Integrated Natural Resources Management Plan

USAG Stuttgart

2019

FINAL

Prepared by:

Natural Resource Innovations GmbH

June 2019

This page intentionally left blank

EXECUTIVE SUMMARY

PURPOSE

The purpose of this plan is to document the desired natural resource conditions and describe the policies and programs at USAG Stuttgart that are designed to accomplish a specific set of goals for the five-year planning period from 2015-2019. The plan was developed under the concepts of: sustainable use of army lands, natural resources management, biodiversity protection and ecosystem management.

ENVIRONMENTAL COMPLIANCE

This plan has been written in accordance with the Environmental Final Governing Standards for Germany as well as Army Regulation 200-1 and all applicable Department of Defense standards.

SCOPE

Geographical scope:

The USAG Stuttgart consists of nine locations: eight cantonment areas and one training area. Some locations contain several individual sites, together comprising 17 sites, all of which are located in the Stuttgart area in central Baden-Württemberg, Germany. The present total acreage of USAG Stuttgart is approximately 2,402 acres (972 hectares). More than half of the total acreage is occupied by the Local Training Area Boeblingen, which is 1,419 acres (574 hectares).

The underlying geology is characterized by a strata dip from the northwest to the southeast. The sandstone and *Muschelkalk* (shell limestone) layers in the northwest of the garrison submerge and are overlapped by geological formations of the *Keuper* in the central area. Subsequently, the southwestern installations are characterized by Jurassic formations covering the *Keuper*. The natural soils in the area are generally fertile and often contain *Loess*, which was deposited during the Paleozoic era.

Open water bodies within the USAG Stuttgart are principally limited to the training area. There are several small creeks within the training area as well as several ponds, which are of non-natural origin. Those ponds, however, represent valuable ecological habitats today. The largest pond has an approximate size of 0.7-0.8 ha (1.7-1.9 acres) and a maximum depth of 2 meters.

The nutrient-poor grassland areas of the training area are of great ecological significance, providing habitats for rare, threatened, and endangered plant and animal species.

RELATIONSHIP TO THE MILITARY MISSION

The USAG Stuttgart has the mission to provide command and control, communications and Base Operations to assigned and attached units. Furthermore, facility support services and quality-of-life programs and activities are provided to service members, civilians, retirees and their families. An additional central objective is to allow units to accomplish training objectives in realistic environments in accordance with U.S. Army and NATO doctrine, under the published Rules of Engagement.

In order to achieve its mission and maintain readiness standards, the U.S. Army must have lands that are capable of supporting training and other functions indefinitely. Consequently, land and natural resources are some of the U.S. Army's most valuable assets. The dual concepts of managing for sustainable natural resources and a sustainable "outdoor classroom" used for training are complimentary.

Sustainable use of the complex combination of resources found at USAG Stuttgart can be achieved through effective management programs that integrate training and other mission requirements with state-of-art resources management programs and by providing appropriate management goals.

- The primary natural resource needed for the military training mission is an area with a balanced portion of forested and open land, which is uninhabited, providing realistic training conditions.
- During decades of military use, the training area has not been subjected to fertilizer or pesticide use, or any other negative factors of intensive farming and forestry. Studies show that biodiversity is much higher within the training area compared to adjacent lands, which have either been built-up or are used as farmland or industrial, production-based forestry.
- Natural resource management on military lands has a tremendous influence on the quality and sustainment of the mission. When natural resource management is synchronized with the mission, it is a primary training enabler. Conversely, improperly conceived and executed programs can have a very negative, adverse effect on the mission. The relationship between natural resource management and military activities is therefore mutually dependent.

PARTNERSHIPS

For the development and implementation of this INRMP, the most significant partners for the USAG Stuttgart are;

- Environmental Division (ED)
- 7th Army Training Command Training Support Center (TSC)
- Operations and Maintenance Division (O&M)
- Institute for Federal Real Estate or *Bundesanstalt für Immobilienaufgaben (BImA*) - representing the landowner.
- Federal Forest Service (*Bundesforst)* – serving as the land management department under the BImA.
- State Forest Agency (*Landesbetriebs ForstBW*)

- Regierungspräsidium (RP) Stuttgart
- Local nature protection agencies

PLANNED MAJOR INITIATIVES

Over the next five years, the following major recurring natural resource management initiatives are required for the U.S. Garrison Stuttgart in order to fulfill its sustainability responsibilities. The initiatives incorporated into this INRMP are:

1. Implement Natura 2000 management guidelines and measures determined by the Natura 2000 Management Plan for area 7220-311, which was developed by the State of Baden-Württemberg Nature Protection agency and outlined in Sections 4.9 and 6.0 of this document.

2. Implement threatened and endangered species (TES) management measures for the local training area (LTA) as outlined in the TES Management Plan (Section 6.2).

3. Continue implementation of the TES surveying program to support the success of the management measures.

These three recurring initiatives fulfill Army Environmental Guidance, Host Nation legal requirements, the European Union Natura 2000 Habitat Directive and demonstrate the commitment of the Stuttgart Garrison in providing professional management for the habitat of many threatened and endangered species. Further details about these requirements are given in Section 6.

SUMMARY OF THE POSITIVE EFFECTS THE PLAN WILL HAVE ON THE INSTALLATION AND THE MISSION

The natural resource management programs detailed in this plan have been designed to support and enable the mission and concurrently preserve, protect and enhance the environmental and ecological conditions of USAG Stuttgart. This will:

- Ensure that the U.S. Army has maximized the quality of the training lands with the highest carrying capacity capable of supporting the mission indefinitely into the future;
- Guarantee that habitats and species are not only properly protected, but that whenever possible, conditions will be enhanced so as to increase their ecological value;
- Limit negative impact on the USAG Stuttgart and Federal Republic of Germany (FRG) community environments;
- Enhance host nation attitudes and cooperation;
- Provide the desired quality of life for all permanently and temporarily assigned soldiers/personnel and family members, and;
- Provide the installation with economically feasible and efficient natural resources management operations.

This page intentionally left blank

APPROVALS

This Integrated Natural Resources Management Plan (INRMP) addresses environmental management requirements specific to the U.S. ARMY GARRISON STUTTGART.

This INRMP satisfies the requirement to develop and maintain environmental management plans as outlined in the Final Governing Standards (FGS) Chapter 13 for Germany. The FGS states that this INRMP must be reviewed annually and updated at least once every 5 years.

