

Draft

# PROGRAMMATIC ENVIRONMENTAL ASSESSMENT

Real Property Master Plan | Fort Jackson, South Carolina



June 2013



**ATKINS**

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**Preliminary Draft**  
**Programmatic Environmental**  
**Assessment**  
**2012 Real Property Master Plan**  
**Fort Jackson, South Carolina**

**Prepared for:**

**U.S. Army Garrison Fort Jackson**



**June 2013**

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# 141 Acronyms and Abbreviations

142

|     |          |   |
|-----|----------|---|
| 143 | AADT     | Annual Average Daily Traffic                                    |
| 144 | ACM      | asbestos containing materials                                   |
| 145 | ACPs     | access control points   |
| 146 | ASHERA   | Asbestos Hazardous Emergency Response Act                       |
| 147 | AHMP     | Asbestos Hazard Management Plan                                 |
| 148 | AIRFA    | American Indian Religious Freedom Act                           |
| 149 | AIT      | Advanced Individual Training                                    |
| 150 | AQCR     | Air Quality Control Region                                      |
| 151 | AR       | Army Regulation   |
| 152 | AAFES    | Army Air Force Exchange Service                                 |
| 153 | ARPA     | Archaeological Resources Protection Act                         |
| 154 | AST      | aboveground storage tanks                                       |
| 155 | AT/FP    | Anti Terrorism/Force Protection                                 |
| 156 | ATC      | Army Training Command   |
| 157 | B2       | Breathe Better Program  |
| 158 | BCT      | Basic Combat Training   |
| 159 | BSDP     | best site design practices                                      |
| 160 | CEQ      | Council on Environmental Quality                                |
| 161 | USACHPPM | U.S. Army Center for Health Promotion and Preventative Medicine |
| 162 | CAA      | Clean Air Act   |
| 163 | CAIR     | Clean Air Interstate Rule                                       |
| 164 | CEPs     | Central Energy Plants   |
| 165 | CFR      | Code of Federal Regulations                                     |
| 166 | CIS      | Capital Investment Strategy                                     |
| 167 | CMOG     | Central Midlands Council of Governments                         |

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|     |       |   |
|-----|-------|---|
| 168 | CO    | carbon monoxide   |
| 169 | COR   | contracting officer representative                        |
| 170 | CWA   | Clean Water Act   |
| 171 | CX    | Categorical Exclusion                                     |
| 172 | CZMP  | Coastal Zone Management Program                           |
| 173 | DA    | Department of Army  |
| 174 | dB    | decibels  |
| 175 | dBA   | A-weighted sound level measurements                       |
| 176 | DDESB | Department of Defense Explosives Safety Board             |
| 177 | DOL   | Director of Logistics                                     |
| 178 | DPTMS | Directorate of Plans, Training, Mobilization and Security |
| 179 | DPW   | Directorate of Public Works                               |
| 180 | DS    | direct support  |
| 181 | EA    | Environmental Assessment                                  |
| 182 | EAC   | Early Action Compact                                      |
| 183 | ECO   | Environmental Compliance Officer                          |
| 184 | EIS   | Environmental Impact Statement                            |
| 185 | EISA  | Energy Independence and Security Act                      |
| 186 | EMS   | Environmental Management System                           |
| 187 | ENV   | Environmental Division                                    |
| 188 | EO    | Executive Order   |
| 189 | EOD   | Explosives Ordnance Disposal                              |
| 190 | EPA   | Environmental Protection Agency                           |
| 191 | EPAct | Energy Policy Act   |
| 192 | ESA   | Endangered Species Act                                    |
| 193 | ESMP  | Endangered Species Management Plan                        |
| 194 | FCC   | Facility Category Code                                    |
| 195 | FCU   | future capital upgrade                                    |

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|     |          |   |
|-----|----------|---|
| 196 | FEMA     | Federal Emergency Management Agency                           |
| 197 | FLUM     | Future Land Use Map   |
| 198 | FNSI     | Finding of No Significant Impact                              |
| 199 | FTX      | Field Training Exercise                                       |
| 200 | FYDP     | Future Years Defense Plan                                     |
| 201 | GHGs     | greenhouse gasses   |
| 202 | GS       | general support   |
| 203 | HAZCOM   | Hazardous Communication                                       |
| 204 | HQDA     | Headquarters, Department of the Army                          |
| 205 | I3MP     | Installation Information Infrastructure Modernization Program |
| 206 | IAP      | Installation Action Plan                                      |
| 207 | ICRMP    | Integrated Cultural Resources Management Plan                 |
| 208 | ICU      | initial capital upgrades                                      |
| 209 | ICUZ     | Installation Compatible Use Zone                              |
| 210 | IDG      | Installation Design Guide                                     |
| 211 | IET      | Initial Entry Training  |
| 212 | IMCOM    | Installation Management Command                               |
| 213 | IMCOM SE | Installation Management Command Southeast Region              |
| 214 | IMT      | Initial Military Training                                     |
| 215 | INRMP    | Integrated Natural Resources Management Plan                  |
| 216 | IPB      | Installation Planning Board                                   |
| 217 | IPM      | integrated pest management                                    |
| 218 | IPMP     | Integrated Pest Management Plan                               |
| 219 | IRP      | Installation Restoration Program                              |
| 220 | ISCP     | Installation Spill Contingency Plan                           |
| 221 | ISO      | International Organization for Standardization                |
| 222 | ISSA     | Interservice Support Agreement                                |
| 223 | ITAM     | Integrated Training Area Management                           |

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|     |                          |  |
|-----|--------------------------|--|
| 224 | JLUS                     | Joint Land Use Study                                   |
| 225 | kV                       | kilovolt   |
| 226 | LBP                      | lead-based paint                                       |
| 227 | LCTA                     | Land Condition Trend Analysis                          |
| 228 | LRAM                     | Land Rehabilitation and Maintenance                    |
| 229 | LRC                      | Long Range Component                                   |
| 230 | leQ                      | Equivalent Sound Level                                 |
| 231 | LUC                      | Land Use Controls                                      |
| 232 | $\mu\text{g}/\text{m}^3$ | micrograms per cubic meter                             |
| 233 | MACH                     | Moncrief Army Community Hospital                       |
| 234 | MG                       | million gallons  |
| 235 | Mgd                      | million gallons per day                                |
| 236 | MHPI                     | Military Housing Privatization Initiative              |
| 237 | MMRP                     | Military Munitions Response Program                    |
| 238 | MOA                      | Memorandum of Agreement                                |
| 239 | MOI                      | Memorandum of Instruction                              |
| 240 | MOEC                     | Memorandum of Environmental Consideration              |
| 241 | MOU                      | Memorandum of Understanding                            |
| 242 | MPTM                     | Master Training Technical Manual                       |
| 243 | MSA                      | Metropolitan Statistical Area                          |
| 244 | MTC                      | McCrary Training Center                                |
| 245 | MTMC                     | Military Traffic Management Command                    |
| 246 | MVA                      | megavolt amperes                                       |
| 247 | MWR                      | Morale, Welfare and Recreation                         |
| 248 | NAAQS                    | National Ambient Air Quality Standards                 |
| 249 | NAGPRA                   | Native American Graves Protection and Repatriation Act |
| 250 | NCU                      | new capital upgrade                                    |
| 251 | NEC                      | Network Enterprise Center                              |

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|     |        |   |
|-----|--------|---|
| 252 | NEPA   | National Environmental Policy Act               |
| 253 | NGR    | National Guard Regulation                       |
| 254 | NHPA   | National Historic Preservation Act              |
| 255 | NOA    | Notice of Availability                          |
| 256 | NO2    | Nitrogen Dioxide                                |
| 257 | NOX    | nitrogen oxides                                 |
| 258 | NPDES  | National Pollutant Discharge Elimination System |
| 259 | NPL    | National Priorities List                        |
| 260 | NRCS   | Natural Resource Conservation Service           |
| 261 | NRHP   | National Register of Historic Places            |
| 262 | NSR    | New Source Review                               |
| 263 | O3     | Ozone   |
| 264 | ONMP   | Operational Noise Management Plan               |
| 265 | OSHA   | Occupational Safety and Health Act              |
| 266 | PA     | Programmatic Agreement                          |
| 267 | PAL    | Privatization of Army Lodging                   |
| 268 | Pb     | lead  |
| 269 | PCB    | polychlorinated biphenyl                        |
| 270 | PCPI   | per capita personal income                      |
| 271 | PEA    | Programmatic Environmental Assessment           |
| 272 | PIP    | Priority Improvement Projects                   |
| 273 | PM 2.5 | fine particulate matter                         |
| 274 | PM10   | particulate matter                              |
| 275 | POL    | petroleum oil and lubricants                    |
| 276 | POW    | Prisoners of War                                |
| 277 | ppm    | parts per million                               |
| 278 | PS     | pump station                                    |
| 279 | PSUS   | Palmetto State Utilities Service                |

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|     |        |  |
|-----|--------|--|
| 280 | QRP    | Quality Recycling Program  |
| 281 | R&R    | renewals & replacement projects                                  |
| 282 | RCI    | Residential Communities Initiative                               |
| 283 | RCRA   | Resource Conservation and Recovery Act                           |
| 284 | RCW    | red-cockaded woodpecker  |
| 285 | RDT&E  | Research Development Test & Evaluation                           |
| 286 | REC    | Record of Environmental Consideration                            |
| 287 | ROD    | Record of Decision   |
| 288 | ROI    | Region of Influence  |
| 289 | ROW    | right-of-way   |
| 290 | RPMP   | Real Property Master Plan  |
| 291 | RPMPD  | Real Property Master Plan Digest                                 |
| 292 | RPO    | Radiation Protection Officer                                     |
| 293 | SCAPCR | South Carolina Air Pollution Control Regulations                 |
| 294 | SCARNG | South Carolina Army National Guard                               |
| 295 | SCDHEC | South Carolina Department of Health and Environment              |
| 296 | SCDNR  | South Carolina Department of Natural Resources                   |
| 297 | SCE&G  | South Carolina Electric and Gas                                  |
| 298 | SCIAA  | South Carolina Institute of Archaeology and Anthropology         |
| 299 | SHPO   | South Carolina Department of Archives and History State Historic |
| 300 |        | Preservation Office  |
| 301 | SIP    | State Implementation Plan  |
| 302 | SJA    | Staff Judge Advocate   |
| 303 | SMS    | Fort Jackson Sustainability Management System                    |
| 304 | SO2    | Sulfur Dioxide   |
| 305 | SPCC   | Spill Prevention, Control and Countermeasure                     |
| 306 | SRC    | Short Range Component  |
| 307 | SWMU   | Solid Waste Management Unit                                      |
| 308 | TCP    | traditional cultural places                                      |

|     |           |   |
|-----|-----------|---|
| 309 | TRADOC    | US Army Training and Doctrine Command                       |
| 310 | UEPH      | unaccompanied enlisted personnel housing                    |
| 311 | UPS       | Uninterruptable Power Supply                                |
| 312 | USACHPPM  | US Army Center for Health Promotion and Preventive Medicine |
| 313 | USATC     | United States Army Training Center                          |
| 314 | USDA      | United States Department of Agriculture                     |
| 315 | US ATC&FJ | US Army Training Center and Fort Jackson                    |
| 316 | UST       | Underground Storage Tank                                    |



# 317 **Executive Summary**

318

## 319 **ES-1 Introduction**

320 This Programmatic Environmental Assessment (PEA) has been prepared in  
321 compliance with the National Environmental Policy Act (NEPA), as implemented by  
322 the President's Council on Environmental Quality (CEQ) regulations for Implementing  
323 the Procedural Provisions of the National Environmental Policy Act, Title 40 of the  
324 Code of Federal Regulations (CFR), Parts 1500–1508. In turn, CEQ regulations are  
325 supplemented by procedures adopted on an agency-specific basis. For the Army,  
326 the pertinent regulations are 32 CFR 650 *Environmental Protection and*  
327 *Enhancement*, and 32 CFR 651 *Environmental Analysis of Army Actions*.

328 A PEA does not analyze the specific environmental effects of an action, rather it  
329 identifies and evaluates broad types of actions and establishes a bounding analysis  
330 for those actions relative to their potential impacts. Additionally, this document  
331 provides Fort Jackson planners with information that can be used to make  
332 environmentally sound training, project and operational decisions during the earliest  
333 stages of the on-going master planning process; thereby, improving the overall  
334 efficiency of the planning and environmental review process. The PEA will eliminate  
335 the need for preparation of repetitive individual environmental documents for minor or  
336 routine actions that are similar to those evaluated in this document. However, this  
337 PEA does not relieve the burden from proponents satisfying National Environmental  
338 Policy Act (NEPA) requirements for actions and projects not sufficiently addressed in  
339 this document.

## 340 **ES-2 Proposed Action**

341 This PEA evaluates a multi-faceted Proposed Action that includes the  
342 implementation of the Fort Jackson RPMP and its Component Plans. Fort Jackson  
343 proposes to implement the RPMP in order to provide the facilities infrastructure  
344 required to support both current and future missions.

345 The master planning process is based on guidance provided in AR 210-20, which  
346 establishes and prescribes the Army RPMP process, and assigns responsibilities and  
347 prescribes policies and procedures relating to the development, content, submission,  
348 and maintenance of a RPMP. Army installation master planning is a continual  
349 evolving process that is designed to provide direction for the continued development,  
350 operation, management and maintenance of installation resources including land,  
351 facilities and infrastructure; and provides a framework whereby the installation can  
352 manage its resources in compliance with all applicable laws and regulations. It is  
353 anticipated that future updates of the RPMP will continue to occur, and that these  
354 updates will reflect new and evolving Army master planning guidance.

355

## 356 Master Plan Components

357 The RPMP documents the installation's comprehensive planning process and  
 358 consists of five components: RPMP Digest (RPMPD), Installation Design Guide  
 359 (IDG), CIS, SRC and LRC. This PEA will discuss the real property actions and  
 360 strategies contained in the LRC, CIS and SRC, which are detailed in the following  
 361 subsections.

### 362 Short-Range Component (SRC)

363 The Fort Jackson RPMP SRC (2012) provides a list of projects planned over the next  
 364 five to seven years (Future Years Defense Plan (FYDP) window (2012-2016)), as  
 365 recognized by Headquarters, Department of the Army (HQDA). The SRC provides  
 366 an overview of specific maintenance, repair, and new construction projects in the six-  
 367 year budget cycle. The SRC ensures that repair, maintenance, and construction  
 368 projects have been thoroughly evaluated and coordinated prior to funding. Table ES-  
 369 1 below provides a list of short range projects to be considered in this PEA. Many of  
 370 these projects have a completed and approved DD Form 1391 on file with Fort  
 371 Jackson's Directorate of Public Works (DPW).

372 **Table ES-1 2012 RPMP Short-Range Projects**

| Map Number | Fiscal Year | Project Name                                  | *Project Number |
|------------|-------------|---|-----------------|
| 1          | 2010        | Drill Sergeant School Barracks                | 31354           |
| 2          | 2010        | BCT 3 Barracks Complex, Phase 1               | 48169           |
| 3          | 2010        | Quad DFAC and Electrical Substation           | 69417           |
| 4          | 2011        | BCT 2 Barracks, Phase 2                       | 73299           |
| 5          | 2011        | AIT 1 Barracks Complex, Phase 1               | 53794           |
| 6          | 2011        | Training Aids Support Center (TSC)            | 71119           |
| 7          | 2012        | AIT 1 Barracks, Phase 2                       | 62995           |
| 8          | 2012        | Repair Receptee Barracks Bldg 1892            | 80589           |
| 9          | 2012        | New Parking Lot for 193 <sup>rd</sup> Brigade | 69417           |
| 10         | 2013        | BCT 3 Barracks Complex, Phase 2               | 58970           |
| 11         | 2013        | Repair Receptee Barracks Bldg 1872            | 80590           |
| 12         | 2013        | Dog Kennel Expansion                          |                 |
| 13         | 2013        | New Post Conference Room                      |                 |
| 14         | 2013        | New PSUS Maintenance Building                 |                 |
| 15         | 2014        | Repair Receptee Barracks Bldg 1880            | 80592           |
| 16         | 2014        | Pierce Terrace School Replacement             |                 |
| 17         | 2015        | BCT 4 Barracks Complex, Phase 1               | 51937           |
| 18         | 2015        | BCT 4 Barracks Complex, Phase 2               | 76218           |

| Map Number                                  | Fiscal Year | Project Name                              | *Project Number |
|---|-------------|---|-----------------|
| 19  | 2015        | AIT 2 Barracks Complex, Phase 1           | 53796           |
| 20  | 2015        | AIT 2 Barracks Complex, Phase 1           | 70989           |
| 21  | 2015        | Reception Battalion Upgrade Modernization | 53798           |
| 22  | 2016        | Improvements to Golden Arrow Road         | 76161           |
| *Project Number was obtained from the RPMP. |             |   |                 |

373

### 374 Long-Range Component (LRC)

375 The Fort Jackson RPMP LRC contains focused, detailed planning strategies that  
 376 guide the long-range use of land and facilities throughout Fort Jackson. The Plan  
 377 serves as a broad-based area framework for development of the entire Installation  
 378 projected over a period of 20 to 50 years. The LRC provides a description and  
 379 assessment of physical and environmental conditions at Fort Jackson, including an  
 380 analysis of Fort Jackson's capacity to support existing and future missions. In  
 381 addition, the report includes the Future Development Plan, which consolidates/co-  
 382 locates functions and land uses, increases development density, encourages  
 383 walkability, and promotes efficiency of mission-critical functions.

### 384 Capital Investment Strategy (CIS)

385 The Fort Jackson RPMP CIS serves as the link between the installation's SRC and  
 386 LRC and the US Army's Planning Programming Budgeting and Execution System.  
 387 The CIS is a static document that guides long-term infrastructure and facility planning  
 388 policy and only changes when significant stationing actions, mission or other Army  
 389 Defense initiatives affect the installation. The CIS is based on Army goals and Army  
 390 Installation Management Command (IMCOM) planning and programming guidance,  
 391 and includes summaries of the desired sequencing of maintenance, repair, and new  
 392 construction projects to address the facility excesses and deficiencies. The CIS  
 393 analyzes and explains in detail the planning direction that the Installation will follow  
 394 over an unconstrained planning period based upon IMCOM funding guidance, and  
 395 the development goals and objectives of the Installation.

396 In addition, the PEA describes and provides a programmatic evaluation of Ongoing  
 397 and New Mission Activities. However, the EA does not cover ranges and training  
 398 lands because these items are not covered in Fort Jackson's RPMP.

### 399 ES-3 Purpose and Need

400 The purpose of the Proposed Action is to implement the recommendations of the  
 401 2012 RPMP for Fort Jackson, South Carolina (see Figure 2.1 Fort Jackson Map) to  
 402 support current and foreseeable mission requirements. The RPMP is a living

403 document that helps the Garrison to achieve the goals of the Army and Fort Jackson  
404 through real property and infrastructure planning.

405 Many of the permanent structures at the Installation have reached the age where  
406 extensive renovations and repairs are required to extend their useful life, comply with  
407 current facility standards, and meet current and projected mission requirements. In  
408 response to these needs, Fort Jackson initiated a comprehensive master planning  
409 program. Although this program is a continuous and on-going process, the  
410 framework for guiding the future development of the installation has been  
411 documented in the Installation RPMP.

## 412 **ES-4 Alternatives**

413 As required by federal and ARs governing NEPA (40 CFR Parts 1500-1508 and 32  
414 CFR Part 651, respectively), the proponent of an action or project must identify and  
415 describe all reasonable alternatives to the proposed action or project. The master  
416 planning process includes a careful review of project- or program-specific  
417 implementation alternatives during the formulation of each proposed (construction,  
418 renovation, or maintenance) project. Typically, alternatives that are considered in  
419 planning to meet new building space requirements include:

- 420 • leasing off-site space;
- 421 • consolidation of similar or compatible uses in existing structures by increasing  
422 the use density;
- 423 • rehabilitation or adaptive reuse of existing space;
- 424 • construction of new facilities; and
- 425 • review of alternative construction sites.

426 Therefore, this PEA limits the scope of its analysis to the comparison of the No  
427 Action Alternative and “Full Implementation” of the RPMP and ongoing mission.

### 428 **No Action (Baseline) Alternative**

429 Under the No Action Alternative, Fort Jackson would continue to utilize and develop  
430 land in accordance with the 2001 RPMP and existing land use plan. Many of the  
431 concepts identified in the 2001 RPMP would remain applicable and would not be  
432 updated in support of mission goals and requirements. Further, Fort Jackson would  
433 not update and implement the short range projects, long range future land use plan  
434 and the CIS. The short-range construction projects, which would be in support of the  
435 current and planned activities and organizations, would not be completed.

436 Maintenance, repair, and operation of existing operational and support facilities  
437 would continue as currently conducted and IET including BCT and AIT levels would  
438 continue at their current intensities. The Installation would continue only with the  
439 current missions assigned and could not accept any new missions requiring the  
440 substantial renovation of, or additions to, the existing building stock or supporting  
441 infrastructure.

**442 Alternative 1 – Full Implementation of the Fort Jackson RPMP**

443 Under Alternative 1, Fort Jackson would implement the RPMP and all component  
444 plans including the SRC, LRC, and the CIS in support of mission goals and  
445 requirements. The short range projects identified in the RPMP take into  
446 consideration Fort Jackson's assigned missions, economic resources, environmental  
447 stewardship, and potential for productivity enhancements. These projects will be  
448 completed along with any associated demolition as required to support all elements  
449 of the RPMP and associated current and future mission requirements.

450 This alternative would implement the Future Development Plan which guides  
451 installation development and the reconfiguration of the use of existing facilities. The  
452 Future Development Plan reflects the land use goals and objectives of Fort Jackson,  
453 consolidates compatible land uses into functional areas that improve the efficiency of  
454 Installation operations, and improves upon the Installation's functional land use  
455 relationships.

456 Ongoing management actions associated with the Installation's contributing plans  
457 would continue with modifications, as needed. Fort Jackson could continue to take  
458 on new or modify the current missions assigned to the Installation and could accept  
459 any new missions that would require substantial renovation of, or additions to, the  
460 existing building stock or supporting infrastructure. The Installation would be able to  
461 modify land use to accommodate any changes in on-going and future missions.

462 Under Alternative 1, current ongoing mission activities would continue, and be  
463 expanded or modified as required to meet requirements associated with full  
464 implementation of the RPMP. In addition, the RPMP, including the future land use  
465 plan, all component plan elements, and new mission activities would proceed under  
466 the broad guidance and direction established by the Installation planning documents.  
467 This alternative involves accomplishing the Installation's current and future missions  
468 through a combination of renovation of existing facilities, demolition of deteriorated  
469 and obsolete structures, and construction of new facilities and infrastructure.

**470 ES-5 Environmental Consequences****471 No Action Alternative**

472 The Implementation of the No Action Alternative would result in a number of adverse  
473 impacts as detailed in Table 6-4. Under the No Action Alternative, the 2001 RPMP  
474 would continue to guide land use and installation development; no new construction  
475 projects would occur and ongoing mission activities would continue to occur at  
476 current baseline levels. Failure to implement the Master Plan (and its associated  
477 Preferred Land Use Plan) would result in the continued use of existing deteriorating,  
478 maintenance-intensive, and inefficient facilities which are approaching, or past, the  
479 end of their useful life. The continued use of deteriorated facilities and other  
480 operating limitations associated with the No Action Alternative would have an  
481 adverse impact on the ability of the installation to meet current and projected mission  
482 requirements. Further, implementation of the No Action Alternative could jeopardize  
483 the viability of Fort Jackson in this era of military installation consolidation and  
484 closure.

**485 Full Implementation Alternative**

486 The Preferred Land Use Plan for Fort Jackson proposes the expansion of existing  
487 land uses only to the extent necessary to accommodate additional construction as  
488 required to meet mission requirements and operating standards, and to allow the  
489 implementation of several relatively low-impact land use improvement concepts. The  
490 analysis of the Preferred Land Use Plan in Section 6 indicates that it would be  
491 capable of meeting mission requirements and minimizing impacts to the natural and  
492 cultural environment. Beneficial impacts on the visual character of the Installation, as  
493 well as the functionality of the facilities, would be realized while increasing overall  
494 system efficiency.

495  
496 Under the Full Implementation Alternative, a number of construction projects would  
497 be implemented over an extended period of time. This construction program would  
498 result in some short- and long-term adverse impacts to the physical, water, and  
499 biological resources on the Installation. However, since these impacts are within the  
500 range of those normally expected with construction activities, no critical or unique  
501 sensitive resources would be impacted, and no significant adverse impacts would be  
502 expected to occur. As illustrated in Table 6-3, the completion of these projects would  
503 have a substantial overall beneficial effect on the ability of the Installation to meet  
504 current and future mission requirements. In addition, completion of these projects  
505 would provide a benefit the local and regional economy.

506  
507 Ongoing mission activities would continue to occur at their current level, and would  
508 be expanded to meet the needs of all future RPMP elements and activities. As  
509 provided in Table 6-5, the Full Implementation Alternative as it relates to ongoing  
510 mission activities would result in both beneficial and adverse impacts. Adverse  
511 impacts are generally associated with training, utility systems, maintenance of utility  
512 ROW and other cleared areas, or the construction of additional buildings and  
513 infrastructure as required to meet mission requirements and comply with current  
514 regulations, laws and standards. However, none of these impacts are expected to  
515 reach significant levels and these adverse impacts are offset by numerous beneficial  
516 impacts as described in Section 6.5.

**517 ES-6 Conclusions**

518  
519 Based on the analysis presented in Section 6, it is concluded that the Full  
520 Implementation Alternative is the Army preferred action to be implemented by Fort  
521 Jackson. The Full Implementation Alternative is also the environmentally preferred  
522 action to be implemented by Fort Jackson. As a result, if after public review,  
523 significant environmental impacts are not demonstrated or agreed upon, a Finding of  
524 No Significant Impact (FNSI) is recommended.

525  
526 In general, properly applied management directives and guidelines, compliance with  
527 applicable laws and regulations, proactive development and implementation of  
528 resource management plans, and ongoing development and operating permit  
529 requirements will collectively serve to prevent significant adverse effects on  
530 installation or regional resources. However, it must be noted that this document was  
531 designed to evaluate the Installation RPMP and related actions in a broad,

532 programmatic manner. Because the majority of the proposed RPMP short range  
533 projects, current site plans, and future contributing plan actions are conceptual and  
534 subject to change, this PEA cannot be used as a blanket document to cover all  
535 actions now and into the future. Accordingly, the Installation will use the  
536 programmatic review procedures incorporated in this PEA to assist in evaluating the  
537 environmental effects of future projects and actions that are not specifically  
538 addressed by this document.

539

540 The principal conclusions of this PEA include: (1) implementation of the Full  
541 Implementation Alternative would not result in significant environmental impacts  
542 provided that BMPs to mitigate these potential environmental impacts are adhered to  
543 during construction and operation of the proposed projects; (2) implementing the Full  
544 Implementation Alternative will provide Fort Jackson with infrastructural  
545 improvements which will allow the Army to achieve their respective mission  
546 requirements; (3) construction and operation of proposed projects on Fort Jackson  
547 will provide necessary facilities to satisfy BCT and AIT training requirements; (4)  
548 implementing the Full Implementation Alternative is consistent with the land use  
549 planning objectives for Fort Jackson; implementing the No Action Alternative is not  
550 consistent with land use planning objectives for Fort Jackson; and (5) implementing  
551 the No Action Alternative would eliminate the negligible to minor environmental  
552 impacts associated with the Full implementation Alternative, but would also eliminate  
553 the beneficial impacts of the Proposed Action.

# 1. Introduction

555

## 1.1. Scope and Use of this Programmatic Environmental Assessment (PEA)

558 This document evaluates the *Real Property Master Plan (2012 RPMP) for US Army*  
559 *Training Center and Fort Jackson (US ATC&FJ)* (hereafter referred to as Fort  
560 Jackson) (Atkins, 2012a). While it includes ongoing mission activities as they existed  
561 during the development of this Programmatic Environmental Assessment (PEA),  
562 specific master plan elements and related operations that occur at Fort Jackson are  
563 subject to continuous change in response to a wide range of influencing factors.  
564 Therefore, this PEA also includes the evaluation of environmental impacts relating to  
565 actions and plans to be proposed at some future date.

### 1.1.1. Scope of this PEA

567 This PEA is designed to address potential environmental impacts resulting from the  
568 implementation of the RPMP and related ongoing mission activities as further  
569 described in Section 2, *Purpose and Need for the Proposed Action* and Section 3,  
570 *Description of the Proposed Action*. The primary documents used in the development  
571 of this PEA include the *US Army Training Center and Fort Jackson, South Carolina*  
572 *Environmental Assessment of the Master Plan and Ongoing Mission* (Parsons  
573 Harland Bartholomew & Associates, Inc., 2000) and the RPMP.

