufflers and/or other sound-shielding devices as appropriate. Shut down noise-generating equipment when not in use. If complaints about noise are received, increase sound-reducing measures appropriately.
- Position HVAC systems, generators, transformers, and other noise-producing equipment away from areas where quiet is important and shield it with walls or other enclosures as appropriate to reduce sound transmission.

3.9.5.3 Impacts of the No Action Alternative

Under the No Action Alternative, each garrison would continue to use its existing process to conduct master planning. Actions with a potential to adversely affect an installation's noise environment would continue to be evaluated through project- and

site-specific NEPA analysis and would comply with UFC 2-100-01, AR 210-20, and AR 200-1, applicable noise ordinances, and the garrison's Operational Noise Management Plan (where applicable). Therefore, the adverse impacts on noise from implementing the No Action Alternative would be similar to those expected under the Proposed Action and would include short-term minor-to-moderate adverse and long-term minor beneficial to minor adverse impacts.

3.10 SOCIOECONOMICS

3.10.1 Definition of the Resource

Socioeconomics is defined as the basic attributes and resources associated with the human environment, particularly population and economic activity. Demographics can be used to describe attributes such as age, gender, income level, and race within a population. Economics includes employment, personal income, and business activity. Changes in population and economic activity might be accompanied by changes in other socioeconomic components such as the availability of housing and public services (e.g., fire protection, healthcare, law enforcement, recreational facilities, and schools). This section also addresses environmental justice, the protection of children, and recreation (e.g., leisure activities).

The ROI for socioeconomics is the geographic area where installation personnel and their dependents live, work, shop, and recreate, and where installations procure goods and services. The ROI includes the county or counties that encompass each installation and sometimes adjacent counties, if they are closely associated with economic activity at the installation.

3.10.2 Regulatory Framework

Although there are no federal regulations specific to socioeconomics, AR 200-1 lists socioeconomics as one of the elements of the man-made environment to be considered when Army agencies and organizations address their environmental responsibilities.

EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, provides that, to the extent practicable, each federal agency shall make achieving environmental justice part of its mission by identifying and addressing any disproportionately high and adverse human health or environmental impacts its actions might have on minority populations in the United States. The purpose of the EO is to ensure the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, meaning that no group of people should bear a disproportionate share of the negative environmental consequences of federal actions.

EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, recognizes that children might suffer disproportionately from environmental health and

safety risks because their bodily systems are not fully developed and their behavior patterns can make them more susceptible to accidents. This EO directs federal agencies to assess environmental health and safety risks resulting from their actions that might disproportionately affect children and ensure that they address any that do.

3.10.3 Planning Considerations

UFC 2-100-01 recommends that planners collect data on socioeconomic conditions, demographic patterns, and community services to inform the master planning process. It also directs planners to consider the needs of the various populations that live, work, shop, and recreate on- and off-post. Master planners must involve stakeholders with relevant socioeconomic knowledge and interests in the planning process, including off-post communities, when feasible.

3.10.4 Affected Environment

Socioeconomic Conditions. As of 2019, IMCOM employed more than 55,000 military, civilian, and contract personnel worldwide (IMCOM 2019a). Military installations have a positive economic impact on their local economy, providing jobs and income to the regional workforce and supporting the economy by purchasing goods and services from local businesses.

The number of personnel at IMCOM installations ranges from a few hundred at the smallest installations to over 100,000 at the largest, with a median of 11,500 persons. Total population in the ROI of IMCOM installations ranges from about 7,000 in the most rural ROIs to more than 4 million in the most populous. The percent of the population within an ROI that is employed ranges from less than 10 percent to over 50 percent, compared to 48 percent of people in the United States as a whole (U.S. Census Bureau 2019a, 2019b).

Business volume, which is defined as the annual total of all business activity and sales within an ROI, ranges from less than $1 billion to more than $200 billion, with greater business volumes generally corresponding to areas with higher populations, compared to a business volume of more than $16 trillion for the United States as a whole (U.S. Census Bureau 2019a, 2019b).

Environmental Justice. In accordance with EO 12898, consideration of environmental justice includes identifying minority and low-income populations that could be affected by a proposed action. The term “minority population” includes individuals who identify themselves as American Indian and Alaska Native, Asian, Black or African American, Hispanic or Latino, Native Hawaiian and Other Pacific Islander, and persons of two or more races (as identified by the U.S. Census Bureau).

Per CEQ environmental justice guidance, minority populations are present where either:

- The minority population of the affected area exceeds 50 percent, or

- The minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate geographic area of comparison (CEQ 1997).

Using the first criterion, minority populations are within the ROI of least one IMCOM installation in the following states and territories: Arkansas, California, Florida, Georgia, Hawaii, Maryland, New Mexico, New York, Puerto Rico, Texas, and Virginia (U.S. Census Bureau 2019a, 2019b).

Using the second criterion and the state or territory as the geographic area of comparison, minority populations are within the ROI of least one IMCOM installation in the following states: Arkansas, Florida, Kentucky, Maryland, North Carolina, New York, Texas, and Virginia (U.S. Census Bureau 2019a, 2019b).

Per CEQ guidance, poverty thresholds established by the U.S. Census Bureau are used to identify low-income populations (CEQ 1997). The U.S. Census Bureau defined the 2018 poverty threshold as a maximum annual income of $12,793 for an individual and $25,707 for a family of four (U.S. Census Bureau 2019c). The U.S. Census Bureau defines a “poverty area” as a census tract (which is a subdivision of a county) where 20 percent or more of the residents have incomes below the poverty threshold, and an “extreme poverty area” as a census tract with 40 percent or more of the population below the poverty threshold (U.S. Census Bureau 1995). IMCOM installations in Arkansas, Georgia, Puerto Rico, and Texas are in ROIs that have poverty rates above 20 percent; none is above 40 percent. Note that for this programmatic level analysis, the ROI data used were at the county level, not the census tract level; however, this indicator is appropriate for the scope of this analysis.

Protection of Children. IMCOM complies with EO 13045 by incorporating analysis of environmental health and safety risks that might disproportionately affect children into its decision-making processes. This ensures that the IMCOM would identify, disclose, and respond to potential adverse health and safety impacts on children on their installations.

Children can be present on IMCOM installations as residents or visitors during special events. IMCOM garrisons take precautions for child safety through locating community facilities (e.g., housing, schools, retail, and recreation facilities) away from incompatible land uses (e.g., training ranges and impact areas), limiting access to certain areas, and requiring adult supervision of children.

Recreation. Recreation is any activity done for leisure. Examples of recreational facilities found on IMCOM installations include gyms, parks, sports fields, golf courses, and swimming pools; recreational activities can also include boating, fishing, and hunting. Similar facilities and activities are found in the communities around IMCOM garrisons. Small garrisons may have few, if any, recreational facilities on post.

3.10.5 Environmental Consequences

3.10.5.1 Significance Criteria

An alternative would be expected to have a significant adverse impact on socioeconomics if it would result in (1) substantial gains or losses in population that would exceed historic rates of growth or decline; (2) a decrease in jobs that substantially raises the regional unemployment rate; (3) a substantial change in the housing market such as severe housing shortages or surpluses; (4) a substantial increase in need for public services (e.g., fire protection, law enforcement, or schools); (5) a substantial long-term loss or displacement of recreational opportunities and resources; (6) disproportionately high and adverse environmental or human health impacts to an identified minority or low-income population per EO 12898; or (7) a disproportionately high and adverse environmental health or safety risk to an identified population of children per EO 13045, such as the increase in a child's risk of exposure to an environmental hazard (through contact, ingestion, or inhalation) or the risk of potential substantial harm of children.

Under NEPA, socioeconomic impacts by themselves do not require that an EIS be prepared unless the action also would have natural or physical environmental impacts (40 C.F.R. § 1508.14).

3.10.5.2 Impacts of the Proposed Action

The Proposed Action would have short-term minor beneficial impacts and long-term impacts ranging from minor beneficial to moderate adverse as described in this section.

3.10.5.2.1 Developing, Adopting, and Updating RPMP Component Documents

Developing, adopting, or updating RPMP component documents involve the establishment of goals and procedures for real property management that would have no direct socioeconomic impacts. When developed in accordance with UFC 2-100-01 and AR 210-20, RPMPs would collect data on socioeconomic conditions, demographic patterns, and recreation and would use them to assess potential impacts on the population, economy, recreation, and sensitive populations (children and environmental justice communities) in the ROI. Master planners would coordinate with appropriate stakeholders to ensure that socioeconomic constraints are identified and proposed development is sited appropriately. Master planning would help to ensure that appropriate levels of housing, community and recreational facilities, infrastructure, and public services would be provided to meet anticipated needs based on socioeconomic projections. Therefore, developing, adopting, and updating RPMP component documents would have no adverse impacts on the socioeconomic environment, including environmental justice and the protection of children.

3.10.5.2.2 Implementing RPMP Projects

Implementing RPMP projects would have short-term minor beneficial impacts and long-term impacts ranging from minor beneficial to moderate adverse on socioeconomics. There would be no disproportionate adverse impacts on environmental justice populations or the protection of children. Impacts on recreation would include long-term minor-to-moderate beneficial and adverse impacts.

Socioeconomic Impacts. Implementing RPMP projects would have short-term minor beneficial impacts and long-term impacts ranging from minor beneficial to negligible adverse on socioeconomics.

Project Construction. Short-term minor beneficial economic impacts would result from economic activity of limited duration from construction, demolition, and renovation of facilities. The expenditures associated with RPMP project construction (including renovation and demolition) would temporarily increase regional employment, income, and business sales for goods and services in an IMCOM installation's ROI. Those economic benefits would include purchasing project materials and supplies, hiring people in construction-related industries, wages earned by those employees, and expenditure of these wages on goods and services.

The economic impact of constructing RPMP projects would vary depending on the scope and budget of the project. Projects would range from several thousand dollars with completion in less than one year, to millions of dollars implemented in phases over several years. RPMPs from about a dozen IMCOM installations were reviewed to compile data on proposed projects and their costs. Table 5 presents project costs from a sampling of RPMPs. Small projects are defined as less than $1 million; medium projects range from $1 million to $15 million; and large projects are more than $15 million. Example projects from the RPMPs ranged from small, minimal cost projects (e.g., $2,500 for minor building renovation of new paint and $3,000 for improvements to a fitness trail) to large projects (e.g., $88 million for new building construction and $40 million for stormwater system repair and upgrade).

The cost of RPMP projects (Table 5) would not be substantial in comparison to total economic activity in an ROI (e.g., sales by local businesses, size of the labor force, number of persons employed in the region, income earnings of persons employed) (U.S. Census Bureau 2019a, 2019b). The average cost of small-to-medium projects would generally be less than one percent of ROI business sales.[1] The average cost of large projects would be less than one percent to a few percent. Project labor would be supplied from the regional workforce. Workers would commute from within the ROI or from surrounding communities (if needed) without moving place of residence.

[1] Business sales volume is defined as business activity or sales within the ROI. It is the sum of total accommodation and food service sales, total retail and wholesaler sales, total selected service (healthcare and social assistance) receipts, and total manufacturer shipments (value-added by manufacturing) (USACERL 1994).

Therefore, implementing RPMP projects would not result in substantial changes to an ROI's population, job availability, or demand for housing or public services.

Therefore, the impacts from construction of RPMP projects would be beneficial, providing regional economic benefits in the form of jobs and income and business sales from construction spending for equipment, materials, and supplies in the ROI.

Table 5. Example Average RPMP Project Costs

Project type	Small projects	Medium projects	Large projects	Overall average for project type
Facility construction, renovation, or demolition project	$264,000	$5,195,000	$41,727,000	$13,040,000
Transportation project	$224,000	$5,984,000	$16,300,000	$1,970,000
Utility project	$373,000	$2,780,000	$27,730,000	$3,290,000
Outdoor recreation and open space project	$314,000	$2,307,000	None found	$621,000
Energy and climate resilience project	$372,400	$1,300,000	None found	$600,000
Overall average for project size	$278,200	$4,672,000	$39,806,500	Not applicable

Project Operation and Maintenance. Long-term economic impacts would range from minor beneficial to negligible adverse. RPMP projects that introduce new or expanded existing facilities would require ongoing expenditures and additional permanent employees to operate and maintain the facilities. Economic benefits would include purchasing goods and services for operation and maintenance, wages earned by employees, and expenditure of these wages on goods and services. Jobs would be filled by local residents or people who move into the area for the jobs; however, any increase in population would be negligible. Therefore, long-term minor beneficial impacts on job availability, employment, and income would occur in the ROI.

RPMP projects that removed or reduced facilities would reduce ongoing expenditures associated with operation and maintenance of the facilities and might make some jobs unnecessary. Any affected employees would be moved to other jobs, potentially in other locations, slightly reducing overall economic activity in the area. The scope of any reductions in economic activity would be very small compared to overall business volume in the ROI, and adverse impacts on job availability, population, housing, and demand for public services in the ROI would be negligible.

Environmental Justice. Implementing RPMP projects would result in no disproportionate adverse environmental or health impacts on low-income or minority populations. Master planners would follow UFC 2-100-01 guidance, collecting and analyzing data on socioeconomic conditions and demographic patterns and involving stakeholders. In accordance with EO 12898 and in conformance with CEQ guidance, they would identify minority and low-income communities during the planning process and avoid implementing projects that would result in adverse impacts on environmental justice; therefore, there would be no environmental justice impacts.

Protection of Children. Implementing RPMP projects would have no disproportionate adverse impacts on children because the Proposed Action would not increase the risks described in EO 13045; therefore, there would be no impacts on the protection of children. As a BMP, which most garrisons already consider a standard practice, construction sites should be fenced and appropriate signage posted to deter unauthorized persons, including children, from accessing them.

Recreation. RPMP projects would propose increasing, decreasing, or reconfiguring recreational opportunities depending on each installation's needs, and impacts on recreation would range from minor beneficial to moderate adverse. If RPMP projects added or expanded recreational facilities and opportunities, a minor beneficial impact would result because more recreational opportunities would be created.

If RPMP projects removed or decreased recreational facilities or opportunities, adverse impacts would occur. However, recreational facilities would likely be available elsewhere on the installation and/or in the surrounding communities in proportion to the installation or community's demand for such facilities, so a substantial long-term loss or displacement of recreational opportunities and resources would be unlikely. Therefore, long-term adverse impacts would range from minor to moderate adverse.

3.10.5.2.3 Mitigation Measures and Best Management Practices

No adverse socioeconomic impacts would be expected; therefore, no mitigation measures would be necessary to reduce adverse impacts to below significant levels. Under the Proposed Action, IMCOM garrisons would implement the following BMP, which is already standard practice at most garrisons, as applicable:

- Fence construction sites and post appropriate signage to deter unauthorized people, including children, from accessing them.

3.10.5.3 Impacts of the No Action Alternative

Under the No Action Alternative, each garrison would continue to use its existing process to conduct master planning. Actions with a potential to adversely affect socioeconomic resources (including environmental justice and protection of children) would continue to be evaluated through project- and site-specific NEPA analysis and would comply with UFC 2-100-01, AR 210-20, AR 200-1, EO 12898, and EO 13045.

Through their existing master planning processes, garrisons would plan and implement real property development so it would not substantially affect socioeconomics or recreational opportunities or increase health and safety risks under EO 12898 or EO 13045. Therefore, impacts on socioeconomic resources from implementing the No Action Alternative would be similar to those expected under the Proposed Action and would include short- and long-term minor beneficial impacts.