Prepared By:

_____ _____

ANJA EMMENECKER
Chief Environmental Division
DPW USAG Stuttgart

Date

_____ _____

MARISA K. BARRIE
Director of Public Works
USAG Stuttgart

Date

Approved By:

_____ _____

MATTHEW T. ZIGLAR
COL, CA
Commanding

Date

This page intentionally left blank

Table of Contents

EXECUTIVE SUMMARY ..... *I*

APPROVALS ..... *V*

LIST OF APPENDICES X

1.0 INTRODUCTION *1*

1.1 PURPOSE 1
1.2 OVERALL GOALS AND OBJECTIVES 2
1.4 ORGANIZATION OF THE PLAN 5
1.5 PLAN INTEGRATION 5
1.6 REVISION 6
1.7 INSTALLATION POLICIES 7
1.8 POINTS OF CONTACT 8
1.9 ENVIRONMENTAL ASSESSMENT SYSTEM (EPAS) 12
1.10 ENVIRONMENTAL REVIEW GUIDE (ERG) 12
1.11 BENEFICIAL PARTNERSHIPS AND COLLABORATIVE RESOURCE PLANNING 13
1.12 LIMITED PUBLIC ACCESS 13

2.0 MILITARY MISSION *16*

2.1 NATURAL RESOURCES NEEDED TO SUPPORT THE MILITARY MISSION 17
2.2 EFFECTS OF THE MILITARY MISSION ON NATURAL RESOURCES 17
2.3 POSITIVE EFFECTS OF THE MILITARY MISSION ON NATURAL RESOURCES 18
2.4 MISSION CHANGES AND FUTURE MISSION IMPACTS ON NATURAL RESOURCES 18
2.5 IMPACTS OF NATURAL RESOURCES ON THE MISSION 20
2.5.1 NATURAL RESOURCE CONSULTATION REQUIREMENTS 20
2.5.2 IMPACT REGULATION (*EINGRIFFSREGELUNG*) UNDER NATURE PROTECTION LAW 21

3.0 CURRENT CONDITIONS AND USE *25*

3.1. SETTING 25
3.1.1 LOCATION AND LAND OWNERSHIP 25
3.1.2 ACREAGE AND ACQUISITION 25
3.1.3 LAND USES 28

3.1.4 LAND MANAGEMENT UNITS 28
3.1.5 DESIGNATED NATURE CONSERVATION AREAS 30
3.2 FACILITIES AND TRANSPORTATION SYSTEM 33
3.3 REGIONAL LAND USE 34
3.4 SHORT HISTORY AND PRE-MILITARY LAND USE 43

4.0 NATURAL RESOURCES AND CLIMATE 45

4.1 GEOGRAPHICAL SETTING 45
4.2 CLIMATE 45
4.3 TOPOGRAPHY 47
4.4 GEOLOGY 47
4.5 SOILS 49
4.6 WATER RESOURCES 50
4.6.1 SURFACE WATER 50
4.6.2 GROUNDWATER 51
4.6.3 WATER PROTECTION AREAS 53
4.7 ECOLOGICAL COMMUNITIES AND BIOTOPES 56
4.7.1. POTENTIAL NATURAL VEGETATION (PNV) 56
4.7.2. EXISTING VEGETATION 56
4.8 THREATENED AND ENDANGERED SPECIES (TES) 57
4.8.1 REGULATORY LEVELS FOR SPECIES AND HABITATS 57
EUROPEAN UNION NATURA 2000 DIRECTIVES 57
FEDERAL REPUBLIC OF GERMANY 58
STATE OF BADEN-WÜRTTEMBERG 59
4.8.2 THREATENED AND ENDANGERED SPECIES (TES) IN THE USAG STUTTGART 60
4.9 NATURA 2000 64
4.9.1 NATURA 2000 NETWORK FUNDAMENTALS 64
4.9.2 NATURA 2000 AREAS WITHIN THE USAG STUTTGART 65
4.9.3 NATURA 2000 MANAGEMENT PLAN - GLEMSWALD AND STUTTGARTER BUCHT 66
4.10 WETLANDS AND DEEP WATER HABITATS 68
4.11 FLORA 69
4.12 FAUNA 70

5.0 NATURAL RESOURCES PROGRAM STRUCTURE 73

5.1 INSTALLATION ORGANIZATIONS 73

5.2 OTHER DEFENSE ORGANIZATIONS 73
5.3 GERMAN AGENCIES 73
5.4 CONTRACTORS 74

6.0 NATURAL RESOURCES MANAGEMENT PROGRAMS 75

6.1 INTRODUCTION TO MANAGEMENT PROGRAMS 75
6.1.1 FUNDING FOR CANTONMENT AREAS 75
6.1.2 FUNDING FOR TRAINING AREAS 76
6.2 TES MANAGEMENT & NATURA 2000 MANAGEMENT 78
6.2.1 RESPONSIBILITIES AND POINTS OF CONTACT 78
6.2.2 PROGRAM OVERVIEW AND STATUS 78
6.2.3 INVENTORYING AND SURVEYING 79
6.2.4 STANDARD OPERATING PROCEDURES 80
6.2.5 MANAGEMENT ISSUES AND CONCERNS 81
6.2.6 MANAGEMENT GOALS, OBJECTIVES, AND RESOURCES REQUIRED FOR IMPLEMENTATION 83
6.2.7 PROJECT/PROGRAMS PRIORITIES AND FUNDING OPTIONS 85
6.2.8 COST SAVING OPPORTUNITIES 85
6.2.9 IMPLEMENTATION SCHEDULE 85
6.2.10 COMMAND SUPPORT 86
6.3 WETLANDS AND DEEP WATER HABITATS MANAGEMENT 86
6.4 FISH AND WILDLIFE MANAGEMENT 86
6.5 FORESTRY MANAGEMENT 86
6.5.1 RESPONSIBILITIES AND POINTS OF CONTACT 86
6.5.2 REGULATORY REQUIREMENTS AND ENFORCEMENT 87
6.5.3 ORGANIZATION OF THE BUNDESFORST 88
6.5.4 PROGRAM OVERVIEW AND STATUS 88
6.5.5 INVENTORYING AND SURVEYING 89
6.5.6 STANDARD OPERATING PROCEDURES 89
6.5.7 MANAGEMENT ISSUES AND CONCERNS 90
6.6. VEGETATION MANAGEMENT 90
6.6.1 RESPONSIBILITIES AND POINTS OF CONTACT 90
6.6.2 PROGRAM OVERVIEW AND STATUS 90
6.6.3 INVENTORYING AND SURVEYING 92
6.7 INVASIVE SPECIES MANAGEMENT 93