574 A PEA does not analyze the specific environmental effects of an action, rather it  
575 identifies and evaluates broad types of actions and establishes a bounding analysis  
576 for those actions relative to their potential impacts. Additionally, this document  
577 provides Fort Jackson planners with information that can be used to make  
578 environmentally sound training, project and operational decisions during the earliest  
579 stages of the on-going master planning process; thereby, improving the overall  
580 efficiency of the planning and environmental review process.

581 The PEA will eliminate the need for preparation of repetitive individual environmental  
582 documents for minor or routine actions similar to the ones evaluated in this  
583 document. However, this PEA does not relieve the burden from proponents  
584 satisfying National Environmental Policy Act (NEPA) requirements for actions and  
585 projects not sufficiently addressed in this document. Future documentation for  
586 actions required by NEPA may be tiered from this PEA, which will, to the extent  
587 possible, minimize duplication of effort, complexity, and size of future documents.  
588 This subsequent documentation (separate environmental assessment [EA] and  
589 related Finding of No Significant Impact [FNSI] or an environmental impact statement  
590 [EIS] and related record of decision [ROD]) may be limited to the application of the  
591 Programmatic Analysis Procedure (as described in Section 1.1.2 and depicted in  
592 flowcharts provided in Appendix A) and the subsequent preparation of a Record of  
593 Environmental Consideration (REC). Should the review process conclude that the

594 PEA does not sufficiently address the proposed action; additional level(s) of  
595 documentation as mentioned above may be required. All subsequent documentation  
596 should conform to all applicable Army Regulations (AR).

597 In conclusion, a PEA has been determined to be the appropriate level of NEPA  
598 review for the Fort Jackson RPMP (Preferred Alternative). The Preferred Alternative  
599 proposes a series of recurring actions to include the construction and addition of new  
600 buildings, building complexes, building expansions and additions, utility renewals &  
601 replacements (R&R) projects, and transportation network improvements.

### 602 **1.1.2. Programmatic Analysis Procedure**

603 This section describes the Programmatic Analysis Procedure to be implemented by a  
604 proponent or reviewer to evaluate the potential environmental impact of a proposed  
605 action. Based on the results of this screening, the reviewer will have a basis for  
606 determining the type and extent of additional environmental documentation required  
607 to implement the proposed action.

608 Use of this PEA as a single source of evaluation will not guarantee that a project can  
609 be implemented without adverse environmental impacts. Therefore, it will still be  
610 necessary for each project to be considered by appropriate Environmental Division  
611 (ENV) specialists and reviewed in compliance with the *Fort Jackson Environmental*  
612 *Protection and Enhancement (FJ 200-8)* and a Fort Jackson Environmental  
613 Compliance Checklist (Appendix A) should be completed. This regulation prescribes  
614 responsibilities, policies, and procedures for managing environmental issues at Fort  
615 Jackson in accordance with applicable federal, state and local laws and regulations,  
616 Army Regulation 200-1 and Fort Jackson Regulation 200-8.

617 An initial screening may reveal environmental impacts that can be avoided through  
618 redesign of the project prior to submittal to ENV, thus increasing the speed and  
619 overall efficiency of the review process by avoiding the need for resubmittal. The  
620 information and procedures included in this document provide a consolidated tool for  
621 initial screening and early avoidance of impacts to currently known resources. The  
622 following paragraphs provide step-by-step instructions regarding the application of  
623 the programmatic review procedures included in this PEA to future actions. These  
624 procedures are also summarized in Figure 1.1 and detailed in Appendix A.

625 **Step 1 – Consult with ENV to Determine if the Proposed Action is Evaluated in**  
626 **this PEA.** As an initial step, the proponent should review Section 3, *Description of*  
627 *the Proposed Action*, of this PEA and consult with ENV, to determine if the proposed  
628 action was specifically listed and addressed herein. The project proponent submits a  
629 REC form with the top portion completed and signed, and supplies any additional  
630 information requested by ENV.

631 Consultation with key ENV personnel (as referenced in the flow charts in Appendix A)  
632 is required to identify if the proposed action was included in the analysis covered by  
633 this PEA. If the action was included in this PEA then Section 6, *Environmental*  
634 *Consequences*, must be reviewed to:

- 635
- 636
- 637
- 638
- 639
- identify the type and extent of impacts that were identified, and any related mitigation recommendations or commitments that were made; and
  - confirm that existing conditions have not changed, and that the conclusions of this PEA regarding the specific project are still valid.

640 ENV specialists will assist the proponent in determining what level of supplemental documentation is required (if any). In most cases, it is anticipated that a REC will be sufficient to allow the proponent to proceed.

643 **Step 2 – Determine if New Action is within Scope of this PEA.** If the proposed action was not specifically addressed in this PEA, then the proponent should consult with ENV to determine if the proposed action is within the scope of the programmatic review elements of this document. In order for ENV to determine that a new action is covered by this PEA, the new action must be located within Installation boundaries, and fall under one of the broad evaluation categories described in Section 4, *Alternatives Considered*.

650 If the proposed action falls outside of these parameters, the proponent must consult with ENV personnel before proceeding with the following steps.

652 **Step 3 – In Consultation with ENV, Determine if New Action is Eligible for a Categorical Exclusion.** 32 Code of Federal Regulations (CFR) 651, Environmental Effects of Army Actions, defines a categorical exclusion (CX) as a category of actions that do not require an EA or EIS. This is because the Army has determined that the actions do not have individual or cumulative impacts on the environment. ENV will determine whether the proponent's proposed action falls within the parameters of an existing CX. Consultations with appropriate ENV personnel are required to ensure that current regulations are applied to the decision-making process. If the proposed action is not covered by a CX, the proponent should proceed to Step 4.

661 **Step 4 – Review Flow Charts.** Overall guidance for the programmatic review process is provided by a series of seven decision-based flow charts described in the *South Carolina Environmental Assessment of the Master Plan and Ongoing Mission* (Parsons Harland Bartholomew & Associates, Inc., 2000; Appendix A). These charts include: (1) Summary of Programmatic Review Procedures; (2) Physical Environment Resources; (3) Sensitive Zones; (4) Water Resources; (5) Biological Resources; (6) Cultural Resources; and (7) Land Use and Socioeconomic Resources. Evaluation of a specific proposed action requires use of all seven flow charts, in sequence, to determine if the action has the potential to result in a significant adverse effect on Installation resources.

671 Movement through each chart requires providing a *yes* or *no* answer to the question presented in each box. Arrows indicate the direction of movement based on the answer provided. The user should proceed through the charts in order, making notes regarding suggested staff consultations. Figure A.8 provides a form that can be used to document this review process. The user should proceed through all seven charts until the final directive is reached at the end of Figure A.7. This final directive reads, "Proponent confirms assessment and related mitigation plans with ENV. The ENV prepares the REC, supplemental EA or EIS, or Permit Application." At Fort Jackson,

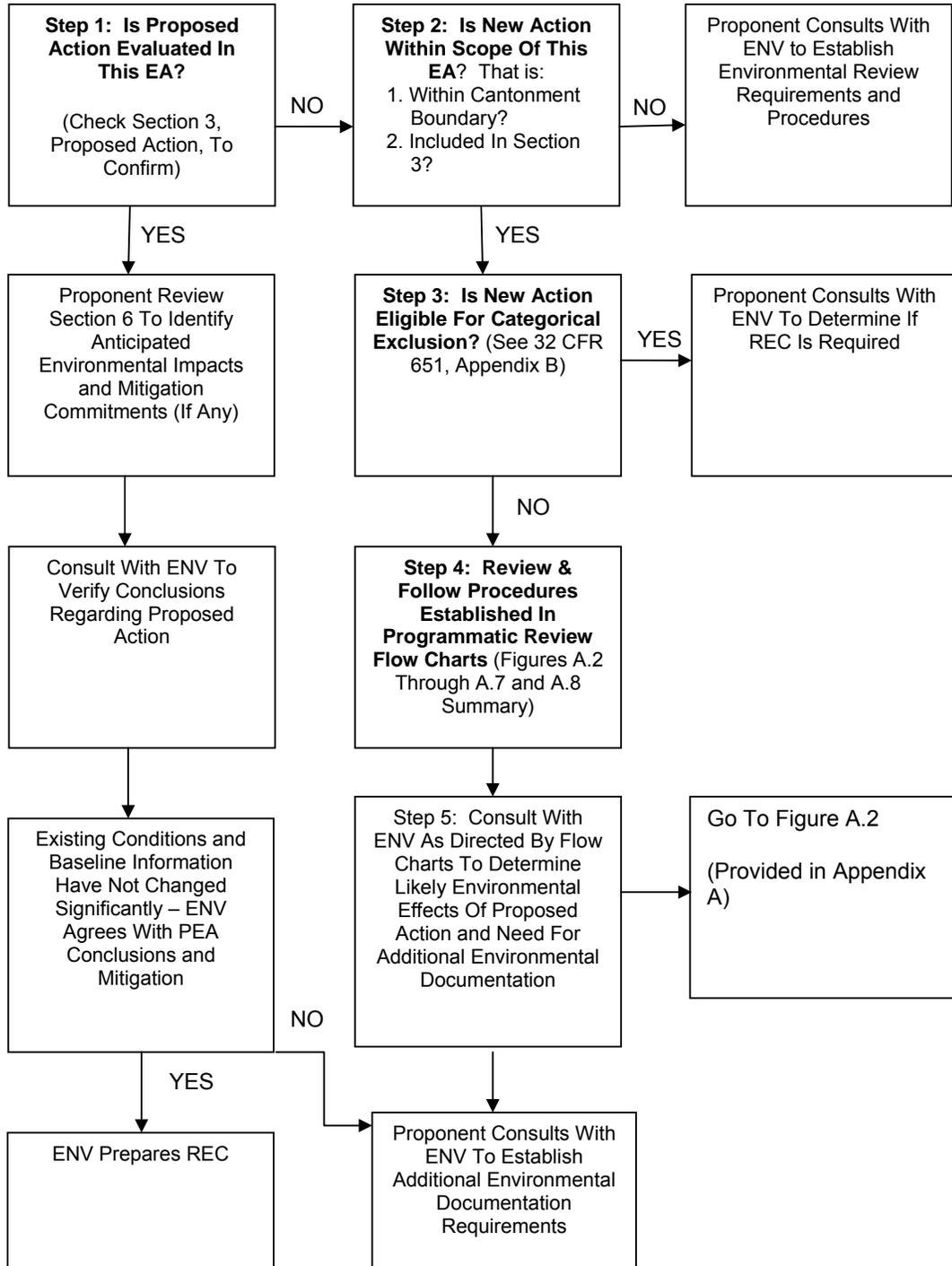
679 only the ENV in consultation with the Staff Judge Advocate (SJA) is authorized to  
680 reach a conclusion with respect to the appropriate level of environmental analysis  
681 that is required.

682 The flow charts share a similar structure, each one beginning by asking the reviewer  
683 if the proposed action has a potential to impact a specific resource category. The  
684 charts provide guidance for consultation with ENV and/or regulating agencies or  
685 authorities to determine if the effect has the potential to be significant. The flow  
686 charts are intended to provide a guide to proponents, and are not a complete listing  
687 of all potential issues, actions or impacts, and are not intended to negate the  
688 importance of early, timely and effective coordination with ENV. Where applicable,  
689 the charts refer to the series of sensitive resource maps that are located in Section 5,  
690 *Affected Environment* as an initial tool in evaluating potential impacts. Impact  
691 thresholds relating to these sensitive resources are incorporated into the flow charts  
692 to help the user decide if the proposed action is likely to produce an effect significant  
693 enough to warrant preparation of additional environmental documentation.

694 **Step 5 – Conduct Consultations.** To assist proponents with their decision making,  
695 the flow charts identify Fort Jackson ENV organizations that should be consulted to  
696 help determine if this EA is applicable to the proponent’s action. These ENV  
697 personnel will also assist with the specific evaluation of the type, extent and level of  
698 environmental effects associated with the proposed action. ENV personnel will  
699 assure that these evaluations are documented by the preparation of a REC. If the  
700 proponent finds that it is necessary to prepare supplemental environmental  
701 documentation such as an EA or EIS, these same personnel will be able to identify  
702 appropriate information sources and procedures.

703 A proponent, in direct coordination with appropriate ENV personnel, may assume  
704 that additional environmental documentation (EA or EIS) will not be required if the  
705 proposed new action(s):

- 706 • is similar to those evaluated in this EA,
- 707 • is located in an appropriate land use zone,
- 708 • does not impact sensitive resources (as defined in the flow charts and  
709 associated maps), and
- 710 • conforms to properly applied management plans, guidelines and regulations.  
711



712  
713  
714  
715

**Figure 1.1**  
**Programmatic Analysis Procedure**

716 **1.1.3. Assumptions Regarding the Programmatic Analysis**  
717 **Procedure**

718 The following list of assumptions is provided to further define the specific intent and  
719 use of this PEA, and to ensure that the document is applied in a consistent and  
720 logical manner.

- 721
- 722 • In accepting and signing this PEA, Fort Jackson has agreed to accept the  
723 findings of the document, and commit physical and monetary resources,  
724 subject to the availability of funds, to ensure that referenced environmental  
725 protection measures are implemented as required to comply with applicable  
726 laws and regulations. The proponent of a proposed action should understand  
727 that the same obligations should be incorporated into their project planning  
728 using this PEA to evaluate their proposed action.
  - 729 • This PEA does not provide blanket coverage. In most situations, actions  
730 similar to those described herein can proceed based on a REC, or other  
731 documents that tier off this PEA. However, subsequent tiered EA or EIS  
732 documents must include evidence of an evaluation, anticipated impacts, and  
733 mitigation commitments for any impacts determined to be significant.
  - 734 • A future action may include master plan activities (projects or component  
735 plans) or ongoing mission activities; but these future actions must fall into one  
736 of the master plan project or ongoing mission activity categories established  
737 in this PEA.
  - 738 • The final determination that this PEA is applicable to a proposed action, or  
739 that the action has the potential to have a significant adverse effect on any of  
740 the resource categories evaluated in this document will be made by qualified  
741 ENV personnel.
  - 742 • All mitigation actions (regardless of size) will be documented in a  
743 Memorandum of Environmental Consideration (MOEC) or an EA, specifying  
744 the proposed action, responsible party and implementation schedule. At a  
745 minimum, the MOEC or an EA reference would be attached to a REC.

746 **1.2. Regulatory Authority**

747 This PEA has been prepared in compliance with NEPA, as implemented by the  
748 President's Council on Environmental Quality (CEQ) regulations for implementing the  
749 Procedural Provisions of NEPA, Title 40 CFR Parts 1500–1508. In turn, CEQ  
750 regulations are supplemented by procedures adopted on an agency-specific basis.  
751 For the Army, the pertinent regulations are 32 CFR 650 *Environmental Protection*  
752 *and Enhancement*, and 32 CFR 651 *Environmental Analysis of Army Actions*.

753 **1.2.1. National Environmental Policy Act**

754 The Army is required to comply with NEPA. NEPA is the basic national charter for  
755 the protection of the environment, requiring federal agencies to use a systematic,  
756 interdisciplinary approach to ensure that the impacts of federal actions on the  
757 environment are considered during the decision-making process (NEPA, 1969). The  
758 NEPA process is not intended to fulfil the specific requirements of other  
759 environmental statutes and regulations. However, the process is designed to provide  
760 the decision-maker with an overview of the major environmental resources to be  
761 affected, the interrelationship of these components, and potential conflicts.

762 Anticipating the need for evaluation of these broad actions, NEPA includes provisions  
763 for the development of programmatic documents and “tiering”. As referenced in the  
764 CEQ regulations (40 CFR 1502.20), whenever a broad EA or EIS has been prepared  
765 the subsequent environmental document need only summarize the issues that are  
766 specific to the subsequent action. In these cases, it is only necessary to incorporate  
767 by reference any pertinent issues that have already been covered by an approved  
768 initial document.

769 If later, an action associated with the preferred alternative is expected to (1) create  
770 impacts not described in the PEA; (2) create impacts greater in magnitude, extent, or  
771 duration than those described in the PEA; or (3) require mitigation measures to keep  
772 impacts below significant levels that are not described in the PEA; then a  
773 supplemental EA would be prepared to address the specific action and would be  
774 tiered from this PEA in accordance with 40 CFR 1508.28.1. Further, actions that are  
775 determined to require a more detailed or broader environmental review would be  
776 subject to stand-alone NEPA documentation.

### 777 **1.2.2. Army Regulations**

778 ARs stipulate policies, responsibilities, and procedures for integrating environmental  
779 considerations into Army planning and decision-making. 32 CFR Part 651,  
780 *Environmental Analysis of Army Actions*; Final Rule (March 2002) was issued with  
781 respect to the NEPA establishing the Army’s responsibility for the early integration of  
782 environmental consideration into planning and decision-making. Under this rule,  
783 actions normally requiring an EA include changes to established Installation land use  
784 that may generate impacts on the environment (32 CFR 651). An EA is intended to  
785 allow for agency and public participation and to assist agency planning and decision-  
786 making.

### 787 **1.2.3. Other Environmental Laws, Regulations and Executive** 788 **Orders**

789 Army decisions that affect environmental resources and conditions occur within the  
790 framework of numerous laws, regulations, and executive orders (EOs). Some of the  
791 authorities prescribe standards for compliance. Others require specific planning and  
792 management actions to protect environmental values potentially affected by Army  
793 actions. These include the Clean Air Act (CAA), Clean Water Act (CWA), Noise  
794 Control Act, Endangered Species Act (ESA), National Historic Preservation Act  
795 (NHPA), Archaeological Resources Protection Act (ARPA), Resource Conservation  
796 and Recovery Act (RCRA), Energy Policy Act (EPAct), Energy Independence and  
797 Security Act (EISA), and Toxic Substances Control Act. EOs bearing on the  
798 proposed action include EO 11988 (Floodplain Management); EO 11990 (Protection  
799 of Wetlands); EO 12088 (Federal Compliance with Pollution Control Standards); EO  
800 12580 (Superfund Implementation); EO 12898 (Federal Actions to Address  
801 Environmental Justice in Minority Populations and Low-Income Populations); EO  
802 13045 (Protection of Children from Environmental Health Risks and Safety Risks);  
803 EO 13175 (Consultation and Coordination with Indian Tribal Governments); EO  
804 13186 (Responsibilities of Federal Agencies to Protect Migratory Birds); EO 13423

805 (Strengthening Federal Environmental, Energy, and Transportation Management);  
 806 and EO 13514 (Federal Leadership in Environmental, Energy, and Economic  
 807 Performance). Where useful to better understanding, key provisions of these  
 808 statutes and EOs are described in more detail in the text of the PEA. The text of EOs  
 809 can be accessed at <http://www.archives.gov/federal-register/executive-orders/>, and  
 810 the text of public laws can be accessed at <http://www.archives.gov/federal-register/laws/>.  
 811

#### 812 **1.2.4. Fort Jackson Environmental Guidance Documents and** 813 **Regulations**

814 In addition to the federal, state and local regulations, Fort Jackson implements its  
 815 environmental programs through various plans and protocols (Table 1-1). All of  
 816 these plans conform to requirements defined in federal regulations and guidance.  
 817 Project managers would coordinate with Fort Jackson ENV to ensure compliance  
 818 with all local, state and federal environmental regulations.

819 **Table 1-1 Fort Jackson Guidance Documents and Regulations**

| Plan Title   |   |
|--|---|
| 1. Asbestos Hazard Management Plan (FJ, 2009b)   | 10. Fort Jackson Regulation 200-9 (Qualified Recycling Program) |
| 2. Fort Jackson Regulation 200-8 (Environmental Quality, Environmental Protection and Enhancement) | 11. Integrated Natural Resources Management Plan (2004)         |
| 3. Endangered Species Management Plans   | 12. Pest Management Plan (2005)                                 |
| 4. Fort Jackson Land Disturbance Handbook (2010)   | 13. Stormwater Pollution Prevention Plan                        |
| 5. Hazardous Substance Management Plan (2011)  | 14. Fort Jackson Operational Noise Management Plan              |
| 6. Comprehensive Energy and Water Master Plan (2010)   | 15. Indoor Recreation Plan (2008)                               |
| 7. Integrated Cultural Resources Management Plan (2008)  | 16. Outdoor Recreation Plan (2006)                              |
| 8. Installation Compatible Use Zone Study  | 17. Fort Jackson Sustainability Management System               |
| 9. Installation Action Plan (2012)   | 18. Installation Design Guide (2012)                            |

820

### 821 **1.3. Fort Jackson**

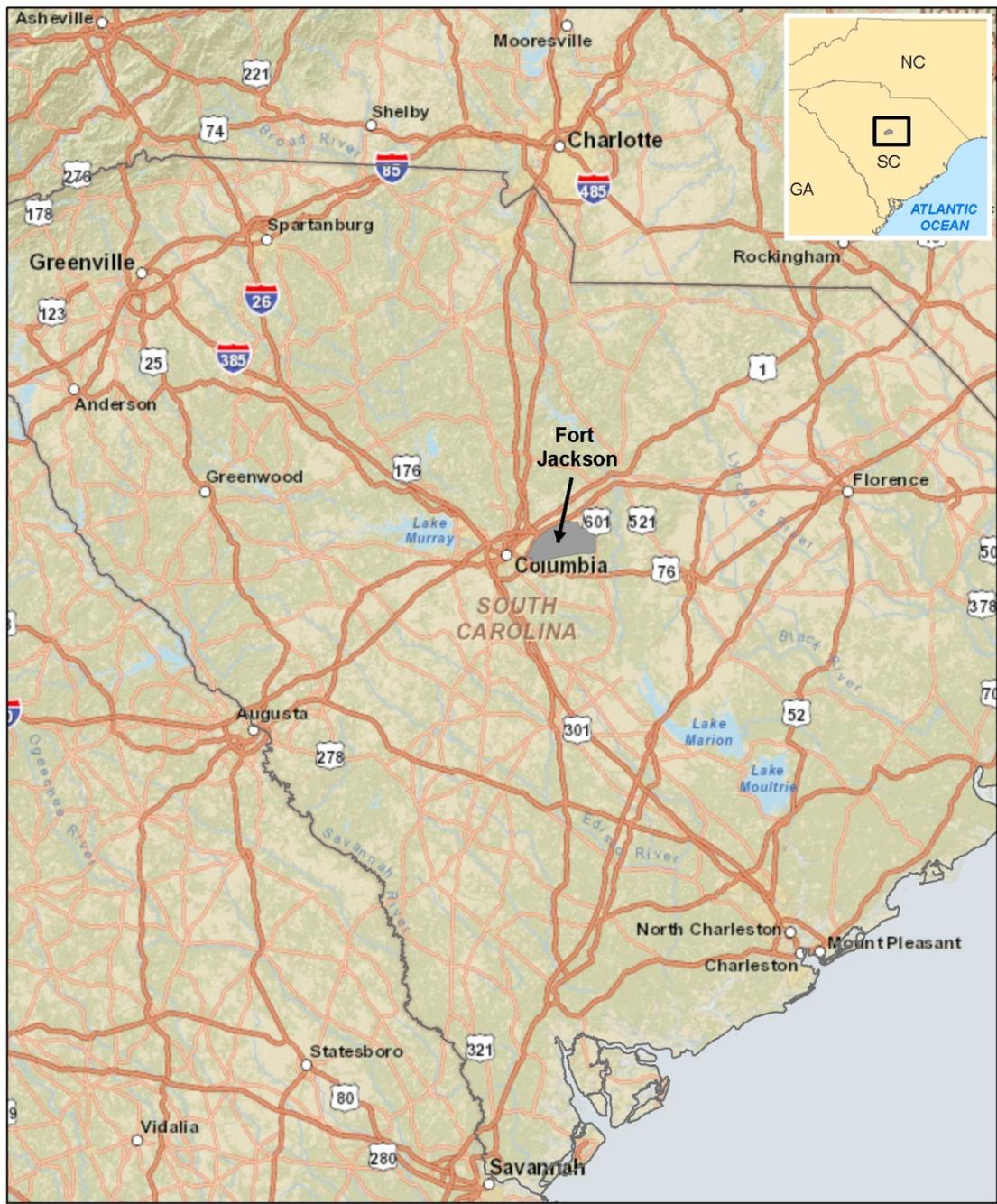
#### 822 **1.3.1. Location and Description**

823 The US ATC&FJ is centrally located within the state of South Carolina in Richland  
 824 County. Fort Jackson is located within the city limits of Columbia, the State capital;  
 825 approximately five miles east of the business district (see Figure 1.2). Charleston is  
 826 located approximately 110 miles southeast of the installation and Greenville is

827 located approximately 105 miles northwest. Shaw Air Force Base is located  
828 approximately 35 miles east and Charlotte, North Carolina is located approximately  
829 90 miles to the north. Augusta, Georgia is located approximately 75 miles to the  
830 southwest of the Installation.

831 Major highway systems in the area consist of Interstate 20 (I-20), which runs east  
832 and west through Columbia; I-26, which runs northwest and southeast; and I-77,  
833 which runs north from Columbia, passes across the northern boundary of the  
834 cantonment area, and connects with I-26 to the southwest. Combined US Highway  
835 76/378 is located to the south and US Highway 1 is located north of the Installation.  
836 The Columbia Metropolitan Airport is located approximately 10 miles west of the  
837 Installation.

838 Fort Jackson encompasses more than 52,000 acres of land and includes 1,150  
839 buildings and over 100 ranges and field training sites. The Installation is surrounded  
840 by a 3,000 foot buffer. Fort Jackson's cantonment area occupies roughly 5,500 acres  
841 in the southwestern corner of the Installation. The majority of the Installation is range  
842 area, which includes approximately 17,000 acres of training areas and 11,000 acres  
843 of impact areas, while the remainder of the Installation is devoted to managed  
844 woodlands. The South Carolina Army Reserve National Guard (SCARNG) is  
845 licensed to use approximately 15,000 acres in the southeastern corner of Fort  
846 Jackson (see Figure 2.1 Fort Jackson). Referred to as the McCrady Training Center  
847 (MTC), the site includes the area east of Weston Lake Road, south and east of the  
848 East Impact Area, and south of Messers Pond Road. The SCARNG cantonment  
849 area contains just over 500 acres in the southwestern corner of MTC; the remaining  
850 14,000+ acres are dedicated to training lands. The 585-acre Columbia-Greenville  
851 National Veteran's Cemetery is on land formerly held by Fort Jackson at the northern  
852 end of the Installation. The site includes administration facilities, a public information  
853 center, restrooms, maintenance facilities, a cemetery entrance area, committal  
854 shelters for funeral services, a flag assembly area, and supporting infrastructure.



|                      |   |   |
|----------------------|---|---|
| <p>0 20 40 Miles</p> | <p><b>Figure 1.2</b><br/><b>Fort Jackson</b><br/><b>Regional Location</b></p> | <p>Sources:<br/>World_Street_Map: ArcGIS Map Service<br/><a href="http://services.arcgisonline.com/ArcGIS/services">http://services.arcgisonline.com/ArcGIS/services</a><br/>Remaining Data: Fort Jackson</p> |
|----------------------|---|---|

855

### 856 **1.3.2. History**

857 Since its inception, Fort Jackson has been used to train soldiers. A portion of the  
858 present-day Installation was originally part of the Wade Hampton Estate. The City of  
859 Columbia purchased the estate in the early 1900s, as it was an ideal location for a  
860 training camp for officers and enlisted soldiers in support of the World War I war  
861 effort. Local citizens donated an additional 1,192 acres, which are within the existing  
862 cantonment area.

863 First known as Camp Jackson, the Installation was named in honor of Andrew  
864 Jackson, Major General of the Army and the seventh President of the United States.  
865 In June 1917, the camp was designated as the sixth national cantonment and one of  
866 16 national cantonments constructed to support the war. In 1922, the camp was  
867 deactivated and closed. In 1925, Camp Jackson was re-opened and became a  
868 training ground for the South Carolina National Guard.

869 During World War II, Fort Jackson became a permanent military Installation. The  
870 Fort was used primarily for infantry training and new facilities and infrastructure were  
871 constructed in support of incoming troops. The camp expanded to nearly 53,000  
872 acres as more land was acquired by purchase by the Federal government. In  
873 addition to training infantry, the Installation also served as a training field for soldiers  
874 in field artillery, combat arms, and tanks. Also, from 1944 to 1946, Fort Jackson  
875 became home to approximately 2,000 German Prisoners of War (POWs).

876 In June 1947, Fort Jackson became one of four permanent replacement training  
877 centers. Three years later, after the 5<sup>th</sup> Infantry Division moved from the Fort to  
878 Indiantown Gap Military Reservation in Pennsylvania, Fort Jackson was again slated  
879 for closure. At this point, only the 31<sup>st</sup> Infantry Division, made up of National Guard  
880 units from Alabama and Mississippi and a few hundred personnel remained. Soon  
881 after the Korean War began, over 9,000 troops were stationed at Fort Jackson as  
882 part of their annual summer training and the planned closure was put on hold.  
883 Thousands of soldiers trained at the Post during the Korean and Vietnam Wars.