3.11 TRANSPORTATION AND TRAFFIC

3.11.1 Definition of the Resource

Transportation is the movement of people and goods by land, air, or water. Common transportation systems include vehicular systems (e.g., roads and parking lots); aviation systems (e.g., airports and heliports), waterway and maritime systems, public transportation systems (e.g., buses, ferries, and passenger rail); and rail systems (e.g., railroads). Other modes of transportation include walking, bicycling, and scooters. The ROI for transportation and traffic is IMCOM garrisons and their surrounding communities to the extent that on-post changes in transportation, circulation, and traffic might affect those communities.

3.11.2 Regulatory Framework

Transportation infrastructure must be designed, built, and operated in accordance with applicable federal, state, and local laws and regulations. AR 420-1 implements applicable laws by providing policies and procedures for on-post transportation infrastructure, including paved roads, airfields, and other surfaced areas; railroads; and bridges.

3.11.3 Planning Considerations

One of the purposes of the master planning process and the resulting RPMP is to define the conceptual and spatial layout and standards that will guide efficient development of the garrison's transportation infrastructure. In particular, the RPMP's transportation-related Network Plans, which present the preferred end state of an installation's transportation network, and Street Envelope Standards, which present allowable configurations for each street type, define how transportation infrastructure should be developed.

UFC 2-100-01 includes the following planning strategies relevant to transportation and traffic:

- *Connected transportation networks (Section 2-2.6)*, which directs planners to ensure that uses are thoroughly connected and afford multiple route options for vehicles, bicyclists, and pedestrians.
- *Transit-oriented development (Section 2-2.3)*, which directs planners to focus on compact, mixed-use development around transit corridors to promote walking, bicycling, and the use of mass transit.

- *Planning for walking, running, and biking (Section 2-4.1)* and *pedestrian and cycling plans (Section 2-4.2)*, which direct planners to provide safe, continuous pathways for walking, running, and bicycling between key destinations.

Some IMCOM garrisons have a Transportation Plan or other plans that relate to transportation infrastructure. The RPMP should inform and be informed by those plans.

3.11.4 Affected Environment

The primary features of transportation infrastructure at IMCOM garrisons include roads, ACP gates, bridges, sidewalks, bicycle trails, parking areas, railways, recreational trails, tank trails, airfields, and heliports. Associated transportation amenities include traffic signals, signage, lighting, and landscaping. The transportation network is a key part of IMCOM's real property portfolio. IMCOM garrisons collectively have approximately 193,000 acres of paved roads, 94,000 acres of other paved areas (e.g., parking lots, and vehicle and equipment storage and staging areas), 106,000 acres of unpaved roads, more than 2,200 miles of railroads, 40 airfields, and six heliports (IMCOM 2019b).

Roadways are the primary means of transportation to, from, and within most IMCOM garrisons. Road networks are relatively dense in cantonments and other high-use areas and relatively sparse in training areas and other undeveloped or minimally developed areas, where many roads are unpaved. Roads in cantonment areas and near entry gates can experience traffic congestion, especially during peak commute hours. Roads in training areas and other less developed parts of an installation typically experience little to no traffic congestion.

Access to all IMCOM garrisons is controlled. Anyone wishing to be admitted to one of the installations must obtain the appropriate clearances and enter through one of the designated gates, or ACPs. All goods being delivered must have the appropriate paperwork accompanying them. Larger installations generally have more ACPs than smaller installations. The function of ACPs is to restrict traffic so that access to the installation can be securely monitored; however, at some ACPs, this results in traffic congestion that can impact off-post roadways, primarily during peak commute hours. Most ACPs, however, experience minimal vehicle wait times.

IMCOM garrisons also have multimodal transportation infrastructure, including sidewalks and other pedestrian pathways, bicycle lanes and dedicated bicycle paths, soft surface trails used for transportation and recreation, and transit facilities such as bus stops. The extent and level of development of the multimodal transportation infrastructure varies by installation.

Many IMCOM garrisons support rail transportation and have one or more airfields or heliports. Rail is typically used to transport goods, vehicles, and equipment rather than passengers. Airfields and helipads support training of military aircraft crews and

transportation of Soldiers and equipment. Some coastal installations or those located on a navigable waterway have water-based transportation infrastructure such as boat launches and piers.

At numerous IMCOM garrisons, many of the principal features of the transportation network were constructed decades ago, resulting in increased repair frequency and cost to maintain the aging infrastructure. Existing transportation infrastructure might also need modernizing to meet today's standards for design, safety, access for people with disabilities, alternative modes, and aesthetic appeal.

Because access to IMCOM garrisons is controlled by ACPs, the interconnection between the on- and off-post transportation networks is limited to the roads around ACPs. On-post transportation networks are typically characterized by infrastructure similar to that of off-post networks, with a hierarchy of paved roads built to accommodate various volumes and types of traffic, sidewalks, bicycle trails, paths, parking areas, transit networks, airports, and railways.

3.11.5 Environmental Consequences

3.11.5.1 Significance Criteria

An alternative would be expected to have a significant adverse impact if it would (1) substantially increase traffic congestion or delays for an extended period of time; (2) substantially increase transportation safety hazards due to an RPMP project design feature; or (3) overwhelm existing parking capacity.

3.11.5.2 Impacts of the Proposed Action

Impacts on transportation and traffic from the Proposed Action would include short-term impacts ranging from negligible to moderate adverse and long-term impacts ranging from moderate adverse to moderate beneficial as described in this section.

3.11.5.2.1 Developing, Adopting, and Updating RPMP Component Documents

Developing, adopting, and updating RPMP component documents involve the establishment of goals and procedures for real property management that would have no direct impact on transportation and traffic. Careful consideration of transportation and traffic during the planning process would aid in avoiding or minimizing adverse impacts on those resources in the future. When developed in accordance with UFC 2-100-01 and AR 210-20, especially those sections of UFC 2-100-01 that relate specifically to transportation (see Section 3.11.3), RPMPs would identify the needs and deficiencies of the existing transportation system and plan for future development that would reduce traffic congestion where it exists and increase the safety, efficiency, and multimodal diversity of the garrison's transportation network, resulting in long-term minor beneficial impacts.

3.11.5.2.2 Implementing RPMP Projects

Implementing RPMP projects would result in short-term impacts ranging from negligible to moderate adverse and long-term impacts ranging from moderate adverse to moderate beneficial.

Project Construction. Construction activities (including renovation and demolition) would result in short-term impacts ranging from negligible to moderate adverse. Some construction activities would disrupt existing transportation infrastructure by closing lanes, roads, parking areas, sidewalks, or other transportation features. As a result, personnel might experience longer travel times to their destinations, have to use alternate routes, or have to park further from their destinations. Depending on the project, any part of the circulation system could be affected, including vehicular traffic, air traffic, rail traffic, bicyclists, and pedestrians. For example, repaving a runway could mean air operations would have to be reduced or suspended or temporarily use an alternate airfield. Adding a new lane to a road could mean that traffic has to temporarily use a detour route to avoid the affected section of road.

During construction, the number of vehicle trips on roads to and from the construction site would increase because of trucks delivering equipment and supplies and workers traveling to and from those sites. The additional trips would be a small fraction of the current volume of traffic; therefore, the increase would not result in a noticeable change in traffic. As a BMP, construction vehicle trips would be routed and scheduled to minimize conflicts with other traffic to the maximum extent practical.

The impacts of constructing small RPMP projects would be negligible to minor, lasting a few days or weeks, affecting a limited area, and having minimal effect on user movements. For example, reconfiguring a sidewalk might require pedestrians to use an alternate walking route until the project was completed. The impacts of constructing large projects would be more substantial, with some lasting several months and having a moderate adverse impact on user movements. For example, widening a primary road could require that substantial volumes of traffic use alternate routes, including secondary or tertiary roads, increasing travel times and congestion in a moderately large portion of the garrison.

Installations would implement temporary traffic control BMPs to safely and efficiently manage traffic flow around construction sites. They would select applicable measures from the *Manual on Uniform Traffic Control Devices for Streets and Highways*, Part 6, Temporary Traffic Control (DOT and FHWA 2012), or other applicable standards or guidance documents. Part 6 details how to provide for “continuity of movement of motor vehicle, bicycle, and pedestrian traffic (including accessible passage); transit operations; and access (and accessibility) to property and utilities” while promoting the safety of users, workers, and emergency responders. Temporary traffic controls might include public notification, signage, barriers, and flaggers.

For larger RPMP projects, installations should consider preparing a written temporary Traffic Control Plan—either as a stand-alone document or as a section of the project's Health and Safety Plan—to ensure that the traffic control BMPs to be implemented during construction are clear and easy to communicate to all parties involved.

The impacts of most construction would be limited to on-post areas and installation personnel would be informed in advance of any adjustment measures and prepared to deal with the traffic pattern changes for any temporary inconveniences associated with construction. Construction of new ACPs or at existing ACPs would be one of the few types of projects that might affect transportation and traffic off-post. For ACP projects, the garrison would coordinate with the jurisdictional agency or agencies of nearby off-post areas (e.g., the local community department of public works and/or state Department of Transportation [DOT]) on appropriate BMPs for traffic management during construction (e.g., signage, flaggers, and public notification), as applicable.

Project Operation and Maintenance. Most RPMP projects that would affect transportation and traffic would have long-term minor-to-moderate beneficial impacts because they would improve the safety, efficiency, and circulation of the transportation network compared to existing baseline conditions. For example, widening a road would reduce traffic congestion, changing the traffic controls at an intersection would enhance safety, and building a parking garage would enhance parking efficiency by providing a large number of new parking spaces conveniently located near key destinations.

New ACPs would result in impacts ranging from minor beneficial to moderate adverse and would be one of the few types of projects that could impact off-post traffic. Beneficial impacts would result from reducing congestion at existing ACPs and providing alternative locations to access the garrison. Although vehicle queuing at ACPs is a normal part of operations, adverse impacts to traffic flow and air quality (see section 3.2.5.2) would result from vehicle queuing if it introduced or increased congestion on nearby off-post roads. New ACPs would be designed so traffic would not routinely back up on off-post roads by providing sufficient queueing space on Army property away from local roads, therefore, impacts on traffic flow would not exceed moderate adverse. In addition, as a BMP, the garrison would coordinate with the jurisdictional agency or agencies of nearby off-post areas (e.g., the local community and/or state DOT) during the design of the ACP.

Projects that would demolish real property (e.g., buildings and related transportation infrastructure such as access roads and parking areas), would have no long-term impact on transportation and traffic. The RPMP would identify those features for removal after performing internal analyses that demonstrate they are no longer needed; therefore, removing them would have no long-term adverse impacts.

UFC 2-100-01 promotes compact, infill development, which could result in certain areas becoming less convenient to access by vehicle but more convenient to access on foot

or by bicycle over time, representing the installation's deliberate choice to promote alternative modes of transportation. Because the circulation system would evolve to more accurately represent each garrison's vision of an ideal connected transportation network, the long-term impacts of those changes would be moderately beneficial.

3.11.5.2.3 Mitigation Measures and Best Management Practices

No mitigation measures would be necessary to reduce adverse impacts to below significant levels. Garrisons would implement the following BMPs to manage impacts:

- Route and schedule construction vehicles to minimize conflicts with other traffic to the maximum extent practical.
- To safely and efficiently manage traffic around construction sites, implement appropriate measures from Part 6 of the *Manual on Uniform Traffic Control Devices for Streets and Highways* (DOT and FHWA 2012), or other applicable standards or guidance document, as applicable. For larger projects, consider preparing a written temporary traffic control plan—either as a stand-alone document or as a portion of the project's health and safety plan—to ensure that BMPs are clear and easy to communicate to all parties involved in the work.
- For ACP projects, coordinate with the jurisdictional agency or agencies of nearby off-post areas (e.g., the local community and/or state DOT) on using signage, flaggers, public notification, and other appropriate BMPs for traffic management during construction, as applicable.

3.11.5.3 Impacts of the No Action Alternative

Under the No Action Alternative, each garrison would continue to use its existing process to conduct master planning. Individual garrisons' processes, although not standardized, would be conducted in accordance with UFC 2-100-01 and AR 210-20, and in compliance with all applicable laws and regulations, including NEPA; therefore, the impacts on transportation and traffic from implementing the No Action Alternative would be similar to those expected under the Proposed Action and would include short-term impacts ranging from negligible to moderate adverse and long-term impacts ranging from moderate adverse to moderate beneficial.

3.12 UTILITIES

3.12.1 Definition of the Resource

Utilities are man-made systems that provide essential services such as water conveyance and treatment systems (e.g., drinking water and wastewater management), energy systems (e.g., electricity, steam, and natural gas), communications (e.g., telephone, television, and Internet), and nonhazardous solid waste disposal (e.g., trash removal and landfills). Stormwater conveyance systems are addressed in Section 3.13, *Water Resources*. The ROI for utilities is IMCOM garrisons and their surrounding

communities to the extent that garrisons interconnect with or use off-post utility systems and services.

3.12.2 Regulatory Framework

Utility systems must be designed, built, and operated in accordance with applicable federal, state, and local laws and regulations. AR 420-1 is the primary Army regulation guiding utilities management and compliance with other applicable regulations, with environmentally related components such as waste management also addressed in AR 200-1. These regulations include many conservation measures such as the requirement in AR 420-1 that all military construction, renovation, and demolition projects divert a minimum of 50 percent of construction and demolition waste by weight from landfill disposal.

3.12.3 Planning Considerations

Planning for utilities is a crucial component of installation development. UFC 2-100-01 includes the following planning strategies relevant to utilities:

- *Energy and water conservation (Sections 2-2.11 and 2-2.12)*, which directs planners to incorporate practices that can reduce energy and water consumption at the planning level (e.g., by designing low-water landscaping or incorporating energy efficiency or renewable energy production into projects).
- *Waste management (Section 2-2.13),* which directs planners to incorporate practices that can reduce waste at the planning level (e.g., by adaptively reusing a building instead of demolishing it).
- *Multistory buildings (Section 2-2.8),* which the UFC asserts can provide a cost saving over providing utilities to multiple one-story buildings.
- *District and nodal energy plants (Section 2-2.11.2),* which encourages planners to choose local energy plants over central or building-specific plants because the local plants provide better load leveling and economies of scale and can make renewable energy systems more cost effective.
- *Compact and infill development (Sections 2-2.1 and 2-2.2)*, which reduces the number and length of utility runs and makes nodal energy more cost effective.
- *Capacity planning (Section 2-6)*, which directs planners to define and not to exceed the capacity of its utility systems and to plan to augment these systems as needed to support additional development.
- *Network planning (Section 2-8)*, which directs planners to consider utility systems and their interconnections at the broadest level, including connections between installation districts and to off-post utilities. The document acknowledges that, in the past, adverse impacts resulted from poor network planning for utilities and aims to avoid this in the future. It states that planners should be aware that, in

some instances, redundant utility systems might be advantageous in providing continuity of operations. Privatized utility partners should be involved in network planning. This portion of the document also directs planners to place power lines underground when possible for practical and aesthetic purposes.

In accordance with UFC 2-100-01, the RPMP should include a Primary Utility Plan among its Network Plans. That plan should identify all current and proposed primary utility lines and infrastructure, utility easements and rights-of-way, and renewable energy sites on the installation as well as present the preferred end state for the installation's primary utility network.

Both UFC 2-100-01 and AR 210-20 state that utility-related data—including locations and capacities—should be collected and analyzed during the planning process. Both documents also state that multiple alternatives for utility system development should be considered during the planning process and a preferred plan ultimately selected.

IMCOM installations have multiple management plans related to utilities, including Utility Capacity Plans, Energy Management Plans, Water Resource Management Plans, and Integrated Solid Waste Management Plans. The RPMP should inform and be informed by those plans.