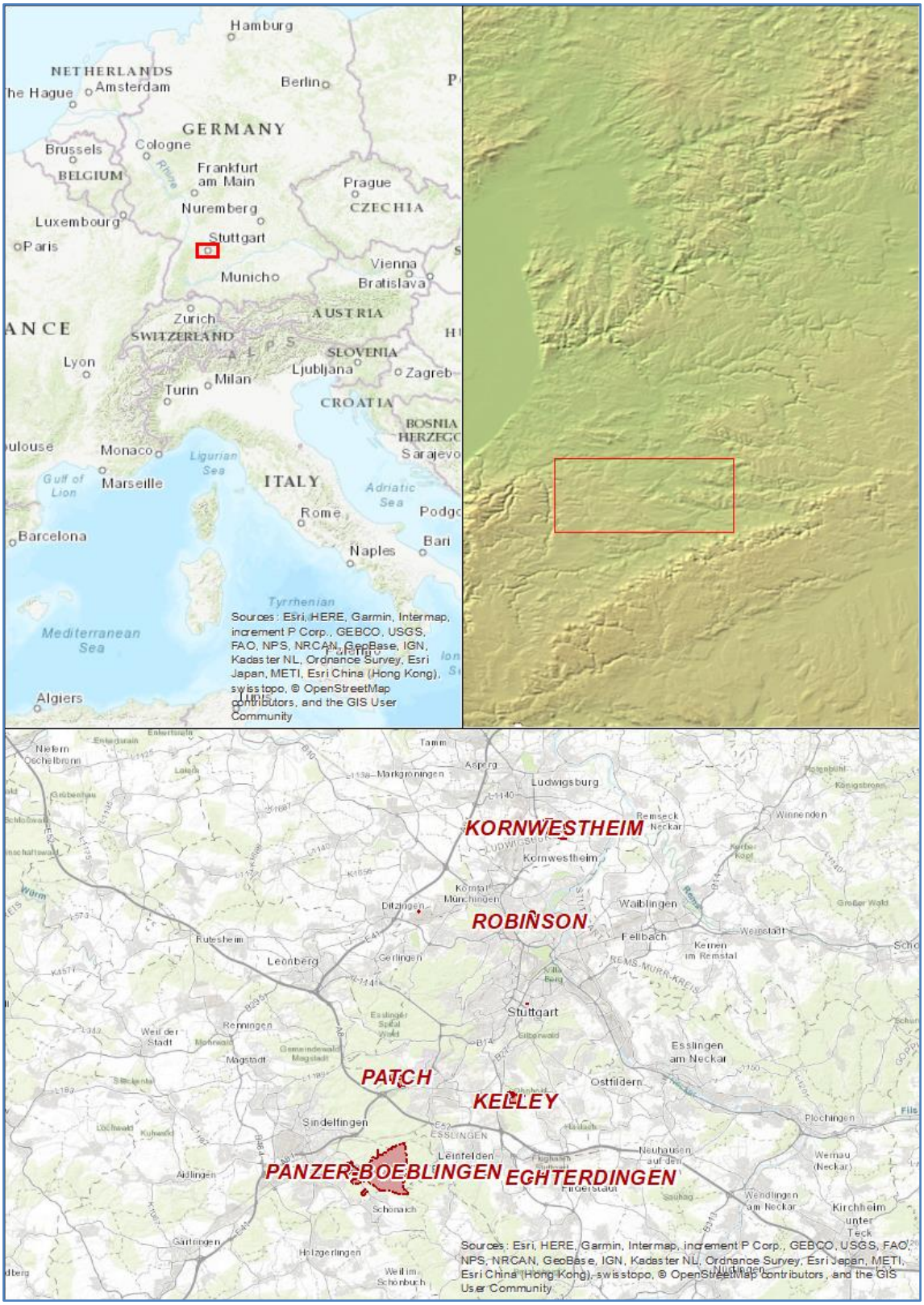
6.8 PEST MANAGEMENT 93
6.8.1 RESPONSIBILITIES AND POINTS OF CONTACT 93
6.8.2 PROGRAM OVERVIEW AND STATUS 93
6.8.3 INVENTORYING AND MONITORING 94
6.8.4 STANDARD OPERATING PROCEDURES 94
6.8.5 MANAGEMENT ISSUES AND CONCERNS 94
6.8.6 MANAGEMENT GOALS, OBJECTIVES AND RESOURCES REQUIRED FOR IMPLEMENTATION 94
6.9 TRAINING AREA LAND MANAGEMENT 95
6.9.1 RESPONSIBILITIES AND POINTS OF CONTACT 95
6.9.2 REGULATORY REQUIREMENTS AND ENFORCEMENT 96
6.10 GEOGRAPHIC INFORMATION SYSTEM (GIS) MANAGEMENT 97
6.11 OUTDOOR RECREATION 98
6.11.1 RESPONSIBILITIES AND POINTS OF CONTACT 98
6.11.2 PROGRAM OVERVIEW AND STATUS 98
6.12 WILDLAND FIRE MANAGEMENT 99
6.13 TRAINING OF NATURAL RESOURCE PERSONNEL 99
6.14 WATER RESOURCES MANAGEMENT 99
6.14.1 RESPONSIBILITIES AND POINTS OF CONTACT 99

7. IMPLEMENTATION 103

7.1 PROCESS OF PREPARING PRESCRIPTIONS 103
7.2 NO NET MISSION LOSS 103
7.3 USE OF COOPERATIVE AGREEMENTS 103

LIST OF APPENDICES

Appendix 1 Acronyms
Appendix 2 References
Appendix 3.1 Development Constraints Maps
Appendix 3.2 Protected Areas Maps
Appendix 4 Laws and Regulations
Appendix 5 Relationship between German and U.S. Legislation
Appendix 6 Nature Protection Areas
Appendix 7 Model Grounds Maintenance
Appendix 8 Urban Tree Management


Hamburg
NETHERLANDS
Amsterdam
Berlin
GERMANY
Brussels
Cologne
BELGIUM
Frankfurt am Main
Prague
CZECHIA
Luxembourg
Nuremberg
Paris
Stuttgart
Munich
Vienna
Bratislava
AUSTRIA
Zurich
SWITZERLAND
SLOVENIA
Lyon
Ljubljana
Zagreb
Milan
Turin
CROATIA
BOSNIA
Sarajevo
Monaco
Ligurian Sea
Gulf of Lion
Marseille
ITALY
Adriatic Sea
Rome
Barcelona
Naples
Bari
Tyrrhenian
Mediterranean Sea
Algiers
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS User Community
KORNWESTHEIM
ROBINSON
PATCH
KELLEY
PANZER-BOEBLINGEN
EGHTERDINGEN
Ludwigsburg
Remseck
Kornwestheim
Waiblingen
Fellbach
Leonberg
Stuttgart
Esslingen am Neckar
Ostfildern
Sindelfingen
Leinfelden
Neuhausen auf den
Wendlingen am Neckar
Kirchheim unter Teck
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS User Community

U.S. ARMY GARRISON STUTTGART

INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN

RECORD OF REVISIONS

Revision No.	Date	Name and Title	Signature	Pages Affected
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				

1.0 INTRODUCTION

This Integrated Natural Resources Management Plan (INRMP) has been prepared for the U.S. Army Garrison Stuttgart in accordance with the Environmental Final Governing Standards (FGS) for Germany, Chapter 13 – Natural Resources and Endangered Species.