884 Permanent steel and concrete buildings were constructed in 1964 that would replace  
885 the wooden barracks that had been used since the early 1940s. With the  
886 establishment of the all volunteer Army in 1970, modern facilities were constructed  
887 and the Installation was enhanced in order to promote the attractiveness of service  
888 life. In 1973, Fort Jackson was designated as one of four permanent United States  
889 Army Training Centers (USATCs) (RPMP, 2012).

### 890 **1.3.3. Population**

891 Active military, dependents, civilians, and retirees collectively make up the Fort  
892 Jackson community. Typically, the Installation hosts an on-post population in excess  
893 of 34,000 which includes 1,120 permanent military officers, 5,391 civilian personnel  
894 and 27,000 trainees. Approximately 30 percent of the permanent military personnel  
895 reside on the Installation, while the remaining 70 percent live in the surrounding  
896 communities, primarily in Richland County. Fort Jackson's military population is  
897 projected to remain fairly stable with only a minimal decrease anticipated by 2016.

898 This decrease is primarily the result of a decline in military enlistments and an  
 899 anticipated reduction in U.S. military presence abroad. If the Installation's mission  
 900 changes or military efforts are re-evaluated, the population at Fort Jackson would  
 901 shift correspondingly (RPMP, 2012).

## 902 **1.4. Fort Jackson Mission and Operations**

903 The primary mission of the US ATC&FJ is to provide basic combat training (BCT)  
 904 and advanced individual training (AIT) to Army personnel. Fort Jackson's mission is  
 905 to:

906 *"Provide the Army with trained, disciplined, motivated and physically fit warriors who*  
 907 *espouse the Army's core values and are focused on teamwork."*

908 The U.S. Army Basic Combat Training Center of Excellence, Fort Jackson, is part of  
 909 the U.S. Army's Training and Doctrine Command (TRADOC). Fort Jackson contains  
 910 two brigades, nine battalions, and 54 companies focused solely on training Soldiers  
 911 in BCT. Fort Jackson serves as the largest Initial Military Training (IMT) Center in the  
 912 U.S. Army. Approximately 45,000 Soldiers are trained in BCT annually at Fort  
 913 Jackson. Nearly half of all Soldiers who complete BCT in the Army do so at Fort  
 914 Jackson, SC. In addition to training nearly half of all Army soldiers trained in BCT  
 915 and AIT every year, missions at Fort Jackson include several Initial Military Training  
 916 (IMT) schools operated by TRADOC (RPMP, 2012).

917  
 918 Major units at Fort Jackson include (RPMP, 2012):

### 919 **Basic Combat Training**

- 920 • 193<sup>rd</sup> Infantry Brigade
- 921 • 165<sup>TH</sup> Infantry Brigade

### 922 **Advanced Individual Training**

- 923 • 171<sup>st</sup> Infantry Brigade - also part of the Army Training Command (ATC), is  
 924 one of the most diverse Brigades in the entire U.S. Army. It consists of four  
 925 distinctly different battalions. The first is the 120<sup>th</sup> Adjutant General Battalion,  
 926 which is the Army's largest reception battalion responsible for processing over  
 927 45,000 Soldiers per year. The second is the 187th Ordnance Battalion, which  
 928 is planned to move to Fort Lee by the end of FY 15, conducts AIT focused on  
 929 training Wheeled Vehicle Mechanics (MOS 91B). The third battalion is Task  
 930 Force Marshall, which prepares Individual Ready Reserve Soldiers and Navy  
 931 Individual Augmentees for deployment. Soldiers and Sailors who complete  
 932 this training deploy straight from Fort Jackson into the CENTCOM AOR for  
 933 overseas contingency operations. The fourth battalion is the 4<sup>th</sup> Battalion,  
 934 10th Infantry Regiment, which provides range and training support required to  
 935 conduct training on Fort Jackson. The 282nd Army Band and the U.S. Army  
 936 Student Detachment are also assigned to this battalion.

## 937 Other Units

- 938 • 81<sup>st</sup> Regional Support Command
- 939 • U.S. Army Soldier Support Institute
- 940 • Armed Forces Chaplaincy Center
- 941 • Drill Sergeant School
- 942 • Defense Academy for Credibility Assessment Mission
- 943 • South Carolina Army National Guard
- 944 • 157<sup>th</sup> Infantry Brigade
- 945 • Navy Reserves
- 946 • Marine Corps

## 947 1.5 Organization of this PEA

948  
949 This PEA identifies, documents, and evaluates environmental effects of implementing  
950 the RPMP while also providing specific elements to meet programmatic review goals.  
951 An interdisciplinary team of environmental scientists, biologists, planners,  
952 economists, engineers, archaeologists, historians, and military technicians has  
953 analyzed the Proposed Action and alternatives in light of existing conditions and has  
954 conducted a comprehensive, programmatic evaluation of the Proposed Action.

955 Section 1 provides an introduction to the PEA including the scope of the analysis and  
956 the Programmatic Analysis Procedure to be implemented by a proponent or reviewer  
957 to evaluate the potential environmental impact of a proposed action (Appendix A,  
958 Figures A.1 through A.7). Section 1 also covers the applicable laws and regulations  
959 for the PEA and gives an introduction to Fort Jackson; specifically, its location,  
960 history, mission, and operations.

961 The *Purpose and Need for the Proposed Action* is described in Section 2. The  
962 *Description of the Proposed Action* provided in Section 3 includes descriptions and  
963 evaluation of a broad range of currently identified master plan capital improvement  
964 projects, master plan component plans, and ongoing mission activities. These  
965 current plans and activities are representative of the types of actions that are likely to  
966 be identified and evaluated in the future.

967 Alternatives, including the No Action Alternative, are described in Section 4. Section  
968 5, *Affected Environment*, provides a description of the existing physical, social and  
969 economic conditions within and adjacent to Fort Jackson which result from all past  
970 and ongoing actions at the Installation. This baseline data is used to evaluate  
971 impacts of actions identified in this PEA, and will be useful in evaluating the potential  
972 impact of future actions. This baseline data should be updated approximately every

973 five years to maintain the usefulness of this document for programmatic review  
974 purposes. Section 5 of this PEA also provides a series of maps that illustrate the  
975 general location of resource features that should be avoided or carefully considered  
976 in siting future development projects, or approving new management or operating  
977 plans. These maps are designed to alert proponents of potential environmental  
978 resource conflicts during the initial planning stages so that conflicts can be identified  
979 and resolved as efficiently as possible.

980 In Section 6, *Environmental Consequences*, the Proposed Action is analyzed against  
981 baseline data to determine the environmental impacts, which will also be useful in  
982 evaluating the potential impact of future actions. Section 6 also addresses the  
983 potential for cumulative effects, and mitigation measures are identified where  
984 appropriate.

## 985 **1.6 Agency Coordination and Public Involvement**

986  
987 The Army invites public participation in the NEPA process. Consideration of the  
988 views and information of all interested persons promotes open communication and  
989 enables better decision making. All agencies, organizations, and members of the  
990 public that have a potential interest in the proposed action, including minority, low-  
991 income, disadvantaged, and Native American groups, are urged to participate in the  
992 decision-making process.

993 Army guidance provides for public participation in the NEPA process. If the EA  
994 concludes that the proposed action would not result in significant environmental  
995 effects, the Army may issue a draft FNSI. The Army will then observe a 30-day  
996 period during which agencies and the public may submit comments on the EA or  
997 draft FNSI. The 30-day comment period will also serve as the public's opportunity to  
998 review and comment on cultural resources addressed in the EA, as required under  
999 Section 106 of the NHPA (as applicable). Upon consideration of any comments  
1000 received from the public or agencies, the Army may approve the FNSI and implement  
1001 the preferred alternative. If however, during the development of the EA it is  
1002 determined that significant effects would be likely, the Army will issue a notice of  
1003 intent to prepare an EIS.

1004 A Notice of Availability (NOA) will be published, which announces the beginning of  
1005 the 30-day public review period. The EA and draft FNSI are available for review  
1006 during the public comment period at the following local libraries: Thomas Lee Hall  
1007 Library, Building 4679 Lee Road, Fort Jackson, SC 29207, and the Richland County  
1008 Library, Main Branch, 1431 Assembly Street, Columbia, SC 29201. Comments  
1009 received via email must contain the name and address of the person submitting the  
1010 comments.

1011 Reviewers are invited to submit comments on the PEA and draft FNSI during the 30-  
1012 day public comment period via mail, fax, or e-mail to the following:

1013 Mr. Patrick Metts

1014 NEPA Specialist

1015 Fort Jackson, DPW-ENV

1016 Building 2563 Essayons Way, Fort Jackson, SC 29207

1017 803-751-4078

1018 [william.p.metts.ctr@mail.mil](mailto:william.p.metts.ctr@mail.mil)

## 2. Purpose and Need for the Proposed Action

### 2.1 Proposed Action

This PEA evaluates a multi-faceted Proposed Action that includes the implementation of the 2012 Fort Jackson RPMP and its Component Plans.

1. The **Long Range Component (LRC)** documents how the Installation will be used and developed over a long-range planning horizon. The LRC identifies the Installation land use plan projected over a period of 20 years.

2. The **Short Range Component (SRC)** provides an overview of specific maintenance, repair, and new construction projects for the next five to seven years. The SRC ensures that repair, maintenance and construction projects have been thoroughly evaluated and coordinated prior to funding.

3. The **Capital Investment Strategy (CIS)** serves as the link between the Installation's SRC and LRC while supporting Fort Jackson's mission and Department of the Army objectives by providing a framework for making decisions. The CIS describes exactly how to implement Army strategy and ensures that resources flow from national security objectives to each Installation's missions, programs, and known requirements. It provides a list of all real property actions and their impact on the Future Development Plan.

In addition, the PEA describes and provides a programmatic evaluation of Ongoing and New Mission Activities. However, the EA does not cover ranges and training lands because these items are not addressed in Fort Jackson's RPMP.

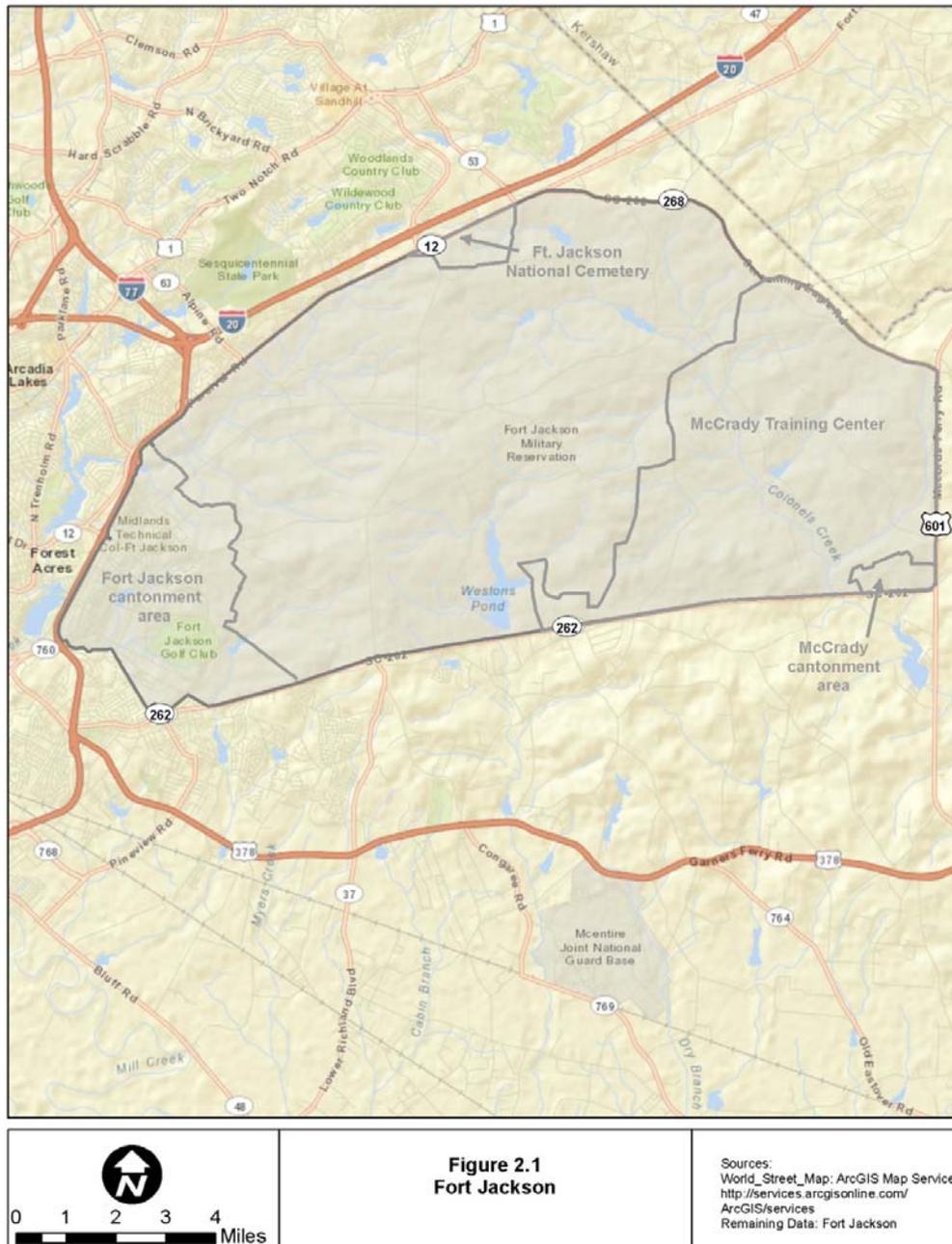
### 2.2 Purpose and Need for the Proposed Action

The purpose of the Proposed Action is to implement the recommendations of the 2012 RPMP for Fort Jackson, South Carolina (see Figure 2.1) to support current and foreseeable mission requirements. As indicated previously, Fort Jackson typically hosts an on-Post population of in excess of 34,000, including 1,120 permanent military officers, 5,391 civilian personnel and over 27,000 trainees and students. The Installation provides land, equipment and facilities to support direct mission activities as well as the housing and general living needs of many of its residents. Similar to any community of its size and complexity, there is a continuous need to provide a full range of support services such as maintenance of Installation roadways, buildings, grounds and utility systems; and numerous support functions including public health and welfare, recreation and commercial services. Specifically, the Installation's utility infrastructure, particularly water and wastewater, is aging and in poor condition, requiring annual capital upgrades and R&R to accommodate the evolution of the Post.

1057 All U.S. Army installations are required to maintain a RPMP, as per AR 210-20: *Real*  
1058 *Property Master Planning for Army Installations*. The RPMP outlines long-term  
1059 strategies for growth while addressing off-post/regional, Installation-wide, and site-  
1060 specific planning considerations. The RPMP is a living document that assists the  
1061 Garrison in achieving the goals of the Army and Fort Jackson through real property  
1062 and infrastructure planning.

1063 Many of the permanent structures at the Installation have reached the age where  
1064 extensive renovations and repairs are required to extend their useful life, comply with  
1065 current facility standards, and meet current and projected mission requirements. In  
1066 response to these needs, Fort Jackson initiated a comprehensive master planning  
1067 program. Although this program is a continuous and on-going process, the  
1068 framework for guiding the future development of the installation has been  
1069 documented in the Installation RPMP.

1070



1071

## 1072 **3. Description of the Proposed** 1073 **Action** 1074

### 1075 **3.1 Introduction**

1076 This section details the Proposed Action starting with a description of applicable  
1077 master planning regulations and processes as well as Fort Jackson's master planning  
1078 vision and goals. This information demonstrates the dynamic and complex nature of  
1079 the Army installation master planning process and the need for a PEA, which  
1080 establishes a methodology for the evaluation of future projects. This section also  
1081 describes the various elements of the existing Fort Jackson RPMP addressed in this  
1082 PEA, including its existing activities, component plans and ongoing mission activities,  
1083 and the potential to receive new mission activities.

### 1084 **3.2 Master Planning Process**

1085 Fort Jackson proposes to implement the RPMP in order to provide the facilities  
1086 infrastructure required to support both current and future missions. The RPMP was  
1087 prepared to identify actions necessary to ensure that the infrastructure at Fort  
1088 Jackson is capable of supporting mission goals and requirements. It establishes  
1089 current requirements and utilization levels for available assets and provides a list of  
1090 proposed short-range projects. Each project identified in the RPMP was developed  
1091 in consideration of Fort Jackson's unique mission, economic resources,  
1092 environmental stewardship, and potential for productivity enhancements.

1093 The master planning process is based on guidance provided in AR 210-20, *Real*  
1094 *Property Master Planning for Military Installations*, which establishes and prescribes  
1095 the Army RPMP process, and assigns responsibilities and prescribes policies and  
1096 procedures relating to the development, content, submission, and maintenance of a  
1097 RPMP. Army installation master planning is a continual evolving process that is  
1098 designed to provide direction for the continued development, operation, management  
1099 and maintenance of installation resources including land, facilities and infrastructure;  
1100 and provides a framework whereby the installation can manage its resources in  
1101 compliance with all applicable laws and regulations. It is anticipated that future  
1102 updates of the RPMP will continue to occur, and that these updates will reflect new  
1103 and evolving Army master planning guidance.

1104 However, it is not anticipated that additional master plan activities will result in  
1105 significant changes in the type and extent of activities that are projected to occur at  
1106 Fort Jackson over the next three to five years. As new plans are developed, it will be  
1107 necessary to compare the range of proposed actions to those evaluated herein. It is  
1108 anticipated that some supplemental environmental documentation will be required to  
1109 fully address all elements of new plans. This PEA includes a variety of programmatic  
1110 review elements designed to facilitate the environmental evaluation of future actions.  
1111 (See Section 1.1 and Appendix A)

### 1112 **3.3 Master Plan Vision and Goals**

1113 Prior to the development of the RPMP, Fort Jackson conducted a series of  
1114 workshops with Installation staff targeting long-term sustainability. The vision and  
1115 goals developed during the sustainability workshops that pertain to real property  
1116 master planning provide direction to the RPMP.

1117 *“Fort Jackson will meet rapidly evolving national defense needs by optimizing*  
1118 *training potential and capacity through the successful integration of uses,*  
1119 *through partnership with the civilian community, and through the incorporation*  
1120 *of planning principles addressing sustainable development and holistic*  
1121 *community design.”*

1122 Fort Jackson’s RPMP goals are as follows (RPMP, 2012):

- 1123 • Fort Jackson will plan and develop facilities that provide maximum operational  
1124 support enabling soldiers to achieve the best possible execution of the  
1125 missions assigned;
- 1126 • Fort Jackson will achieve effective and orderly long-range development of the  
1127 Installation that supports growth through expansion of existing missions and  
1128 addition of new missions;
- 1129 • Fort Jackson will support the overall needs of the individual soldier by  
1130 providing and designing facilities that achieve the highest possible quality of  
1131 life for the Army community;
- 1132 • Fort Jackson will maintain a harmonious relationship between the Post and  
1133 civilian community through cooperative community planning and compatible  
1134 development;
- 1135 • Fort Jackson will be an Installation that respects the environment;
- 1136 • Fort Jackson will create a framework for coherently integrating the multiple  
1137 components of the RPMP with other Installation-wide planning processes.

### 1138 **3.4 Master Plan Components**

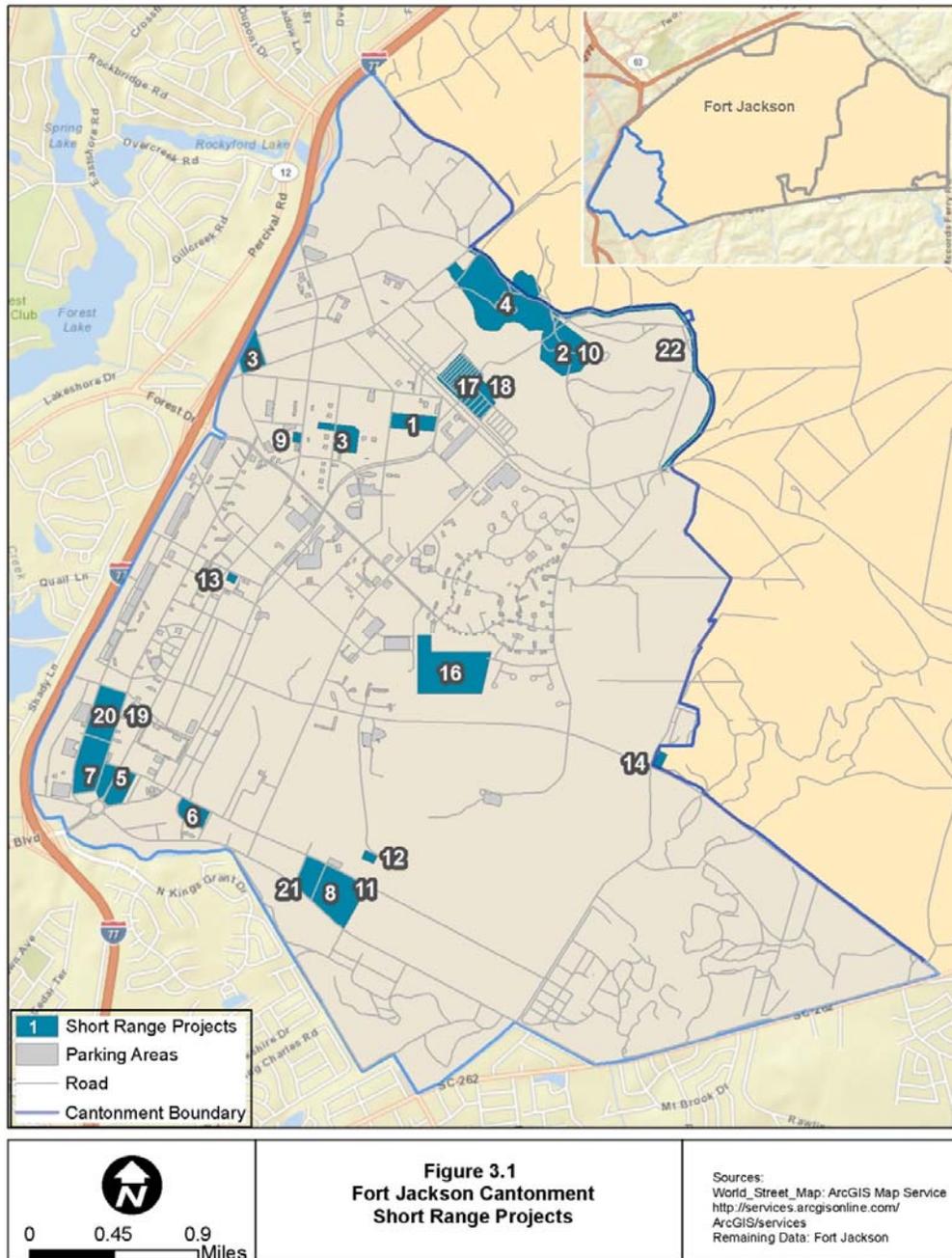
1139 The RPMP documents the installation’s comprehensive planning process and  
1140 consists of five components: RPMP Digest (RPMPD), Installation Design Guide  
1141 (IDG), CIS, SRC and LRC. This PEA will discuss the real property actions and  
1142 strategies contained in the LRC, CIS and SRC, which are detailed in the following  
1143 subsections.

#### 1144 **3.4.1 Short-Range Component**

1145 The Fort Jackson RPMP SRC (2012) provides a list of projects planned over the next  
1146 five to seven years (Future Years Defense Plan (FYDP) window (2012-2016)), as  
1147 recognized by Headquarters, Department of the Army (HQDA). The SRC provides

1148 an overview of specific maintenance, repair, and new construction projects in the six-  
1149 year budget cycle. The SRC ensures that repair, maintenance, and construction  
1150 projects have been thoroughly evaluated and coordinated prior to funding.

1151 Table 3-1 below provides a list of short range projects to be considered in this PEA.  
1152 The Fort Jackson RPMP CIS provides a brief summary description of each of these  
1153 projects, and the general location of each project is illustrated on Figure 3.1. Many of  
1154 these projects have a completed and approved DD Form 1391 on file with Fort  
1155 Jackson's Directorate of Public Works (DPW). These projects are either under  
1156 construction at the time of publication or have been approved through the 1391  
1157 process or by the IRPB and are awaiting funding for construction.



1158

1159

1160 **Table 3-1 Fort Jackson Short Range Projects**

| Map Number | Fiscal Year | Project Name                                  | *Project Number |
|------------|-------------|---|-----------------|
| 1          | 2010        | Drill Sergeant School Barracks                | 31354           |
| 2          | 2010        | BCT 3 Barracks Complex, Phase 1               | 48169           |
| 3          | 2010        | Quad DFAC and Electrical Substation           | 69417           |
| 4          | 2011        | BCT 2 Barracks, Phase 2                       | 73299           |
| 5          | 2011        | AIT 1 Barracks Complex, Phase 1               | 53794           |
| 6          | 2011        | Training Aids Support Center (TSC)            | 71119           |
| 7          | 2012        | AIT 1 Barracks, Phase 2                       | 62995           |
| 8          | 2012        | Repair Receptee Barracks Bldg 1892            | 80589           |
| 9          | 2012        | New Parking Lot for 193 <sup>rd</sup> Brigade | 69417           |
| 10         | 2013        | BCT 3 Barracks Complex, Phase 2               | 58970           |
| 11         | 2013        | Repair Receptee Barracks Bldg 1872            | 80590           |
| 12         | 2013        | Dog Kennel Expansion                          |                 |
| 13         | 2013        | New Post Conference Room                      |                 |
| 14         | 2013        | New PSUS Maintenance Building                 |                 |
| 15         | 2014        | Repair Receptee Barracks Bldg 1880            | 80592           |
| 16         | 2014        | Pierce Terrace School Replacement             |                 |
| 17         | 2015        | BCT 4 Barracks Complex, Phase 1               | 51937           |
| 18         | 2015        | BCT 4 Barracks Complex, Phase 2               | 76218           |
| 19         | 2015        | AIT 2 Barracks Complex, Phase 1               | 53796           |
| 20         | 2015        | AIT 2 Barracks Complex, Phase 1               | 70989           |
| 21         | 2015        | Reception Battalion Upgrade Modernization     | 53798           |
| 22         | 2016        | Improvements to Golden Arrow Road             | 76161           |

\*Project Number was obtained from the RPMP.

1161

1162 **3.4.2 Long-Range Component**

1163 The Fort Jackson RPMP LRC contains focused, detailed planning strategies that  
 1164 guide the long-range use of land and facilities throughout Fort Jackson. The Plan  
 1165 serves as a broad-based area framework for development of the entire Installation  
 1166 projected over a period of 20 to 50 years.

1167 The LRC provides a description and assessment of physical and environmental  
 1168 conditions at Fort Jackson, including an analysis of Fort Jackson's capacity to  
 1169 support existing and future missions. In addition, the report includes the Future  
 1170 Development Plan, which consolidates/co-locates functions and land uses, densifies  
 1171 development, encourages walkability, and promotes efficiency of mission-critical  
 1172 functions. Section 6.3 provides additional detail concerning each plan, including  
 1173 excerpts from the RPMP and supporting documentation that summarize the

1174 attributes associated with each land use concept. The cantonment land use plan is  
1175 graphically illustrated in Section 5, *Affected Environment*.

### 1176 **3.4.3 Capital Investment Strategy**

1177 The Fort Jackson RPMP CIS serves as the link between the installation's SRC and  
1178 LRC and the US Army's Planning Programming Budgeting and Execution System.  
1179 The CIS is a static document that guides long-term infrastructure and facility planning  
1180 policy and only changes when significant stationing actions, mission or other Army  
1181 Defense initiatives affect the installation. The CIS is based on Army goals and Army  
1182 IMCOM planning and programming guidance, and includes summaries of the desired  
1183 sequencing of maintenance, repair, and new construction projects to address the  
1184 facility excesses and deficiencies.

1185 The CIS analyzes and explains in detail the planning direction that the Installation will  
1186 follow over an unconstrained planning period based upon IMCOM funding guidance,  
1187 and the development goals and objectives of the Installation. Broad groupings of  
1188 facility types are combined into facility category codes (FCC) based upon similar  
1189 functional characteristics and FCC groupings, as established in AR 415-28, *Real*  
1190 *Property Category Codes*.