3.12.4 Affected Environment

Utility infrastructure at IMCOM garrisons includes aboveground and underground pipes, lines, plants, and other infrastructure to provide and manage water, wastewater, energy, communications, and waste. Utility infrastructure can be owned and operated by the garrison, privatized utility operators, public and private utility companies, or a combination of those entities. Most garrisons rely at least in part on utility providers in the nearby community. In addition to distribution and collection systems, some garrisons have on-post generation and treatment facilities such as energy plants and substations for generating electricity, wells that supply drinking water, wastewater treatment plants that treat wastewater, and landfills for disposal of waste.

At many garrisons, portions of the utility system were constructed decades ago and utility infrastructure is in need of major repairs or upgrades. Partially driven by Army Directive 2014-02, *Net Zero Installations Policy*, many garrisons are making great strides in constructing on-post renewable energy facilities, conserving water and energy, and reducing waste, lessening demand and realizing cost savings and environmental benefits.

3.12.5 Environmental Consequences

3.12.5.1 Significance Criteria

An alternative would be expected to have a significant adverse impact on utilities if it would result in (1) exceeding the available capacity of existing utilities and supporting

infrastructure without an appropriate plan to provide the additional needed capacity, (2) causing long-term or frequent disruption of utility service on- or off-post, or (3) violating regulatory or permit limits related to utilities (e.g., by creating a wastewater discharge greater than an existing permit allowed).

3.12.5.2 Impacts of the Proposed Action

The Proposed Action would have short- and long-term minor adverse and minor beneficial impacts on utilities as described in this section.

3.12.5.2.1 Developing, Adopting, and Updating RPMP Component Documents

Developing, adopting, and updating RPMP component documents involve the establishment of goals and procedures for real property management that would have no impact on utilities. Utility systems would be carefully considered during the planning process, including demand, capacity, infrastructure design and location, and conservation measures. Therefore, long-term impacts on utilities would be minor beneficial.

When developed in accordance with UFC 2-100-01 and AR 210-20, RPMPs and component documents would evaluate the capacity of existing utility infrastructure and plan for any additional capacity needed to support implementation of the RPMP. When applicable, privatized utility system operators and public and private utility providers would be included in this process. Therefore, developing, adopting, and updating RPMP component documents would plan for any additional needed capacity and position the installation to avoid exceeding the available capacity of existing utilities, so there would be no adverse impact on utilities.

In accordance with UFC 2-100-01 guidance on energy and water conservation and waste management and other DoD and Army initiatives, the RPMP would incorporate strategies to reduce energy and water consumption and waste generation at the planning level. Those measures would result in less demand on the installation's existing utility capacity, resulting in a minor beneficial impact on utility infrastructure. It would also have a long-term minor beneficial impact on the natural environment by conserving resources.

Other UFC 2-100-01 planning strategies such as network planning, district and nodal energy plants, compact and infill development, and multistory buildings would aid the garrison in planning efficient, effective, and resilient utility infrastructure. Through high-level planning, new utility infrastructure would be compact and rightsized and its installation would be coordinated to minimize the number of times ground-disturbing utility projects would occur. The result would be short- and long-term minor beneficial impacts because it would provide needed utility capacity with minimal disruption.

3.12.5.2.2 Implementing RPMP Projects

Implementing RPMP projects would result in short- and long-term impacts on utilities ranging from minor beneficial to minor adverse.

Project Construction. Short-term minor adverse and long-term minor beneficial impacts on utilities would occur during project construction (including renovation and demolition). Some projects would require relocation of existing utilities, resulting in temporary localized service interruptions. Those interruptions would also occur when utilities for a particular facility were connected to or disconnected from utility infrastructure. Service disruptions would be short, affect a localized area, and be timed to avoid or minimize impact on users; therefore, this short-term adverse impact would be minor.

Construction, renovation, and demolition projects would also result in short-term increases in demand for utility services, using additional energy to power equipment, requiring additional water (e.g., to wash equipment or keep down dust), and generating additional waste, primarily in the form of construction and demolition debris. As required by AR 420-1, all military construction, renovation, and demolition projects would be required to divert a minimum of 50 percent of construction and demolition waste by weight from landfill disposal. Additional demand for utilities during construction, renovation, and demolition activities would be minor compared to suppliers' total available capacity and would be for a limited duration; therefore, this short-term adverse impact would be minor.

Projects to demolish inefficient underutilized facilities would result in long-term minor beneficial impacts because those facilities would no longer consume utilities such as energy or potable water or require wastewater treatment capacity, reducing demand on utility systems.

Project Operations and Maintenance. Long-term impacts would range from minor beneficial to minor adverse. Projects that require utility services such as new buildings, lighting, landscaped vegetation, swimming pools, and golf courses would increase the long-term demand on utility supply and capacity once they became operational. Proper planning and compliance with applicable regulations and policies, however, would ensure that demand would not exceed the available supply and capacity of existing utilities and supporting infrastructure; therefore, this long-term adverse impact would be minor.

Garrisons are generally expected to include in their RPMPs renewable energy projects, water and energy conservation measures, and waste reduction measures. Those projects and measures would lessen demand relative to the garrison's existing utility capacity, offsetting some or all of the demand from projects that require utility services, and potentially lowering the garrison's overall demand for utility services, resulting in a minor beneficial impact. The overall increase or decrease in demand would vary from

garrison to garrison, so long-term impacts would range from minor beneficial to minor adverse.

3.12.5.2.3 Mitigation Measures and Best Management Practices

No mitigation measures would be necessary to reduce adverse impacts to below significant levels. No BMPs other than compliance with applicable laws and regulations; permits; and Army and installation programs, policies, and plans would be necessary.

3.12.5.3 Impacts of the No Action Alternative

Under the No Action Alternative, each garrison would continue to use its existing process to conduct master planning. Actions with a potential to adversely affect utilities would continue to be evaluated through project- and site-specific NEPA analysis and would comply with UFC 2-100-01, AR 210-20, AR 420-1, AR 200-1, applicable utility regulations and permitting requirements, and any garrison-specific utility or energy management plans. Garrisons' existing master planning processes would plan for real property development so as not to exceed available utility capacity, cause long-term or frequent service disruptions, or violate regulatory or permit limits. Therefore, the impacts on utilities from implementing the No Action Alternative would be similar to those expected under the Proposed Action and would include short- and long-term moderate adverse and minor beneficial impacts.

3.13 WATER RESOURCES

3.13.1 Definition of the Resource

Water resources include surface water, groundwater, coastal waters, wetlands, stormwater, and floodplains. Surface waters include ponds, lakes, streams, rivers, and wetlands. Groundwater is any source of water beneath the ground that can be used for drinking water, irrigation, or industrial applications. Coastal waters include near-shore ocean waters protected by the CZMA. Wetlands are permanently or periodically saturated areas such as marshes and swamps. Stormwater includes natural surface flow regimes and man-made conveyances to control runoff and minimize soil erosion that could cause sedimentation in streams and other water bodies, affecting water quality. Floodplains are low-lying areas adjacent to water bodies that are subject to periodic inundation.

Water resources also address water quality, which is the chemical and physical composition of water as affected by natural conditions and human activities. The ROI for water resources is surface water features, groundwater resources, and the watersheds within which IMCOM garrisons are located, which can also include off-post land areas.

3.13.2 Regulatory Framework

The CWA is the primary federal law governing surface water quality. CWA Section 303(d) requires states to list impaired waters and develop total maximum daily loads

(TMDLs) for those water bodies. A TMDL establishes the maximum amount of a pollutant allowed in a water body without exceeding its water quality standard for that pollutant and serves as the starting point for restoring water quality.

CWA Section 404 requires a discharger to obtain a federal permit to legally discharge dredge or fill material into waters of the United States, including wetlands. CWA Section 401 requires a discharger to obtain a state certification before a Section 404 permit can be issued. CWA Section 404 permits also trigger the consultation requirements of the Fish and Wildlife Coordination Act (16 U.S.C. §§ 661-667e).

CWA Section 402 established the NPDES program, which requires the discharger to obtain a permit issued by EPA or the state to legally discharge pollutants from a point source to a water of the United States, including wetlands. Stormwater discharges from construction activities that disturb one acre or more of land require a NPDES permit. This permit requires a construction site operation to prepare a SWPPP that describes site activities to be implemented to prevent stormwater contamination, control sedimentation and erosion, and comply with the CWA. Stormwater practices must also comply with Section 438 of the EISA, which requires development or redevelopment projects affecting more than 5,000 square feet to maintain or restore the predevelopment hydrology of the property to the maximum extent that is technically feasible.

EO 11990, *Protection of Wetlands*, requires federal agencies to minimize impacts on wetlands. EO 11988, *Floodplain Management*, requires federal agencies to avoid development in floodplains when there is a practicable alternative and to minimize potential harm to people, property, and the floodplains themselves if development must be located in a floodplain. A Finding of No Practicable Alternative would be developed if floodplain impacts are anticipated.

AR 200-1 provides guidance to ensure the availability, conservation, and protection of water resources, including potable water, and enables Army compliance with the CWA, Safe Drinking Water Act, and applicable state and local regulations implementing those federal laws.

3.13.3 Planning Considerations

UFC 2-100-01 includes the following planning strategies relevant to water resources:

- *Low-impact development and stormwater management (Section 2-2.8)*, which involves the use of on-site natural and man-made features to control stormwater runoff quantity and quality. Low-impact development strategies focus on minimizing impervious surfaces when siting new facilities and structures. Low-impact development is required by law (i.e., EISA Section 438) and DoD policy. Low-impact development design requirements are defined in UFC 3-210-10.

- *Water conservation (Section 2-2.12)*, which directs planners to reduce water consumption by designing landscaping features that are low maintenance and by incorporating other strategies such using grey water for irrigation.
- *Flood protection (Section 2-2.16)*, which directs planners to identify flood hazard areas and avoid siting facilities in those areas if other alternatives are available.
- *Sustainable landscape elements (Section 2-2.7)*, which requires planners to incorporate vegetation to absorb stormwater and help conserve water resources.
- *Environmental conditions (Section 3-5.6.2.3)*, which requires planners to plan for changing climatic conditions that can affect water levels and precipitation.

AR 210-20 states that reducing negative impacts on water quality through erosion and pollutant control should be considered when developing an RPMP.

Each installation has plans such as an INRMP or Water Resources Management Plan that document the installation's water resources and identify management measures for preserving them. Those plans should inform and be informed by the RPMP.

3.13.4 Affected Environment

Surface Water. Many IMCOM installations have one or more surface water bodies such as ponds, lakes, streams, rivers, and wetlands. They are classified as "perennial" if they contain water year-round or "intermittent" or "ephemeral" if they contain water less often. Surface waters are a source of drinking water and/or a recreational resource at some installations. Other installation surface waters are on the CWA Section 303(d) list of impaired waters.

Groundwater. All IMCOM installations have groundwater beneath them. Many have on-post wells that access groundwater to use for drinking water, irrigation, or industrial purposes. Groundwater beneath an installation also can supply water to communities around the installation. Some installations contain aquifer recharge areas, where percolation of surface water is important to replenishing the aquifer.

Coastal Waters. Installation lands that border the Atlantic, Pacific, and Arctic oceans; Gulf of Mexico; Long Island Sound; and Great Lakes are subject to the CZMA, which aims to prevent degradation of coastal waters through the establishment of coastal management plans and programs.

Wetlands. IMCOM installations in wetter climates may have many acres of wetlands, while installations in drier climates may have very few wetland areas. Not all wetlands on IMCOM installations have been identified and mapped. When needed, installation personnel conduct wetland delineation surveys and submit them to the U.S. Army Corps of Engineers (USACE), who determines if a wetland is jurisdictional and thus subject to CWA Section 404 permitting requirements.

Stormwater. Stormwater drainage systems on IMCOM installations include a variety of gutters, ditches, channels, pipes, culverts, drain inlets, and other features that contain and convey stormwater until it percolates into the ground or outfalls into a receiving water body. The municipal separate storm sewer system and industrial NPDES programs are a source of stormwater management measures available to garrisons. Garrisons also implement a variety of standard BMPs to control stormwater runoff from construction sites such as minimizing exposed soils, protecting storm drain inlets, and installing silt fences.

Floodplains. Most IMCOM installations have floodplains. They are typically in low-lying areas adjacent to surface water bodies and, if the topography is flat, may extend well beyond the surface water body.

3.13.5 Environmental Consequences

3.13.5.1 Significance Criteria

An alternative would be expected to have a significant adverse impact on water resources if it would (1) cause an exceedance of a TMDL, (2) cause a detrimental change in the impairment status of a surface water, (3) result in unpermitted direct impact on a water of the United States, (4) result in the unpermitted loss or destruction of more than one acre of jurisdictional wetlands, or (5) cause erosion and sedimentation that would violate water quality laws or the terms of a NPDES permit.

3.13.5.2 Impacts of the Proposed Action

Impacts on water resources from the Proposed Action would include short-term impacts ranging from minor to moderate adverse and long-term impacts ranging from moderate adverse to moderate beneficial as described in this section.

3.13.5.2.1 Developing, Adopting, and Updating RPMP Component Documents

Developing, adopting, and updating RPMP component documents involve the establishment of goals and procedures for real property management that would have no direct impact on water resources. Careful consideration of water resources during the planning process would aid in minimizing adverse impacts on those resources in the future. Therefore, the long-term impacts of developing, adopting, or updating an RPMP component document would be beneficial.

By following the UFC's guidance on low-impact development and stormwater management, RPMPs would incorporate small-scale, on-site hydrologic controls such as bioswales and permeable pavers to maintain pre-project hydrologic conditions. Low-impact development would minimize the introduction of new impervious surfaces and offset the impact of new impervious surfaces by planning for on-site stormwater retention and infiltration. That would reduce or avoid surface water quality impacts from erosion and sedimentation, resulting in a long-term moderate beneficial impact.

By following the UFC's guidance on water conservation and sustainable landscape elements, RPMPs would plan for reduced water consumption through techniques such as low maintenance landscaping and irrigation with gray water, resulting in a long-term minor-to-moderate beneficial impact.

Also by following the UFC's guidance on sustainable landscape elements, RPMPs would incorporate vegetation to absorb stormwater (complementing low-impact development techniques) and conserve water by using native plants with little need for supplemental water (complementing water conservation techniques).

By following the UFC's guidance on flood protection, RPMPs would avoid siting new projects in flood hazard areas when other practical alternatives are available; therefore, there would be no adverse impact on floodplains.

By following the UFC's guidance on environmental conditions, RPMPs would plan for resiliency to anticipated changes in climatic conditions that would affect water resources. They would include changes in the timing and amount of precipitation and flooding and the frequency and intensity of storms and droughts. More frequent and longer droughts would reduce potable water supplies, increasing the installation's reliance on groundwater and the need for water conservation. Changes in precipitation, storms, and flooding would increase the importance of managing stormwater to avoid water quality degradation and avoiding development in floodplains. Planning for changing climatic conditions would protect water resources, resulting in a long-term minor beneficial impact.

3.13.5.2.2 Implementing RPMP Projects

Implementing RPMP projects would result in short-term impacts ranging from minor to moderate adverse and long-term impacts ranging from moderate adverse to moderate beneficial.

Project Construction. Ground disturbance during construction would result in some soil erosion and sediment-laden stormwater runoff. The runoff might contain minor amounts of pollutants from paved surfaces and minor drips from construction equipment and vehicles. IMCOM or its contractor would minimize impacts by implementing BMPs outlined in the SWPPP developed for the project and by stabilizing all disturbed areas upon completion of site preparation activities (e.g., vegetation removal, excavation, and grading). Those actions would ensure that the project would not cause an exceedance of a TMDL, cause a detrimental change in the impairment status of a surface water, or cause erosion and sedimentation that would violate water quality laws. Therefore, short- and long-term adverse impacts on surface water would not exceed moderate.