1.1 PURPOSE

The primary purpose of an INRMP is to ensure that natural resources conservation measures and military operations on the installation are integrated and consistent with legal requirements. This document is a long-term planning tool intended to guide the installation commander in the management of natural resources, while protecting and enhancing installation resources for multiple use, sustainable yield, and biological integrity. The Final Governing Standards for Germany (G-FGS) provide specific standards for environmental protection for the Department of Defense (DOD) and for organizational components for the USAG Stuttgart. The FGS implement DOD Instruction 4715.5, Overseas Environmental Baseline Guidance Document (OEBDG).

The Garrison commander is required to provide plans and programs to ensure proper protection, enhancement, and management of applicable natural resources and any biological species declared protected, threatened or endangered by either the United States or the Host Nation. This plan adheres to the FGS Chapter 13 regulations for Germany, detailing the requirements for natural resource management that support the installation mission, as well as harmonize with the landscape. Implementing the INRMP ensures sustainable use of lands for military training and other mission activities.

As defined in the Defense Environmental Programs Annual Report to Congress (DEP ARC) each installation requiring an INRMP is evaluated on a “red-yellow-green” basis at the end of the fiscal year using the seven focus areas listed below;

- INRMP Impact on Installation Mission
- INRMP Implementation
- Partnership/Cooperation and Effectiveness
- Team Adequacy
- Status of Federally-Listed Species and Critical Habitat
- Ecosystem Integrity
- Fish and Wildlife Management and Public Use

1.2 OVERALL GOALS AND OBJECTIVES

Overall goals and objectives of this plan include:

GOAL 1: Enhance the training mission of USAG Stuttgart by maximizing the availability and accessibility of training lands through implementation of a land management program that enables and sustains the outdoor training classroom.

I. OBJECTIVE – Ensure that no additional open land is lost, for example by reforestation, invasive species, etc., resulting in a net loss of training land (IAW AR 200-1, Section 4.3.d.(1)(g))

II. OBJECTIVE – Repair all major erosion problems caused by maneuver activities within 1 year of damage occurring to avoid net loss of training space.

III. OBJECTIVE – Provide increased operational theater realism through vegetation management activities, removing encroaching vegetation and forest where mission essential training requirements are identified.

IV. OBJECTIVE – Survey invasive species and ensure that there is no significant increase in numbers of invasive species.

GOAL 2: Sustain the natural resources of USAG Stuttgart by meeting all compliance requirements.

I. OBJECTIVE – Implement the INRMP (IAW The Final Governing Standards (FGS) – Germany C13.3.4.2. and IAW AR 200-1, Section 4.3.d.(1)(b)) by;

- actively requesting, receiving, and using funds for priority projects and activities,
- ensuring that sufficient numbers of professionally trained natural resources management personnel are available to perform the tasks required by the INRMP,
- coordinating at least annually with all cooperating offices and,
- documenting specific INRMP actions undertaken each year.

II. OBJECTIVE – Support MILCON projects with baseline surveys.

- continue annual T&E species and habitat resurveys (PLS) for key species to establish baselines for MILCON planning and mitigation measures IAW the DD 1391, and to satisfy ERG requirements and establish alternative site options.
- Establish eco-account IAW state forest and nature protection laws to bring additional flexibility to the MILCON site selection process.

III. OBJECTIVE – As a minimum, maintain the current status of the T&E species.

- maintenance and reclamation of open-land habitats, wetlands and reduction of forest and other vegetative encroachment.

- installation, repair and replacement of bat boxes.
- continue habitat tree surveys identifying valuable nesting sites for endangered birds and bats.
- continued inventory and maintenance of rare fruit tree species.

IV. OBJECTIVE – Initiate an invasive species survey and implement eradication, measures, ensuring a 15% reduction each year.

GOAL 3: Maintain the quality of life of soldiers and their dependents. For example, by improving outdoor recreational activities and by maintaining a safe and attractive living and working environment.

Department-Specific Goals

Master Planning Goals:

- Provide sustainable facilities (sustainability in regard to the conservation of natural resources).
- Integrate U.S. military communities and facilities into the surrounding landscape.
- Implement site zoning (residential, industrial/commercial, military).

Training Support (TSC) Goals:

- Sustain ranges and training land by implementing the Sustainable Range Program (SRP) to integrate live training programs to maximize range and training lands' capability, availably and accessibility in an economic and environmentally sound manner.
- Improve roads, drainage, erosion control and vegetation control.
- Reduce unauthorized and unwanted access to the LTA (walkers etc.).
- Build partnerships with Environmental Division to generate a combined effort to meet goals.

O&M Goals (Water Resources Management):

- Earlier integration of water supply and wastewater issues into the construction planning process.
- Monthly surveying of water consumption and equip all buildings with individual water meters, allowing initiation of targeted measures to reduce water consumption.
- Reduce water consumption by installing flow reducers in all buildings.
- Integrate into the Energy Conservation Program

1.3 Management Philosophy

This INRMP was developed under five main concepts:

- sustainable use of military lands;
- biodiversity protection;
- natural resource compliance and management;
- ecosystem management; and
- economic efficiency.

In order to execute its operational mission and maintain readiness standards, the U.S. Army must have lands that enable realistic training and are capable of supporting mission functions and flexible training scenarios indefinitely into the future. Consequently, suitable training land is one of the U.S. Army's most valuable assets. Sustainable use of these resources can be achieved through effective land management programs that enhance the training mission, maintain the training carrying capacity, and, as a tactical windfall, sustain the natural resources that contribute to the successful execution of that mission. As outlined in Army Environmental Policy signed by the Chief of Staff and Secretary of the Army, "sustainability means developing operational procedures that support our mission in the present without compromising our ability to accomplish our mission in the future". Natural resource sustainability involves management with the goal of maintaining or increasing the resource's value indefinitely into the future. The sustainability goal of the U.S. Army is to manage all aspects of natural resources in a way that enables training objectives while limiting multiple use of the training area. Multiple uses include, but are not limited to mission activities, outdoor recreation, aesthetic value, forest management, and preservation.

Biodiversity is defined by U.S. Army Regulation 200-1 as "*the variety of life and its processes, including living organisms, the differences among them, and the communities and ecosystems in which they occur*". Protecting and enhancing biodiversity is one main objective of the U.S. Army's natural resource management program because a more bio diverse habitat is a more stable habitat. Biodiversity consists of many elements of the natural environment, including indigenous ecological communities, native species and their associations, and ecosystem functions such as predation, grazing, nutrient cycling, and wild fire. Biodiversity is best measured by the variety of natural communities and the variety of natural functions that occur within and among these communities, rather than the numbers of species present. Management for maximum biodiversity helps to ensure ecosystem health, which in turn ensures sustainable use to accomplish military missions.