## 1191 **3.5 Ongoing Mission Activities**

1192 Fort Jackson's primary ongoing mission is to provide BCT and AIT. As the largest  
1193 and most active IET Center in the Army, Fort Jackson provides training to  
1194 approximately 45,000 soldiers per year, or approximately 50 percent of all soldiers  
1195 entering the Army. Fort Jackson is also home to additional tenants as detailed in  
1196 Section 1.4 and support functions aligned with its soldier-centric mission (RPMP,  
1197 2012). These "ongoing mission activities" are primarily public works and commercial  
1198 service functions that are required to allow people to live and work on the Installation.  
1199 These activities are similar to those conducted in any community of equal size, and  
1200 they are regulated by the same federal, state and local environmental regulations.  
1201 Ongoing mission activities also include the execution of actions documented in  
1202 installation service maintenance contracts, existing Memoranda of Understanding  
1203 (MOU) and Memoranda of Agreement (MOA), Interservice Support Agreements  
1204 (ISSA), and licenses, leases, permits, easements, consents and agreements. New  
1205 Mission Activities

### 1206 **3.5.1 General**

1207 Fort Jackson is potentially subject to continuous mission changes, which is  
1208 particularly true as the Army continues to respond to changing global security  
1209 requirements. Mission changes are common throughout the Army for various  
1210 operating units as well as the installations that these units rely on to provide required  
1211 facilities and training lands. These mission changes may be the result of new  
1212 technology, changes in force structure and alignment or other factors. Fort Jackson  
1213 must be prepared to receive new missions in the future based on changing  
1214 conditions. In turn, the master planning and facility development process must be

1215 flexible to accommodate these potential changes. This PEA includes programmatic  
1216 review procedures (Appendix A) that can be used to evaluate the environmental  
1217 impacts of new mission activities as they are identified.

1218 Relatively small increases in military strength, which result from the realignment of  
1219 civilian and/or military personnel are considered to be routine actions that are readily  
1220 accommodated by existing facilities and operations at Fort Jackson. Therefore,  
1221 these relatively small increases or decreases in personnel do not warrant specific  
1222 evaluation of environmental consequences. The Installation has the ability to absorb  
1223 many new mission assignments without major facility modifications or new  
1224 construction since, in addition to gaining new activities, the Installation also loses  
1225 tenants and mission activities on a periodic basis in response to continuing force  
1226 structure adjustments. Realignment actions require an individual REC, EA or EIS  
1227 depending upon the size and nature of the action.

1228 Review of realignments resulting in the need for new construction or major  
1229 renovation are accommodated in the ongoing master planning process which is  
1230 described in Section 3.2. As described in Section 1.2 and detailed in Appendix A, a  
1231 programmatic review procedure has been incorporated to facilitate and support the  
1232 review of future proposed actions. This process is equally suited to screen projects  
1233 identified from ongoing operations as well as responding to future mission changes.

### 1234 **3.5.2 Current New Mission Initiatives**

1235 At the time that base data was assembled in support of this PEA, there were no  
1236 known plans for any new missions to be assigned to the US ATC&FJ. If major new  
1237 missions are assigned to Fort Jackson that have the potential to cause significant  
1238 adverse impacts, then an additional EA or EIS may be required.

## 4. Alternatives Considered

1239

1240

### 4.1. Introduction

1241

1242 As required by federal and ARs governing NEPA (40 CFR Parts 1500-1508 and 32  
1243 CFR Part 651, respectively), the proponent of an action or project must identify and  
1244 describe all reasonable alternatives to the proposed action or project. The  
1245 alternatives should provide a basis from which to compare the proposed action to  
1246 other potential methods of implementation; however as discussed in Section 3.2,  
1247 military installation master planning is a continuous process, and specific  
1248 implementation actions are subject to ongoing evaluation and modification in  
1249 response to changing mission requirements.

1250 The master planning process includes a careful review of project or program specific  
1251 implementation alternatives during the formulation of each proposed (construction,  
1252 renovation, or maintenance) project. Typically, alternatives that are considered in  
1253 planning to meet new building space requirements include:

- 1254 • leasing off-site space;
- 1255 • consolidation of similar or compatible uses in existing structures by increasing  
1256 the use density;
- 1257 • rehabilitation or adaptive reuse of existing space;
- 1258 • construction of new facilities; and
- 1259 • review of alternative construction sites.

1260 These evaluations are conducted on a regular and ongoing basis, and the results of  
1261 this process are subject to documentation, and review and approval by the Fort  
1262 Jackson Installation Planning Board. As a result of this planning process, once a  
1263 specific project or program has been approved and included as part of the installation  
1264 master plan, it is not viable or beneficial to conduct further evaluation of  
1265 implementation alternatives. Therefore, this PEA limits the scope of its analysis to  
1266 the comparison of the No Action Alternative and “Full Implementation” of the RPMP  
1267 and the ongoing mission. These alternatives are listed below and discussed in  
1268 greater detail in the following sections.

- 1269 • No Action Alternative. Consists of not implementing the Installation’s RPMP  
1270 and supporting component plans.
- 1271 • Implement the full RPMP, and all its component plans. This is Fort Jackson’s  
1272 Preferred Alternative.

1273 These alternatives are evaluated in a broad, programmatic manner consistent with  
1274 the goals and intent of this PEA. Specific projects or programs that are identified in

1275 the future will be subject to further environmental screening and evaluation per the  
1276 programmatic review procedures included in Appendix A.

## 1277 **4.2. No Action (Baseline) Alternative**

1278 The No Action Alternative, prescribed by CEQ regulations, serves as a baseline  
1279 against which the impacts of the Preferred Alternative and other alternatives can be  
1280 evaluated. Under the No Action Alternative, Fort Jackson would continue to utilize  
1281 and develop land in accordance with the 2001 *Real Property Master Plan* and  
1282 existing land use plan. Many of the concepts identified in the 2001 *Real Property*  
1283 *Master Plan* would remain applicable and would not be updated in support of mission  
1284 goals and requirements.

1285 Further, Fort Jackson would not update and implement the short range projects, long  
1286 range future land use plan and the CIS. The short-range construction projects, which  
1287 would be in support of the current and planned activities and organizations, would not  
1288 be completed. Maintenance, repair, and operation of existing operational and  
1289 support facilities would continue as currently conducted and IET including BCT and  
1290 AIT levels would continue at their current intensities. Enhancement to improve safety  
1291 and efficiency and updating to comply with policies and guidance would not occur  
1292 under the No Action Alternative. The Installation would continue only with the current  
1293 missions assigned and could not accept any new missions requiring the substantial  
1294 renovation of, or additions to, the existing building stock or supporting infrastructure.

## 1295 **4.3. Alternative 1 – Full Implementation of the Fort** 1296 **Jackson RPMP (Preferred Alternative)**

1297 Under Alternative 1, Fort Jackson would implement the RPMP and all component  
1298 plans including the SRC, LRC, and the CIS (as discussed in Section 3) in support of  
1299 mission goals and requirements. The short range projects identified in the RPMP  
1300 take into consideration Fort Jackson's assigned missions, economic resources,  
1301 environmental stewardship, and potential for productivity enhancements. These  
1302 projects will be completed along with any associated demolition as required to  
1303 support all elements of the RPMP and associated current and future mission  
1304 requirements.

1305 This alternative would implement the Future Development Plan, as described in  
1306 Section 3.4.2, which guides installation development and the reconfiguration of the  
1307 use of existing facilities. The Future Development Plan reflects the land use goals  
1308 and objectives of Fort Jackson, consolidates compatible land uses into functional  
1309 areas that improve the efficiency of Installation operations, and improves upon the  
1310 Installation's functional land use relationships.

1311 Ongoing management actions would continue with modifications, as needed. Fort  
1312 Jackson could continue to take on new or modify the current missions assigned to  
1313 the Installation and could accept any new missions that would require substantial  
1314 renovation of, or additions to, the existing building stock or supporting infrastructure

1315 (i.e., roads or utilities). The Installation would be able to modify land use to  
1316 accommodate any future changes in on-going activities and missions.

1317 Under Alternative 1, current ongoing mission activities would continue, and be  
1318 expanded or modified as required to meet requirements associated with the full  
1319 implementation of the RPMP. In addition, the RPMP, including the Preferred Future  
1320 Land Use Plan, all component and new and ongoing mission activities would proceed  
1321 under the broad guidance and direction established by the Installation planning  
1322 documents. This alternative involves accomplishing the Installation's current and  
1323 future missions through a combination of renovation of existing facilities, demolition  
1324 of deteriorated and obsolete structures, and construction of new facilities and  
1325 infrastructure.

1326

## 5. Affected Environment

### 5.1. Introduction

This section describes the existing environmental and human resource conditions at Fort Jackson necessary for the analysis of the potential environmental consequences of the Proposed Action and the No Action Alternative. The NEPA requires that the analysis address those areas and components of the environment with the potential to be affected; locations and resources with no potential to be affected need not be analyzed. Information used in this section, and other sections of the EA, was obtained primarily from the *US Army Training Center and Fort Jackson, South Carolina Environmental Assessment of the Master Plan and Ongoing Mission* (Parsons Harland Bartholomew & Associates, Inc., 2000), the *Affected Environment Update of the Environmental Assessment Master Plan and Ongoing Mission* (Parsons Harland Bartholomew & Associates, Inc., 2008), the *Long Range Component – RPMP* (2012), and the *Draft Environmental Assessment for Implementation of the Privatization of Army Lodging Program at Fort Jackson, South Carolina* (USACE, 2012).

The information provided will support the environmental analysis of proposed projects and activities considered in the RPMP as well as those that will be identified and considered in the future. Each resource discussion begins with a definition including resource attributes and any applicable regulations. The expected geographic scope of any potential consequence is identified as the region of influence (ROI). For the majority of resources in this chapter, the ROI is defined as the boundaries of Fort Jackson, while for some resources (i.e., Socioeconomics) the ROI extends over a larger jurisdiction unique to the resource. The Affected Environment of each relevant environmental resource is described to provide decision-makers a baseline to compare potential future effects.

The Cumulative Impacts analysis provides a review of many of these actions. These actions include natural events, prehistoric and historic events, prior activities by U.S. Army personnel, and activities associated with the continuation of existing ongoing missions at Fort Jackson.

There are a wide range of activities that occur on a regular basis at Fort Jackson to support assigned missions. These ongoing mission activities are essentially public works and commercial service functions that are required to allow people to live and work on the Installation, and include the following types of activities:

- Administrative operations;
- Airspace management;
- Facilities repair, maintenance, construction, and alteration;

- 1361 • Fuel and petroleum storage and dispensing;
- 1362 • Grounds maintenance;
- 1363 • Hospital, medical and dental clinic operations;
- 1364 • Installation and community support services;
- 1365 • Natural resources management and environmental protection;
- 1366 • Recreation;
- 1367 • Road and right-of-way maintenance;
- 1368 • Training and training support services;
- 1369 • Utility operations including infrastructure maintenance, capital improvement and R&R  
1370 projects;
- 1371 • Warehousing and supply storage; and
- 1372 • Vehicle and equipment maintenance and repair.

1373

1374 These activities are similar to those conducted in any community of equal size, and the same  
1375 federal, state and local environmental regulations regulate them as would regulate any local  
1376 community government.

1377 Further, as part of the documentation of the affected environment, it is important to note that  
1378 environmental constraints exist on Fort Jackson including both natural resources (water,  
1379 vegetation, habitat, topography and soils, air quality and cultural resources) and operational  
1380 (ammunitions storage, hazardous waste). This EA contains a series of resource maps provided  
1381 at the end of Section 5 (Figures 5.4 – 5.8). These maps are provided to: (1) illustrate resources  
1382 that are most likely to be a constraint when evaluating future actions; (2) facilitate the evaluation  
1383 of proposed actions; and (3) support the use of the programmatic review charts provided in  
1384 Appendix A of this document.

1385 **5.2. Land Use**

1386 This section describes existing land use conditions on and surrounding Fort Jackson, taking into  
1387 consideration both natural or human modified activities. Natural land use classifications include  
1388 wildlife areas, forests, and other open or undeveloped areas. Human-modified land use  
1389 classifications include residential, commercial, industrial, utilities, agricultural, recreational, and  
1390 other developed uses. Land use is regulated by management plans, policies, and regulations

1391 determining the type and extent of land use allowable in specific areas and protection specially  
1392 designated for environmentally sensitive areas.

1393 The following sections discuss existing land use patterns within the ROI, which includes Fort  
1394 Jackson and the surrounding area. The following information concerning land use was  
1395 extracted from the *Long Range Component – RPMP (2012)*, which was authorized by AR 210-  
1396 20, *Master Planning for Army Installations* and is intended to govern and guide the future  
1397 physical development of the installation.

### 1398 **5.2.1. Fort Jackson (On-Post) Land Use**

1399 Fort Jackson encompasses nearly 52,000 acres of land, including 1,160 buildings and over 100  
1400 ranges and training sites. The Installation is surrounded by a 3,000 foot buffer. The majority of  
1401 the Installation is comprised of range area which includes approximately 17,000 acres of  
1402 training areas and 11,000 acres of impact areas while the remainder of the Installation is  
1403 devoted to managed woodlands.

1404 Fort Jackson's cantonment area occupies approximately 5,500 acres in the southwestern corner  
1405 of the Installation. Family housing and associated elementary schools are located in separate  
1406 adjacent areas on the eastern perimeter of the cantonment, while troop housing is located to the  
1407 north and west. A variety of community and commercial services are concentrated to the south  
1408 and west of the family housing area, including the post exchange, commissary, bank and credit  
1409 union, Class VI stores, Officers Club, and various indoor recreational facilities. The Moncrief  
1410 Army Community Hospital (MACH) is located to the west of the community center and north of  
1411 Semmes Lake. The Post Headquarters is centrally located on Jackson Boulevard. Industrial  
1412 activities in the form of public works, logistics, and maintenance are concentrated in the  
1413 southern, central portion of the Installation east of Marion Avenue. The cantonment is  
1414 surrounded on the north and east by reserved land and buffer areas, which provide a  
1415 transitional use to the Installation's range and training areas.

1416 The land use classification system presented in the Master Planning Technical Manual (MPTM)  
1417 is intended to provide flexibility in siting facilities and encourage mixed-use development. Table  
1418 5-1 and Figure 5.1 detail these land use categories and provide the acreages located within the  
1419 cantonment area. "*Constrained land*", such as protected land, environmentally sensitive areas,  
1420 or other undevelopable lands were not designated as a specific land use category under the  
1421 MPTM system; however, these areas are depicted on other maps within this document (Figures  
1422 5.4 – 5.8).

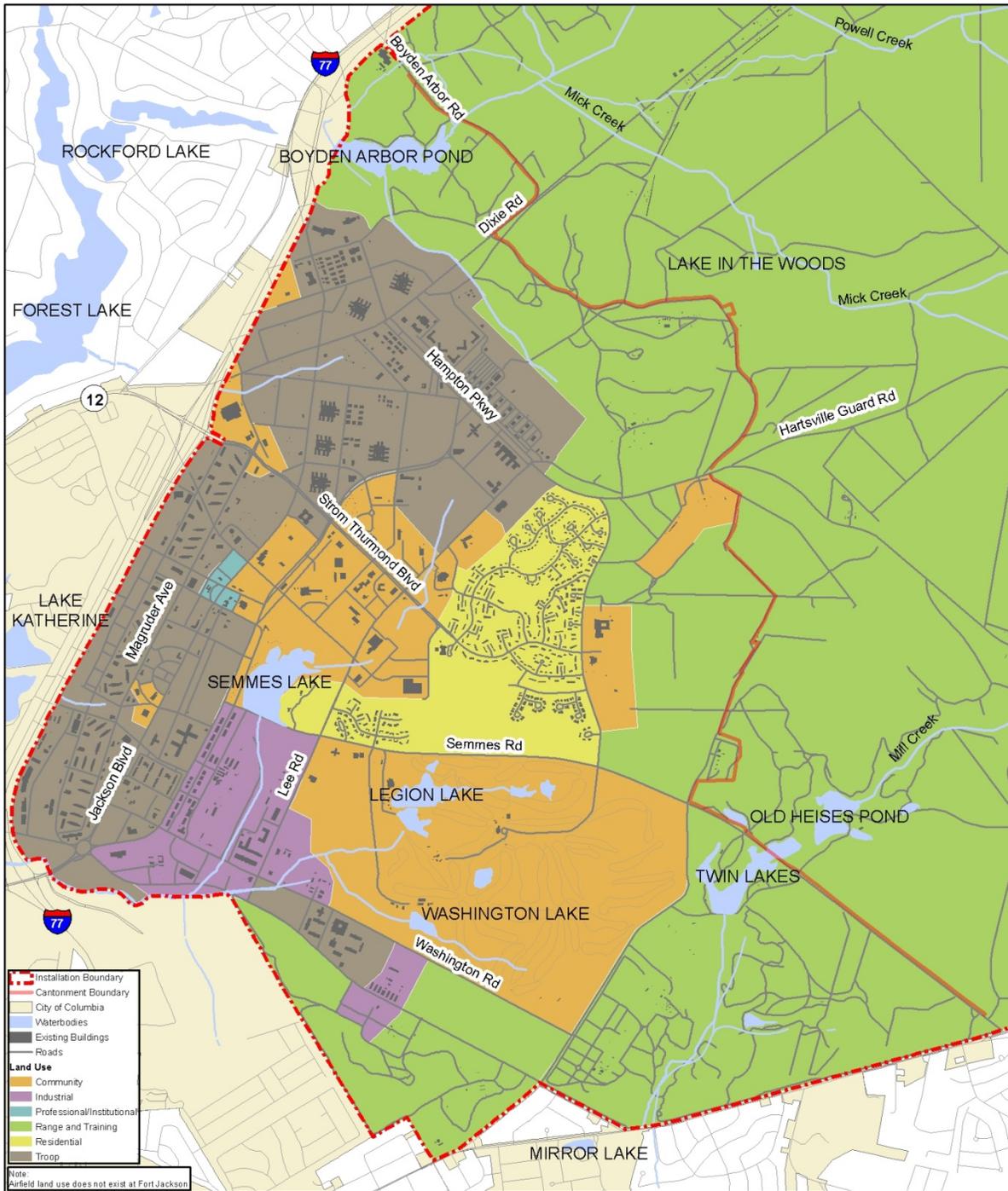
1423 **Table 5-1 Fort Jackson Land Use Categories and Acreages**

| Land Use Categories        | Description   | Acreage |
|----------------------------|---|---------|
| Troop                      | Land use is designated for operational facilities with a goal of providing contiguous facilities to related organizations in order to facilitate operational readiness, to support operations security for deployable units, and to improve circulation and movement of trainees. Troop land use is most prevalent within the cantonment area, covering the majority of the land from the western installation boundary approximately to Marion Avenue, and from Gate 1 to Gate 4 on Golden Arrow Road. | 1,417   |
| Ranges and Training        | Land use includes live indoor and outdoor firing ranges, range control towers and buildings, ammunition breakdown and distribution sheds, target storage and maintenance buildings, gas chambers, simulator buildings, bunkers, safety clearances and distances for weapons firing and ammunition storage, and impact areas. Ranges and Training land encompass the vast majority of the Installation, most of which is located outside of the cantonment area.   | 2,172   |
| Community                  | Land use includes facilities in support of religious, family, personnel, professional, medical, community, housing, recreational, and commercial services.  | 1,357   |
| Industrial                 | Land use is located within two areas on Fort Jackson and includes areas designated for production, maintenance, loud outdoor equipment operations, depot and other storage activities that generate significant amounts of heavy vehicular traffic, noise, smoke, and large amounts of steam or pollutants that must be processed on site. Storage and maintenance are the main functions within the industrial zones.  | 321     |
| Professional/Institutional | Land use provides for non-tactical organizations. These may include military schools, headquarters, major commands, and non-industrial Research Development Test and Evaluation (RDT&E). The Post Headquarters, Post Conference Room, and Post Museum are the primary facilities designated as professional/institutional,  | 15      |
| Residential                | Land use includes the provision of family housing and senior unaccompanied personnel housing, family services and other neighborhood services. Currently, eight neighborhoods totalling 1,162 units exist within one large area designated for family housing.  | 464     |
| Airfield**                 | Land use does not exist at Fort Jackson. Fort Jackson does not have airfield facilities or assigned aircraft.   | NA      |

| Land Use Categories | Description  | Acreage      |
|---------------------|--|--------------|
|                     | However, transient aircraft, including fixed wing and rotorcraft, use the airspace above the installation to conduct training activities. Many of the transient helicopters that use Fort Jackson airspace belong to the SCARNG Army Aviation Support Facilities, a tenant activity stationed at McEntire Joint National Guard Base. |              |
| <b>Total</b>        |  | <b>5,746</b> |

1424  
1425  
1426  
1427

Note:  
\*Acreages are totals within the cantonment area.  
\*\*There are two permanently designated areas for helicopter landings and three additional landing areas within the cantonment area.



**Figure 5.1**  
**Fort Jackson Cantonment**  
**Land Use**

Sources:  
 World\_Street\_Map: ArcGIS Map Service  
<http://services.arcgisonline.com/ArcGIS/services>  
 Remaining Data: Fort Jackson

1428

1429

## 1430 5.2.2. Adjacent (Off-Post) Land Use

1431 Fort Jackson is bordered by the City of Columbia to the northwest, west and southwest, while  
 1432 the remaining areas are adjacent to unincorporated portions of Richland County as indicated in  
 1433 Figure 1.2. Urbanized development is located to the southwest between Leesburg and Garners  
 1434 Ferry roads; to the west along Jackson Boulevard; and to the northwest within the Forest Acres  
 1435 and Arcadia Lakes communities and in the vicinity of Interstate highways I-20 and I-77. Dense  
 1436 commercial development, such as the Columbia Mall, occurs in the vicinity of Two Notch Road  
 1437 (US Highway 1) and I-20, and strip commercial characterizes development on Decker  
 1438 Boulevard, Two Notch Road, the intersection of Percival Road and I-77, and the intersection of  
 1439 Forest Drive and I-77 outside Gate 2. Sesquicentennial State Park, a day-use facility with lake,  
 1440 hiking and biking trails, picnic and camping facilities, is located northeast of the junction of I-20  
 1441 and I-77 and is the largest public land use adjacent to Fort Jackson. Most of the unincorporated  
 1442 areas adjacent to Fort Jackson are low density or rural residential, agricultural, or open space  
 1443 land uses. The 585-acre Columbia-Greenville National Veteran's Cemetery is on land formerly  
 1444 held by Fort Jackson at the northern end of the Installation.

1445 Several studies have been conducted to guide the growth and development of the City of  
 1446 Columbia as well as Richland County. This section focuses on five future development plans  
 1447 and their impact on adjacent land uses surrounding Fort Jackson. There are several adjacency  
 1448 opportunities and concerns which will need to be addressed in any future development plans  
 1449 proposed for the Installation adjacent to these areas.

- 1450 • **The Columbia Plan: 2018** has been prepared on a foundation of public participation to  
 1451 envision and guide the growth and development of the City of Columbia through the next  
 1452 decade. The Columbia Plan addresses the pressing concerns facing future planning as  
 1453 identified by the public. The Plan is viewed as a guidance document and only shows the  
 1454 final destination, not the actual paths to reach it. Those decisions are left to the  
 1455 individuals charged with its implementation.
- 1456 • **City of Columbia Future Land Use Plan** provides a land use map representing the  
 1457 long-term, future growth and development for the City of Columbia through 2018. It  
 1458 helps inform decisions makers on whether or not the proposed development (i.e.  
 1459 annexing, redevelopment, and rezoning requests) is in accordance with the City's goals  
 1460 for future growth.
- 1461 • **2009 Richland County Comprehensive Plan** provides informed recommendations for  
 1462 guiding future growth and development. The Land Use Element section of the document  
 1463 addresses existing land use patterns and identifies projected future land use  
 1464 development over the next 10 years. It enables the identification of specific areas  
 1465 available for future growth, and allows the community to repeat successful growth  
 1466 patterns that are still thriving.

1467

- 1468 • **Richland County Future Land Use Plan** uses the Future Land Use Map (FLUM) to  
1469 guide growth and does not change the current zoning of any area. The policies and  
1470 maps are provided as a framework for decision makers as they consider and evaluate  
1471 future land uses. The North East, Beltway, and South East planning areas are adjacent  
1472 to or include Fort Jackson.
- 1473 • **Joint Land Use Study (JLUS)** is a cooperative planning effort between Fort  
1474 Jackson/McCrary and the surrounding communities to examine both the way that the  
1475 Installation operates and the development pattern in which nearby communities are  
1476 growing. The study's purpose is to ensure military missions continue without degrading  
1477 the safety and quality of life in surrounding communities, while also accommodating local  
1478 economic development. The plan attempts to balance growth opportunities with the  
1479 military's need to conduct critical training and readiness activities. It is an advisory  
1480 document that lays out a series of proposed regulations and policies for the military and  
1481 local governments to consider. The primary concern identified within the JLUS is  
1482 encroachment around Fort Jackson/MTC. Compatibility issues relate mainly to housing  
1483 and manufactured housing units in noise areas east and north-east of Fort  
1484 Jackson/MTC.

### 1485 **5.3. Aesthetics and Visual Resources**

1486 A military installation conveys a visual image established by its architectural and historical  
1487 character, arrangement of facilities, circulation patterns, and features in the landscape. This  
1488 image can be clear, orderly, logical, and attractive; or cluttered, confused, and unattractive.

1489 The purpose of the IDG (Atkins, 2012b) is to provide design guidance for standardizing and  
1490 improving the quality of the total environment of the installation. Many aspects of the built  
1491 environment and natural setting influence the standards established in the IDG. This includes  
1492 not only the visual impact of features on the installation, but also the impact of projects on the  
1493 total built and natural environment.

1494 The overall goal of providing a clear comprehensive approach to maintaining a positive visual  
1495 image throughout the installation is accomplished by implementing appropriate standards  
1496 through a systematic process that can be followed by all parties who are involved. The IDG  
1497 includes standards and general guidelines for the design issues of site planning; architectural  
1498 character, colors and materials; vehicular and pedestrian circulation; and landscape elements,  
1499 including plant material, seating, signage, lighting, and utilities. These standards are achieved  
1500 through a series of objectives that guide site planning, architecture and interiors, circulation,  
1501 landscape design, site elements, and force protection.

- 1502 • **Site Planning** is utilized at Fort Jackson to ensure an attractive, sustainable  
1503 development. Sustainability requires the built environment to be designed and  
1504 constructed to preserve and enhance the cultural and natural resources, and  
1505 appropriately considers environmental constraints as indicated on Figures 5.4 – 5.8.
- 1506 • **Architecture and Interior** design guidelines ensure that future buildings blend in with  
1507 existing conditions, and maintain the unique sense of place at Fort Jackson. The goal for

1508 architecture is to provide objectives and visual determinants that will be utilized to  
 1509 identify and assess the building design quality of the installation. Another goal is to  
 1510 provide standards and guidance pertaining to the development and maintenance of the  
 1511 various interiors and exteriors of buildings on the installation.

1512 • **Circulation** systems on-Post establishes a sustainable system that promotes aesthetic  
 1513 appeal, environmental preservation and compliance, and energy conservation. Another  
 1514 consideration is the safe, efficient circulation and carrying capacity required by future  
 1515 growth to avoid traffic congestion and delays.

1516 • **Landscaping** is an important element in the design of outdoor spaces. Overall, the  
 1517 goals for plant material use include: improving the physical and psychological well-being  
 1518 of those living and working on the installation, contributing to the preservation and  
 1519 restoration of natural resources on the installation, and increasing sustainability of  
 1520 developments (through use of native plants for energy conservation, climate  
 1521 modification, erosion control, air purification, and noise abatement).

1522 • **Site Elements** are used to enhance the appearance and sustainability of the installation.  
 1523 Specific site elements selection will be governed in part by the Theme standards to  
 1524 ensure conformance to that location's distinct palette of site elements.

1525 • **Force Protection** measures should be effective while also contributing to the overall  
 1526 aesthetic quality of the installation. The goal is to provide protection by using security  
 1527 devices that fit into the context of the site and do not detract from the historic character  
 1528 of Fort Jackson.

1529 The design guidelines incorporate sustainable design, quality of design, anti-terrorism, low  
 1530 maintenance, historical and cultural considerations, durability, safety, and compatibility.

1531 The IDG process begins with the development of goals and objectives that address the visual  
 1532 requirements of the installation. Visual surveys are performed in preparation of the IDG, to  
 1533 establish visual themes of the installation, and document the assets and liabilities. The  
 1534 information gathered through the visual surveys is used to establish the visual themes of the  
 1535 installation. Themes are delineated by distinctive visual characteristics that create a certain  
 1536 "look and feel" of an area. Dominant features help define the overall image and can include  
 1537 unique buildings, vehicular and pedestrian corridors, functional use, natural features, and spatial  
 1538 relationships. Other contributing factors include function, massing, physiographic, political, and  
 1539 operational. These themes are delineated after gathering reconnaissance data and analyzing  
 1540 the findings. Figure 5.2 illustrates the distinct visual themes within the cantonment area.