If any project was proposed in a floodplain, the installation would comply with EO 11988, which requires federal agencies to avoid to the maximum extent possible adverse

impacts associated with occupying or modifying the 100-year floodplain. Therefore, short- and long-term adverse impacts on floodplains would not exceed moderate.

If any project would adversely affect any jurisdictional wetland or other waters of the United States in a manner exceeding the limits of a general permit, the installation would obtain a CWA Section 404 individual permit from USACE—and a CWA Section 401 permit or waiver, as applicable—and abide by any conservation measures specified in the permit(s). Doing so would ensure that projects would not result in unpermitted direct impact on a water of the United States or result in the unpermitted loss or destruction of more than one acre of jurisdictional wetlands. Therefore, short- and long-term adverse impacts on wetlands and surface waters would not exceed moderate.

For projects that border the Atlantic, Pacific, and Arctic oceans; Gulf of Mexico; Long Island Sound; and Great Lakes, the installation would prepare a federal Coastal Consistency Determination as required by the CZMA, receive approval from the regulatory agency prior to implementing the project, and abide by any agreed-upon conservation measures. Doing so would ensure that projects would not substantially degrade those water bodies. Therefore, short- and long-term adverse impacts would be minor.

Project Operation and Maintenance. Upon completion of RPMP construction projects, RPMP projects that implemented low-impact development techniques to increase the amount of stormwater to be retained on-site and percolate into the ground instead of being conveyed to an outfall at a receiving surface water body would result in long-term minor-to-moderate beneficial impacts on surface water and groundwater. Because less stormwater would enter surface waters, less sediment and other pollutants would enter them. Because more stormwater would percolate into the ground, aquifer recharge rates would increase, albeit slightly. Examples of those RPMP projects include buildings of all types; transportation infrastructure such as roads, parking lots, and airfield surfaces (e.g., runways, taxiways, and parking aprons); sports fields and courts; and utility projects implemented specifically to improve stormwater drainage features.

Some RPMP projects would have no perceptible impact on water resources. These projects would each have a limited footprint that would not substantially alter the topography, hydrology, and amount of impervious surface at a site. Examples include trails, fences, utility lines, and other utility features with a small footprint; outdoor memorials; and exercise equipment. In addition, projects that designate land for open space, parks, and other functions where it would remain in its current state with minimal modification would not alter water features or site hydrology and thus would have no or negligible long-term adverse impacts on water resources.

3.13.5.2.3 Mitigation Measures and Best Management Practices

No mitigation measures would be necessary to reduce adverse impacts to below significant levels. No BMPs other than compliance with applicable laws and regulations; permits; and Army and installation programs, policies, and plans would be necessary.

This would include compliance with CWA, UFC 2-100-01, AR 210-20, AR 200-1, and the installation's INRMP and Water Resources Management Plan. If a CWA individual permit is required, wetland mitigations may be required.

3.13.5.3 Impacts of the No Action Alternative

Under the No Action Alternative, each garrison would continue to use its existing process to conduct master planning. Individual garrisons' processes, although not standardized, would be conducted in accordance with UFC 2-100-01 and AR 210-20, and installation RPMPs would be in compliance with NEPA. Furthermore, each garrison's RPMP would identify and implement projects in compliance with all applicable laws and regulations, including NEPA; therefore, the impacts on water resources from implementing the No Action Alternative would be similar to those expected under the Proposed Action and would include short-term impacts ranging from minor to moderate adverse and long-term impacts ranging from moderate adverse to moderate beneficial.

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4.0 CUMULATIVE EFFECTS

Cumulative effects result when the effect of a proposed action on the environment is added to separate past, present, and reasonably foreseeable future actions, regardless of the agency or person who undertakes those actions. Cumulative effects can accrue from individually minor but collectively significant actions being taken over an extended period of time. Taken individually, environmental impacts might be incremental, occurring one action at a time; however, determining the significance of those actions collectively requires an analysis of their larger effect on the environment. Cumulative effects would be significant if the total effects of separate past, present, and reasonably foreseeable future actions would be greater than the identified significance criteria for a resource.

The scope of this analysis of cumulative effects includes the impact of the Proposed Action—developing, adopting, updating, and implementing RPMPs—in combination with other past, present, and future actions occurring within each IMCOM installation's planning region. The ROI for the cumulative effects analysis is IMCOM garrisons and their adjacent communities.

When considering the implementation of a specific proposed action on an installation, installations would use the Environmental Checklist in Appendix A of this PEA to determine whether tiering from this PEA is appropriate and whether additional NEPA analysis—including additional cumulative analysis—is necessary. The installation must consider whether other on- and off-post actions are underway or proposed that, when combined with the potential effects of the Proposed Action, could have a significant cumulative effect on the human or natural environment on- or off-post.

4.1 CUMULATIVE SETTING

The juxtaposition of military operations with the surrounding communities has been the baseline in each IMCOM installation's ROI for as long as that installation has been in operation. Military installations and their surrounding communities have a symbiotic relationship, with each relying on the other. IMCOM installations are located in rural, suburban, and urban environments. They are located in areas in which the surrounding population is decreasing, relatively stable, or increasing. Both large and small construction, renovation, and demolition projects of buildings, utilities, and transportation infrastructure occur almost continuously on- and off-post.

Over the years, development has occurred as necessary on installations to meet current mission requirements and in the surrounding communities to meet the needs of the area's population and changing community characteristics. Past, present, and reasonably foreseeable future on- and off-post projects vary widely in number and scope depending on the setting within each ROI and the amount of development

occurring there. Projects include construction, demolition, and renovation of buildings, utilities, transportation infrastructure, and natural infrastructure (e.g., parks and trails).

On- and off-post planners develop management plans for orderly growth and development of a region. In addition to the RPMP, IMCOM garrison management plans and programs that influence conditions on the installation and in the surrounding communities are discussed in the resource sections and include the ACUB program, Air Installation Compatible Use Zone, ICRMPs, INRMPs, JLUSs or CUPs, and RCMPs. Those plans are updated periodically to respond to changing conditions, and the RPMP is coordinated with them so they do not conflict.

Off-post, the primary planning document is the general plan. Analogous to an RPMP, cities and counties use those plans to prepare for anticipated population growth, demands on utility and transportation infrastructure, and development of commercial, industrial, recreational, and residential areas. In addition, cities and counties might prepare other plans to address topics of special relevance to their community such as transportation or sustainability plans.

4.2 CUMULATIVE EFFECTS UNDER THE PROPOSED ACTION

Cumulative beneficial effects would result from planning efforts in which on- and off-post stakeholders coordinate with each other. Although some plans do not require the involvement of off-post stakeholders, the RPMP, JLUS or CUP, INRMP, and ICRMP require coordination with government agencies or the local community. Coordinating with off-post stakeholders during the planning process can aid an IMCOM installation in identifying potential conflicts that might occur as a result of air, land use, noise, socioeconomic, utilities, or transportation impacts. Planners could then develop plans that would avoid or mitigate adverse impacts on the human and natural environments on- and off-post, resulting in a minor beneficial cumulative effect.

This section discusses the cumulative effects on each resource area of the Proposed Action and the No Action Alternative.

4.2.1 Air Quality and Greenhouse Gases

Any project that would produce emissions would have an adverse effect on air quality. The primary sources of air emissions would include construction, demolition, or renovation; operating emission-producing equipment; and vehicle traffic. The states and territories take into account the effects of all past, present, and reasonably foreseeable future projects, activities, and associated emissions when they develop their State Implementation Plans (SIPs) under the CAA. Estimated emissions from each proposed action are required by law to conform to the applicable SIP, regulations or rules regulating fugitive dust, and any required operating permit. In addition, federal projects in nonattainment or maintenance areas must not exceed the General Conformity thresholds. The purpose of those regulations, plans, and permits is to maintain or

achieve conformance with the NAAQS; therefore, compliance with them would limit cumulative air quality effects to less than significant.

Although GHG emissions are increasing nationwide and currently no numeric threshold limiting GHG emissions exists, DoD and many state and commercial initiatives are being implemented to reduce GHG emissions; therefore, cumulative effects on GHGs would be less than significant.

4.2.2 Biological Resources

Implementing more than one project at a time or multiple projects over a period of time could have cumulative effects on biological resources. The installations have INRMPs for managing biological resources while maintaining mission readiness. If there was the potential for protected species to be affected, garrison personnel would be required to consult with the appropriate federal and state agencies and implement measures as necessary to minimize and mitigate adverse impacts. Cumulative long-term impacts on biological resources would also occur from increasing human disturbance and loss of habitat. IMCOM garrisons would be responsible for complying with applicable laws, ordinances, and regulations, including the ESA, MBTA, and BGEPA, and, when applicable, the related state requirement, and any previously agreed-upon conservation measures (e.g., those included in a Biological Opinion) to protect biological resources. Therefore, cumulative effects on biological resources would be less than significant.

4.2.3 Cultural Resources

Cultural resources are protected by a body of legislation requiring consultation with appropriate consulting parties. IMCOM installations have ICRMPs for managing cultural resources while maintaining mission readiness. If there was the potential for cultural resources to be affected, garrison personnel would identify mitigation measures through project-specific consultation with the SHPO (and other consulting parties as appropriate) and implement them to mitigate any adverse impacts. Present and reasonably foreseeable future actions that might affect cultural resources include any ground-disturbing activities, demolition or renovation of NRHP-eligible or -listed properties, and projects that would be in or within the viewshed of an NRHP-eligible or -listed historic district. Such actions also would include those with the potential to introduce incremental changes in the character of use or introduction of visible, atmospheric, or audible elements. Whether on- or off-post, these actions would need to be compliant with regulations relevant to cultural resources, including the ARPA, NAGPRA, and NHPA. Therefore, cumulative effects on cultural resources would be less than significant.

4.2.4 Earth Resources

Many past, present, and reasonably foreseeable future projects would involve ground disturbance. Multiple ground-disturbing projects occurring at the same time would contribute to cumulative effects on earth resources, primarily by causing soil erosion. To

limit soil erosion during construction, garrison personnel would be required to obtain and comply with NPDES permits for project proponents and develop and implement Erosion and Sediment Control Plans, SWPPPs, and Fugitive Dust Control Plans when required by law. All construction projects, whether private or government, would be required to comply with applicable laws and regulations, which would limit soil erosion during construction.

In areas where population is growing, past, present, and reasonably foreseeable future projects would introduce new buildings and infrastructure that would increase the amount of impervious surfaces in the ROI. Although IMCOM mandates the use of low-impact development to manage stormwater and prevent erosion and sedimentation, off-post projects in many areas would not be required by law or policy to use those techniques and many would not. Therefore, although the Proposed Action would have a beneficial contribution to cumulative effects by implementing low-impact development techniques that reduce soil erosion, cumulative effects on earth resources would be adverse but less than significant.

4.2.5 Hazardous Materials and Waste

Cumulative effects on hazardous materials and waste would occur from the cumulative risk of inadvertent or unintentional spills or releases of hazardous materials or waste. That risk would be managed through compliance with applicable federal, state, and local regulations that guide the safe use, handling, storage, and disposal of regulated materials.

Pesticide application would be part of on- and off-post projects as a component of vegetation management and to control weeds and nuisance species. The use of pesticides has the potential to result in cumulative adverse impacts on vegetation, wildlife, water quality, and public health. Those cumulative effects would be limited by the fact that all pesticide applications must comply with the EPA- and state-approved application instructions and that pesticides can be applied by someone who is a DoD- or state-certified pesticide applicator. Therefore, cumulative effects on hazardous materials and waste would be less than significant.

4.2.6 Human Health and Safety

Cumulative effects on human health and safety would occur from the cumulative risk of human exposure to health hazards and safety risks. Most construction projects would involve those risks and the operation and maintenance of other projects might involve ongoing risks such as safety of operations and maintenance workers. Those risks would be managed through compliance with applicable federal, state, and local regulations regarding human health and safety such as those promulgated by OSHA. Therefore, cumulative effects on human health and safety would be less than significant.

4.2.7 Land Use

Long-term beneficial cumulative effects on land use would be expected. Planning processes for on- and off-post land-use would account for previous development to avoid conflicts with existing land use to the maximum extent practicable. Those land-use planning processes would also take into account future land uses that would avoid to the maximum extent practicable conflicts or incompatibilities with existing and future land uses. Therefore, cumulative effects on land use would be less than significant.

4.2.8 Noise

Cumulative noise effects occur when noise from more than one noise source occurs at approximately the same time and within an area in which a common sensitive noise receptor could hear it. Noise associated with the Proposed Action would occur in the short term during construction, demolition, and renovation projects and in the long term from operation of new facilities such as HVAC systems, backup generators, transformers, and traffic. Activities outside IMCOM installations such as vehicle and air traffic, mowing and other landscaping activities, HVAC units operating, and use of heavy equipment associated with construction would add to the noise environment. Cumulative projects would generally occur at different times and be spaced out across the ROI so that noise would not combine to produce significant impacts. All projects, whether private or government, would be required to comply with the Noise Control Act and applicable local noise ordinances, so overall noise levels would remain appropriate for the type of land use. Therefore, cumulative effects on noise would be less than significant.

4.2.9 Socioeconomics

Beneficial cumulative economic effects would be expected over time from jobs created, income earned, and business sales in the ROI associated with on- and off-post planning and development activities, resulting in a minor-to-moderate beneficial cumulative effect. The Proposed Action would have no disproportionate impacts on low-income or minority populations, and so would not contribute to any cumulative effects on environmental justice. Both on- and off-post projects would implement reasonable measures to avoid disproportionate risks to the safety and health of children. Planners and developers on- and off-post would plan for recreational opportunities in each installation's ROI that would reflect the types and number of recreational opportunities considered by the community to be important. Therefore, cumulative effects on socioeconomics would be beneficial.

4.2.10 Transportation and Traffic

In areas with dense development or growing populations, congestion on the vehicular transportation network would increase over time. On- and off-post planners and developers would anticipate this trend by planning projects that would help alleviate traffic congestion by expanding either the vehicular transportation network, public transit

opportunities, or infrastructure for alternative modes of transportation such as walking and bicycling. Construction and maintenance activities associated with implementing those projects would temporarily increase congestion; however, over the long term, improved traffic flow and safety compared to the baseline would be expected. Therefore, cumulative effects on transportation and traffic would be beneficial.

4.2.11 Water Resources

Past, present, and reasonably foreseeable future on- and off-post projects would have short- and long-term, less-than-significant impacts on water resources. Impacts would include increases in stormwater runoff, increases in demand for water, degradation of water quality, and lower rates of groundwater recharge. Stormwater management during construction would be addressed, as required by law, by SWPPP and/or appropriate erosion and sedimentation control BMPs that would be approved by installation staff or the state before construction begins. Post-construction stormwater runoff would be controlled and managed to minimize degradation of water quality, control the quantity of water leaving a site both short term (during construction) and long term, and minimize the potential for adverse cumulative impacts.

Although IMCOM garrisons and their surrounding communities are aware of the need to conserve water resources and, in some areas, are planning to maintain or reduce demand for water, demand is expected to increase in many areas, especially those in which the population is growing. Increased demand for water results in lower groundwater recharge rates and less available surface water. To manage use of surface and groundwater resources, IMCOM garrisons and other users in some areas must obtain water rights or permits that limit the amount of water they can use from a given source. The regulatory agencies that manage water resources determine those limits by balancing the needs of humans and the natural environment.