Ecosystem management is the tool that the U.S. Army uses to protect and enhance biodiversity and to achieve sustainable use for military activities. This approach favors management that considers natural resources at a community or ecosystem level and de-emphasizes management at the single species level. The quality, integrity and connectivity of the ecosystem are the main objectives in this approach, and it is assumed that within this broader scheme, individual species will prosper. This approach does not mean that individual rare species are neglected. Rare species are important components of ecosystem biodiversity and are provided legal protection in many instances, and therefore must be considered, particularly during project planning.

1.4 ORGANIZATION OF THE PLAN

The natural resource management programs for the installation have identified goals designed to address management issues and concerns. The Project/Program Priorities section of each program are defined as Highest Priority, Important, or Less Important.

1.5 PLAN INTEGRATION

Management of real property facilities, training ranges, and the natural environment at Army installations is influenced by many internal and external factors. Guiding this management is a collection of plans written to aid decision makers, all of whom are struggling to meet mission requirements with increasingly limited natural and financial resources. The content of these planning documents as well as the planning procedures to create the documents are specified in Army Regulations (AR), Army Pamphlets (PAM), and other guidance documents. The Army Regulations are crafted to establish Army policy, ensure compliance with Federal laws, respond to DoD Directives, and outline standardized procedures for installation-level planning.

Environmental and Natural Resource-specific planning documents developed within the USAG Stuttgart include:

- Spill Prevention and Response Plan (SPRP)
- Potable Water System Master Plan (PWSMP)
- Storm water Pollution Prevention Plan (SWP2)
- Water Emergency Contingency Plan
- Asbestos Management Plan
- Hazardous Waste Management Plan (HWMP)
- Integrated Cultural Resource Management Plan (ICRMP)
- Threatened and Endangered Species (TES) Habitat Survey at the Local Training area Boeblingen
- Integrated Pest Management Plan (IPMP)
- Range Management Plans

This INRMP is intended to integrate the various planning documents by providing cross references where applicable. This INRMP in combination with its supporting planning documents provide an integrated USAG Stuttgart Command response to its natural resource management and sustainability obligations and responsibilities.

1.6 REVISION

The INRMP will be reviewed annually by a team of stakeholders and revised as necessary by USAG Stuttgart ED and ITAM personnel to attain U.S. Army sustainability goals. A major revision is recommended to be accomplished at least every five years. The initial plan will be signed by the U.S. ARMY GARRISON Commander. As soon as the initial plan and major revisions are made, it will be sent through official channels to IMCOM-EUROPE for approval. The Environmental Quality Control Committee (EQCC) is responsible for the maintenance of the plan.

- **Annual Reviews**

Annual reviews facilitate 'adaptive management' by providing an opportunity to review the goals and objectives of the plan, as well as establish a realistic schedule for undertaking proposed actions. As a minimum requirement, it is recommended to annually evaluate whether:

- all critical projects ('highest priority' projects) and activities have been programmed into the budget and that implementation is on schedule.
- projects and activities included in the INRMP for the upcoming year have been identified and programmed for. An updated project list does not necessitate revising the INRMP if the goals and objectives remain unchanged.
- all required natural resource positions are filled or are in the process of being filled;
- all required coordination has occurred or is in process;
- all significant changes to the installation's mission requirements or its natural resources have been identified;
- the INRMP goals and objectives are still valid; and
- no net loss of training capability has occurred due to implementation of the INRMP in accordance with AR 200-1, Section 4.3.d.(1)(g).

The INRMP Update Report Form, which is included at the beginning of this document, will be used to document any projects or actions (management goals) which needed to be altered, removed or newly-created.

- **5-Year Review for Operation and Effectiveness**

Major revisions for operation and effectiveness are recommended to be performed at a minimum frequency of every five years. (IAW Sikes Act and AR 200-1))

Furthermore, certain developments may also necessitate an INRMP revision. These developments include, but are not limited to the following:

- A change in mission requirements or intensity of land use.
- A significant change in natural resource baseline condition; for example, a substantial change in population for a listed species or a new invasive species.
- The current INRMP has proven inadequate, was unable to be implemented, or monitoring has shown projects to be ineffective in meeting natural resource management goals.

- Natural resource management goals have changed or the planning horizon of the previous INRMP has expired.

1.7 INSTALLATION POLICIES

The principal installation policies established to attain natural resources management goals at the USAG Stuttgart include:

- Maintaining sustainable use of army lands through the conservation of existing resources;
- Enhancement of the quality of life for residents by incorporating the conservation of natural resources into the planning process;
- Integrating surrounding land uses into the military mission through proper administration of programs that provide planning and surveying of the natural resources and strategic re-design of problem areas;
- Reduction of operational costs by using sound natural resource management practices in the on-going maintenance of the facility;
- Fulfillment of sustainability responsibilities through surveying, protection and enhancement of the existing natural resources;
- U.S. Army and allied army personnel participating in training are required to read and understand the environmental awareness educational aids supplied by the installation;
- Movement into off-limits areas is strictly prohibited. Observe restrictions on movement of vehicles in those areas designated on off-limit overlays and marked with Seibert Stakes;
- Wheeled and tracked vehicles will not be operated in “Seibert Stake” areas unless specifically authorized by the appropriate authorities;
- Prevent tracked vehicles from making locked tread turns or neutral steer maneuvering unless it is absolutely necessary;
- All personnel must be safety conscious at all times and understand and comply with appropriate safety regulations when dealing with natural resource issues;
- Care will be taken to prevent the destruction of ant hills in forests, as these ants are protected species and managed by the *Federal Forestry Service* for controlling tree damaging insects;
- Vehicles can drive anywhere except in areas marked with Seibert Stakes,
- Plan and execute bridging operations only at suitable sites;
- Conduct movement into assembly or bivouac areas in vehicle columns to reduce damage to road shoulders and culverts;
- Do not build ground fires, cut or damage trees unless authorized by the Federal Forestry Representative. (i.e. nailing signs to trees);

- Do not create new roads or parking areas in training lands unless authorized by Range Control TSC Chief, 431-2474. Building 2948 RM213,
- Do not dig trenches, ditches, survivability, or individual fighting positions unless authorized by Range Control;
- Do not fire weapons at or otherwise harass wildlife;
- Clean up and/or report spills of fuel/oil;
- Do not leave trash in the field or bury trash in the ground;
- In cantonment areas, owners are responsible for cleaning up after their pets;
- Do not litter;
- Vehicle idling is prohibited;
- Any permanent planting in the cantonment areas shall be coordinated with the Department of Public Works, O&M Division;
- Excessive leaf collection and mowing is a waste of money and detrimental to the environment. Seek to reduce such activities by setting aside natural meadow areas in rarely used (semi-improved) areas;
- The use of pesticides is prohibited unless applied by a certified pest controller;
- Use of salt for snow and ice removal is limited. Only salt/gravel mixtures shall be applied; and
- Trash shall be ‘SORTed’ and the respective containers shall be used.