1541 • **BCT Visual Theme** is the largest of all the visual zones and includes IET-BCT mission  
 1542 support functions. This is attributed to its vital role supporting one of the Fort Jackson's  
 1543 largest and most important missions: Basic Combat Training. With BCT mission  
 1544 growth, future development will include infill where appropriate and new BCT complexes  
 1545 extending the theme boundary to the north.

1546 • **AIT Visual Theme** is mainly comprised of IMT-AIT mission support functions as well as  
 1547 other troop functions. This theme is characterized by dense development on smaller

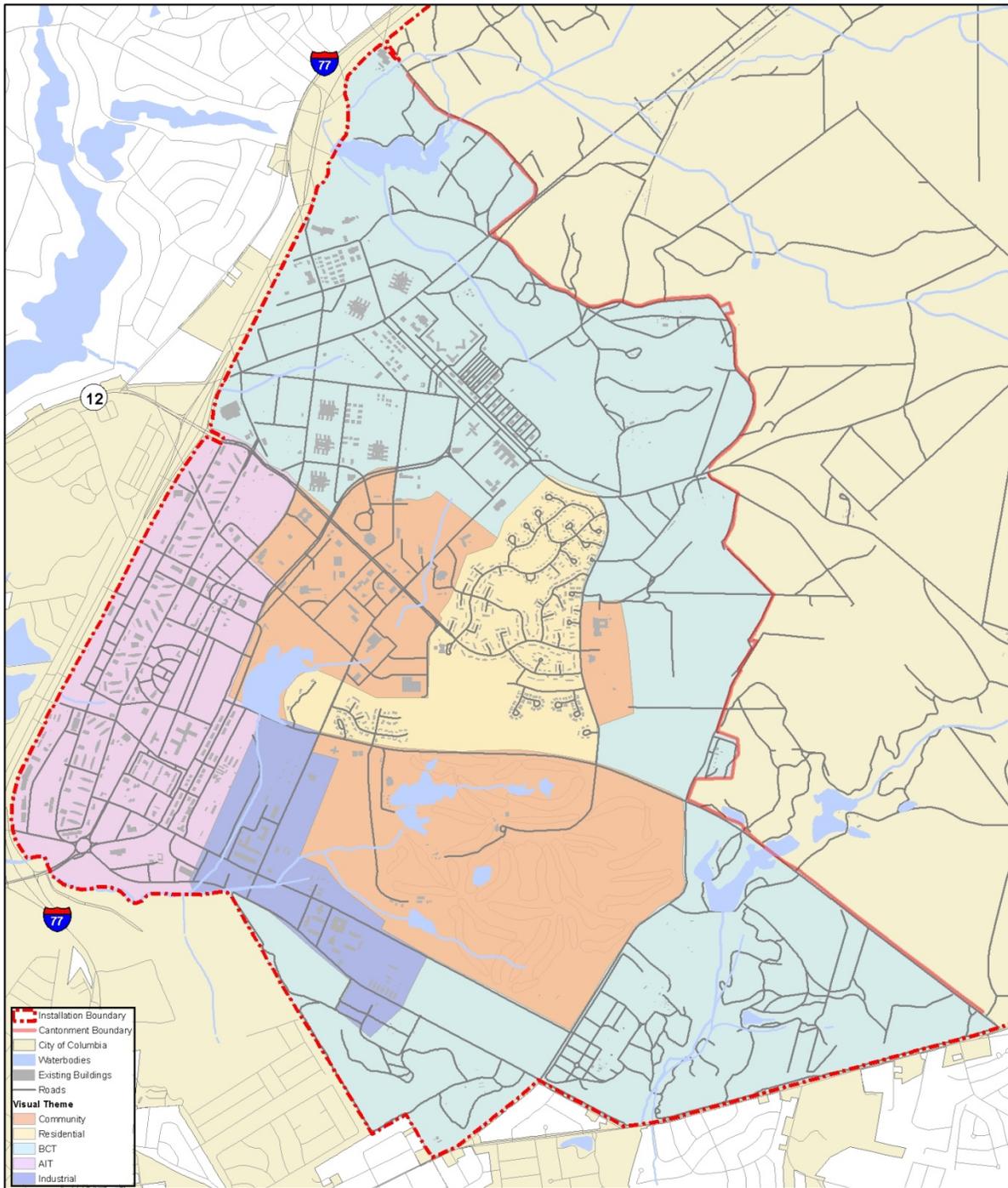
1548 development parcels, orthogonal grid of streets, angled barrack building orientation, and  
1549 narrow, two-lane roads.

1550 • **Community Visual Theme** consists of a variety of community support facilities, such as  
1551 religious, family support, personnel services, professional services, medical, commercial  
1552 and recreational services. There are four community support areas within the  
1553 Installation.

1554 • **Industrial Visual Theme** is characterized by large clustered development parcels  
1555 separated from each other by existing woodlands, large amounts of paved area for  
1556 vehicle storage, parking and other industrial functions, and industrial style buildings set  
1557 back from roads. There is a large wetland running through the center of the theme.

1558 • **Residential Visual Theme** has a curvilinear road layout that gives the housing area a  
1559 unique sense of place. This theme area is characterized by newly constructed and  
1560 renovated low-density housing, support facilities, and site furnishings, off-street parking,  
1561 strategically placed public open space, and perimeter formed by woodlands.

1562



|  |  |   |
|--|--|---|
|  | <p><b>Figure 5.2</b><br/> <b>Fort Jackson Cantonment</b><br/> <b>Visual Themes</b></p> | <p>Sources:<br/>                 Remaining Data: Fort Jackson<br/>                 Atkins</p> |
|--|--|---|

1563

1564

1565 Each theme is assessed for its particular design qualities. This analysis is based on existing  
 1566 conditions on-Post and includes an assessment of visual character, assets, liabilities, and  
 1567 recommendations. Visual character describes the physical character, prominent functions, and  
 1568 features that occur, and location within the Post. Assets are facilities or features that have a  
 1569 positive influence on the visual or functional quality of the Post. Liabilities are facilities or  
 1570 features that detract from the visual image or functionality of the surroundings.

1571 Once the visual character, liabilities and assets are defined for each theme, recommendations  
 1572 are provided to correct liabilities and, where desired, to enhance assets. In addition, specific  
 1573 Priority Improvement Projects (PIP) are provided. The intent of a PIP is to depict how  
 1574 implementing the design guidelines can remedy existing visual liabilities and/or enhance  
 1575 existing assets to improve the overall visual quality of the Installation.

1576 The design guidelines and standards provided by the IDG are intended to be used in all  
 1577 maintenance, repair, renovation, and new construction projects, regardless of funding sources,  
 1578 through the following steps:

1579       **Step 1:**       Review the IDG Analysis Criteria information, including design goals and  
 1580                           objectives, visual elements, and design principles. This will give a  
 1581                           background of the master plan.

1582  
 1583       **Step 2:**       Review the Installation Profile information included in the IDG.

1584  
 1585       **Step 3:**       Review the information and description of the Installation themes. This will  
 1586                           determine the theme area the project is located. Review the assets,  
 1587                           liabilities, and recommendations for that theme. This will give guidance on  
 1588                           examples of how the project can contribute positively to the Post.

1589  
 1590       **Step 4:**       Refer to future improvement projects that are being proposed on the  
 1591                           Installation. These projects will give the designer guidance to ongoing  
 1592                           improvements that may impact their specific project.

1593  
 1594       **Step 5:**       Refer to the appropriate guidelines or standards for the appropriate design  
 1595                           discipline.

## 1597    **5.4.    Physical Resources**

1598 This section details the climate, geology, and soils at Fort Jackson. Geologic resources include  
 1599 subsurface and exposed rock. Soils include particulate, unconsolidated materials formed from in  
 1600 place underlying bedrock or other parent material or transported from distant sources via glacial  
 1601 transport, water, and wind. Soils serve a critical role in the natural and human environment,  
 1602 affecting vegetation and habitat, water and air quality, and the success of the construction and

1603 stability of roads, buildings, and shallow excavations. The ROI for the geology and soils  
1604 discussion is the land within Fort Jackson.

#### 1605 **5.4.1. Climate**

1606 According to the Köppen climate classification, South Carolina is classified as a humid  
1607 subtropical climate. Northern regions of the state are less “subtropical” in comparison to areas  
1608 along the coastline. The predominant climatic factors are the Installation's location in the lower  
1609 latitudes and its proximity to the Appalachian Mountains to the west, which block the approach  
1610 of unseasonable cold weather in the winter. Columbia, located in central South Carolina,  
1611 typically experiences its coldest month in January with an average high of 55 °F and warmest  
1612 month in July with an average high of 92 °F. The average annual temperature is approximately  
1613 75 °F while on average receiving 48 inches of precipitation per year, mostly during June, July,  
1614 and August. During these months, the city of Columbia receives between five and five and one  
1615 half inches of rain per month.

#### 1616 **5.4.2. Physiography, Geology and Topography**

1617 Fort Jackson lies in Richland County, which contains two physiographic provinces: the  
1618 Piedmont Plateau and the Atlantic Coastal Plain. Fort Jackson is located in the northwestern  
1619 portion of the Atlantic Coastal Plain, referred to as “Sand Hills”, which joins with the Piedmont  
1620 Province running north and west. The Sand Hills are a region of low to moderate relief and  
1621 gently rolling plains with numerous streams and springs that are fed by groundwater. Local relief  
1622 in the high plains of the reservation is largely between 165 and 250 feet. Slopes are  
1623 predominately between three and eight percent at Fort Jackson. In the areas along narrow  
1624 stream valleys, slopes commonly exceed 15 percent. The highest elevation on the Installation is  
1625 540 feet above sea level in the west-central portion of Fort Jackson near the Weir Tower; the  
1626 lowest point is less than 160 feet above sea level occurring in the floodplain of Colonels Creek  
1627 in the southeastern portion of Fort Jackson. The Piedmont Plateau contains numerous streams  
1628 and water bodies. Ridge tops are broad sloping gentle to moderate toward the streams. The  
1629 stream floodplains are often narrow. The Fall Line, a zone which marks the boundary between  
1630 the younger, softer sediments of the Coastal Plain Province and the ancient, crystalline rocks of  
1631 the Piedmont Province, lies approximately four miles west of the cantonment area.

1632 Rocks in the Piedmont Plateau are grouped in a geologic belt known as the Carolina Slate Belt.  
1633 The rock is shale and shist, rather than true slate. The principal rock type is argillite and fine  
1634 grained rock with a high content of silica and alumina. The principal geologic formation in the  
1635 Sand Hills is the Tuscaloosa, which consists of unconsolidated marine deposits of light-colored  
1636 sands and kaolin clays. Most of the soils at Fort Jackson are formed from sediment of the  
1637 Tuscaloosa. A layer of Quaternary sand terrace overlies the Tuscaloosa formation, which lies  
1638 upon a complex of old metamorphic and igneous rock. The Tuscaloosa complex generally  
1639 consists of clay strata overlying unconsolidated sands. The Upper Cretaceous-age Tuscaloosa  
1640 Formation outcrops over most of Fort Jackson and consists of unconsolidated, cross bedded,  
1641 kaolinitric, and arkosic sands. It lies unconformably on the peneplained surface of crystalline

1642 rocks. Near the northern boundary of the installation, the older crystalline rocks of the Carolina  
 1643 Slate Group outcrop at the surface. In the northwestern portions of Fort Jackson, Pleistocene  
 1644 sands and gravel are present at the ground surface.

1645 **5.4.3. Soils**

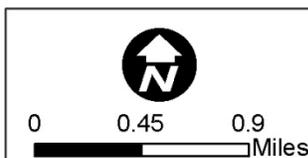
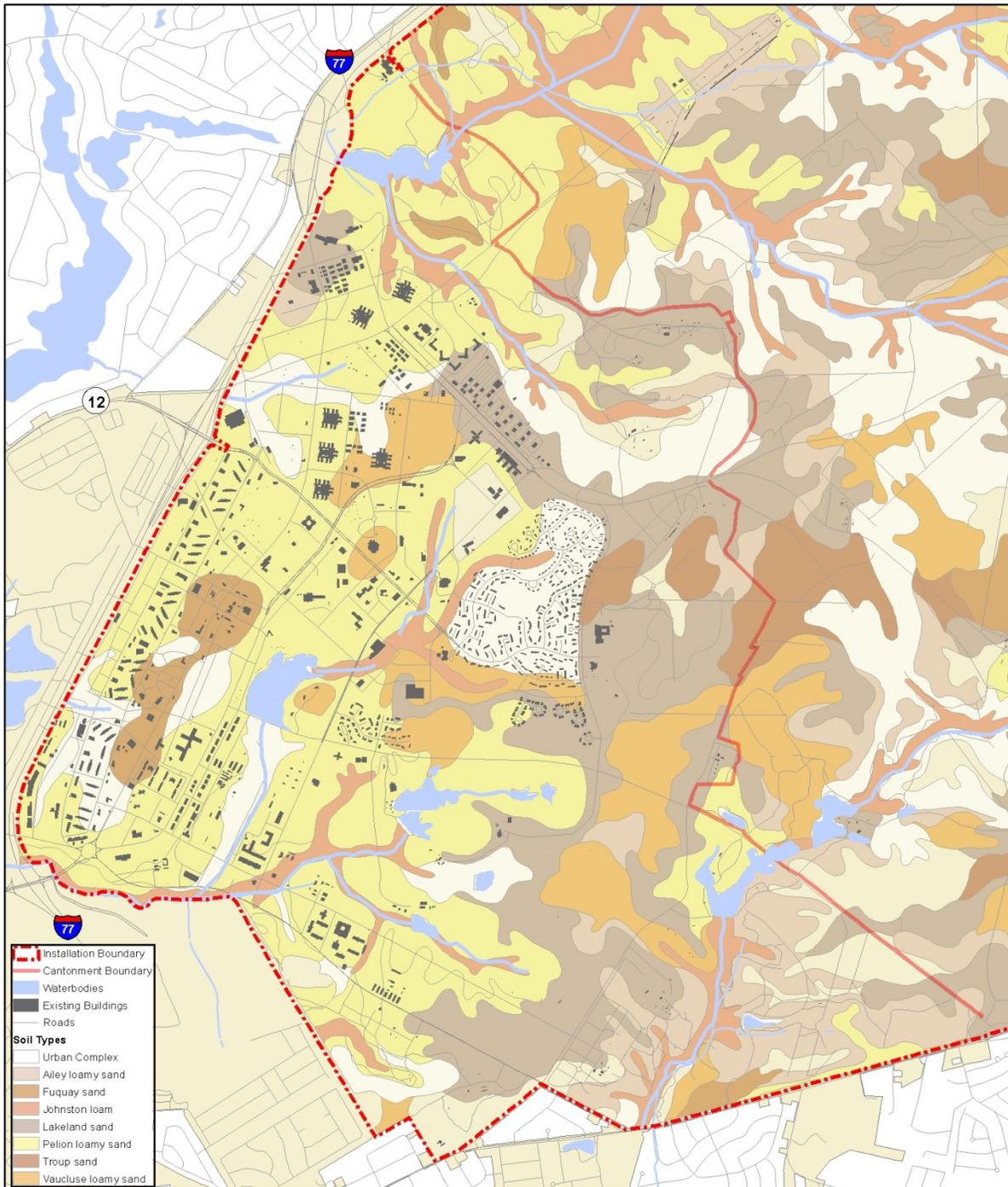
1646 A soil survey conducted by the United States Department of Agriculture (USDA) concluded that  
 1647 soils in the Fort Jackson coastal plain are predominantly well drained on the higher plains and  
 1648 side slopes and somewhat poorly drained in the valleys. These soils have a sandy surface  
 1649 layer and a predominantly loamy sub-soil. Primary soil classifications on Fort Jackson are  
 1650 identified below in Table 5-2 and illustrated on Figure 5.3.

1651 **Table 5-2 Primary Soil Classifications on Fort Jackson**

| Soil Classification                          | Characteristics   |
|--|---|
| <b><i>Lakeland soils</i></b>                 | dark gray sandy surface layer and a sandy underlying material to a depth of more than 80 inches. This soil is typically excessively drained and generally sandy throughout.   |
| <b><i>Vaucluse-Ailey-Pelion soils</i></b>    | found on the upper part of side slopes and on slope breaks. It is well drained to moderately well-drained with a sandy surface layer and a loamy subsoil. It is common to find fragipan in the subsoil.   |
| <b><i>Fuquay-Troup-Vaucluse soils</i></b>    | are nearly level to gently sloping and are found on ridge tops. They have sandy surface and subsurface layers that extend to a depth of 20 to 40 inches. Vaucluse soils are sloping to strongly sloping and are on side slopes that are parallel to drainage ways. Troup soils are gently sloping to nearly level and are located on ridge tops with sandy surface and subsurface layers that extend to a depth of 40 to 80 inches. |
| <b><i>Pelion-Johnston-Vaucluse soils</i></b> | range from moderately well drained with a sandy surface layer and a loamy subsoil, to very poorly drained soils that are loamy throughout, to well drained with a sandy surface layer and a fragipan in the loamy subsoil.  |

1652 Source: United States Department of Agriculture

1653



**Figure 5.3**  
**Fort Jackson Cantonment**  
**Soils**

Sources:  
World\_Street\_Map: ArcGIS Map Service  
<http://services.arcgisonline.com/ArcGIS/services>  
Remaining Data: Fort Jackson  
NRCS Soil Data

1654

1655

1656 The removal of vegetation and the length and percent of slope are concerns related to the soil  
 1657 erosion potential at Fort Jackson. Thus, soils that are absent of vegetation or are located on  
 1658 long, steep slopes can be highly erodible. These conditions are the case on most of Fort  
 1659 Jackson. In addition, while the sandy soils at Fort Jackson do not erode as easily as clay soils,  
 1660 once they do begin to erode, they do so more quickly and are more difficult to stabilize. Areas  
 1661 of known concern have been identified in the Land Rehabilitation and Maintenance component  
 1662 of the Integrated Training Area Management (ITAM) Program.

1663 **5.4.4. Noise**

1664 Noise is generally defined as undesirable sound. Sound is all around us, becoming noise when  
 1665 it interferes with normal activities such as speech, concentration, or sleep, is intense enough to  
 1666 damage hearing, or is otherwise intrusive. The type and characteristics of the noise, distance  
 1667 between the noise source and the receptor, the receptor sensitivity, and time of day all cause  
 1668 variations in human response. Noise is often generated by community activities that are  
 1669 fundamental to the quality of life, such as construction or vehicular traffic as demonstrated in  
 1670 Table 5-3.

1671 **Table 5-3 Common Noises and Sound Levels**

| Outdoor                | Sound Level (dBA) | Indoor             |
|------------------------|-------------------|--------------------|
| Motorcycle             | 100               | Subway Train       |
| Tractor                | 90                | Garbage Disposal   |
| Noisy Restaurant       | 85                | Blender            |
| Downtown (large city)  | 80                | Ringling Telephone |
| Freeway Traffic        | 70                | TV Audio           |
| Normal conversation    | 60                | Sewing Machine     |
| Rainfall               | 50                | Refrigerator       |
| Quiet Residential Area | 40                | Library            |

1672 Source: Harris 1998

1673 Noise associated with military installations is a factor in land use planning both on- and off-Post.  
 1674 Noise emanates from vehicular traffic associated with new facilities and from project sites during  
 1675 construction. Ambient noise (the existing background noise environment) can be generated by  
 1676 a number of noise sources, including mobile sources, such as automobiles and trucks, and  
 1677 stationary sources such as construction sites, machinery, or industrial operations. In addition,  
 1678 there is an existing and variable level of natural ambient noise from sources such as wind,  
 1679 streams and rivers, and wildlife.

1680 Sound intensity is measured with instruments that record instantaneous sound levels in decibels  
 1681 (dB). The human ear also detects and responds to differences in sound frequency. A-weighted  
 1682 sound level measurements (dBA) are used to characterize sound levels that can be sensed by

1683 the human ear. The typical measurement for quieter sounds, such as rustling leaves or a quiet  
1684 room, is from 20 to 30 dBA. Conversational speech is commonly 60 dBA, and a home lawn  
1685 mower measures approximately 98 dBA. All sound levels discussed in this EA are A-weighted.

1686 The dBA noise metric describes steady noise levels, although very few noises are, in fact,  
1687 constant. Therefore, A-weighted Day-night Sound Level (DNL) has been developed. DNL is  
1688 defined as the average sound energy in a 24-hour period with a 10-dB penalty added to the  
1689 nighttime levels (10 p.m. to 7 a.m.). DNL is a useful descriptor for noise because (1) it averages  
1690 ongoing yet intermittent noise, and (2) it measures total sound energy over a 24-hour period. In  
1691 addition, Equivalent Sound Level (Leq) is often used to describe the overall noise environment.  
1692 Leq is the average sound level in dB.

1693 The Noise Control Act of 1972 (Public Law 92-574) directs federal agencies to comply with  
1694 applicable federal, state, and local noise control regulations. In 1974, the EPA provided  
1695 information suggesting continuous and long-term noise levels in excess of DNL 65 dBA are  
1696 normally unacceptable for noise-sensitive land uses such as residences, schools, churches, and  
1697 hospitals.

1698 South Carolina's Environmental Noise Act of 1974 limits noise to that level which will protect the  
1699 health, general welfare, and property of the people of the state. The Richland County Noise  
1700 Ordinance (Chapter 18, Section §18-3) maintains that noise levels in excess of 62 dBA between  
1701 the hours of 7:00 a.m. and 10:00 p.m. and 55 dBA between the hours of 10:00 p.m. and 7:00  
1702 a.m. are unlawful, and that non-residential operation of construction equipment shall not be  
1703 used between the hours of 10:00 p.m. and 6:00 a.m. (Chapter 26, Section §26-97).

1704 Both on- and off-Post individuals could be subjected to multiple sources of noise during the day  
1705 including normal operation of heating, ventilating, and air conditioning systems; military unit  
1706 physical training activities; lawn maintenance; and general maintenance of streets and  
1707 sidewalks. Other minor noise sources include traffic, aircraft over flights, and construction  
1708 activities.

1709 Fort Jackson has five helicopter landing zones within the cantonment area, which are mainly  
1710 used for emergency medical evacuation and transporting dignitaries (Fort Jackson 2011).  
1711 Aircraft stationed at the Eastover Army Aviation conduct low-level training at Fort Jackson.  
1712 Travelling to the installation, pilots comply with National Guard Regulation (NGR-95-1) and  
1713 maintain minimum altitudes of 500 above ground level above unpopulated areas and 1,000 feet  
1714 above ground level in populated areas, and when entering the installation, the aircraft come in  
1715 at 800 feet above ground level (U.S. Army Center for Health Promotion and Preventive  
1716 Medicine [USACHPPM], 2009).

1717 A study of noise generators and noise impacts conducted by the USACHPPM at Fort Jackson  
1718 (USACHPPM, 1995) noted that the primary noise generators were small arms, demolition, and  
1719 artillery. Fort Jackson's *Installation Compatible Use Zone Study* (ICUZ) (FJ, 1991) was updated  
1720 using the noise contours developed by the USACHPPM to aid in the process of identifying

1721 areas which experience high levels of noise. The study resulted in the mapping of areas on the  
1722 installation that are within the contour lines of Noise Zones II and III (Figure 5.4).

1723 • Zone III is the area where the DNL is greater than 75 decibels, A-weighted (dBA). This  
1724 zone is considered an area of severe noise exposure and is unacceptable for noise-  
1725 sensitive activities.

1726 • Zone II is the area where the sound level is between 65 and 75 dBA DNL. This area is  
1727 considered to have a significant noise exposure and is, therefore, “normally  
1728 unacceptable” for noise-sensitive land uses.

1729 When significant changes occur in the type, frequency, or size of range operations, new noise  
1730 contour models are prepared and the results are appended to the ICUZ study or a new ICUZ is  
1731 prepared. Figure 5.4 illustrates the location of the noise contour lines.

1732 While noise complaints are not frequent to Fort Jackson, the Installation’s Operational Noise  
1733 Management Plan (ONMP) provides guidelines for noise management pertaining to Installation  
1734 functions. The goal of the ONMP, last updated in May 2009, is to achieve compatibility between  
1735 the Army and the surrounding communities so that soldier training on Post will not be  
1736 interrupted or restricted due to public concern over noise levels produced on Post.

1737 The ONMP listed the following conclusions from its 2009 analysis:

- 1738 • The Noise Zones from small arms training are contained within the Installation  
1739 boundaries.
- 1740
- 1741 • Due to deployments and reorganizations, current large caliber operations are not  
1742 frequent enough to generate Noise Zone II or Noise Zone III levels.
- 1743 • Large caliber operations may produce peak noise levels that can generate a moderate  
1744 or high risk of complaints beyond the Installation boundary.
- 1745

1746 Fort Jackson has established sound buffer areas adjacent to portions of the installation  
1747 perimeter to mitigate any potential for disturbance of noise-sensitive uses located off-Post.  
1748 These zones, which are approximately 900 meters wide, are located adjacent to Leesburg Road  
1749 and Highway 601 along the southern and eastern borders of the installation, respectively  
1750 (Figure 5.4).

1751 The MTC, located in the southeastern portion of the Installation, is also a contributor to noise  
1752 generation. While McCrady is contained within the Fort Jackson Installation boundary, its  
1753 missions, operations, and administration are autonomous and separate from Fort Jackson’s.  
1754 However, the off-Post community is not able to distinguish whether the noise disturbance was  
1755 generated by Fort Jackson or SCARNG. For this reason, it is important that both entities  
1756 communicate complaints that are received.

1757 Despite the lack of common noise complaints from the surrounding community, Fort Jackson is  
 1758 dedicated to resolving noise-related issues in the best manner possible. The handling of noise  
 1759 complaints at Fort Jackson is in accordance with Fort Jackson Range Regulation 350-14 that  
 1760 requires the Army to document complaints and have each complaint investigated by Range  
 1761 Control who then reports findings back to the Directorate of Plans, Training, Mobilization and  
 1762 Security (DPTMS) and the Directorate of Public Works (DPW) Environmental Division. The  
 1763 DPW Environmental Division then shares the information with the Environmental Quality Control  
 1764 Committee. Fort Jackson also maintains an Installation Noise Complaint Management Program  
 1765 under AR 200-1. This program forwards all noise complaints received to the SCARNG so the  
 1766 Guard can take any necessary corrective actions for their noise-producing operations.

## 1767 **5.5. Water Resources**

1768 This section describes water resources on Fort Jackson (Figure 5.1) including surface and  
 1769 groundwater resources. Fort Jackson surface waters include lakes, rivers, and streams which  
 1770 are important for a variety of reasons, including economic, ecological, recreational, and human  
 1771 health. Groundwater comprises the subsurface hydrogeologic resources of the Installation's  
 1772 physical environment. This section also discusses stormwater, and floodplains. Wetlands are  
 1773 described in Section 5.6.3, *Biological Resources*. The ROI for water resources is Fort Jackson  
 1774 as well as areas downstream from the site.

### 1775 **5.5.1. Surface Water**

1776 Fort Jackson lies within the boundaries of the Congaree River and the Wateree River basins in  
 1777 the City of Columbia. Streams at Fort Jackson are typical of those found in the Coastal Plain  
 1778 Province. The surface pattern is linear branching and streams occupy relatively broad valleys  
 1779 with gentle regional gradients to the south and southeast. Eventually, all streams leaving Fort  
 1780 Jackson flow into either the Wateree River or the Congaree River. The confluence of these  
 1781 rivers, approximately 16 miles southeast of the installation, forms the Santee River. The Santee  
 1782 River continues in a southeasterly direction, eventually emptying into the Atlantic Ocean south  
 1783 of Georgetown, South Carolina.

1784 There are four surface water drainage systems on the installation. All of the streams that are  
 1785 present on the eastern half of the reservation flow into Colonels Creek, a major tributary of the  
 1786 Wateree River, which flows southeastward across the installation. The other major surface  
 1787 water drainage system, Gills Creek, flows slightly southwesterly across the northwestern quarter  
 1788 of the installation. After leaving the installation, Gills Creek flows south through a series of lakes  
 1789 and is joined by Wildcat Creek prior to reaching the Congaree River. Wildcat Creek drains the  
 1790 major portion of the cantonment area. The southern part of the installation is drained by the  
 1791 upper reaches of Cedar Creek and Mill Creek.

1792 There are a total of 25 lakes, ponds, and impoundments located on Fort Jackson. Lakes and  
 1793 streams on Fort Jackson are primarily groundwater fed, since virtually no water drains onto Fort  
 1794 Jackson from off-Post. As demonstrated in Table 5-4, these water bodies range in size from 0.5

1795 to 173 acres; however, most are less than 35 acres in size. Together, these waterbodies cover  
 1796 approximately 427 acres. Seven of these ponds are adequate for fisheries management (Old  
 1797 Heises Pond, Upper Legion Lake, Big Twin Lake, South Pond, Upper Barstow Pond, Lower  
 1798 Barstow Pond, and Odom Pond), while the remaining lakes and ponds are maintained for  
 1799 waterfowl habitat, recreation, aesthetics, and an irrigation water supply for golf courses.