If wetlands were to be impacted, the developer would be required to comply with the CWA and state regulatory requirements, including obtaining permits prior to construction and implementing mitigation measures as necessary to minimize and mitigate any adverse wetland impacts. Projects proposed in coastal areas would need to comply with the CZMA and be reviewed and approved by the state. All construction projects, whether private or government, would be required to comply with federal, state, and local regulations, as applicable. Therefore, cumulative effects on water resources would be less than significant.

4.2.12 Utilities

Past, present, and reasonably foreseeable future on- and off-post projects would result in changes to utility infrastructure and ongoing filling of landfills. On- and off-post planners and developers would anticipate needs for utility infrastructure expansion and maintenance to meet user demand. Construction and maintenance activities associated with implementing those projects could involve temporary service disruptions; however,

over the long term, a sufficient and reliable supply of basic utilities (e.g., water, energy, communications, and waste disposal) would be expected. On- and off-post projects of all types would contribute to the quantity of debris disposed of at regional landfills, gradually filling landfills and reducing available capacity. On- and off-post planners and developers would anticipate the need for additional landfill capacity or new landfills and either expand existing facilities or build new ones prior to reaching capacity at existing landfills. Therefore, cumulative effects on utilities would be less than significant.

4.3 CUMULATIVE EFFECTS UNDER THE NO ACTION ALTERNATIVE

Under the No Action Alternative, on- and off-post planners and developers would continue to use their existing processes to conduct master planning and implementing projects that anticipate and are responsive to the community's needs. Planning efforts on- and off-post would take into account the orderly growth and development of the region and identify conflicts or potential conflicts and solutions for avoiding or minimizing them, resulting in minor-to-moderate beneficial cumulative effects. On- and off-post planners would continue to collaborate on issues that affect both the IMCOM installation and the local community (such as noise and air quality) and identity ways to avoid or mitigate adverse effects on the human and natural environments. Specific on- and off-post projects would have cumulative effects similar to those described for the Proposed Action. Therefore, implementing the No Action Alternative would have minor-to-moderate beneficial and less than significant adverse cumulative effects on the human and natural environments.

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5.0 SUMMARY OF POTENTIAL EFFECTS AND CONCLUSION

5.1 SUMMARY OF POTENTIAL EFFECTS

For each resource area analyzed, Table 6 provides a summary of anticipated impacts using the categorization noted in Section 3.1.

As discussed in Section 1.4, IMCOM garrisons would use the Environmental Checklist in Appendix A of this PEA when considering an individual proposed action to determine whether tiering from this PEA is appropriate, or whether additional NEPA analysis is needed. If the installation concludes that additional NEPA analysis is necessary, it must be completed before any irreversible and irretrievable commitments of resources related to that action occurs.

Table 6. Summary of Potential Effects

Resource area	Proposed Action (Preferred Alternative)	No Action Alternative
Air quality and GHGs	Short-term minor-to-moderate adverse; long-term minor beneficial to moderate adverse	Short-term minor-to-moderate adverse; long-term minor beneficial to moderate adverse
Biological resources	Short-term minor-to-moderate adverse; long-term beneficial to minor adverse	Short-term minor-to-moderate adverse; long-term beneficial to minor adverse
Cultural resources	Short-term minor adverse; long-term ranging from none to moderate adverse	Short-term minor adverse; long-term ranging from none to moderate adverse
Earth resources	Short- and long-term minor beneficial to minor adverse	Short- and long-term minor beneficial to minor adverse
Hazardous substances and waste	Short- and long-term minor beneficial to minor adverse	Short- and long-term minor beneficial to minor adverse
Human health and safety	Short-term minor adverse; long-term minor beneficial	Short-term minor adverse; long-term minor beneficial
Land use	No short-term; long-term minor beneficial	No short-term; long-term minor beneficial
Noise	Short-term minor-to-moderate adverse; long-term minor beneficial to minor adverse	Short-term minor-to-moderate adverse; long-term minor beneficial to minor adverse
Socioeconomics	Short-term minor beneficial; long-term minor beneficial to moderate adverse	Short-term minor beneficial; long-term minor beneficial to moderate adverse

Resource area	Proposed Action (Preferred Alternative)	No Action Alternative
Transportation and traffic	Short-term negligible-to-moderate adverse; long-term impacts moderate adverse to moderate beneficial	Short-term negligible-to-moderate adverse; long-term impacts moderate adverse to moderate beneficial
Utilities	Short- and long-term minor beneficial to minor adverse	Short- and long-term minor beneficial to minor adverse
Water resources	Short-term minor-to-moderate adverse; long-term moderate adverse to moderate beneficial	Short-term minor-to-moderate adverse; long-term moderate adverse to moderate beneficial

5.2 SUMMARY OF MITIGATION MEASURES AND BEST MANAGEMENT PRACTICES

As described in Section 3.0, no mitigation measures would be necessary to reduce potential adverse impacts to below significant levels. BMPs—most of which are already standard practice at IMCOM garrisons—would be implemented as applicable to manage and further reduce impacts. Each IMCOM garrison would select the appropriate BMPs for their installation's conditions and the individual proposed action being evaluated. BMPs presented in Section 3.0 are summarized in Table 7.

Table 7. Summary of Best Management Practices

Resource area	Best management practice
Air quality and GHGs	• Consider low-emission options for all emissions-producing equipment (e.g., HVAC systems, generators, transformers, and refrigeration units). • To suppress dust during ground-disturbing activities, cover or apply water or soil stabilizers to soil. Limit or halt soil-disturbing activities during high-wind conditions when work is in soil classified as highly erodible. • Limit driving on unpaved surfaces to necessary vehicles only and drive slowly on unpaved surfaces. • Cover soil stockpiles and trucks transporting soil or other materials that could cause airborne dust. • Use electricity from established power sources rather than generators whenever possible. • Service equipment in accordance with the manufacturer's recommendations and repair equipment promptly to prevent excess emissions. • Minimize vehicle and equipment idling times. • Clean excess soil from heavy equipment and trucks leaving the work zone to prevent off-site transport.

Resource area	Best management practice
Biological resources	• Avoid vegetation removal (e.g., tree removal, tree trimming, brush removal, or disturbance of vegetated ground) during the migratory bird breeding season and protected bat roosting season (typically spring to late summer). Specific dates would depend upon the species present locally and would be specified in the garrison's INRMP. If vegetation must be removed during that time, have a qualified biologist conduct a preconstruction survey to identify nests, maternity roosts, burrows, and other wildlife shelters of concern and determine the most appropriate action to take to comply with species protection requirements (e.g., establishing buffers around nests or rescheduling construction activities). The preconstruction survey would be conducted close enough to the start of construction activities that no substantial changes in the interim period would be likely. • Inspect and/or wash vehicle tires prior to vehicles entering and exiting construction areas with disturbed ground to reduce the potential spread of invasive species. • Promptly revegetate disturbed areas with native plant species from the garrison's approved plant list. • Comply with any installation tree removal and replacement policies. • For construction projects, implement an approved SWPPP and/or appropriate erosion and sedimentation control BMPs such as silt fences, straw bale dikes, diversion ditches, limiting total area of disturbance, and sedimentation ponds.
Cultural resources	• None other than compliance with applicable laws and regulations; permits; and Army and installation programs, policies, and plans.
Earth resources	• Minimize soil erosion that could result in fugitive dust by implementing appropriate control measures such as applying water or other stabilizers to exposed soils, limiting vehicle speeds on unpaved surfaces, minimizing or temporarily stopping ground-disturbing activities during high-wind conditions, and training staff on fugitive dust control practices. • Minimize soil erosion that could result in sedimentation of surface water during ground-disturbing activities by implementing appropriate control measures such as silt fences, inlet protection, diversion ditches, and training staff on erosion and sediment control practices. • After finishing ground-disturbing activities, promptly establish permanent ground cover using native species from the garrison's approved plant list, mulch, and/or other appropriate cover materials (e.g., rock, gravel). • Scarify soils in areas where impervious surfaces would be removed to reduce soil compaction and allow precipitation to infiltrate naturally. • To the extent possible, limit construction in areas with earth-related hazards such as karst terrain or other areas where subsidence could occur, areas with steep or unstable slopes, or seismically active areas. When construction in such areas is necessary, conduct a geotechnical study and implement its recommended measures to limit risk.

Resource area	Best management practice
Hazardous substances and waste	• None other than compliance with applicable laws and regulations; permits; and Army and installation programs, policies, and plans. In particular, each garrison has established BMPs for spill prevention and response contained in its SPCC or other management plans. All contractors working on the garrison must also implement these and other BMPs.
Human health and safety	• None other than compliance with applicable codes such as National Fire Protection Association, National Electric Code, etc.; laws and regulations; permits; and Army and installation programs, policies, and plans.
Land use	• None other than compliance with applicable laws and regulations; permits; and Army and installation programs, policies, and plans.
Noise	• In densely developed, mixed-use areas, incorporate appropriate levels of sound-dampening construction materials into the design of buildings where a quiet interior is important such as homes, hospitals, lodging, schools, childcare facilities, offices, and classrooms. • Where no local noise ordinance applies, limit construction to daytime hours on weekdays to the maximum extent practicable. • For all construction activities, implement the industry standard practice of operating construction equipment in accordance with the manufacturer's specifications and with standard mufflers and other noise-reducing equipment in proper operating condition. • For construction activities within 800 feet of on- or off-post noise-sensitive receptors, use equipment mufflers and/or other sound-shielding devices as appropriate. Shut down noise-generating equipment when not in use. If complaints about noise are received, increase sound-reducing measures appropriately. • Position HVAC systems, generators, transformers, and other noise-producing equipment away from areas where quiet is important and shield it with walls or other enclosures as appropriate to reduce sound transmission.
Socioeconomics	• Fence construction sites and post appropriate signage to deter unauthorized people, including children, from accessing them.
Transportation and traffic	• Route and schedule construction vehicles to minimize conflicts with other traffic to the maximum extent practical. • To safely and efficiently manage traffic around construction sites, implement appropriate measures from Part 6 of the *Manual on Uniform Traffic Control Devices for Streets and Highways* (DOT and FHWA 2012), or other applicable standards or guidance document, as applicable. For larger projects, consider preparing a written temporary traffic control plan—either as a stand-alone document or as a portion of the project's health and safety plan—to ensure that BMPs are clear and easy to communicate to all parties involved in the work. • For ACP projects, coordinate with the jurisdictional agency or agencies of nearby off-post areas (e.g., the local community and/or state DOT) on

Resource area	Best management practice
	using signage, flaggers, public notification, and other appropriate BMPs for traffic management during construction, as applicable.
Utilities	• None other than compliance with applicable laws and regulations; permits; and Army and installation programs, policies, and plans.
Water resources	• None other than compliance with applicable laws and regulations; permits; and Army and installation programs, policies, and plans. If a CWA individual permit is required, wetland mitigations may be required.

5.3 CONCLUSION

This PEA examines the Proposed Action (the Preferred Alternative) and a No Action Alternative. The analysis in this PEA supports the conclusion that no significant adverse impacts, either individual or cumulative, on the human or natural environment would result from implementing the Proposed Action or No Action Alternative, provided that the Proposed Action is implemented in compliance with all applicable laws, ordinances, and regulations and subject to application of the Environmental Checklist (Appendix A) for consideration of individual proposed actions.

Issuance of a FONSI is appropriate, and an EIS need not be prepared before implementing the Proposed Action.

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- Army Environmental Command (AEC)
- HQ USACE
- USACE Construction Engineering Research Laboratory (CERL)
- USACE, Mobile District
- Office of the Deputy Chief of Staff (ODCS), G-9, Headquarters, Department of the Army (HQDA)
- Office of the Judge Advocate General, HQDA
- Office of the Assistant Secretary of the Army (Environment, Safety, and Occupational Health) [ODASA(ESOH)]
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Appendix A.
Environmental Checklist

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ENVIRONMENTAL CHECKLIST FOR PROGRAMMATIC ENVIRONMENTAL ASSESSMENT FOR REAL PROPERTY MASTER PLANS ON U.S. ARMY INSTALLATION MANAGEMENT COMMAND GARRISONS

INTRODUCTION

This checklist supports referencing the *Programmatic Environmental Assessment for Real Property Master Plans on U.S. Army Installation Management Command Garrisons* (PEA) and the associated Finding of No Significant Impact (FONSI).

The purpose of this checklist is to ensure that actions proposed by U.S. Army Installation Management Command (IMCOM) garrisons comply with the National Environmental Policy Act of 1969 (NEPA) (Title 42 of the *United States Code* Section 4321), the Council on Environmental Quality (CEQ) NEPA regulations (Title 40 of the *Code of Federal Regulations* [C.F.R.] Parts 1500–1508), and the Army's NEPA implementing regulation (32 C.F.R. Part 651), *Environmental Analysis of Army Actions*.

The checklist facilitates consideration of environmental effects of IMCOM garrisons developing, adopting, implementing, and updating Real Property Master Plans (RPMPs) and their component documents using a standardized process in accordance with Department of Defense and Army guidance and encourages community partner participation in that process. It also provides a framework for identifying installation-specific NEPA requirements.

The terms "IMCOM garrisons," "IMCOM installations," "garrisons," and "installations" apply only to Army installations or joint bases managed by Headquarters, IMCOM. IMCOM installations located outside the United States and its territories are not subject to NEPA.

USING THIS CHECKLIST

The RPMP PEA should be used by any IMCOM garrison considering a proposed action to (1) adopt a new or updated RPMP component document or (2) implement a project in the RPMP or any of its component documents. If an installation-specific proposed action is outside the scope of the PEA, additional NEPA analysis will be required.

IMCOM installations wanting to tier from the RPMP PEA and associated FONSI should use this checklist to determine whether reliance on the PEA—and possibly other NEPA analyses and one or more categorical exclusions [CXs]—is appropriate or if additional NEPA analysis is needed before implementing a proposed action. When completing the

checklist, garrison personnel might need to consult multiple subject matter experts to ensure careful and informed consideration of all potential impacts.

Based on the responses in the checklist, a garrison must complete the appropriate NEPA documentation as follows:

- If the garrison responds “no” to each checklist item, no further NEPA analysis would appear to be required. The proposed action would qualify for a record of environmental consideration (REC), indicating that the analysis in the PEA has adequately addressed the action. If any CXs apply, the REC should cite them.
- If the garrison responds “yes” or “maybe” to any checklist item, the garrison could reconsider the proposed action to determine if it can be altered to avoid the effect on the resource and the answer changed to “no.” If, upon investigation of each “yes” and “maybe” response, the installation determines that no further environmental analysis is required and that a REC is appropriate, it should maintain documentation of the results of the investigation with the REC and completed checklist.
- If the garrison responds “yes” or “maybe” to any checklist item and the impact(s) cannot be avoided, additional environmental analysis might be required as part of an installation-level NEPA process. The garrison should consider all previous NEPA documentation prepared for the installation and whether Environmental Assessments for RPMPs at other garrisons have addressed the same issue(s).

If the garrison concludes that additional NEPA analysis is necessary, it must prepare the documentation before any irreversible and irretrievable commitments of resources are made for the proposed action. The installation-specific NEPA document can focus on resource areas for which “yes” was checked and tier from the RPMP PEA for resource areas for which the response was “no.”

If the garrison determines that no further NEPA analysis is required, it should prepare a REC reflecting that determination. If it is relying on the RPMP PEA or any other NEPA analyses, the REC should cite 32 C.F.R. § 651.12(a)(2): “action is adequately covered within an existing EA or EIS,” name the applicable analysis (e.g., the PEA) and associated FONSI or Record of Decision, and state where the cited NEPA document(s) can be accessed. If the garrison is relying on this PEA, at least in part, the completed checklist should be attached. If any CXs apply, the REC should also include those citations. Lastly, the REC should discuss any specific issues that prompted modification or special consideration of the proposed action (e.g., the items for which the initial response was “yes” or “maybe”).