1.8 POINTS OF CONTACT

Natural resources management point of contact (POC) information for the installation and German agencies are presented in Tables 1.8.1 and 1.8.2, respectively.

Table 1.8.1 U.S. Army Garrison Stuttgart - INRMP Points of Contact

Program	Location	Responsible Department	Primary Point of Contact			
			Title	Name	Building	Tel. Number
ITAM Program Management	Grafenwöhr	USAREUR, HQ 7th JMTC	USAREUR ITAM Program Manager	Aaron Eckert	Camp Normandy Bldg. 3007	DSN: 475-6902
Regional Training Support Division West	Wiesbaden	SRP	RTLP/ITAM Specialist	Mr. Damian Owens	McCully, Bldg. 6258	DSN: 546-6181
TSC Stuttgart	Stuttgart	TSC	TSC Chief	Mr. Charles Fray	Panzer, Bldg. 2948	DSN: 431-3792
ITAM Program Stuttgart	Stuttgart	TSC	LTA Coordinator	Mr. Ruben Montez	Panzer Range Bldg. 3012	
IMCOM-E Natural Resources Management	Sembach	IMCOM-E	Env. Prot. Specialist	Ms. Nicole Sikula		DSN: 544-4509
Wildlife Management	Stuttgart	DPW-ED	Env. Prot. Specialist	Ms. Inga Gebhard	3318	DSN: 421-6132
Outdoor Recreation	Stuttgart	MWR – Recreatio Division	Outdoor Recreation Manage	Mr. Mendoza	2953	DSN: 431-2774
Rare, Threatened and Endangere Species Management	Stuttgart	DPW-ED	Env. Protection Specialist	Ms. Inga Gebhard	3318	DSN: 421-6132
Wetlands Management	Stuttgart	DPW-ED	Env. Prot. Specialist	Ms. Inga Gebhard	3318	DSN: 421-6132
Water Resources Management	Stuttgart	DPW-ED	Chief ED	Mr. Patrick Griffin	3318	DSN: 421-6131
- Water Resources Quality	Landstuhl	CHPPM	Env. Protection Specialist	Lt. Beman	-	CIV: 06371-867048
- Water/Wastewater Treatm.	Stuttgart	O&M	Chief O&M	Mr. Godin	3319	DSN: 421-6291
Forest Management	Sembach	IMCOM-E	Envir. Prot. Specialist	Mr. Christoph Graner		DSN: *544-4507*

Program	Location	Responsible Department	Primary Point of Contact			
			Title	Name	Building	Tel. Number
Pest Management	Stuttgart	DPW, O&M	PM-Coordinator	Ms. Wahl	2318	DSN: 421-6261
Fire Management	Stuttgart	Fire and Emerger	Fire Chief	Mr. Doersam	3318	DSN: 430 2064-4509
Cultural Resources	Stuttgart	DPW-ED	Env. Protection Specialist	Ms. Gebhard	3318	DSN: 421-6132
Grounds Maintenance and Vegetation Management	Stuttgart	DPW, O&M	Grounds Maintenance Coordinator	Ms. Wahl	2318	DSN: 421-6261

Table 1.8.2 German Agencies - INRMP Points of Contact

Program	Responsible Agency	Address	Primary Point of Contact		
			Title	**Name**	**Telephone Number**
Forest Management	Bundesforstamt	Zeurengasse 79 72469 Meßstetten	Director Forestry Office (Leiter Forstamt)	Dr. Goetze	CIV: 07431/9493312
	Bundesforst Revierleiter	Friedrich List Straße 24 71032 Boeblingen	District Forester (*Revierleiter*)	Mr. Ganz	CIV: 07031/287239
Host Nation (Landowner)	Bundesanstalt für Immobilienaufgaben Hauptstelle Koblenz – Sparte Verwaltungsaufgaben	Morlauterer Str. 21 67657 Kaiserslautern	Administrator (*Sachbearbeiter*)	Mr. Kulke	CIV: 0631/3722-238
Nature Protection	Regierungspräsidium Stuttgart Ref. 56 Naturschutz	Ruppmannstr. 21 70565 Stuttgart	Administrator (*Sachbearbeiter*)	Ms. Mödinger	CIV: 0711/90415607
	Regierungspräsidium Stuttgart Ref. 55 Naturschutz und Recht	Ruppmannstr. 21 70565 Stuttgart	Administrator (*Sachbearbeiter*)	Ms. Säle	CIV: 0711/90415501
	UNB Landeshaupstadt Stuttgart Amt für Umweltschutz	Gaisburgstraße 4 70182 Stuttgart	Section Chief (Abteilungsleiterin)	Ms. Kuebler	CIV: 0711/21688702
	UNB Boeblingen Landratsamt Boeblingen	Parkstraße 16 71034 Böblingen	Chief Administrator (*Sachgebietsleiterin*)	Ms. Misch	CIV: 07031/6631256
	UNB Stadt Kornwestheim Stabsstelle Umwelt- und Klimaschutz	Jakob-Sigle-Platz 1 D-70806 Kornwestheim	Administrator (Sachbearbeiter)	Ms. Hartkorn	CIV: 07154/2028370
FFH Management	Regierungspräsidium Stuttgart Referat 56 - Naturschutz und Landschaftspflege	Ruppmannstr. 21 70565 Stuttgart	Administrator (Sachbearbeiter)	Mr. Waldmann	CIV: 0711/90415622
Water Management	Landeshauptstadt Stuttgart Amt für Umweltschutz	Gaisburgstr. 4 70182 Stuttgart	Administrator (Sachbearbeiter)	Mr. Seethaler	CIV: 0711/21688434

1.9 ENVIRONMENTAL ASSESSMENT SYSTEM (EPAS)

Formerly known as Environmental Compliance Assessment System (ECAS), the Environmental Performance Assessment System (EPAS) Program was first developed and implemented by HQDA in 1991-92 in response to the recommendation made by the USEPA in 1986. Active Army installations are assessed for compliance performance approximately every three years as recommended by the Department of Defense (DoD).

The EPAS Program includes both external and internal assessments. External assessments are conducted by a team of environmental experts assembled by the U.S. Army to evaluate a facility's level of compliance with applicable environmental regulations. Since experts who are not from the installation perform the audits, the resulting report provides a good indication of a facility's compliance posture.

Internal assessment is required by Army directives and is one of the most effective tools for understanding regulatory requirements and achieving compliance. The internal assessment is considered to be a systematic, documented, objective, and comprehensive environmental compliance review of installation processes, facilities, and the practices. Installation personnel or their designees conduct the assessments and is to be completed within a 12-month period.