1800 Weston Lake, the largest lake, is located north of Leesburg Road east of the cantonment area  
 1801 and has a surface area of approximately 173 acres, accounting for over one-third of the  
 1802 Installation's total surface impoundment acreage. Weston Lake also serves as the Installation's  
 1803 primary waterside recreation lake, with camping facilities, picnic shelters, community house, and  
 1804 beach pavilion.

1805 Various activities at Fort Jackson may contribute sediment and other nonpoint source pollutants  
 1806 to nearby water bodies through stormwater runoff. Runoff from training areas may carry  
 1807 sediments, vehicle fluids, and metals (e.g., lead), as well as phosphorus and toxics contained  
 1808 within munitions. Runoff may also contain nonpoint source pollution such as pesticides,  
 1809 fertilizers, animal waste, oil, and grease. Many of the streams receive sediment deposition from  
 1810 firebreak areas. In addition, silvicultural activities at Fort Jackson may disturb the soil surface  
 1811 and can potentially affect surface water quality. Runoff from areas that have been harvested for  
 1812 timber may contain sediment, large organic debris, oil, and grease.

1813 **Table 5-4 Fort Jackson Lakes and Ponds**

| Lake/Pond        | Acreage | Lake/Pond          | Acreage |
|------------------|---------|--------------------|---------|
| Arrowhead Pond   | 1.8     | Boyden Arbor Pond  | 14.5    |
| Lower Legion     | 5.0     | Lower Barstow Pond | 2.8     |
| Big Twin Lake    | 15.0    | Chavers Pond       | 2.4     |
| Catfish Pond     | 0.8     | Old Heises Pond    | 12.0    |
| Odom Pond        | 4.5     | Old Mill Pond      | 0.5     |
| Cobbs Pond       | 19.0    | Price Pond         | 2.7     |
| Davis Pond       | 21.5    | Semmes Lake        | 33.8    |
| Dupree Pond      | 33.3    | South Pond         | 4.5     |
| Golf Course Pond | 2.4     | Upper Barstow Pond | 3.6     |
| Golf Course Pond | 1.8     | Upper Legion Lake  | 12.8    |

| Lake/Pond        | Acreage | Lake/Pond   | Acreage |
|------------------|---------|-------------|---------|
| Golf Course Pond | 3.3     | Varn Lake   | 5.0     |
| Little Twin Lake | 3.8     | Weston Lake | 173.0   |
| Messers Pond     | 47.0    |             |         |

1814 Source: Fort Jackson Integrated Natural Resources Management Plan, 1993.

1815 **5.5.2. Groundwater**

1816 Fresh groundwater is generally plentiful at Fort Jackson. The Tuscaloosa Formation, of Upper  
 1817 Cretaceous age, underlies all of Fort Jackson and is the primary source of groundwater in the  
 1818 area. This formation lies unconformably on a peneplained surface of older, crystalline rocks.  
 1819 The formation consists of inter bedded, generally unconsolidated, fine to coarse sand and clay,  
 1820 causing groundwater to occur under both unconfined and confined (i.e., artesian) conditions.  
 1821 Groundwater occurs under water table conditions in the upper part of the zone of saturation. At  
 1822 a depth ranging from 100 to 250 feet, the permeable sand zones are frequently overlain by less  
 1823 permeable clay zones, and the groundwater exists under artesian conditions. Small quantities  
 1824 of groundwater may be available in the alluvial deposits along major streams.

1825 Well water, together with surface water, is treated by the City of Columbia prior to its delivery to  
 1826 the Installation for consumption. According to the SCDHEC, water quality at Fort Jackson is fit  
 1827 for human consumption. Total dissolved solids are generally less than 50 milligrams per liter.  
 1828 Water standards are occasionally exceeded by slight concentrations of iron and manganese.  
 1829 Fort Jackson is not located within a recharge area for a sole-source aquifer.

1830 **5.5.3. Stormwater**

1831 The Stormwater Management and Sediment Reduction Act (Stormwater Act) of South Carolina  
 1832 is administered by SCDHEC and delegated to Fort Jackson. This Act requires that a  
 1833 stormwater management and sediment reduction plan be prepared prior to conducting any land  
 1834 disturbing activities. All land disturbing activities conducted on Fort Jackson shall be conducted  
 1835 in accordance with the guidance presented in this document with the exception of those  
 1836 activities described in South Carolina Code Regulations, R.72-302A (1) and (2). All other  
 1837 activities described in R.72-302.A are subject to the requirements of this guidance. The *Fort*  
 1838 *Jackson Land Disturbance Handbook* defines the procedures and minimum design standards  
 1839 and specifications for land disturbing activities for compliance with the Stormwater Act.

1840 As a delegated authority, Fort Jackson complies with the National Pollutant Discharge  
 1841 Elimination System (NPDES) Program General Permit for Stormwater Discharge from Large  
 1842 and Small Construction Activities (Construction General Permit). This permit establishes  
 1843 procedures and stormwater design standards for land disturbing activities. The *Fort Jackson*  
 1844 *Land Disturbance Handbook* defines the procedures and minimum design standards and

1845 specification for land disturbing activities for compliance with the Stormwater Act as well as the  
1846 Construction General Permit.

1847 Fort Jackson has been identified by SCDHEC as a small Municipal Storm Sewer System (MS-4)  
1848 and is therefore required to comply with the NPDES General Permit for Stormwater Discharges  
1849 from Regulated Small MS4s (Phase 2 MS4 General Permit). Under this permit, Fort Jackson is  
1850 required to develop a number of procedures to reduce stormwater pollution, including defining  
1851 stormwater design standards, reviewing of construction documents for land disturbing activities,  
1852 and conducting site inspections. The *Fort Jackson Land Disturbance Handbook* has been  
1853 developed to assist Fort Jackson in complying with the Phase 2 MS4 General Permit.

1854 Construction-related activities at Fort Jackson employ the Installation's Stormwater  
1855 Management Plan which serves as a guidance document for compliance with the six minimum  
1856 control measures of the Small MS-4 permit. The protocols outlined in this plan help minimize  
1857 adverse effects of stormwater due to construction and increased impervious surfaces through  
1858 the implementation of BMPs. Construction sites must also develop sediment and erosion control  
1859 plans and Stormwater Pollution Prevention Plans (SWPPP), for sites exceeding one acre in  
1860 disturbance. These plans ensure compliance with guidelines set forth in the 2012 NPDES  
1861 General Permit for Stormwater Discharges from Large and Small Construction Activities. Fort  
1862 Jackson has developed a Land Disturbance Handbook to assist engineers with developing  
1863 these plans and SWPPPs.

1864 Fort Jackson does not lie within an area controlled under a Coastal Zone Management Program  
1865 (CZMP). Therefore, Fort Jackson's on-Post operations and activities are not managed or  
1866 controlled by the CZMP.

#### 1867 **5.5.4. Floodplains**

1868 One hundred-year floodplains have been designated along all of the major waterways on Fort  
1869 Jackson. These include lands along Gills Creek, Mill Creek, Cedar Creek, Wildcat Creek and  
1870 Colonels Creeks (Figures 5.4 – 5.8). These areas are shown on the 2002 Federal Emergency  
1871 Management Agency (FEMA) Flood Insurance Rate Maps for Richland County (FEMA, 2008).  
1872 Development activities in regulatory floodplain areas are limited in accordance with EOs 11988  
1873 and 11990.

### 1874 **5.6. Biological Resources**

1875 This section describes biological resources at Fort Jackson. Fort Jackson harbours a rich  
1876 diversity of flora and fauna. This section focuses primarily on plant and animal species or  
1877 habitat types that are typical or are an important element of the ecosystem, are of special  
1878 category importance (of special interest due to societal concerns), or are protected under state  
1879 or federal law or statute regulatory requirement. Fish and wildlife are discussed first, followed  
1880 by vegetation, wetlands, and threatened and endangered species. The ROI for biological  
1881 resources is the land within Fort Jackson.

1882 **5.6.1. Fish and Wildlife**

1883 There is a wide variety of wildlife, including mammals, birds, fish, reptiles, and amphibians,  
 1884 found on Fort Jackson that utilizes the diverse ecosystems present. Table 5-5 provides a listing  
 1885 of these species, which include typically occurring species in similar habitats throughout South  
 1886 Carolina. White-tailed deer (*Odocoileus virginianus*) are the largest wild animals that may  
 1887 reside on the Installation. Other common species include five mouse species, three shrew  
 1888 species, two bat species, striped skunk (*Mephitis mephitis*), raccoon (*Procyon lotor*), opossum  
 1889 (*Didelphis virginiana*), Eastern cottontail rabbits (*Sylvilagus floridanus*), fox squirrel (*Sciurus*  
 1890 *niger*), and Eastern gray squirrel (*S. carolinensis*).

1891 Fort Jackson conducted an endangered bird and mammal survey from 1990-1992, which  
 1892 included a bat survey conducted by the South Carolina Department of Natural Resources  
 1893 (SCDNR) on the SCARNG licensed area of Fort Jackson. A listing of mammals known to occur  
 1894 on Fort Jackson is included in the INRMP (Gene Stout and Associates, 2004). Since 1992,  
 1895 various bird surveys have been conducted on the Installation, including Land Condition Trend  
 1896 Analysis (LCTA) breeding bird surveys, protected species surveys, raptor survey, neotropical  
 1897 migratory bird survey, as well as species-specific surveys. A listing of bird species known to  
 1898 occur on Fort Jackson can be found in the INRMP (Gene Stout and Associates, 2004). Fish  
 1899 species common to the installation are largemouth bass (*Micropterus salmoides*), bluegill  
 1900 (*Lepomis macrochirus*), redear sunfish (*L. microlophus*), chain pickerel (*Esox niger*), and channel  
 1901 catfish (*Ictalurus punctatus*). Data collected from various surveys (LCTA Survey, SCARNG  
 1902 annual reptile and amphibian survey) revealed that there are 68 reptile and amphibian species  
 1903 known to occur on the Installation. Several species-specific invertebrate studies (American  
 1904 burying beetle as well as various butterflies) have been conducted on Fort Jackson. Table 5-5  
 1905 provides a listing of known invertebrates occurring on Fort Jackson.

1906 **Table 5-5 List of Invertebrates Known to Occur on Fort Jackson**

| Birds                       |                    |                                 |                    |
|-----------------------------|--------------------|---------------------------------|--------------------|
| Scientific Name             | Common Name        | Scientific Name                 | Common Name        |
| <i>Accipiter striatus</i>   | Sharp-shinned Hawk | <i>Butorides striatus</i>       | Green-backed heron |
| <i>Accipiter cooperii</i>   | Cooper's Hawk      | <i>Caprimulgus carolinensis</i> | Chuck-will's-widow |
| <i>Aimophila aestivalis</i> | Bachman's sparrow  | <i>Caprimulgus vociferus</i>    | Whip-poor-will     |
| <i>Aix sponsa</i>           | Wood duck          | <i>Cardinalis cardinalis</i>    | Northern cardinal  |
| <i>Anas acuta</i>           | Northern Pintail   | <i>Carduelis tristis</i>        | American goldfinch |
| <i>Anas crecca</i>          | Green-winged Teal  | <i>Carpodacus</i>               | House Finch        |

| Birds                         |                           |                             |                          |
|-------------------------------|---------------------------|-----------------------------|--------------------------|
| Scientific Name               | Common Name               | Scientific Name             | Common Name              |
|                               |                           | <i>mexicanus</i>            |                          |
| <i>Anas platyrhynchos</i>     | Mallard                   | <i>Cathartes aura</i>       | Turkey Vulture           |
| <i>Aqelaius phoeniceus</i>    | Red-winged Blackbird      | <i>Catharus ustulatus</i>   | Swainson's thrush        |
| <i>Archilochus colubris</i>   | Ruby-throated hummingbird | <i>Ceryle alcyon</i>        | Belted Kingfisher        |
| <i>Ardea herodias</i>         | Great Blue Heron          | <i>Chaetura pelagica</i>    | Chimney swift            |
| <i>Aythya collaris</i>        | Ring-necked duck          | <i>Charadrius vociferus</i> | Killdeer                 |
| <i>Aythya valisineria</i>     | Canvasback                | <i>Chen caerulescens</i>    | Snow goose               |
| <i>Bombycilla cedrorum</i>    | Cedar waxwing             | <i>Chordeiles minor</i>     | Common nighthawk         |
| <i>Branta canadensis</i>      | Canada Goose              | <i>Coccyzus americanus</i>  | Yellow-billed cuckoo     |
| <i>Bubo virginianus</i>       | Great Horned Owl          | <i>Colaptes auratus</i>     | Northern flicker         |
| <i>Buteo platypterus</i>      | Broad-winged hawk         | <i>Colinus virginianus</i>  | Northern bobwhite        |
| <i>Buteo lineatus</i>         | Red-shouldered hawk       | <i>Columba livia</i>        | Rock Dove                |
| <i>Buteo jamaicensis</i>      | Red-tailed hawk           | <i>Contopus virens</i>      | Eastern wood-pewee       |
| <i>Coragyps atratus</i>       | Black vulture             | <i>Mimus polyglottos</i>    | Northern mockingbird     |
| <i>Corvus brachyrhynchos</i>  | American crow             | <i>Mniotilta varia</i>      | Black-and-white warbler  |
| <i>Corvus ossifragus</i>      | Fish crow                 | <i>Molothrus ater</i>       | Brown-headed cowbird     |
| <i>Cyanocitta cristata</i>    | Blue jay                  | <i>Myiarchus crinitus</i>   | Great crested flycatcher |
| <i>Dendroica dominica</i>     | Yellow-throated warbler   | <i>Oporornis formosus</i>   | Kentucky warbler         |
| <i>Dendroica discolor</i>     | Prairie warbler           | <i>Otus asio</i>            | Eastern screech-owl      |
| <i>Dendroica pinus</i>        | Pine warbler              | <i>Oxyura jamaicensis</i>   | Ruddy duck               |
| <i>Dryocopus pileatus</i>     | Pileated woodpecker       | <i>Pandion haliaetus</i>    | Osprey                   |
| <i>Dumetella carolinensis</i> | Gray Catbird              | <i>Parus bicolor</i>        | Tufted titmouse          |

| Birds                           |                       |                                   |                          |
|---------------------------------|-----------------------|-----------------------------------|--------------------------|
| Scientific Name                 | Common Name           | Scientific Name                   | Common Name              |
| <i>Egretta thula</i>            | Snowy Egret           | <i>Parus carolinensis</i>         | Carolina chickadee       |
| <i>Elanoides forficatus</i>     | Swallow-tailed Kite   | <i>Passer domesticus</i>          | House Sparrow            |
| <i>Empidonax vireescens</i>     | Acadian flycatcher    | <i>Passerina cyanea</i>           | Indigo bunting           |
| <i>Falco sparverius</i>         | American kestrel      | <i>Phalacrocorax auritus</i>      | Double-crested Cormorant |
| <i>Geothlypis trichas</i>       | Common yellowthroat   | <i>Picoides borealis</i>          | Red-cockaded woodpecker  |
| <i>Guiraca caerulea</i>         | Blue grosbeak         | <i>Picoides pubescens</i>         | Downy woodpecker         |
| <i>Haliaeetus leucocephalus</i> | Bald Eagle            | <i>Picoides villosus</i>          | Hairy Woodpecker         |
| <i>Hirundo rustica</i>          | Barn swallow          | <i>Pipilo erythrophthalmus</i>    | Rufous-sided towhee      |
| <i>Hylocichla mustelina</i>     | Wood thrush           | <i>Melanerpes carolinus</i>       | Red-bellied woodpecker   |
| <i>Icteria virens</i>           | Yellow-breasted chat  | <i>Melanerpes erythrocephalus</i> | Red-headed woodpecker    |
| <i>Icterus spurius</i>          | Orchard oriole        | <i>Meleagris gallopavo</i>        | Wild turkey              |
| <i>Lanius ludovicianus</i>      | Loggerhead Shrike     | <i>Piranga olivacea</i>           | Scarlet Tanager          |
| <i>Limnothlypis swainsonii</i>  | Swainson's warbler    | <i>Piranga rubra</i>              | Summer tanager           |
| <i>Polioptila caerulea</i>      | Blue-gray gnatcatcher | <i>Strix varia</i>                | Barred owl               |
| <i>Progne subis</i>             | Purple martin         | <i>Sturnella magna</i>            | Eastern Meadowlark       |
| <i>Protonotaria citrea</i>      | Prothonotary warbler  | <i>Sturnus vulgaris</i>           | European Starling        |
| <i>Quiscalus quiscula</i>       | Common grackle        | <i>Telespyza cantans</i>          | Laysan finch             |
| <i>Seiurus motacilla</i>        | Louisiana waterthrush | <i>Thryothorus ludovicianus</i>   | Carolina wren            |
| <i>Seiurus aurocapillus</i>     | Ovenbird              | <i>Toxostoma rufum</i>            | Brown thrasher           |
| <i>Setophaga ruticilla</i>      | American redstart     | <i>Turdus migratorius</i>         | American robin           |
| <i>Sialia sialis</i>            | Eastern bluebird      | <i>Tyrannus tyrannus</i>          | Eastern kingbird         |

| Birds                             |                               |                         |                       |
|-----------------------------------|-------------------------------|-------------------------|-----------------------|
| Scientific Name                   | Common Name                   | Scientific Name         | Common Name           |
| <i>Sitta carolinensis</i>         | White-breasted nuthatch       | <i>Vireo olivaceus</i>  | Red-eyed vireo        |
| <i>Sitta pusilla</i>              | Brown-headed nuthatch         | <i>Vireo solitarius</i> | Solitary vireo        |
| <i>Sphyrapicus varius</i>         | Yellow-bellied Sapsucker      | <i>Vireo griseus</i>    | White-eyed vireo      |
| <i>Spizella passerina</i>         | Chipping sparrow              | <i>Vireo flavifrons</i> | Yellow-throated vireo |
| <i>Spizella pusilla</i>           | Field Sparrow                 | <i>Wilsonia citrina</i> | Hooded warbler        |
| <i>Stelgidopteryx serripennis</i> | Northern rough-winged swallow | <i>Zenaida macroura</i> | Mourning dove         |

1907

| Reptiles and Amphibians             |                              |                                 |                        |
|-------------------------------------|------------------------------|---------------------------------|------------------------|
| Scientific Name                     | Common Name                  | Scientific Name                 | Common Name            |
| <i>Acris c. crepitans</i>           | Northern Cricket frog        | <i>Ambystoma talpoideum</i>     | Mole salamander        |
| <i>Acris gryllus</i>                | Southern Cricket frog        | <i>Anolis carolinensis</i>      | Green anole            |
| <i>Agkistrodon p. piscivorus</i>    | Cottonmouth                  | <i>Bufo terrestris</i>          | Southern toad          |
| <i>Agkistrodon c. contortrix</i>    | Copperhead                   | <i>Bufo woodhousi fowleri</i>   | Fowler's Toad          |
| <i>Alligator mississippiensis</i>   | American Alligator           | <i>Cemophora coccinea</i>       | Scarlet snake          |
| <i>Ambystoma opacum</i>             | Marbled salamander           | <i>Chelydra serpentina</i>      | Common Snapping Turtle |
| <i>Cnemidophorus s. sexlineatus</i> | Six-lined Racerunner         | <i>Lampropeltis g. getula</i>   | Eastern King Snake     |
| <i>Crotalus horridus</i>            | Timber/Canebrake Rattlesnake | <i>Masticophis f. flagellum</i> | Eastern Coachwhip      |
| <i>Coluber c. constrictor</i>       | Northern Black Racer         | <i>Necturus punctatus</i>       | Dwarf Waterdog         |
| <i>Diadophis punctatus</i>          | Ring-necked snake            | <i>Nerodia e. erythrogaster</i> | Redbelly Water Snake   |
| <i>Elaphe g. guttata</i>            | Corn/red snake               | <i>Nerodia f. fasciata</i>      | Banded Water Snake     |

| Reptiles and Amphibians          |                               |                                  |                            |
|----------------------------------|-------------------------------|----------------------------------|----------------------------|
| Scientific Name                  | Common Name                   | Scientific Name                  | Common Name                |
| <i>Elaphe o. obsoleta</i>        | Black Rat Snake               | <i>Nerodia taxispilota</i>       | Brown water snake          |
| <i>Eumeces laticeps</i>          | Broad-headed skink            | <i>Notophthalmus viridescens</i> | Eastern Newt               |
| <i>Eumeces fasciatus</i>         | Five-lined skink              | <i>Opheodrys aestivus</i>        | Rough Green Snake          |
| <i>Eumeces inexpectatus</i>      | Southeastern Five-lined Skink | <i>Ophisaurus ventralis</i>      | Eastern Glass lizard       |
| <i>Eurycea cirrigera</i>         | Southern Two-lined Salamander | <i>Pituophis m. melanoleucus</i> | Northern Pine Snake        |
| <i>Eurycea quadridigitata</i>    | Dwarf salamander              | <i>Plethodon glutinosus</i>      | Slimy salamander           |
| <i>Farancia a. abacura</i>       | Eastern Mud Snake             | <i>Pseudacris c. crucifer</i>    | Northern Spring Peeper     |
| <i>Gastrophryne carolinensis</i> | Eastern narrow-mouthed toad   | <i>Pseudacris triseriata</i>     | Upland Chorus Frog         |
| <i>Heterodon platirhinos</i>     | Eastern Hognose Snake         | <i>Pseudemys f. floridana</i>    | Florida Cooter             |
| <i>Heterodon simus</i>           | Southern Hognose Snake        | <i>Pseudotriton m. montanus</i>  | Eastern Mud Salamander     |
| <i>Hyla cinerea</i>              | Green Treefrog                | <i>Rana catesbeiana</i>          | Bullfrog                   |
| <i>Hyla chrysoscelis</i>         | Cope's gray treefrog          | <i>Rana c. clamitans</i>         | Bronze frog                |
| <i>Hyla femoralis</i>            | Pinewoods Treefrog            | <i>Rana utricularia</i>          | Southern leopard frog      |
| <i>Hyla sp.</i>                  | Gray Treefrog                 | <i>Rana virgatipes</i>           | Carpenter frog             |
| <i>Kinosternon subrubrum</i>     | Eastern Mud Turtle            | <i>Regina rigida</i>             | Glossy Water Snake         |
| <i>Scaphiopus h. holbrooki</i>   | Eastern spadefoot toad        | <i>Storeria occipitomaculata</i> | Redbelly Snake             |
| <i>Sceloporus undulatus</i>      | Eastern fence lizard          | <i>Tantilla coronata</i>         | Southeastern crowned snake |
| <i>Sceloporus u. undulatus</i>   | Southern fence lizard         | <i>Terrapene c. carolina</i>     | Eastern box turtle         |
| <i>Sceloporus u.</i>             | Northern fence lizard         | <i>Thamnophis s.</i>             | Eastern Garter             |

| Reptiles and Amphibians      |              |                             |                       |
|------------------------------|--------------|-----------------------------|-----------------------|
| Scientific Name              | Common Name  | Scientific Name             | Common Name           |
| <i>hyacinthinus</i>          |              | <i>sirtalis</i>             | Snake                 |
| <i>Scincella lateralis</i>   | Ground skink | <i>Trachemys s. scripta</i> | Yellow Bellied Turtle |
| <i>Siren intermedia</i>      | Lesser Siren | <i>Virginia striatula</i>   | Rough Earth Snake     |
| <i>Sternotherus odoratus</i> | Stinkpot     | <i>Virginia valeriae</i>    | Smooth earth snake    |

1908

| Mammals                      |                             |                                |                            |
|------------------------------|-----------------------------|--------------------------------|----------------------------|
| Scientific Name              | Common Name                 | Scientific Name                | Common Name                |
| <i>Blarina carolinensis</i>  | Southern short-tailed shrew | <i>Neotoma floridana</i>       | Eastern Woodrat            |
| <i>Glaucomys volans</i>      | flying squirrel             | <i>Ochrotomys nuttalli</i>     | Golden mouse               |
| <i>Canis latrans</i>         | Coyote                      | <i>Odocoileus virginianus</i>  | White-tailed Deer          |
| <i>Castor canadensis</i>     | Beaver                      | <i>Ondatra zibethica</i>       | Muskrat                    |
| <i>Cryptotis parva</i>       | least shrew                 | <i>Peromyscus leucopus</i>     | White-footed mouse         |
| <i>Didelphis marsupialis</i> | opposum                     | <i>Peromyscus polionotus</i>   | Oldfield mouse             |
| <i>Felis concolor</i>        | Mountain Lion               | <i>Peromyscus gossypinus</i>   | Cotton mouse               |
| <i>Lutra canadensis</i>      | River Otter                 | <i>Plecotus rafinesquii</i>    | Rafinesque's Big-eared Bat |
| <i>Lynx rufus</i>            | Bobcat                      | <i>Procyon lotor</i>           | Raccoon                    |
| <i>Mephitis Mephitis</i>     | Skunk                       | <i>Reithrodontomys humulis</i> | Eastern harvest mouse      |
| <i>Mustela vison</i>         | Mink                        | <i>Scapanus latimanus</i>      | Broad-footed mole          |
| <i>Myotis austroriparius</i> | Southeastern Myotis         | <i>Sigmodon hispidus</i>       | Hispid cotton rat          |
| <i>Sorex longirostris</i>    | Southeastern shrew          | <i>Sciurus niger</i>           | Fox Squirrel               |

| Mammals                      |                       |                                 |             |
|------------------------------|-----------------------|---------------------------------|-------------|
| Scientific Name              | Common Name           | Scientific Name                 | Common Name |
| <i>Sylvilagus floridanus</i> | Eastern Cottontail    | <i>Urocyon cinereoargenteus</i> | Gray Fox    |
| <i>Sylvilagus aquaticus</i>  | Swamp Rabbit          | <i>Vulpes fulva</i>             | Red Fox     |
| <i>Sciurus carolinensis</i>  | Eastern Gray Squirrel |                                 |             |

1909

| Fish                            |                          |                                |                   |
|---------------------------------|--------------------------|--------------------------------|-------------------|
| Scientific Name                 | Common Name              | Scientific Name                | Common Name       |
| <i>Chaenobryttus gulosus</i>    | Warmouth                 | <i>Ictalurus natalis</i>       | Yellow Bullhead   |
| <i>Ctenopharyngodon idellus</i> | Grass Carp               | <i>Ictalurus punctatus</i>     | Channel Catfish   |
| <i>Enneacanthus chaetodon</i>   | Black-banded Sunfish     | <i>Lepomis auritus</i>         | Redbreast Sunfish |
| <i>Erimyzon sucetta</i>         | Lake Chubsucker          | <i>Lepomis gibbosus</i>        | Pumpkinseed       |
| <i>Esox a. americanus</i>       | Redfin Pickerel          | <i>Lepomis gulosus</i>         | Warmouth          |
| <i>Esox niger</i>               | Chain Pickerel           | <i>Lepomis macrochirus</i>     | Bluegill          |
| <i>Etheostoma fusiforme</i>     | Swamp Darter             | <i>Lepomis megalotis</i>       | Longear Sunfish   |
| <i>Fundulus lineolatus</i>      | Lined Topminnow          | <i>Lepomis microlophus</i>     | Redear Sunfish    |
| <i>Fundulus nottii</i>          | Starhead Topminnow       | <i>Micropterus salmoides</i>   | Largemouth Bass   |
| <i>Gambusia affinis</i>         | Gambusia (mosquito fish) | <i>Notemigonus crysoleucas</i> | Golden Shiner     |
| <i>Ictalurus catus</i>          | White Catfish            | <i>Pomoxis annularis</i>       | White Crappie     |
| <i>Ictalurus melas</i>          | Black Bullhead           | <i>Pomoxis nigromaculatus</i>  | Black Crappie     |

1910

1911

1912 Fish and wildlife management at Fort Jackson is addressed in the INRMP 2004-2008, which  
 1913 was prepared in accordance with the Sikes Act (Public Law 99-561), AR 200-3, *Natural*  
 1914 *Resources – Land, Forest and Wildlife Management* (DA, 1995), and the Cooperative Plan  
 1915 Agreement among the Installation Commander, the US DOI, and the SCDNR. Since military  
 1916 missions and resource management programs at Fort Jackson affect fish and wildlife habitat,  
 1917 fish and wildlife management activities focus upon programs designed to create and enhance  
 1918 habitat that are consistent with the military missions of the installation.

1919 Wildlife is affected to a large degree by forest management practices. All proposed silvicultural  
 1920 treatments are reviewed by the Wildlife Branch prior to implementation. Prescribed burning is  
 1921 one of the primary tools used in the management of the forested ecosystems on the Installation.  
 1922 Fort Jackson's prescribed burning program is detailed in the INRMP. Other wildlife  
 1923 management practices used on-Post include ongoing inventory and monitoring as well as  
 1924 creation and maintenance of wildlife openings, transition zones, and nesting structures. Hunting  
 1925 and fishing regulations play an important role in the control of certain wildlife populations. Game  
 1926 hunting occurs during established hunting seasons and is managed according to Fort Jackson  
 1927 Regulation 28-4, *Hunting and Fishing Regulation* (July 13, 2009a).