ADDITIONAL REGULATORY REQUIREMENTS

This checklist is designed to assist IMCOM garrisons in identifying the documentation required to meet NEPA requirements. Requirements under other federal and state environmental laws, ordinances, and regulations also must be met, as applicable. Those requirements may include resource-specific consultations with other federal, state, and Tribal governments and agencies—such as consulting with the U.S. Fish and Wildlife Service (USFWS) (or National Oceanic and Atmospheric Administration [NOAA] Fisheries for marine species) under the Endangered Species Act (ESA) or a State Historic Preservation Officer (SHPO) under the National Historic Preservation Act (NHPA)—or completing NEPA-like requirements of the state in which the garrison is located.

Resource Area and Questions	***Check the appropriate response:***
Air Quality	
Would the proposed action result in a National Ambient Air Quality Standards attainment area becoming a nonattainment area?	☐ Yes ☐ No ☐ Maybe
Would the proposed action produce emissions within a nonattainment or maintenance area that exceeded the General Conformity Rule *de minimis* (of minimal importance) threshold values established in 40 C.F.R. § 93.153(b)?	☐ Yes ☐ No ☐ Maybe
Would the proposed action generate nationally substantial greenhouse gas emissions by producing more than 75,000 tons of carbon dioxide equivalent from non-exempt sources per year?	☐ Yes ☐ No ☐ Maybe
Biological Resources	
Note: All required USFWS and/or NOAA Fisheries informal or formal consultation must be completed prior to implementing a proposed action.	
Would the proposed action result in an unpermitted take of a federally protected species (e.g., under the ESA, Migratory Bird Treaty Act, Marine Mammal Protection Act, and Bald and Golden Eagle Protection Act)?	☐ Yes ☐ No ☐ Maybe
Would the proposed action result in detrimental alteration of USFWS-designated critical habitat?	☐ Yes ☐ No ☐ Maybe

Resource Area and Questions	***Check the appropriate response:***
Would the proposed action result in local extirpation of a sensitive non-federally listed species?	☐ Yes ☐ No ☐ Maybe
Would the proposed action have a substantial detrimental effect on the amount or diversity of common native wildlife or plant communities?	☐ Yes ☐ No ☐ Maybe
Would the proposed action have a high probability of increasing the spread of nonnative or invasive species?	☐ Yes ☐ No ☐ Maybe
Cultural Resources	
Note: All required NHPA Section 106 consultation with the SHPO, Advisory Council on Historic Preservation (ACHP), federally recognized Native American Tribes (Tribes), including Native Alaskans or Native Hawaiians, and other relevant consulting parties must be completed prior to the approval of the expenditure of any federal funds on the undertaking. Proposed projects requiring ground disturbance in areas not yet surveyed for cultural resources would require a survey prior to construction beginning.	
Would the proposed action result in NHPA-defined adverse effects, as defined by the NHPA, on a historic property listed or eligible for listing on the NRHP that are not resolved through a Memorandum of Agreement with the SHPO, and possibly with the ACHP?	☐ Yes ☐ No ☐ Maybe
Would the proposed action create conditions that would stop the traditional use of sacred or ceremonial sites or resources by a Tribe or Tribes without discussions on a government-to-government level with the affected Tribe(s)?	☐ Yes ☐ No ☐ Maybe
Earth Resources	
Would the proposed action induce waterborne soil erosion resulting in sedimentation that would violate federal or state water quality laws?	☐ Yes ☐ No ☐ Maybe
Would the proposed action induce windborne soil erosion that would violate federal or state air quality laws?	☐ Yes ☐ No ☐ Maybe
Would the proposed action expose people or structures to substantial earth-related hazards by locating structures on a geologic unit or soil that is unstable or that would become unstable as a result of the project, potentially resulting in a landslide, lateral spreading, subsidence, liquefaction, or collapse?	☐ Yes ☐ No ☐ Maybe

Resource Area and Questions	***Check the appropriate response:***
Hazardous Materials and Waste	
Would the proposed action expose people or substantially increase their risk of exposure to hazardous substances, including explosives, without adequate protection?	☐ Yes ☐ No ☐ Maybe
Would the proposed action substantially increase the risk of spills or releases of hazardous substances?	☐ Yes ☐ No ☐ Maybe
Would the proposed action disturb restoration sites or the progress of cleanup activities at those sites so that adverse effects on human health or the environment could result?	☐ Yes ☐ No ☐ Maybe
Would the proposed action conflict with established land-use controls?	☐ Yes ☐ No ☐ Maybe
Would the proposed action result in noncompliance with applicable federal, state, or local laws or regulations; or with permits related to hazardous materials and waste?	☐ Yes ☐ No ☐ Maybe
Human Health and Safety	
Would the proposed action substantially increase human exposure to a health hazard or safety risk?	☐ Yes ☐ No ☐ Maybe
Would the proposed action result in noncompliance with or a violation of laws and regulations governing human health and safety?	☐ Yes ☐ No ☐ Maybe
Land Use	
Would the proposed action substantially conflict with established land uses in the area or create a major land-use incompatibility?	☐ Yes ☐ No ☐ Maybe
Would the proposed action physically divide an established community?	☐ Yes ☐ No ☐ Maybe
Would the proposed action be inconsistent with adopted land-use control plans that required regulatory agency acceptance, to include land-use controls for restoration sites and habitat conservation plans to protect endangered species?	☐ Yes ☐ No ☐ Maybe
Noise	
Would the proposed action result in a violation of an applicable noise ordinance?	☐ Yes ☐ No ☐ Maybe

Resource Area and Questions	***Check the appropriate response:***
Would the proposed action site incompatible land uses near existing on- or off-installation noise-sensitive receptors?	☐ Yes ☐ No ☐ Maybe
Would the proposed action result in the location of new noise-sensitive receptors in incompatible noise environments (i.e., noise zones II or III; reference Army Regulation 200-1, Chapter 14)?	☐ Yes ☐ No ☐ Maybe
Socioeconomics	
Note: Under NEPA, significant socioeconomic impacts by themselves do not require that an environmental impact statement be prepared unless the action also will have natural or physical environmental impacts (40 C.F.R. § 1508.14).	
Would the proposed action result in substantial gains or losses in population that would exceed historic rates of growth or decline?	☐ Yes ☐ No ☐ Maybe
Would the proposed action result in a decrease in jobs that substantially raises the regional unemployment rates?	☐ Yes ☐ No ☐ Maybe
Would the proposed action result in a substantial change in the housing market such as severe housing shortages or surpluses?	☐ Yes ☐ No ☐ Maybe
Would the proposed action result in a substantial increase in need for public services (e.g., fire protection, law enforcement, schools)?	☐ Yes ☐ No ☐ Maybe
Would the proposed action result in a substantial long-term loss or displacement of recreational opportunities and resources?	☐ Yes ☐ No ☐ Maybe
Would the proposed action result in disproportionately high and adverse environmental or human health impacts to an identified minority or low-income population per Executive Order (EO) 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*? *Note*: Refer also to the CEQ's 1997 *Environmental Justice Guidance Under NEPA*.	☐ Yes ☐ No ☐ Maybe

Resource Area and Questions	***Check the appropriate response:***
Would the proposed action result in a disproportionately high and adverse environmental health or safety risk to an identified population of children per EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, such as the increase in a child's risk of exposure to an environmental hazard (through contact, ingestion, or inhalation) or the risk of potential substantial harm to the safety of children?	☐ Yes ☐ No ☐ Maybe
Transportation and Traffic	
Would the proposed action substantially increase traffic congestion or delays for an extended period of time?	☐ Yes ☐ No ☐ Maybe
Would the proposed action substantially increase transportation safety hazards due to an RPMP project design feature?	☐ Yes ☐ No ☐ Maybe
Would the proposed action overwhelm existing parking capacity?	☐ Yes ☐ No ☐ Maybe
Utilities	
Would the proposed action exceed the available capacity of existing utilities and supporting infrastructure without an appropriate plan to provide the additional needed capacity?	☐ Yes ☐ No ☐ Maybe
Would the proposed action cause long term or frequent disruption of utility service on- or off-installation?	☐ Yes ☐ No ☐ Maybe
Would the proposed action violate regulatory or permit limits related to utilities (e.g., by creating a wastewater discharge greater than that allowed by an existing permit)?	☐ Yes ☐ No ☐ Maybe
Water Resources	
Note: Projects might require one or more permits and approvals, including National Pollutant Discharge Elimination System (NPDES) permits, Clean Water Act Section 401 and 404 permits, and a Coastal Zone Management Act Federal Consistency Determination.	
Would the proposed action cause an exceedance of a total maximum daily load?	☐ Yes ☐ No ☐ Maybe
Would the proposed action cause a detrimental change in the impairment status of a surface water?	☐ Yes ☐ No ☐ Maybe

Resource Area and Questions	***Check the appropriate response:***
Would the proposed action result in an unpermitted direct impact on a water of the United States?	☐ Yes ☐ No ☐ Maybe
Would the proposed action result in the unpermitted loss or destruction of more than 1 acre of jurisdictional wetlands?	☐ Yes ☐ No ☐ Maybe
Would the proposed action cause erosion and sedimentation that would violate water quality laws or the terms of a NPDES stormwater permit?	☐ Yes ☐ No ☐ Maybe
Public Involvement	
Would the proposed action be of interest to the off-post community such that additional public involvement efforts should be conducted?	☐ Yes ☐ No ☐ Maybe
Would the proposed action be environmentally controversial?	☐ Yes ☐ No ☐ Maybe
General	
Would the proposed action involve any extraordinary circumstances that are not captured in the responses above that might necessitate additional analysis?	☐ Yes ☐ No ☐ Maybe
Cumulative Effects	
Are there other actions underway or proposed whose effects—when combined with the potential effects of implementing the proposed plan—could have a significant adverse cumulative effect on human health or the environment?	☐ Yes ☐ No ☐ Maybe

ACRONYMS AND ABBREVIATIONS

ACHP	Advisory Council on Historic Preservation
CEQ	Council on Environmental Quality
C.F.R.	Code of Federal Regulations
CX	Categorical Exclusion
EO	Executive Order
ESA	Endangered Species Act
FONSI	Finding of No Significant Impact
IMCOM	U.S. Army Installation Management Command
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NOAA	National Oceanic and Atmospheric
NPDES	National Pollutant Discharge Elimination System
PEA	Programmatic Environmental Assessment
REC	Record of Environmental Consideration
RPMP	Real Property Master Plan
SHPO	State Historic Preservation Officer
Tribes	Native American Tribes, including Native Hawaiians and Native Alaskans
USFWS	U.S. Fish and Wildlife Service

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Appendix B.
Examples of Key Elements of Real Property Master Plans

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APPENDIX B. EXAMPLES OF KEY ELEMENTS OF REAL PROPERTY MASTER PLANS

This appendix presents examples of some of a Real Property Master Plan's (RPMP's) standard component documents as well as some key elements of those documents to provide additional context for readers of the Programmatic Environmental Assessment (PEA).

Examples are provided of the following elements of RPMP component documents, which are only some of those required in the plan:

- **Vision Plan:** Examples of vision statements, goals, and objectives and a Framework Plan.
- **Installation Planning Standards:** Examples of building standards, street standards, and landscape standards.
- **Long-Range Component (or Installation Development Plan):** Examples of Constraints maps, an Illustrative Plan of a Preferred Alternative, and a Regulating Plan.
- **Capital Investment Strategy:** An example Capital Investment Strategy that provides a bridge between project ideas and an executable funding program.

B.1 VISION PLAN

The primary components of a Real Property Vision Plan are the (1) Real Property Vision Statement, (2) planning goals that support implementation of the Real Property Vision Statement, and (3) specific and measurable objectives that define how each planning goal will be achieved.

Figure 1. Fort Drum, NY, Vision Plan

B.1.1 REAL PROPERTY VISION STATEMENT

Figure 2 is an example of a Real Property Vision Statement for Fort Drum, NY.

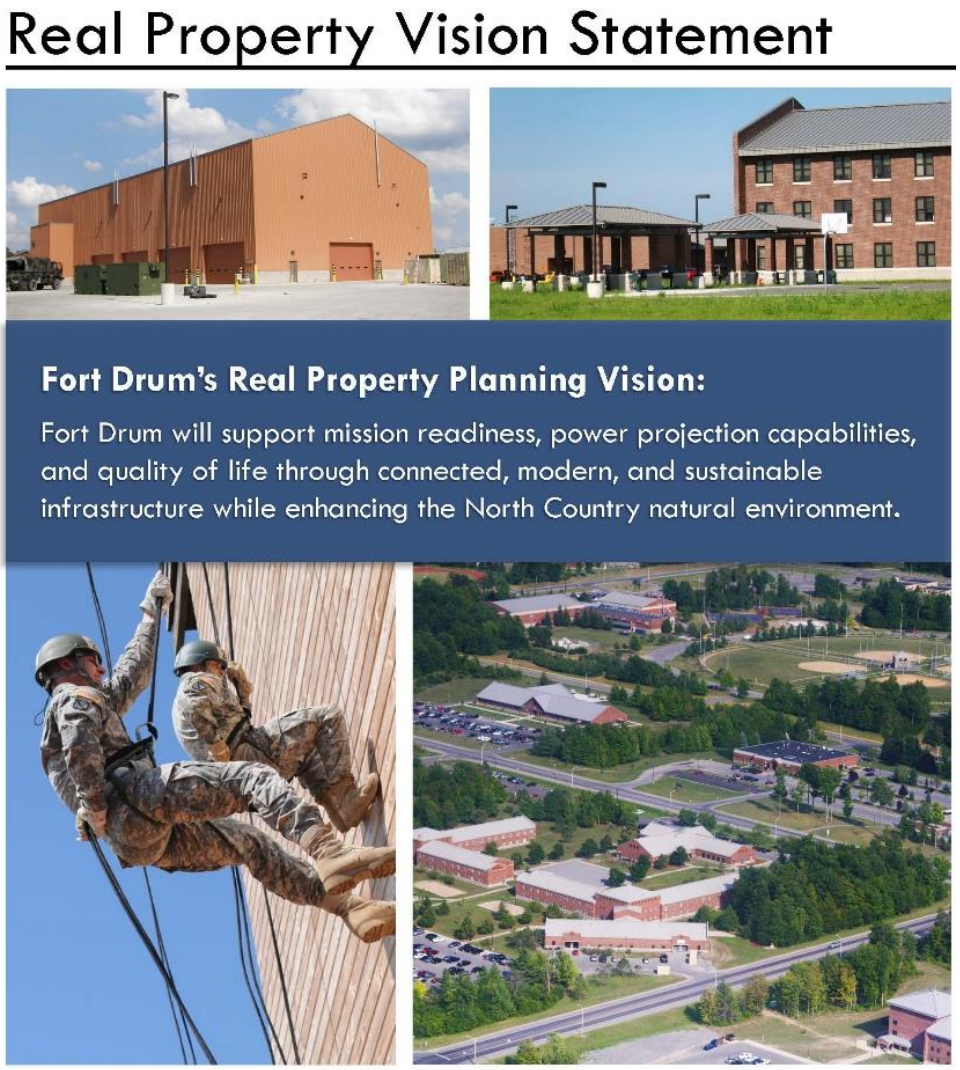

Figure 2. Vision Statement from Fort Drum, NY, Real Property Vision Plan, February 2016.

Other examples of Real Property Vision Statements are:

- "Our planning vision is to create a family of sustainable neighborhoods with multistory, flexible buildings and neighborhood parks connected by great streets that preserve and celebrate our natural resources and cultural heritage." – U.S. Army Garrison Hawaii, February 2013.
- "Fort Drum will support mission readiness, power projection capabilities, and quality of life through connected, modern, and sustainable infrastructure while enhancing the North Country natural environment." – Fort Drum, February 2016.