1.10 ENVIRONMENTAL REVIEW GUIDE (ERG)

The purpose of the Environmental Review Guide (ERG) is to provide environmental guidance to USAREUR environmental coordinators and project planners during the earliest stages of project/activity planning. The ERG is a tool to help USAREUR installations comply with AER 200-1, AR 200-1, DoD Directive 6050.7, EO 12114, and the FGS for projects or activities that occur within the jurisdiction of a foreign nation and that would be examined in an environmental document prepared unilaterally by the United States.

The ERG assists planners in forecasting and mitigating potentially adverse environmental effects. It is designed as an 'early warning system', identifying sensitive environmental issues in the earliest stages of all proposed projects/activities. This allows for mitigation of potential impacts prior to the initiation of projects and various activities. Without an environmental review, or in the case of an inadequate review, a project or activity may not be approved, the approval may be delayed, or a project/activity may be suspended.

ERG software is used by the Army in Europe as a tool to conduct Environmental Reviews. The current version is available from IMCOM-E.

Environmental Reviews should be conducted in early stages of project planning and programming:

- prior to submitting DD 1391s and preparing DA 4283s,
- before 35% of design is started,
- before initial planning and cost estimates are complete,

- before site location is selected, and
- before construction starts.

Responsibilities related to environmental reviews:

- Commanders are responsible for integrating environmental impact analyses into project planning.
- Project proponents and planners are responsible for programming, planning and implementation.
- Project proponents, planners and environmental division must complete review together.

According to DoD Directive 6050.7 and EO 12114, Environmental Reviews (ERs) have to be conducted "*for all projects and actions that have the potential to adversely impact the environment*". For all major projects with the DD Form 1391 certification process according to AR 415-15, conducting a complete ER using the ERG software is mandatory. For all minor projects using OMA funds and not exceeding the $750,000 limit (Work Request, DA-Form 4283-E-R), ERs without using ERG software are allowed. As part of the Memo "*Request for Environmental Review*", 25 Aug 07, IMCOM-E released a Request for Environmental Review Form (RER Form), to provide a quicker evaluation method. The RER Form is included in the AER 200-1 of 8 May 2012.

1.11 BENEFICIAL PARTNERSHIPS AND COLLABORATIVE RESOURCE PLANNING

Every two years, local chapters of German nature protection societies (*Schwäbischer Albverein, Naturschutzbund (NABU), Deutscher Alpenverein (DAV)* and *IBM-Wandergruppe)* conduct a Landscape Preservation Day (*Landschaftspflegetag*) on the LTA. During this event, up to 90 volunteers from the nature societies fight against shrub encroachment on valuable heath areas which are approximately 65 HA large ("*Rotes Steigle*"). Volunteers generally focus on the removal of tree shoots on areas where sheep grazing is not possible.

1.12 LIMITED PUBLIC ACCESS

As previously mentioned, local chapters of German nature societies carry out a landscape preservation day once a year on the LTA and are therefore granted access to the training area.

An agreement that expires on 31 December 2019 was renegotiated on 12. April 2019 between the local NABU chapter and the U.S. Army Europe G8, International Agreements Divsion ("*An Evening Walk on the LTA Boeblingen"*), granting access to the NGO's one day per year, where people are invited for an evening walk on the LTA. The exact date must be coordinated with the U.S. Army at least 60 days in advance. Certain conditions apply for this agreement. For details of the agreement contact the ED.

Additionally, there is an agreement in place to allow public access through the LTA for pedestrians and bicycles via the Musberger Strasse, but this is only intended to be a thoroughfare, and not an entry point to the entire LTA. With this in mind, unauthorized public access has become a serious problem on the LTA. It has been continuously observed that people leave the official access trail (*Musberger Sträßle*), or enter from other points on the boundary, and unlawfully enter the training area. This is detrimental to both the training mission, causing health and safety issues, as well as detrimental to some of the critical habitats in the LTA. Specifically regular dog walking poses a threat by way of harassment of local fauna, as well as adding harmful excrement to nutrient sensitive biotopes such as wetlands and dry meadows. Dogs have also been observed chasing animals that are used to graze the open areas for vegetation control and therefore cause undo stress and difficulty for the animals and shepherds.

It recommended therefor by both the USAG Garrison Environmental Division and the USAREUR Training Support Center that the signage on the boundary of the training are be changed from “Enter at Your Own Risk” to “**DO NOT ENTER**”.

This page intentionally left blank

2.0 MILITARY MISSION

USAG Stuttgart is part of IMCOM Europe, and has two prime missions; to provide command, control, communications and Base Operations to assigned and attached units, and to provide realistic combined arms training for the United States Army, Europe, the Seventh Army's task forces as well as the 10th Special Forces Group, 554th Military Police Company and the Navy Seals, which all use the Local Training Area Boeblingen.

The largest customers of the USAG Stuttgart are the headquarters of the United States European Command (EUCOM) and United States Africa Command (AFRICOM).

An additional mission of the U.S. Army Garrison Stuttgart is to provide facility support services and quality-of-life programs and activities to 12,500 service members, civilians, retirees and their families in its area of operation. This area encompasses the installations contained within the cities of Stuttgart, Boeblingen, Vaihingen and Möhringen. All Armed Forces, including the Army, Air Force, Navy, Marines, and Coast Guard, are supported by the USAG Stuttgart. The USAG Stuttgart is under the responsibility of U.S. Army Europe (USAREUR) and the 7th Army. For more information, go to the USAG Stuttgart homepage (www.stuttgart.army.mil).

Specific mission objectives of the USAG Stuttgart include the following:

- Allow units to accomplish training objectives in realistic environments in accordance with U.S. Army and NATO doctrine, under the published Rules of Engagement
- Provide facilities for house-to-house combat
- Provide Preliminary Marksmanship Instruction (PMI)
- Enhance Host Nation attitudes and cooperation
- Limit negative impact on the installation and Federal Republic of Germany community environments
- Provide desired quality of life standards for all permanently and temporarily assigned soldiers/personnel and family members.

The USAG Stuttgart is composed of administrative and service organizations to provide support for all military organizations, service members, families, and DoD civilians.

2.1 NATURAL RESOURCES NEEDED TO SUPPORT THE MILITARY MISSION

The primary natural resource needed for the military training mission is a large area of uninhabited land of mixed forest and open land, that provides realistic training conditions. The vegetation, topography and water resources must be varied enough to create a challenging test environment for the equipment, vehicles and soldiers to mimic real battle situations. It is important that training space is maximized while meeting natural resource diversity and requirements as to not jeopardize the army mission. The landscape needs to represent conditions that soldiers are likely to encounter in a real battle situation in order to facilitate realistic and effective training.

When properly executed, vegetation management is the ultimate training enabler. In contrary, poor vegetation management has the potential to be a detriment to training.

At the USAG Stuttgart, and particularly the Boeblingen LTA, the main challenge of natural resource management has been to cope with encroachment of woody vegetation, which increased following a reduction of training with tracked and wheeled vehicles. This has led to a steady decline in the open areas needed to support the diverse training missions, which has been taking place over a number of years. As a result, the impact on the valuable natural resources on the remaining open areas has increased.