## 1928 **5.6.2. Vegetation**

1929 Fort Jackson contains a wide variety of vegetative communities ranging from hardwood forests  
 1930 to wetlands. The Installation's natural landscape is densely vegetated except where  
 1931 development has cleared land creating grasslands in the cantonment and along roadways. Fort  
 1932 Jackson completed a post-wide Forest Inventory in 2011. Also in 1992, the Nature  
 1933 Conservancy and the University of South Carolina conducted a rare and endangered plant  
 1934 survey on Fort Jackson. Three additional floral surveys were completed to document rare and  
 1935 federally-listed endangered and threatened plant species.

1936 Over 750 flora species were identified on Fort Jackson. Tree species observed in the terrestrial  
 1937 vegetative areas include longleaf pine (*Pinus palustris*), loblolly pine (*P. taeda*), slash pine (*P.*  
 1938 *elliottii*), scrub oak (*Quercus berberidifolia*), red oak (*Q. falcate*), red maple (*Acer rubrum*), and  
 1939 sycamore (*Platanus occidentalis*). Shrub and grass species include smooth crabgrass (*Digitaria*  
 1940 *ischaemum*), dwarf huckleberry (*Gaylussacia dumosa*), downy sunflower (*Helianthus mollis*),  
 1941 goldenrod (*Solidago spp.*), and indiagrass (*Sorghastrum nutans*).

1942 In general, Fort Jackson can be classified into five primary terrestrial vegetative types: pine,  
 1943 pine/upland hardwood, upland hardwood, bottomland hardwood, and open field. Grassland  
 1944 areas on Fort Jackson include only a small amount in the cantonment area and alongside  
 1945 roads. Forest cover is the dominant vegetative type at Fort Jackson. Eight major forest types  
 1946 comprise the forest cover on the Installation: Natural Pine, Pine Plantation, Pine-Scrub Oak,  
 1947 Pine-Hardwood, Scrub Oak, Upland Hardwood, Bottomland Hardwood, and Hardwood-Pine  
 1948 (Gene Stout and Associates 2004).

- 1949
- 1950
- 1951
- 1952
- 1953
- 1954
- 1955
- **Natural Pine** includes all natural pine stands, regardless of species, and in which less than 20 percent of the basal area of over story trees are hardwoods or less than 20 percent of the basal area is dominated by scrub oak. Longleaf pine is the dominant species, occurring in pure stands on sand ridges and upper slopes, and becoming mixed with loblolly pine and pond pine (*P. serotina*) on lower slopes and bottomland. Scattered mixed stands of short leaf pine (*P. echinata*), loblolly, and Virginia pine (*P. virginiana*) are not uncommon on the upper and lower slopes where clay subsoil is near the surface.
- 1956
- 1957
- 1958
- **Pine Plantation** consists primarily of planted longleaf pine and slash pine, which is not native to Fort Jackson. Some planted loblolly pine and direct-seeded longleaf pine are scattered throughout the installation.
- 1959
- 1960
- 1961
- 1962
- **Pine-Scrub Oak** include pine stands, usually longleaf, with scrub oak understory which will revert to scrub oak. The area must have pine basal areas greater than 30 percent but less than 80 percent. This type is usually located on sand ridges and upper slopes where sandy soil is relatively deep.
- 1963
- 1964
- 1965
- 1966
- 1967
- **Pine Hardwood** include pine stands in which hardwoods constitute 21 to 49 percent of the basal area of the overstory, while the remainder is pine of any species. Longleaf, loblolly, and/or shortleaf pine are commonly found mixed with upland hardwoods on the upper and lower slopes and loblolly and/or pond pine with bottomland hardwoods on the lower slopes and bottomland sites.
- 1968
- 1969
- 1970
- 1971
- 1972
- 1973
- 1974
- **Scrub Oak** include stands in which a minimum of 51 percent of the basal area is dominated by scrub oak; while the remaining basal area is usually comprised of scattered longleaf pine of less than 30 percent basal area. Scrub oak species include turkey oak (*Q. laevis*) blackjack oak (*Q. marilandica*); dwarf post oak (*Q. stellata*) and bluejack oak (*Q. cinerea*). Small black gum (*Nyssa sylvatica*); persimmon (*Diospyros virginiana*); pignut hickory (*Carya glabra*) and mockernut hickory (*C. tomentosa*) are often mixed with the above species on the sand ridges and upper slopes.
- 1975
- 1976
- 1977
- 1978
- 1979
- 1980
- **Upland Hardwood** stands are comprised of at least 80 percent upland hardwoods in the overstory, while the remainder is pine of any species. Upland hardwood species include the southern red oak (*Q. falcata*), water oak (*Q. nigra*) scarlet oak (*Q. coccinea*), willow oak (*Q. phellos*), white oak (*Q. alba*), sweet gum (*Liquidambar styraciflua*), post oak, persimmon, pignut and mockernut hickories attaining greater size than in scrub oak type. Upland hardwoods are usually located on lower slopes.
- 1981
- 1982
- 1983
- 1984
- 1985
- **Bottomland Hardwoods** require a minimum of 80 percent of the basal area of overstory trees to be bottomland hardwoods; while the remainder is pine of any species. Bottomland hardwoods consist primarily of black gum and red maple with scattered sweet gum, water oak, sycamore, and yellow poplar (*Liriodendron tulipifera*), located in branch heads, swamps and poorly drained soils bordering streams.
- 1986
- 1987
- 1988
- 1989
- **Hardwood-Pine** stands are comprised of hardwoods ranging between 51 and 79 percent of the basal area; while the remainder is pine of any species. This vegetative type can be differentiated from Upland Hardwood by the presence of seed-producing pine trees adequate in number to re-seed the area if all other stems are removed.

1990 Hardwood species occur as scrub oak stands, upland hardwood stands, and bottomland  
 1991 hardwood stands and include turkey oak, blackjack oak, dwarf post oak, bluejack oak, black  
 1992 gum, persimmon, pignut hickory, mockernut hickory, southern red oak, water oak, scarlet oak,  
 1993 willow oak, white oak, sweet gum, red maple, sycamore, yellow poplar, swamp bay (*Persea*  
 1994 *pubescens*), flowering dogwood (*Cornus florida*), black cherry (*Prunus serotina*), American holly  
 1995 (*Ilex opaca*), river birch (*Betula nigra*), black willow (*Salix nigra*), hackberry (*Celtis laevigata*),  
 1996 beech (*Fagus grandifolia*), blue beech (*Carpinus caroliniana*), and ironwood (*Ostrya virginiana*).

1997 There are several areas described as “Significant Natural Areas” which are defined in terms of  
 1998 vegetation. These areas are (1) Buffalo Creek Bog (a sandhill seepage bog that is home to  
 1999 many rare or uncommon plant species in the East Impact Area); (2) Skyline Drive Promontory (a  
 2000 well developed bluff of ericaceous shrubs); (3) Dupre Pond Headquarters (a system of braided  
 2001 streams and rivulets giving rise to a unique herbaceous ecosystem in Training Area 11A); (4)  
 2002 Noah’s Marsh (an unusual marsh ecosystem that demonstrates a complex community  
 2003 development); (5) Statue of Liberty Road Smooth Coneflower Site (small area of upland  
 2004 hardwood with a small population of Smooth Coneflower (*Echinacea laevigata*); and (6)  
 2005 Colonel’s Creek Road Nestronia Site (mixed oak-hickory community with a population of  
 2006 *Nestronia umbellula*). Designation of these areas was approved by Fort Jackson’s Wildlife  
 2007 Branch, Master Planning Office, Directorate of Plans, Training and Mobilization, and the  
 2008 SCANG Leesburg Training Center. The designated natural areas are protected from  
 2009 disturbances to avoid impacts (Fort Jackson ENV, 2012).

2010 Prescribed burning is used on Fort Jackson to manage vegetation. Objectives of prescribed fire  
 2011 include restoring ecological processes, controlling evasive and exotic plants, reduction of fuel  
 2012 loading, and site preparation. Silvicultural practices are also used to manage forest lands,  
 2013 which are divided into 13 forest compartments. These practices include timber harvests, pine  
 2014 straw sales, reforestation, and timber stand improvement.

2015 Johnson grass and kudzu are the main invasive plant species located on the Installation.  
 2016 Chemical herbicide application is the primary method used to control invasive species.

### 2017 **5.6.3. Wetlands**

2018 Wetlands are defined by the Environmental Protection Agency (EPA) as areas where water  
 2019 covers the soil or is either at or near the surface of the soil all year long or for varying periods  
 2020 during the year (USEPA, 2012c). These areas are known to support both aquatic and terrestrial  
 2021 species. Wetlands and other surface water features, which may include intermittent and  
 2022 perennial streams, are generally considered “waters of the United States” by the USACE, and  
 2023 under their definition of “jurisdictional waters/features,” are protected under Section 404 of the  
 2024 CWA and EO 11990.

2025 Wetlands on Fort Jackson are non-tidal and are defined as occurring on floodplains along rivers  
 2026 and streams, in isolated depressions surrounded by dry land, along the margins of lakes and  
 2027 ponds, and in other low-lying areas where precipitation sufficiently saturates the soil (USEPA,

2028 2012c). In total, Fort Jackson contains approximately 5,250 acres of wetlands (Figure 5.4),  
2029 which can be primarily categorized as Bottomland Hardwood and Pine Hardwood. The  
2030 Bottomland Hardwood vegetative community is the most prominent contiguous wetland  
2031 community on the installation and occurs along the stream systems.

2032 The Bottomland Hardwood vegetative community is typically located adjacent to a stream or  
2033 creek extending to the limits of the floodplain. The canopy species usually consist of yellow  
2034 poplar, blackgum, red maple, and sweetgum. The sub-canopy is dominated by hardwood  
2035 saplings, stiff cornel dogwood, swamp red bay, ironwood and river birch. The Bottomland  
2036 Hardwood community supports a shrub and ground cover dominated by giant cane, fetterbush,  
2037 sweet gallberry, swamp cyrilla, wax myrtle, iris, sedges, rushes and violets. This community is  
2038 frequently inundated, and wetland identifiers are prominent.

2039 Adjacent to many Bottomland Hardwood communities is a Pine Hardwood community. The  
2040 Pine Hardwood is often a transition from a Bottomland Hardwood community to an upland  
2041 community and may be naturally occurring or planted. The Pine-Hardwood community consists  
2042 primarily of loblolly pine, red maple, and sweetgum in the canopy. Subcanopy species may  
2043 include pine and hardwood saplings, red bay, flowering dogwood and wax myrtle. The shrub  
2044 layer is frequently thick and is dominated by sweet gallberry and cyrilla covered with Smilax  
2045 vines and grape vines. Because of the dense canopy and shrub layers, the Pine-Hardwood  
2046 communities frequently do not have any ground cover vegetation.

2047 Given the changes in topography and man-made features, depressional wetlands and ditches  
2048 are scattered throughout the installation. The depressions are generally less than one acre in  
2049 size and are vegetated with sedges, grasses, and rushes. These areas may be seasonally wet,  
2050 and over time may even lose their wetland characteristics. Ditches consist of both roadside  
2051 swales and channeled drainage ditches and are generally not considered to be wetlands. Over  
2052 time some ditches collect silt and water to the point of supporting wetland plant species. These  
2053 ditches may have an adequate water supply, develop appropriate soils and support wetland  
2054 vegetation to the point of being classified as a wetland. These ditches are vegetated primarily  
2055 with herbaceous plant species, and may occasionally provide substrate for hardwood seedlings  
2056 to sprout. Dominant plant species which characterize this community include rushes, iris, ferns,  
2057 hat pins, panic grasses, and violets.

2058 In accordance with the CWA Section 404(b)(1) guidelines, wetland impacts are first avoided,  
2059 and if unavoidable, are minimized to the maximum extent practicable. Section 404 delegates  
2060 jurisdictional authority over wetlands to the USACE and EPA. The focus of Fort Jackson's  
2061 wetlands management program is protection and maintenance of habitat. Per EO 11990, Fort  
2062 Jackson's goal is to ensure "no net loss" of wetland acreage. To achieve this, the Installation  
2063 has set four management objectives in their INRMP:

2064

2065

- 2066 • Maintain a database on wetland resources at Fort Jackson.
  - 2067 • Use site-specific surveys to evaluate wetland resources if potential wetland impacts are  
2068 proposed.
  - 2069 • Use the project review process and local regulations to protect wetlands.
  - 2070 • Provide a jurisdictional wetlands delineation to the USACE Charleston District for a  
2071 jurisdictional determination (and permit application, if necessary) if a project is planned in  
2072 a suspected wetland.
- 2073 Projects that are determined to result in impacts to wetlands also require NEPA documentation.
- 2074 Erosion sites identified affecting wetlands receive high priority in the Land Rehabilitation and  
2075 Maintenance (LRAM) program. Before land disturbing activities are initiated, an environmental  
2076 review is conducted to ensure that wetlands will not be affected. Timber harvesting may be  
2077 conducted in wetlands provided that operations are in accordance with applicable USACE and  
2078 EPA requirements and conditions. Any proposed cutting will be coordinated with the Fort  
2079 Jackson's Forestry Branch. Wheeled or tracked vehicle traffic is not allowed in wetlands.

#### 2080 **5.6.4. Threatened and Endangered Species**

2081 Under Section 7 of the ESA, the Army must ensure that any Army action authorized, funded, or  
2082 carried out is not likely to jeopardize the continued existence of any threatened and endangered  
2083 species or result in the destruction or adverse modification of habitats on Fort Jackson.

##### 2084 **5.6.4.1. Flora**

2085 According to the INRMP (2004), two federally-listed endangered plant species have been  
2086 located on Fort Jackson. Rough-leaved Loosestrife (*Lysimachia asperulaefolia*) and the  
2087 Smooth Coneflower (*Echinacea laevigata*) were identified by Dr. John Nelson, Curator of the  
2088 Moore Herbarium at the University of South Carolina, during a threatened and endangered plant  
2089 survey of the installation conducted in 1992. There is one other federally-listed plant species  
2090 listed for Richland County, which is the Canby's dropwort (*Oxypolis canbyi*). SCDNR botanist  
2091 Dr. Bert Pittman has indicated that Fort Jackson does not have suitable habitat for this species.  
2092 In addition, there is one federally-listed candidate species listed for Richland County, which is  
2093 Georgia's aster (*Aster georgianus*). Dr. Pittman has indicated that Fort Jackson does not have  
2094 suitable habitat for this species.

2095 Rough-leaved Loosestrife is an herbaceous, perennial, rhizomatous member of the Primulaceae  
2096 (Loosestrife family). The Fort Jackson population, which represents the single, extant South  
2097 Carolina occurrence, is found on the eastern edge of the East (artillery) impact area. Since  
2098 Rough-leaved Loosestrife is a shade-intolerant species, the build-up of woody vegetation within  
2099 the area will have very deleterious effects on its overall vigor. Should this area be excluded from  
2100 at least some regular burning regime, the population would be in great jeopardy.

2101 Outside of active training areas, the population is safe from the effects of troop movements, as it  
2102 lies entirely within the Artillery Impact area. Bivouacking and/or any troop movements would  
2103 have serious effects due to trampling. Some trampling may also occur upon casual field visits  
2104 and monitoring. A potential threat to the northern portion of the population exists in the form of  
2105 siltation. Efforts to date to minimize the rate of erosion and subsequent siltation from the dirt  
2106 roads on its northern edge have been effective.

2107 As stated previously, Fort Jackson currently has approximately 5,250 acres of wetlands which  
2108 are potential habitat for Rough-leaved Loosestrife (Figure 5.4). The majority of wetlands on the  
2109 installation are typically bottomland hardwood wetlands, and Rough-leaved Loosestrife is not  
2110 likely to occur across these wetlands because of the species' intolerance to shade. Suitable  
2111 habitat potentially exists at the wetland/non-wetland interface of these forested wetlands as well  
2112 as openings within these areas. In addition, those limited wetland areas that have been burned  
2113 in the past have a greater potential for Rough-leaved Loosestrife to occur by reducing  
2114 competing vegetation.

2115 Monitoring of the Rough-leaved Loosestrife population was last conducted in June 2001. Plot  
2116 data collected at this time indicate that the total stem count has decreased approximately 26  
2117 percent from 2000 levels and that the percentage of stems that flowered in 2001 was only nine  
2118 percent of what flowered in 2000. This may have been a result of the extremely dry weather  
2119 prior to and following the prescribed burn in December 2000. No current or proposed training  
2120 related activities are planned within wetland areas that would significantly reduce the amount of  
2121 potential habitat for Rough-leaved Loosestrife on Fort Jackson. Potential habitat for Rough-  
2122 leaved Loosestrife is protected to some degree given the various CWA restrictions placed on  
2123 activities within wetlands. Therefore, the amount of current and potential habitat for Rough-  
2124 leaved Loosestrife should remain stable.

2125 **Smooth Coneflower** is a rhizomatous perennial which blooms with a pale purple or pink flower  
2126 from late May through July. Fort Jackson provides habitat for a single population of Smooth  
2127 Coneflower near Statue of Liberty Road on the eastern end of the installation. The population  
2128 occurs at the edge of a partially shaded woodland, along a gently sloping road bank. Plants  
2129 have never been located outside this narrowly defined area, either to its west in the woodland  
2130 proper, or to its east, across the road. It is apparently dependent on an open canopy for  
2131 existence.

2132 The Fort Jackson population of Smooth Coneflower is likely not of natural occurrence. It was  
2133 probably introduced to this site, as the site is well removed from the normal range of the species  
2134 (essentially piedmont and mountains), and the soils present are not characteristic of other sites  
2135 of presumably natural occurrence. Researchers felt that this population likely represents a  
2136 declining remnant of a garden cultivation.

2137 Monitoring conducted in June 2001 identified 20 flowers and 16 stems. Nine of the 20 flowers  
2138 were from stems that resulted from seed propagation efforts to increase the population. In

2139 2000, there were 17 flowers and 20 stems. Propagation efforts have helped to expand the  
2140 population.

2141 Research to date indicates that this plant is highly sensitive to environmental disturbance,  
2142 especially involving mechanical disruption of substrate. This population is potentially threatened  
2143 by mechanical disturbance from nearby vehicular traffic, and probably also from troop  
2144 movements. Mechanical damage to plants would be devastating to the population. Trampling  
2145 may cause physical damage to the plants at all stages of growth. Another potential threat to this  
2146 population arises from potential erosion of the road bank it occupies.

2147 Upon its discovery, this population was initially in danger of being shaded out. However, in May  
2148 1996, management efforts by Fort Jackson, with written concurrence from the USFWS,  
2149 removed much of the overhead canopy and surrounding woody vegetation on this site.

2150 During blooming, Smooth Coneflower is an extremely attractive species. The removal of any  
2151 flowers will seriously damage local reproduction; however, this removal may not necessarily be  
2152 caused by humans and may be the result of local deer populations. In addition to removal of  
2153 flowers, digging any plants will clearly destroy portions, if not all, of the population. Finally, and  
2154 probably most importantly from a long-term view, plants here are threatened by a lack of fire in  
2155 the area. Elsewhere in its range, Smooth Coneflower is considered a resident of open  
2156 woodlands, glades, and meadows, all of which are likely to receive repeated burning.

#### 2157 **5.6.4.2. Fauna**

2158 Fort Jackson provides habitat for one resident federally listed endangered animal species, the  
2159 Red-cockaded Woodpecker (*Picoides borealis*). The Red-cockaded Woodpecker (RCW) is a  
2160 non-migratory bird that is endemic to the pine forests of the southeastern United States. Within  
2161 its range, it is found most commonly in association with longleaf pine forests, although it can be  
2162 found in other pine habitats, including loblolly, shortleaf, slash and others (FJ-DLE-PSW, 1998).

2163 RCWs are unique among woodpeckers in that they excavate cavities in old living pine trees  
2164 which are used for roosting and nesting. The minimum age of pine trees selected for cavity  
2165 trees is about 60 to 70 years, depending on the species. Generally, these trees are infected by  
2166 a heartwood-decaying fungus. The process of excavating a cavity usually takes one to several  
2167 years to complete.

2168 RCWs exist as "families," which are referred to as groups. These groups normally consist of a  
2169 breeding pair, helpers (usually male offspring of one or both of the breeding pair from previous  
2170 years), and the current year's offspring. The helpers assist in excavating new cavities,  
2171 defending territories, and feeding the young.

2172 A group of trees used by a family for nesting and roosting is called a "cluster". A cluster may  
2173 have from one to thirty cavity trees including trees with completed cavities, cavities in the  
2174 process of being excavated (called "start holes"), and inactive cavities. More than one cavity

2175 and type of cavity can be present in a single tree. Usually the cluster of cavity trees used by a  
 2176 RCW family is located within a 1,500-foot diameter circle. Most often, active clusters are found  
 2177 in open, park-like stands of mature pine with little or no mid-story vegetation.

2178 RCWs feed mostly on forest insects, but are known to eat small fruits and seeds. They forage  
 2179 primarily on the surface of living pine trees within pine-dominated forest stands. Large pines,  
 2180 normally greater than ten inches in diameter, are preferred as foraging substrate. Generally,  
 2181 pine-dominated stands are not considered potential foraging habitat until they reach 30 years of  
 2182 age.

2183 Developing RCW habitat, especially nesting sites, where none exist today requires a long-term  
 2184 commitment. Pine-dominated stands must be grown for extended periods, well beyond the age  
 2185 trees are initially selected for cavity excavation. In cases where potential cavity trees are  
 2186 present, adequate foraging habitat surrounding these mature trees may be lacking. Providing  
 2187 adequate foraging habitat may require 30 years.

2188 To protect the species and its preferred habitat, Fort Jackson has maximized the quality of old-  
 2189 growth habitat, constructed and installed artificial cavities, installed excluder devices to prevent  
 2190 predation, and moved 10 RCWs to Fort Jackson (Fort Jackson ENV, 2012).

2191 The RCW population at Fort Jackson is small and vulnerable to extirpation. In total, the number  
 2192 of active RCW clusters has increased from 10 (with 28-30 individuals) in 1995 to 29 (with 90-95  
 2193 individuals) in 2003 (Gene Stout and Associates, 2004).

2194 Fort Jackson manages the RCW population and associated habitat in accordance with the *RCW*  
 2195 *Endangered Species Management Plan* (ESMP) (Gene Stout and Associates, 2004). The  
 2196 ESMP for the RCW has excluded the cantonment area from the defined RCW Habitat  
 2197 Management Unit (i.e., the area to be managed for RCW current and future use). The *2007*  
 2198 *Management Guidelines for the Red-cockaded Woodpecker on Army Installations* is also used  
 2199 for management purposes.

2200 The American bald eagle (*Haliaeetus leucocephalus*), which is no longer listed as endangered  
 2201 but is still a federally recognized protected species, has been documented on the Installation.  
 2202 One active nest is known to exist on Fort Jackson and is located near Dupre Pond.

2203 Although not currently listed as threatened or endangered, Fort Jackson provides habitat for  
 2204 four rare animal species: Southeastern Myotis (*Myotis austroriparius*), Rafinesque's big-eared  
 2205 Bat (*Plecotus rafinesquii*) Loggerhead Shrike (*Lanius ludovicianus*), and Bachman's sparrow  
 2206 (*Aimphila aestivalis*). These species may be listed in the future if their numbers continue to  
 2207 decline.

2208 No land within Fort Jackson has been identified as critical habitat for any federally listed  
 2209 endangered or threatened species. Given the presence of these federally listed endangered  
 2210 species, Fort Jackson has prepared ESMPs for each species. The objective of the ESMP for the

2211 RCW (FJ-DLE-PSW, 1998) and the *Flora Endangered Species Management Component of the*  
 2212 *INRMP* for Smooth Coneflower and Rough-leaved Loosestrife *U.S. Army Training Center and*  
 2213 *Fort Jackson* (FJ-DLE-PSW, 2007) is to conserve these endangered animal and plant species  
 2214 as required by the ESA of 1973 as amended, while providing for training readiness and other  
 2215 mission requirements of Fort Jackson. In order to accomplish this objective, the ESMPs:  
 2216 provide information on each species; identify habitats and limiting factors; define conservation  
 2217 goals; outline plans for management of these animal and plant species and their habitat that will  
 2218 enable achievement of conservation goals; establish monitoring plans; and summarize the cost  
 2219 of conservation efforts and their impact on installation activities.

2220 **5.7. Air Quality**

2221 This section describes the existing air quality conditions at and surrounding Fort Jackson. Air  
 2222 quality is determined by the type and concentration of pollutants in the atmosphere, the size and  
 2223 topography of the air basin, and local and regional meteorological influences. The significance  
 2224 of a pollutant concentration in a region or geographical area is determined by comparing it to  
 2225 federal and/or state ambient air quality standards. Under the authority of the CAA (42 USC  
 2226 7401-7671q), the EPA has been given the responsibility to establish the primary and secondary  
 2227 National Ambient Air Quality Standards (NAAQS) (40 CFR part 50) for pollutants considered  
 2228 harmful to public health and the environment, with an adequate margin of safety. The EPA  
 2229 developed NAAQS for six principal pollutants, which are called “criteria pollutants”, to represent  
 2230 the maximum allowable atmospheric concentrations. The six “criteria pollutants” include:  
 2231 particulate matter (measured as both particulate matter [PM10] and, fine particulate matter  
 2232 [PM2.5]), sulfur dioxide (SO<sub>2</sub>), carbon monoxide (CO), nitrogen oxides (NO<sub>x</sub>), ozone (O<sub>3</sub>), and  
 2233 lead (Pb). Short-term NAAQS (1-, 8-, and 24-hour periods) have been established for pollutants  
 2234 contributing to acute health effects, while long-term NAAQS (annual averages) have been  
 2235 established for pollutants contributing to chronic health effects. Table 5-6 lists the NAAQS  
 2236 values for each criteria pollutant.

2237 Federal regulations designate Air Quality Control Regions (AQCRs) in violation of the NAAQS  
 2238 as *nonattainment* areas. Federal regulations designate AQCRs with levels below the NAAQS  
 2239 as *attainment* areas. According to the severity of the pollution problem, nonattainment areas  
 2240 can be categorized as marginal, moderate, serious, severe, or extreme.

2241 **Table 5-6 National Ambient Air Quality Standards**

| Pollutant                   | Standard Value |
|-----------------------------|----------------|
| <b>Carbon Monoxide (CO)</b> |                |
| 8-hour average              | 9 ppm          |
| 1-hour average              | 35 ppm         |

| Lead (Pb)   |                        |
|---|------------------------|
| Quarterly Average   | 1.5 µg/m <sup>3</sup>  |
| Nitrogen Dioxide (NO <sub>2</sub> )                           |                        |
| Annual arithmetic mean  | 0.053 ppm              |
| Ozone (O <sub>3</sub> )                                       |                        |
| 8-hour average  | 0.075 ppm              |
| 1-hour average  | 0.12 ppm               |
| Particulate matter less than 10 microns (PM <sub>10</sub> )   |                        |
| Annual Mean   | 50 µg/m <sup>3</sup>   |
| 24-hour average   | 150 µg/m <sup>3</sup>  |
| Particulate matter less than 2.5 microns (PM <sub>2.5</sub> ) |                        |
| Annual arithmetic mean  | 15.0 µg/m <sup>3</sup> |
| 24-hour average   | 35 µg/m <sup>3</sup>   |
| Sulfur dioxide (SO <sub>2</sub> )                             |                        |
| Annual arithmetic mean  | 0.03 ppm               |
| 24-hour average   | 0.14 ppm               |

2242 Notes: µg/m<sup>3</sup> micrograms per cubic meter  
 2243 ppm parts per million  
 2244 Source: 40 CFR 50.4 through 50.13  
 2245

2246 **5.7.1. Regional Air Quality**

2247 South Carolina represents one of 28 eastern US states under the Clean Air Interstate Rule  
 2248 (CAIR), a program to permanently cap emissions of SO<sub>2</sub> and NO<sub>x</sub>. CAIR assists South Carolina  
 2249 in meeting and maintaining NAAQS for ground-level ozone and fine particle pollution (SO<sub>2</sub> and  
 2250 NO<sub>x</sub> contribute to the formation of fine particles (PM), and NO<sub>x</sub> contributes to the formation of  
 2251 ground-level ozone). South Carolina has many other programs and regulations to promote  
 2252 better air quality such as a State Implementation Plan (SIP), Diesel Emissions Reduction  
 2253 Program ([www.scdhec.gov/dera](http://www.scdhec.gov/dera)), Breathe Better (B2) Program ([www.scdhec.gov/b2](http://www.scdhec.gov/b2)), and  
 2254 Lawn Mower Exchange ([www.scdhec.gov/lawnmowerexchange](http://www.scdhec.gov/lawnmowerexchange)).