B.1.2 PLANNING GOALS

Goals are established to help achieve the Real Property Vision Statement. The following examples of planning goals (Figure 3) support Fort Drum's Real Property Vision Statement, which is presented in Section B.1.1:

- Goal 1. Connected Networks: Provide improved circulation through flexible roads, trails, and efficient utility corridors.
- Goal 2. Modern Infrastructure: Provide state-of-the-art, multipurpose real property to promote an efficient, user-friendly environment.
- Goal 3. Sustainable Infrastructure: Provide flexible, energy efficient, and adaptable real property that responds to ever-changing requirements.
- Goal 4. Enhanced North Country Natural Environment: Preserve, protect, and integrate natural systems, habitats, and their functions.

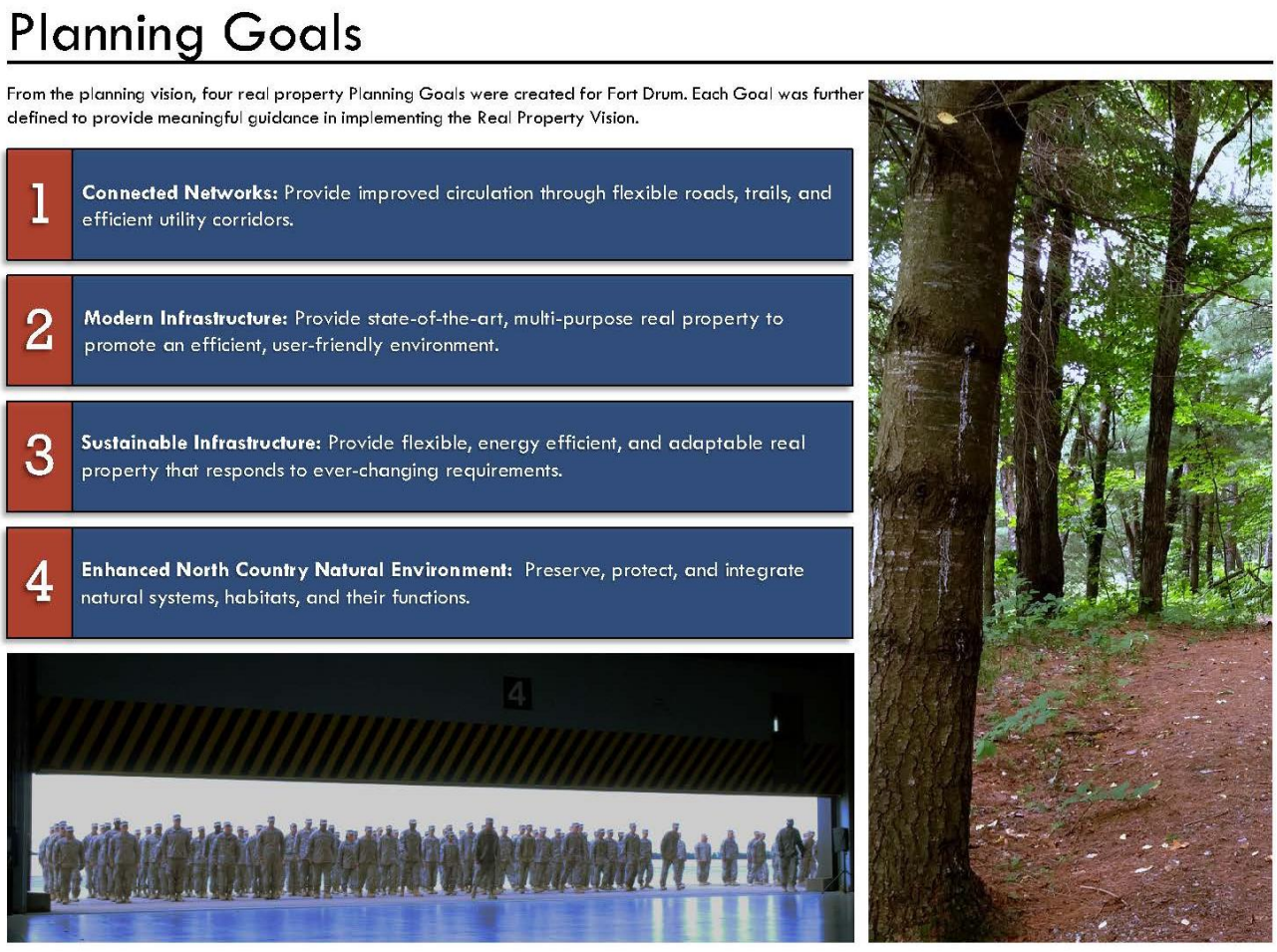

Figure 3. Planning Goals from Fort Drum, NY, Real Property Vision Plan, February 2016.

B.1.3 OBJECTIVES

Objectives are specific, measurable ways to reach the Real Property Vision Statement and support the planning goals. The following examples of objectives are taken from Fort Drum's planning goals 3 and 4, which are presented in Section B.1.2 and repeated here for reference:

- Goal 3: Sustainable Infrastructure
  - Prioritize infill development opportunities.
  - Practice compact development.
  - Utilize clear span structures and demountable walls to facilitate building reconfiguration.
  - Implement renewable energy best practices where practical.
- Goal 4: Enhanced North Country Natural Environment
  - Practice low impact development.
  - Utilize conservation planning to maintain intact natural buffers while preserving land for the mission.
  - Consider local climate and regional characteristics in architectural and site planning.

Figure 4. goals and objectives from Fort Drum, NY, Real Property Vision Plan, February 2016.

B.2 INSTALLATION PLANNING STANDARDS

Installation Planning Standards provide the installation's guidelines for developing sustainable and efficient facilities. They provide a clear set of guidelines to ensure that the installation's vision statement, goals, and planning objectives are achieved. Installation Planning Standards are applicable to all installation tenants and include building, street, and landscape standards.

B.2.1 BUILDING STANDARDS

Building standards regulate building form. They shape public space that is safe, comfortable, and functional through placement and envelope controls on each building type (e.g., administrative, barracks, and commercial) and include force protection standards. For each general type of building, there is a building envelope standard, which is shown in the Regulating Plan (see Section B.3.3). Typical elements in each building envelope standard are massing, height, type of use, and placement of facilities and infrastructure. The building standards aim for the minimum level of land-use control necessary to meet the planning goals.

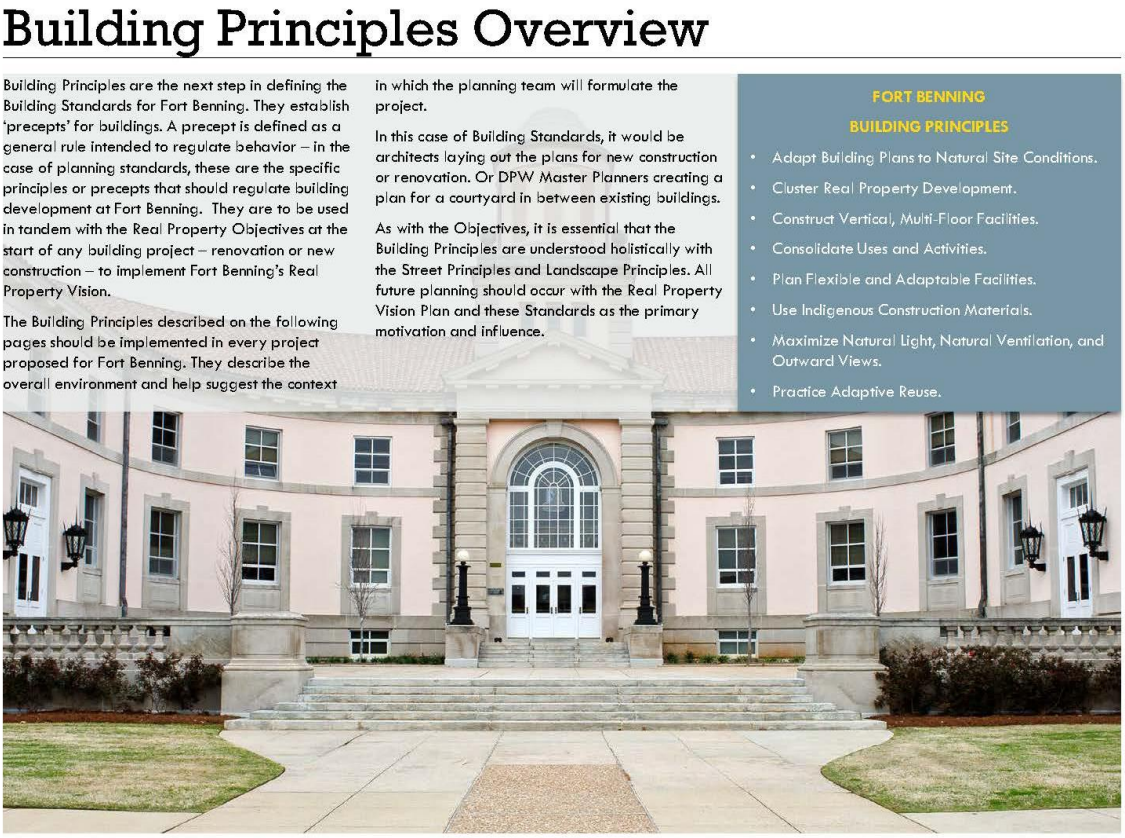

Figure 5. Building Principles that Support the Building Standards from Fort Benning, GA, Installation Planning Standards, February 2016.

B.2.2 STREET STANDARDS

The street standards illustrate typical configurations for all street types specified on an installation through street envelope standards, which are required elements of the Installation Planning Standards. Each street envelope standard addresses vehicular traffic-lane widths, sidewalk and tree planting area dimensions, and on-street parking configurations. After a street (or section of a street, as an entire street need not follow the same standard throughout its length) is selected, the characteristics desired for that street or street section should be documented in the street standards.

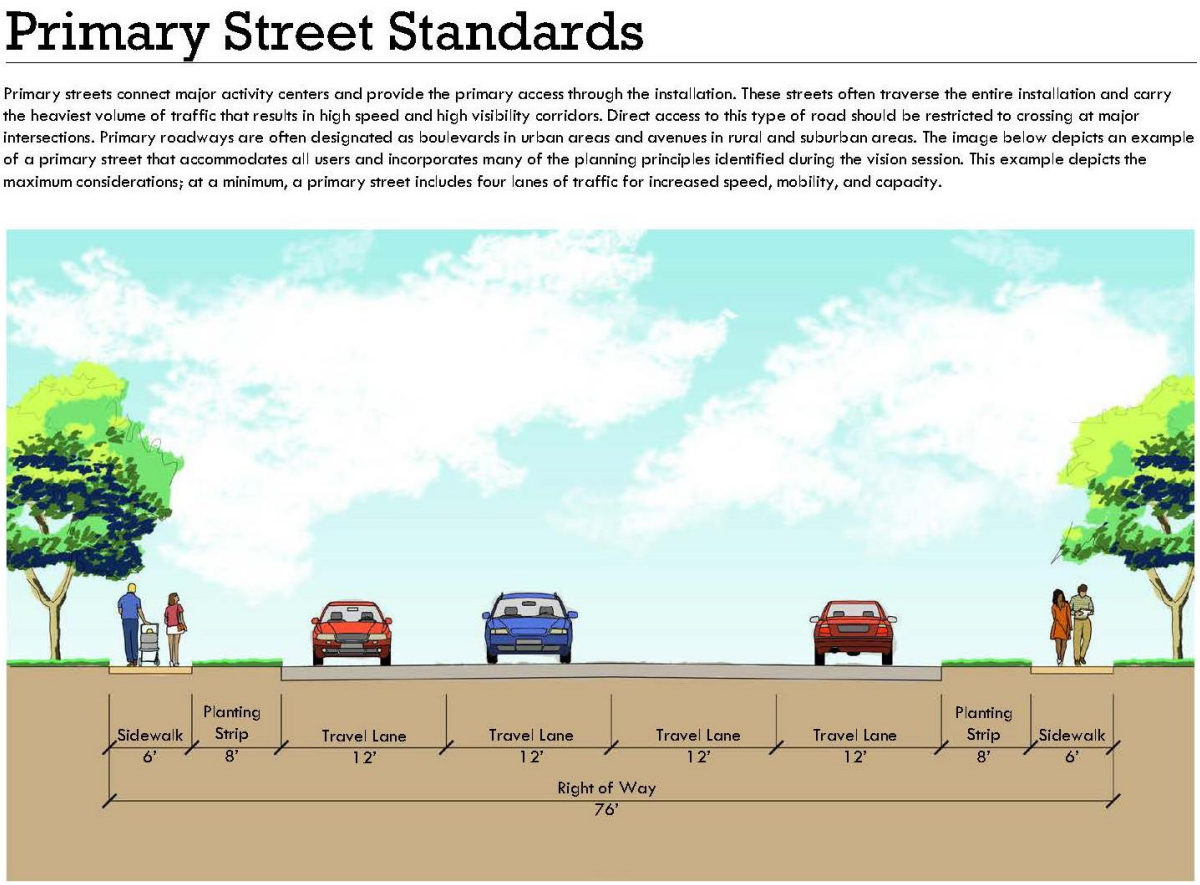

Figure 6. Sample Street Standards from Fort Benning, GA, Installation Planning Standards, February 2016.

B.2.3 LANDSCAPE STANDARDS

Landscape standards show, at a minimum, appropriate type and placement of landscape elements, which include natural landscape features (e.g., trees, shrubs, and ground cover), man-made landscape features (e.g., street furniture, signage, and lighting), and landscape-related force protection features. Landscape standards identify the installation's landscape themes. They address both planning intent and allowable plant materials and site-furnishing elements.

Plant Palette

Plant Material Suitability Matrix		Type		Growth			Flower				Interest				Light			Resistant		Soil Moisture			Function										
		Deciduous	Evergreen	Slow	Medium	Fast	Fall	Summer	Spring	Inconspicuous	Flower	Bark	Foliage	Fruit / Wildlife	Shade	Sun / Shade	Sun	Drought	Pest	Moist	Average	Dry	Street Tree	Shade Tree	Screen	Massing	Windbreak	Hedge	Bank Cover / Natural Area	Specimen	Open Area / Site	Not Available in Nurseries
Botanical Name	**Common Name**	**Characteristics**									**Culture**												**Use**									
Canopy Trees																																	
Liriodendron tulipiferastyraciflua	Boxelder	●			●	●			●	●			●	●		●	●	●		●	●			●						●	●		
Liriodendron tulipifera	Tulip Tree	●				●			●		●		●				●			●	●			●		●				●	●		
Magnolia grandiflora	Magnolia		●		●	●		●			●		●	●		●	●	●		●	●				●					●	●		
Metasequoia glyptostroboides	Dawn Redwood*	●				●				●		●	●				●			●	●		●		●	●			●	●	●		
Nyssa sylvatica	Blackgum	●			●				●	●		●	●	●		●	●		●	●					●		●			●			
Oxydendrum arboretum	Sourwood	●		●				●			●		●			●	●				●	●				●					●			
Pinus echinata	Shortleaf Pine		●			●			●	●		●					●	●					●				●					●		
Pinus elliottii	Slash Pine		●			●			●	●				●			●				●	●					●					●		
Pinus palustris	Longleaf Pine		●			●			●	●		●	●			●	●				●						●				●			

Tulip Tree

Blackgum

Shortleaf Pine

Longleaf Pine

Figure 7. Sample Landscape Standards from Fort Benning, GA, Installation Planning Standards, February 2016.

B.3 LONG-RANGE COMPONENT

The Long-Range Component is called the Installation Development Plan in Unified Facilities Criteria 2-100-01, *Installation Master Planning*. It comprises Area Development Plans (ADPs) for each of the districts identified in the Vision Plan. The Framework Plan (a part of the Vision Plan) identifies the planning districts on the installation, each of which has its own ADP. Each ADP includes a variety of maps and plans, including a map of environmental constraints, Illustrative Plan, and Regulating Plan.

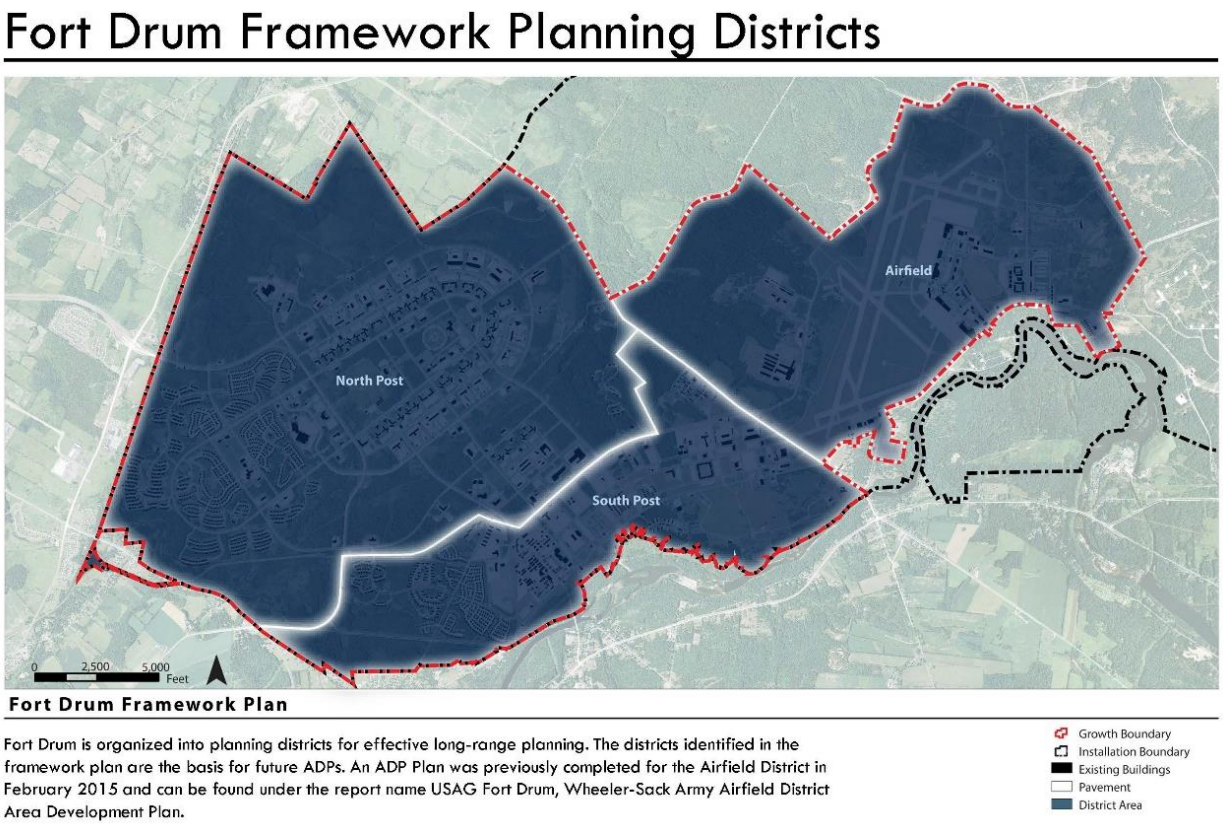

Figure 8. Districts Used to Identify Area Development Plans from Fort Drum, NY, Framework Plan, February 2016.

B.3.1 CONSTRAINTS TO DEVELOPMENT MAPS

Identifying planning constraints at an installation involves a multitude of considerations, including natural and cultural resources information, environmental quality issues, airspace restrictions, operational safety requirements, the built environment, and other factors that influence facility site planning on the installation. This information is critical when beginning to identify land for mission redevelopment, expansion, or new mission acceptance.

Built constraints generally refer to existing development within a district. Environmental constraints are natural elements that have the potential to influence real property development on an installation. Operational constraints directly affect an installation's options for future growth and have associated rules and restrictions to which the installation must adhere. Other influences on development depicted on maps include the location of existing utility lines and topography.

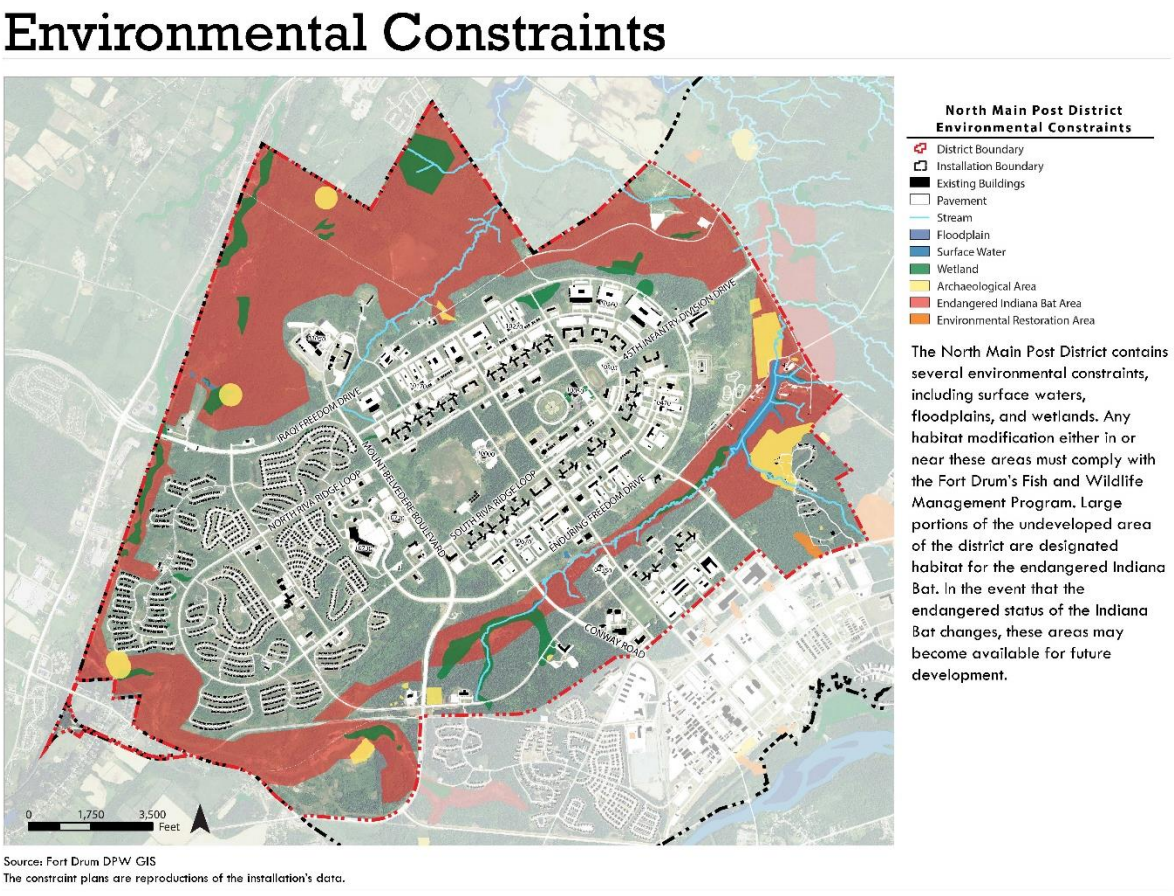

Figure 9. Environmental Constraints from Fort Drum, NY, North Main Post District Area Development Plan, June 2017.

B.3.2 ILLUSTRATIVE PLAN FOR A PREFERRED ALTERNATIVE

The Illustrative Plan, shown for a Preferred Alternative, is a conceptual view of what the build-out of the district could look like in 20 years or more. It incorporates all the known requirements at the time for future program requirements in phased plans.

Stakeholders develop multiple alternatives for future development within the district and then select one or combine two or more of them to create the preferred alternative, which is depicted as the Illustrative Plan. The Illustrative Plan represents only one construction variation, a snapshot in time, that meets the planning vision. The Illustrative Plan shows one way of developing the site based on the Regulating Plan but can change as the plan is updated (while the Regulating Plan is enduring and rarely changes).

The Illustrative Plan visualization of the potential buildout scenario is used to develop the Capital Investment Strategy. Projects are listed as short-, mid-, and long-range efforts, providing a phased approach to development.

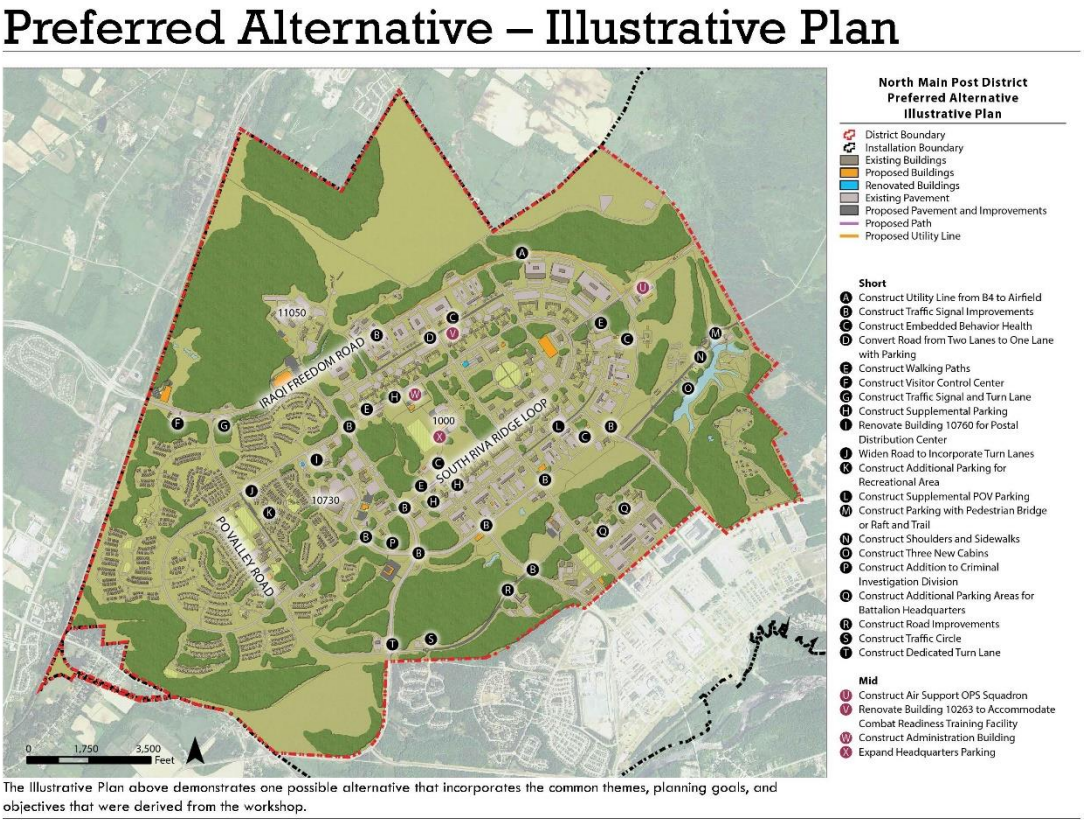

Figure 10. Illustrative Plan of a Preferred Alternative for Fort Drum, NY, North Main Post District Area Development Plan, June 2017.

B.3.3 REGULATING PLAN

The Regulating Plan serves as the installation's "zoning code" for development and uses the Illustrative Plan as a basis for its development. The Regulating Plan functions as an enhanced land-use plan, providing increased flexibility over the traditional land-use style of planning. Building and street standards are applied to specific zones and build-to lines, and allowable uses per zone are established. The Regulating Plan uses the building envelope standard, street envelope standard, and landscape standards in the Installation Planning Standards to help define the required build-to lines.

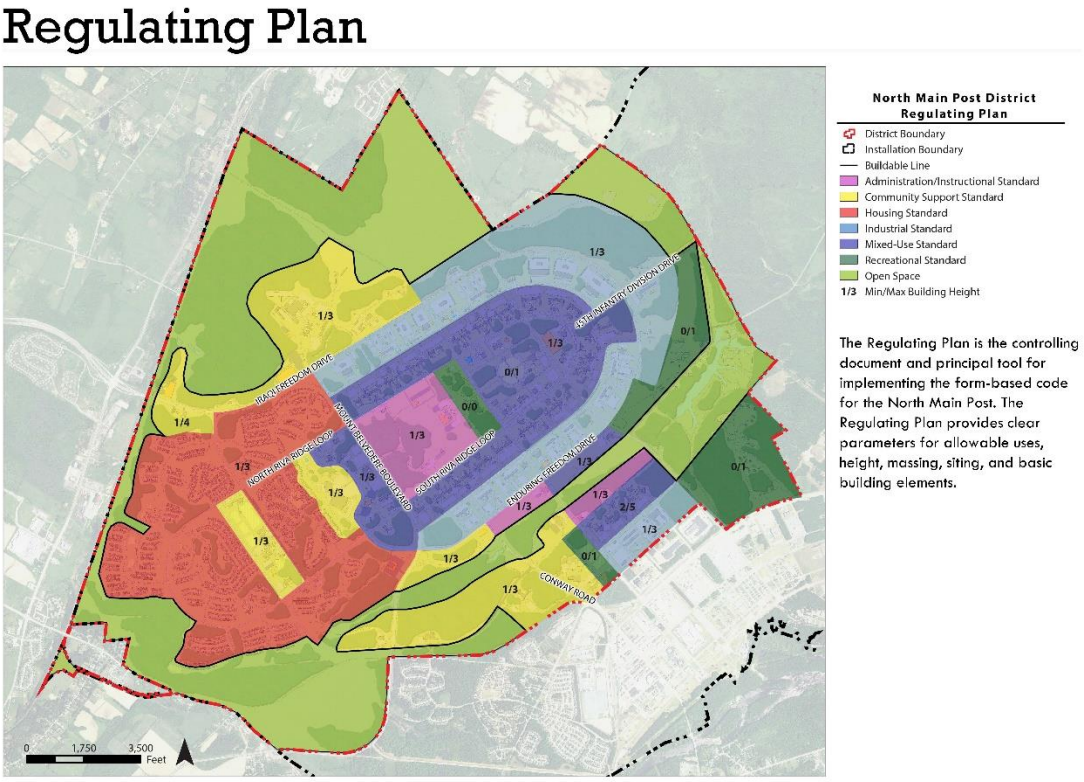

Figure 11. Regulating Plan from Fort Drum, NY, North Main Post District Area Development Plan, June 2017.

B.4 CAPITAL INVESTMENT STRATEGY

The Capital Investment Strategy is another of the five standard components of the RPMP. It links long-term planning to plan implementation. The Capital Investment Strategy represents projects identified by stakeholders during the planning process as well as major projects already programmed. It shows all projects at an installation in both map and table formats. Each project's status is identified as budgeted, programmed, or planned. The funding source and a rough order of magnitude project cost are also provided.

The projects are prioritized by a ranking, or recommended order, in which each project should be developed. The Capital Investment Strategy process is designed to provide a 5-year (short-term), 6–10-year (mid-term), and 11–20-year (long-term) look at program execution.

Figure 12. Capital Investment Strategy Brochure for Fort Campbell, KY.