2255 If a specific location is designated as a non-attainment area, upon the effective date of non-  
 2256 attainment that location is immediately faced with a more comprehensive permitting process  
 2257 under non-attainment New Source Review (NSR). Within one year of the effective date, areas  
 2258 will have to begin conformity analyses, which ensure that projects utilizing federal funds do not

2259 have an adverse impact on an area's air quality. States may also have to implement emission  
2260 reduction strategies to improve air quality.

2261 In 2004, Richland County exceeded the ozone standard and joined the "Early Action Compact"  
2262 (EAC) with the EPA. This was an option provided by the EPA for areas currently meeting the  
2263 one-hour ozone standard, like those in South Carolina, to attain the eight-hour ozone standard  
2264 by December 31, 2007, and obtain cleaner air sooner than federally mandated. This option  
2265 required an expeditious time line for achieving emissions reductions sooner than expected  
2266 under the eight-hour ozone implementation rulemaking, while providing "fail-safe" provisions for  
2267 the area to revert to the traditional SIP process if specific milestones are not met. By signing  
2268 the EAC, EPA agreed to defer the effective date of the nonattainment designation for the  
2269 participating area. In 2007, Richland County met all the milestones associated with the EAC  
2270 and was classified as in attainment for all six criteria pollutants again. Today, the majority of  
2271 South Carolina is in attainment for air quality.

### 2272 **5.7.2. Fort Jackson**

2273 Fort Jackson, located in Richland County, South Carolina, is part of EPA Region 4 (Southeast).  
2274 Richland County is in the Columbia Intrastate AQCR and is in attainment for all NAAQS criteria  
2275 pollutants (USEPA 2012a). Fort Jackson currently operates under the Air Permit issued by the  
2276 SCDHEC. While each state has the authority to adopt standards stricter than those established  
2277 under the federal program, South Carolina accepts the federal standards. SCDHEC is  
2278 responsible for ensuring that the air quality within South Carolina meets or exceeds the levels  
2279 required by Federal and State standards. SCDHEC conducts air monitoring surveillance in six  
2280 forecast zones within the state as well as twelve non-forecast zone counties.

2281 Activities that produce air emissions at Fort Jackson include boilers, generators, ordnance  
2282 detonation, fueling operations, storage tanks, and paint booths (USAEC, 2009). A Title V  
2283 operating permit (Number 1900-0016) was issued August 1, 2001, and although the permit was  
2284 slated to expire in July 2005, the facility operates under a permit shield because SCDHEC has  
2285 not yet issued a permit renewal. Fort Jackson has submitted several permit renewal  
2286 applications; the latest was submitted on March 26, 2010, requesting that the permit be  
2287 converted to a synthetic minor/conditional major permit. The permit requirements include annual  
2288 inventory for all significant stationary sources of air emissions and covers monitoring,  
2289 recordkeeping, and reporting requirements. Fort Jackson's 2011 installation-wide air emissions  
2290 for all significant stationary sources are tabulated below in Table 5-7.

2291 **Table 5-7 2011 Annual Emissions for Significant Statutory Sources at Fort Jackson**

| Pollutant       | Emissions (tons/year) |
|-----------------|-----------------------|
| NO <sub>x</sub> | 28.6                  |
| CO              | 34.2                  |
| VOCs            | 17.0                  |
| PM10/PM2.5      | 4.9                   |
| SO <sub>2</sub> | 2.2                   |

2292 Note: SO<sub>2</sub> = sulfur dioxide; VOCs = Volatile organic compounds

2293

2294 Greenhouse gases (GHGs) are components of the atmosphere that trap heat relatively near the  
 2295 surface of the earth and, therefore, contribute to the greenhouse (or heat-trapping) effect and  
 2296 climate change. Most GHGs occur naturally in the atmosphere, but increase in their  
 2297 concentration as a result of human activities such as burning fossil fuels. Global temperatures  
 2298 are expected to continue to rise as human activities continue to add carbon dioxide, methane,  
 2299 NO<sub>x</sub>, and other GHGs to the atmosphere.

2300 EO 13514, *Federal Leadership in Environmental, Energy, and Economic Performance* outlines  
 2301 policies intended to ensure that federal agencies evaluate climate change risks and  
 2302 vulnerabilities, and to manage the short- and long-term effects of climate change on their  
 2303 operations and mission. The EO specifically requires the Army to measure, report, and reduce  
 2304 their GHG emissions from both their direct and indirect activities. The DoD has committed to  
 2305 reduce GHG emissions from noncombat activities 34 percent by 2020 (DoD 2010). In addition,  
 2306 the CEQ recently released draft guidance on when and how federal agencies should consider  
 2307 GHG emissions and climate change in NEPA analyses. The draft guidance includes a  
 2308 presumptive effects threshold of 27,563 tons per year (25,000 metric tons per year) of carbon  
 2309 dioxide equivalent emissions from a federal action (CEQ 2010).

2310 **5.8. Historic and Cultural Resources**

2311 The Army is required to comply with Sections 106 and 110 of the NHPA and implementing  
 2312 regulations under 36 CFR 800. Compliance is required for preservation of the following:

- 2313 • cultural items, as defined in the Native American Graves Protection and Repatriation Act  
 2314 (NAGPRA);
- 2315 • archaeological resources, as defined in the Archaeological Resources Protection Act  
 2316 (ARPA);
- 2317 • sacred sites, as defined in EO13007 to which access is provided under the

- 2318 • American Indian Religious Freedom Act (AIRFA); and
  - 2319 • collections, as defined in 36 CFR 79 Curation of Federally-Owned and Administered
  - 2320 Collections.
- 2321 Fort Jackson is responsible for identifying and protecting significant archaeological and historic
- 2322 resources in compliance with the NHPA of 1966 as amended, and the ARPA of 1979. Since the
- 2323 inception of these acts, Fort Jackson has completed a number of cultural resource surveys
- 2324 inventorying and documenting archaeological and historical resources. These surveys and their
- 2325 findings are documented in the ICRMP (USACE-SD, 2008). Minor updates to the ICRMP occur
- 2326 annually with major revisions every five years. The ICRMP outlines the Army’s policies,
- 2327 procedures, and responsibilities for meeting cultural resources compliance and management
- 2328 requirements at the Fort Jackson and is intended to be a component of the Installation’s RPMP.
- 2329 Cultural resources can be of three categories: archaeological, built environment, and traditional.
- 2330 Archaeological resources are locations where prehistoric or historic activity altered the earth or
- 2331 produced deposits of physical remains. Built environment resources are architectural/
- 2332 engineering resources that include standing buildings, dams, canals, bridges, and other
- 2333 structures of historic significance. Built environment resources generally must be more than 50
- 2334 years old to be considered for inclusion in the National Register of Historic Places (NRHP).
- 2335 However, more recent structures, such as Cold War era resources, might warrant protection if
- 2336 they manifest exceptional significance or the potential to gain significance in the future.
- 2337 Traditional cultural properties (TCPs) are resources associated with the cultural practices and
- 2338 beliefs of a living community that are rooted in its history and are important in maintaining the
- 2339 continuing cultural identity of the community.
- 2340 Fort Jackson’s primary cultural resources are archaeological sites and historic buildings and
- 2341 cemeteries. Within Fort Jackson boundaries, there are no identified access routes to or sites of
- 2342 religious or ceremonial rites of the Native Americans, no properties listed on the NRHP, the
- 2343 National Registry of National Landmarks, or the World Heritage List, and no properties listed as
- 2344 a National Historic Landmark. Building 2495 is eligible for listing on the NRHP. Archaeological
- 2345 site locations are not a matter of public record.
- 2346 Fort Jackson has no identified TCPs, and the federally recognized Native American Indian tribes
- 2347 have not inquired about or informed Fort Jackson of any TCPs or sacred sites.
- 2348 The South Carolina Department of Archives and History State Historic Preservation Office
- 2349 (SHPO) and federally recognized Native American Indian tribes have been contacted
- 2350 concerning the proposed action (Appendix B). If concerns are raised by the agency or the tribes
- 2351 regarding the resources under their jurisdictions, discussion of the issues will be added to this
- 2352 PEA.
- 2353 A Programmatic Agreement (PA) between the Army, the South Carolina SHPO and the
- 2354 Advisory Council on Historic Preservation has been prepared. The PA provides stipulations by

2355 which Fort Jackson can establish a program of operation, maintenance, and development that is  
 2356 in compliance with the Army's Section 106 responsibilities. The PA identifies projects and  
 2357 activities that are exempt from review as well as those which can receive an internal review.  
 2358 The PA establishes a consistent set of review procedures.

### 2359 **5.8.1. Archaeological Sites**

2360 Prehistoric and historic-era archaeological resources have been identified at Fort Jackson. The  
 2361 Fort Jackson ICRMP provides a summary of known cultural resources and the prehistoric and  
 2362 historic setting of the Installation, a framework for complying with historic preservation  
 2363 regulations, and procedures for identifying cultural resources and managing cultural resources.  
 2364 Both prehistoric and historic era sites have been identified during archaeological survey of Fort  
 2365 Jackson (SCIAA 2008).

2366 An archaeological survey has been completed at Fort Jackson in all areas where surveying is  
 2367 permitted (SCIAA 2008). Follow up studies are conducted on a case by case basis. To date,  
 2368 26 archaeological investigations have been completed at Fort Jackson, including 11 surveys  
 2369 (Phase I), 13 site evaluations (Phase II), one combined Phase I/II effort, and one data recovery  
 2370 (Phase III). Over 670 archaeological sites have been recorded at Fort Jackson, of which 12  
 2371 percent (currently 55 sites) have been determined eligible for listing in the NRHP. Locations of  
 2372 all archaeological sites are contained within a GIS database maintained by Fort Jackson and  
 2373 details of these sites, including individual reports are on file at Fort Jackson ENV and the South  
 2374 Carolina Institute of Archaeology and Anthropology (SCIAA) State Site Files. Monitoring of  
 2375 each of these sites is conducted annually.

### 2376 **5.8.2. Historic Buildings and Structures**

2377 The preservation, restoration, rehabilitation and maintenance of historic properties under Army  
 2378 control or jurisdiction are accomplished in accordance with the standards established by the  
 2379 Secretary of the Interior and as set forth by the Chief of Engineers in TM 5-801-1, *Historic  
 2380 Preservation*. Candidate historical sites are evaluated in reference to the standards of the  
 2381 NRHP. Generally, these sites must be at least 50 years old. In addition, to be considered  
 2382 eligible for inclusion on the NRHP the sites must meet the following criteria:

- 2383 • are associated with important historical events;
- 2384 • are associated with the lives of important historical individuals;
- 2385 • contain distinctive construction; and
- 2386 • have yielded, or may be likely to yield, information important in prehistory and history.

2387 Fort Jackson has contracted numerous surveys to document the historic value of over 1,700  
 2388 structures that are present on-Post, many of which are less than 50 years old. A review of  
 2389 these surveys finds that only three of these structures are considered eligible for listing in the

2390 NRHP. Of these three structures, two were mitigated and demolished. The remaining  
2391 structure, building 2495, is a Morale, Welfare and Recreation (MWR) general maintenance  
2392 facility.

2393 Although there are no sites at Fort Jackson included in the NRHP, there are two structures  
2394 worthy of mention due to their place in the history of Fort Jackson: the Post Headquarters and  
2395 the Dozier House, which served as the former commanding general's residence. The Post  
2396 Headquarters was completed in 1941. The Post Headquarters Building was not re-nominated  
2397 for inclusion on the NRHP, since previous SHPO review indicated that the structure lacks  
2398 sufficient integrity as an individual edifice or as a group to be considered. The Dozier House  
2399 was erected in 1917. Numerous additions have been made to the structure resulting in a lack of  
2400 sufficient historic integrity to be considered for NHRP listing. The structure is located on its  
2401 original site and currently is used as TDY quarters. The Dozier House has the distinction of  
2402 being one of the few remaining World War I headquarters.

### 2403 **5.8.3. Cemeteries**

2404 The Installation ICRMP defines historic cemeteries as burial grounds, marked by headstones  
2405 and/or fenced areas, associated with families, churches, or communities that were established  
2406 within Fort Jackson between European settlement and acquisition by the Army. The definition  
2407 does not include the unknown, unrecorded, and unmarked human burials that may be within the  
2408 boundaries of Fort Jackson. There are 27 cemeteries on Fort Jackson. Of which, four are  
2409 located in the cantonment area: J.E. Belser Cemetery, Viele Chapel Church Cemetery, Sweet  
2410 Home Church Cemetery, and four additional unnamed cemeteries.

2411 The ICRMP states that none of the cemeteries are considered eligible for NRHP inclusion but all  
2412 should be protected (USACE-SD, 2008). For management purposes, all cemeteries are treated  
2413 in the same manner as NRHP eligible cultural resources. They are to be preserved in place  
2414 unless the redesign or relocation of activities necessary to the mission of Fort Jackson cannot  
2415 avoid impinging on these sensitive sites. Descendants of those interred are allowed access to  
2416 the grave sites at times in which military training is not an issue.

## 2417 **5.9. Socioeconomic Resources**

2418 This section describes the economy and the sociological environment of the ROI surrounding  
2419 Fort Jackson. An ROI is a geographic area selected as a basis on which social and economic  
2420 impacts of project alternatives are analyzed. The ROI for the social and economic environment  
2421 is defined as Lexington and Richland counties, South Carolina. Socioeconomic data for South  
2422 Carolina and the United States are presented for comparative purposes.

2423 **5.9.1. Regional Economy**

2424 **Employment and Industry.** Labor force and unemployment data are provided in Table 5-8.  
 2425 The region’s labor force increased at a rate of 11 percent between 2000 and 2010, higher than  
 2426 the state and national labor force at 8 percent. The ROI 2010 annual unemployment rate was 9  
 2427 percent, lower than the state and national unemployment rates of 11 percent and 10 percent.  
 2428 The primary sources of ROI employment were government and government enterprises; retail  
 2429 trade; health care and social assistance; and other services (such as equipment and machinery  
 2430 repairing, religious activities, grant making, advocacy, dry cleaning, and such, except public  
 2431 administration). Together, those industry sectors accounted for almost 50 percent of regional  
 2432 employment (Bureau of Economic Adjustment 2012).

2433 Fort Jackson is a major contributor to the local, regional, and state economy. As the largest and  
 2434 most active IETC in the Army, Fort Jackson circulated more than \$1.2 billion in the greater  
 2435 Columbia area. More than 3,500 active duty Soldiers and about 12,000 family members are  
 2436 assigned to the installation. Fort Jackson employs almost 5,400 civilians and provides services  
 2437 for more than 60,000 retirees and their family members. An additional 27,000 students annually  
 2438 attend courses at the Soldier Support Institute, Chaplain Center and School, and Drill Sergeant  
 2439 School (Fort Jackson 2012).

2440 **Table 5-8 Labor Force and Unemployment Change (2000 – 2010)**

| Location       | 2000 Civilian Labor Force | 2010 Civilian Labor Force | Labor Force Change 2000–2010 | 2010 Annual Unemployment Rate |
|----------------|---------------------------|---------------------------|------------------------------|-------------------------------|
| ROI            | 282,345                   | 314,608                   | 11%                          | 9%                            |
| South Carolina | 1,988,159                 | 2,150,576                 | 8%                           | 11%                           |
| United States  | 142,583,000               | 153,889,000               | 8%                           | 10%                           |

2441 Source: Bureau of Labor and Statistics 2012

2442 **Income.** ROI income levels were higher than state levels, but lower than national income levels  
 2443 as demonstrated below in Table 5-9. The ROI per capita personal income (PCPI) was \$24,985,  
 2444 which is 113 percent of the state PCPI of \$22,128 and 96 percent of the national PCPI of  
 2445 \$26,059. The ROI median household income of \$48,760 was 116 percent of the state median  
 2446 household income of \$42,018 and 97 percent of the national median household income of  
 2447 50,046 (U.S. Census Bureau 2012).

2448

**Table 5-9 2010 Income Level Comparison**

| Location       | Per Capita Personal Income (PCPI) | Median Income Per Household |
|----------------|-----------------------------------|-----------------------------|
| ROI            | \$24,985                          | \$48,760                    |
| South Carolina | 22,128                            | 42,018                      |
| United States  | 26,059                            | 50,046                      |

2449

Source: U.S. Census Bureau 2012

2450

**Population** The ROI's 2010 population was 646,895, an increase of 110,204 persons since 2000. The ROI's population growth of 21 percent exceeded the state and national growth rates of 15 percent and 10 percent, respectively as provided in Table 5-10.

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**Table 5-10 Population Change (2000 – 2010)**

| Location       | 2000 Population | 2010 Population | Population Change (2000–2010) |
|----------------|-----------------|-----------------|-------------------------------|
| ROI            | 536,691         | 646,895         | 21%                           |
| South Carolina | 4,012,012       | 4,625,364       | 15.3%                         |
| United States  | 281,421,906     | 308,745,538     | 10%                           |

2454

Source: U.S. Census Bureau 2012

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2456 **5.9.2. Housing**

2457 **5.9.2.1. Fort Jackson Housing**

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The Army provides transient lodging for Soldiers and their families on temporary duty and permanent change of station travel. Currently, there are 866 unaccompanied enlisted personnel housing (UEPH) spaces available at Fort Jackson. These barracks include spaces for both assigned and visiting personnel. Most of the Post's older UEPH spaces are located in the "rolling pin" barracks situated Magruder and Sumter Avenues in the western portion of the cantonment.

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Over the years, funding shortfalls have prevented the proper maintenance, repair, or replacement of facilities, approximately 80 percent of the Army's lodging inventory has been found to fall short of acceptable quality standards. The Privatization of Army Lodging (PAL) program is an initiative to improve facilities and services for transient lodging users. It is founded on the Military Housing Privatization Initiative (MHPI) established in the 1996 Defense Authorization Act. The MHPI authorizes the Army to obtain private capital by leveraging government contributions, making efficient use of limited resources, and using a variety of

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2471 private-sector approaches to build, renovate, and operate lodging. At this time, Fort Jackson is  
 2472 preparing an EA to evaluate the implementation of the PAL program at Fort Jackson, South  
 2473 Carolina.

2474 Implementation of the PAL program at Fort Jackson would entail the construction of new lodging  
 2475 facilities and the renovation of the existing 11 lodging facilities (850 lodging units). Actions under  
 2476 the PAL program would occur over an approximate 7-year development period beginning in  
 2477 2013, resulting in a final inventory of approximately 866 lodging units. Additionally, these  
 2478 actions would improve the quality of life for Soldiers, their families, and other personnel eligible  
 2479 to use Army transient lodging.

#### 2480 **5.9.2.2. Off-Post Housing**

2481 According to the US Census (2010), the total number of housing units in Richland County was  
 2482 estimated at 161,725. Of this total, 55 percent were owner-occupied, with the remaining 34.7  
 2483 percent renter-occupied; 10.2 percent were vacant (U.S. Census Bureau, 2010 Census)  
 2484 ([http://factfinder.census.gov/servlet/ACSSAFFacts?\\_event=Search&geo\\_id=&geoContext=&street=&county=Richland+County&cityTown=Richland+County&state=04000US45&zip=&lang=en&sse=on&pctxt=fph&pgsl=010](http://factfinder.census.gov/servlet/ACSSAFFacts?_event=Search&geo_id=&geoContext=&street=&county=Richland+County&cityTown=Richland+County&state=04000US45&zip=&lang=en&sse=on&pctxt=fph&pgsl=010)). One of the biggest supporters and programs for  
 2485 residential development is the City of Columbia's City Living Program (RPMP 2011).  
 2486  
 2487

2488 Approximately 43 percent of the permanent party military personnel of Fort Jackson live off-  
 2489 Post, with approximately half owning their own home and the remainder renting either a single  
 2490 family home, apartment, or mobile home. The majority of the off-Post military personnel live in  
 2491 Richland County, with Columbia and the surrounding area being the primary areas of residency.  
 2492 Fort Jackson's stable military population has resulted in an adequate off-Post housing supply in  
 2493 the past in respect to housing types, prices and rent levels.

#### 2494 **5.9.3. Environmental Justice**

2495 EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-*  
 2496 *income Populations*, was issued by President Clinton on February 11, 1994. The EO requires  
 2497 that federal agencies take into consideration disproportionately high and adverse environmental  
 2498 effects of governmental decisions, policies, projects, and programs on minority and low-income  
 2499 populations.

2500 According to the U.S. Census Bureau 2010 census, minority populations composed 42 percent  
 2501 of the ROI's total population. In comparison, that is higher than the South Carolina and national  
 2502 minority populations of 36 and 36.6 percent (U.S. Census Bureau 2011c). The ROI poverty rate  
 2503 was 16 percent, lower compared to the South Carolina poverty rate of 17 percent but higher  
 2504 than the national poverty rate of 14.3 percent (U.S. Census Bureau 2010).

## 2505 **5.9.4. Protection of Children**

2506 EO 13045, *Protection of Children from Environmental Health and Safety Risks*, issued by  
 2507 President Clinton on April 21, 1997, requires federal agencies, to the extent permitted by law  
 2508 and mission, to identify and assess environmental health and safety risks that might dis-  
 2509 proportionately affect children. Children are at Fort Jackson as residents and visitors (e.g.,  
 2510 residing in on-Post family housing, using recreational facilities, attending on-Post events). The  
 2511 Army takes precautions for their safety through a number of means, including using fencing,  
 2512 limiting access to certain areas, and requiring adult supervision.

## 2513 **5.10. Infrastructure**

### 2514 **5.10.1. Utilities**

2515 This section describes existing utilities at Fort Jackson. In general, the utility systems are  
 2516 classified as distribution and collection systems including water, wastewater, and energy  
 2517 sources. Communication systems and solid waste disposal are also discussed in this section.  
 2518 The ROI for utilities is defined as utility services on the Installation and the associated public  
 2519 utility service providers.

2520 Currently, the water, sanitary sewer systems, and telecommunication systems are privatized  
 2521 Installation-wide, including Residential Communities Initiative (RCI) housing. All other utilities  
 2522 are owned, operated, and maintained by Fort Jackson. Water and wastewater systems are  
 2523 privatized through the Palmetto Utility Service (PSUS) in accordance with a 50-year privatization  
 2524 contract. PSUS prepared the *Fort Jackson Water and Sanitary Sewer Facilities Master Plan-*  
 2525 *2010-2011*, which recommended many capital improvement projects for both the water and  
 2526 wastewater systems. Based on the *Fort Jackson Water and Sanitary Sewer Facilities Master*  
 2527 *Plan – 2010-2011* and other factors, PSUS developed a five year capital improvements plan.  
 2528 Projects are classified into four categories: initial capital upgrades (ICU), R&R, new capital  
 2529 upgrades (NCU), and future capital upgrades (FCU).

- 2530 • ICUs consist of those replacement and improvement activities that are required to the  
 2531 utility system, such that upon expiration of the initial capital upgrade period, the utilities  
 2532 would comply with requirements and standards imposed by law as well as the standards  
 2533 typically applied to other utility systems.
- 2534 • R&Rs consist of renewing and replacing of aging and deteriorating facilities, which will  
 2535 permit the long-term safe and reliable operation of the utility system, allowing the system  
 2536 to comply with requirements and standards imposed by law as well as the standards  
 2537 typically applied to other utility systems.
- 2538 • NCUs are the special capital projects that are over and above the existing privatization  
 2539 contract and have been funded through numerous contract modifications between PSUS  
 2540 and the Government.
- 2541 • FCUs include capital upgrades to expand the system or to comply with requirements and  
 2542 standards imposed by law that have changed subsequent to the initial capital upgrade  
 2543 period.

2544

2545 Most of the planned projects, including ICU, R&R, NCU and FCU projects are underground pipe  
 2546 line construction and lift station improvements, given the overall aging and poor condition of the  
 2547 Post's utility infrastructure. These upgrades and improvements to the utility systems will be  
 2548 completed as funding becomes necessary and would be evaluated in accordance with the  
 2549 programmatic review procedures established in this PEA. Further, PSUS has implemented  
 2550 measures in accordance with its existing policies and applicable rules and regulations to  
 2551 minimize potential impacts on the environment including the following:

- 2552 • Implement stormwater management, BMPs.
- 2553 • Apply for and obtain "dig permit" and other permits as required by law.

2554

#### 2555 **5.10.1.1. Potable Water**

2556 The primary water source for Fort Jackson is the City of Columbia. The Fort Jackson water  
 2557 system connects to the City's water system at six points in the cantonment area and at one  
 2558 point outside of the Installation. In addition, there are nine wells located within the Range area  
 2559 that provide water to the training ranges. In 2008, the Installation's water system was privatized  
 2560 by PSUS and includes the RCI housing area. Under the privatization arrangement, PSUS is  
 2561 responsible for supplying water and operating the potable water system. The City of Columbia  
 2562 performs chlorine-booster treatment and PSUS tests the water weekly. A Contracting Officer  
 2563 Representative (COR) manages the coordination between the Installation and the supplier.

2564 The Installation's water permit currently allows for the production of 6.5 million gallons per day  
 2565 (MGD). The water system was modelled in the PSUS "20-25 year Master Plan for Wet Utilities"  
 2566 and confirmed the system provides adequate capacity and supply for the Fort Jackson  
 2567 population

2568 The water distribution system on-Post includes approximately 623,000 linear feet of pipe  
 2569 ranging from ¾" to 16" in diameter. Water is stored in a two million gallon (MG) elevated storage  
 2570 tanks to provide for peak demands and minimize supply fluctuation. The system has been  
 2571 converted from the original dual pressure zone system to a single zone pressure system due to  
 2572 improper connections and lack of planning. Converting to a single zone pressure configuration  
 2573 only allows the utilization of two of the six City connection points. Eighty to eighty-five percent of  
 2574 the water enters through one of the connections. Pressure demands in some areas add stress  
 2575 to the system and cause leakage in some of the old piping. Also, having a majority of the water  
 2576 supply provided through only one connection poses a risk. Should there be a disruption to the  
 2577 primary connection point, it is unknown if enough water can be provided through the other  
 2578 service points.

2579 In general, the water infrastructure is in poor condition, particularly in the southwest portion of  
 2580 the Post. A majority of the valves are missing in this area. Other problems include insufficient  
 2581 looping and undersized pipes. There are pipe segments that have been abandoned due to new  
 2582 construction that receive little or no flow which need to be flushed out periodically. The overall  
 2583 system has been expanded, but has not been enhanced. Repairs and replacements are  
 2584 currently being scheduled as part of the privatization effort.

2585 There are two major pump stations on-Post: Magruder Pump Station (P.S.) and Pickens P.S.,  
 2586 which is the main pump station. It draws water from the interconnection and feeds the water  
 2587 tank directly. One concern with the Magruder P.S. is that it has no Supervisory Control and  
 2588 Data Acquisition system. It runs on a timed and pressurized system, which does not allow for  
 2589 immediate notification should a failure occur. There are two existing storage tanks; however  
 2590 only one is currently being used. There are plans to use the unused storage tank as a storage  
 2591 building.

#### 2592 **5.10.1.2. Wastewater System**

2593 With the exception of the RCI housing area, Fort Jackson's sanitary sewer system was  
 2594 privatized in 2008 by PSUS for a period of 50 years. The RCI housing area is privatized and  
 2595 operates on a separate sanitary sewer system. PSUS is responsible for maintaining and  
 2596 operating the Post sanitary sewer system. A COR manages the coordination between the  
 2597 Installation and the owner.

2598 The sanitary sewer system at Fort Jackson dates back to 1917 and is comprised of over  
 2599 350,000 linear feet of pipe with a majority of the pipe being eight inches in size and the largest  
 2600 pipe 77 inches. In addition, there are seven lift stations on Fort Jackson. The on-Post collector  
 2601 system discharges sanitary sewage into Columbia's sanitary sewer system at a metering station  
 2602 and is treated by the City. The metering station is currently not functioning properly. As a  
 2603 result, wastewater discharge is calculated based upon water consumption. A project is in  
 2604 progress to replace the meter which will be located on-Post. A SCADA system may be  
 2605 incorporated into the design of the new meter.

2606 There are many issues regarding the pipe infrastructure due to old age. Breaks in the sanitary  
 2607 sewer pipe cause leakages and infiltrate into the storm system. There have been complaints  
 2608 from off-Post neighborhoods downstream about sewage entering the storm system. Another  
 2609 issue is large objects that frequently enter the sanitary sewer system. A special grinder pump  
 2610 station is used on-Post to handle the large objects picked up in the sewer system. Additionally,  
 2611 there are many concerns within the dining facility area. In spite of an increase in population,  
 2612 there have been no pipe or grease trap upgrades. The City has recently stopped accepting  
 2613 grease from the traps, and it is possible that a new treatment facility will be needed to treat the  
 2614 grease.