Efforts by the Stuttgart ED are specifically directed to assure the continued non-constrained military use; primarily bivouacking, navigation and orientation exercises. Simultaneously, measures are also aimed at averting negative impacts on habitats and endangered species.

2.2 EFFECTS OF THE MILITARY MISSION ON NATURAL RESOURCES

As the forces stationed within the USAG Stuttgart area use minimal heavy equipment such as tanks or heavy trucks, there are only minor impacts (erosion) on the existing natural resources caused by vehicle movement. However, construction and other projects can directly impact natural resources by sealing soils and completely altering the natural landscape. These impacts must be offset by legally required compensation measures as required by the State of Baden-Wuerttemberg Nature Protection law.

Another possible impact on natural resources is the fragmentation of wildlife habitats caused by fences. The fencing along the public access trail (*Musberger Sträßle*) to minimize unwanted access by pedestrians, is one example. To help mitigate this impact, game passages where installed to allow for population exchange.

On several sites within the Garrison, activities such as hazardous substance storage, vehicle washing, motor pool operations, fertilizer and pesticide application, and sewage disposal have the potential to contaminate groundwater if these activities are not properly managed. Poorly regulated use of imported pesticides by military families can increase the amount of active ingredients released into the ecosystem. Construction of new buildings has the potential to cause the permanent disappearance of important habitats.

2.3 POSITIVE EFFECTS OF THE MILITARY MISSION ON NATURAL RESOURCES

At the LTA, the military mission has a variety of positive effects on natural resources. The installation has continuously served as a military training area since before WWII. The U.S. Army started using the area as early as 1945. Consequently, land use and management practices vary significantly from the surrounding area. Areas outside the LTA consist primarily of built-up areas, agriculture lands where modern farming practices are used, and intensively managed forest areas. During more than sixty years of military use, the training area has not been subjected to fertilizer and pesticide use or other negative impacts of intensive farming. Compared to adjacent agricultural or forest land, biodiversity is much higher within the training area. **In fact, military training areas are generally among the most biologically diverse areas, and the diversity is a direct result of the military mission.** This is a universally recognized concept within the Host Nation, the U.S. and international scientific communities. Additionally, there have been several studies indicating the dependence of many endangered species and habitats on disturbance, including the type which occurs on military training areas. Many of these studies are quoted in Appendix 2.

2.4 MISSION CHANGES AND FUTURE MISSION IMPACTS ON NATURAL RESOURCES

Natural resources will continue to be impacted by construction projects in the future and will most likely contribute to habitat loss and degradation of natural resources. In the course of the Army's transformation in Europe and the evolution of the Army's mission, the enduring installations face new responsibilities. In 2007, for example, the headquarters of AFRICOM was established within Kelley Barracks, resulting in population growth. There is still the need for a greater capacity to serve this growing community. The following are a few examples of major construction projects planned to address this issue:

Site	Description	Est.	Funding
Robinson Barracks	Replace Elementary School	$ 41 M	FY18 Funded
Panzer Kaserne	Construct Commissary	$ 40 M	FY18 Funded
Panzer Kaserne	Expand/Repair Bldg. 2901 (MARFOR)	$ 42 M	FY19 Programmed
Airfield	Construct DLA Fueling Station	$ 2 M	FY20 Programmed
Robinson Barracks	Construct Connector Road to support new Elementary School	$ 4 M	FY22 Request
Kelley Barracks	Construct AFRICOM Headquarters	$ 152 M	FY 26 Request

Detailed information on future changes to mission related activities is included in the USAG Stuttgart Master Plan.

The current trend for the U.S. Army to train with lighter and quicker response troops rather than conducting large area tactical maneuvers has already resulted in a lack of (heavy vehicle) disturbance on many training grounds. Disturbance-dependent species decline where training intensity is reduced, and the formerly mosaic-like habitat structures are missing, resulting in less diverse biotopes. In the Boeblingen LTA, tanks

have not been used for several years and there is currently no plan to reintroduce heavy vehicle training in the area. To supplement the lack of disturbance, management actions like sheep grazing, mowing and the creation of small ponds are in progress and need to be increased to maintain habitats for disturbance dependent species.

2.5 IMPACTS OF NATURAL RESOURCES ON THE MISSION

Natural resources, primarily vegetation and endangered species, have the greatest potential to negatively affect the mission, primarily, by limiting areas that are suitable and available for training. Invasive species, especially plant species, can also overtake and close off open areas, [e.g.: Eagle Fern/Adlerfarn *(Pteridium aquilinum)]* and negatively impact habitats and species. Some plant species even constitute health hazards, [e.g. Giant Hogweed/Riesenbärenklau (Heracleum mantegazzianum*)]* and render them unusable for training.

One of the main objectives for the period FY14-18 was the execution of an "Invasive Species Survey" that covers the LTA as well as the cantonment areas. The survey was completed in 2016 by the Firm IVL, and delivered in English and German. Accompanying the survey are geospatial layers defining the extent of the two species named above, in addition to the identification of alder (Alnus glutinosa) as an encroaching species on the open areas that needs urgent attention for reasons of both habitat preservation and training mission impact.

2.5.1 Natural Resource Consultation Requirements

For the U.S. Army Garrisons in Europe, the natural resources consultation requirements are different from those applied to Garrisons located in the USA. In Germany, the land used by the U.S. Army is owned by the BImA, represented by the *Bundesforst*.

All construction work completed for the U.S. Forces in Germany must be carried out in accordance with the ABG-75 administrative agreement (German: *Auftrags- Bauten-Grundsätze*; English: "Principles of Construction Contracting") between the Federal Ministry of Transport, Building and Urban Affairs, and the armed forces stationed in Germany. The ABG-75 Agreement establishes general authority for execution of construction projects in Germany for or by the U.S. Forces. It sets general procedures for contracting, program and project coordination, acceptance of construction work, compensation fees, payment, and auditing.

The ABG distinguishes between indirect and direct procedures, depending on the type and scope of the project. Direct procedures involve the planning, execution and administration of construction work completed by the U.S. Forces using either their own personnel, employed construction workers, or through contracts made directly by the U.S. Forces. Total estimated project costs for direct procedures are typically <u>below</u> € 375,000. Indirect procedures involve the planning, execution and administration of construction work by the German authorities on behalf of the U.S. Forces. Such projects can be implemented either by the German authorities using their own personnel, or by contracted civilian construction, engineering or architectural firms. Total estimated project costs for indirect procedures are normally over € 375,000.

2.5.2 Impact Regulation (*Eingriffsregelung*) under Nature Protection Law

Definition

Impact regulation obligates the agency causing the impact to compensate for the immediate negative effects on the ecosystem. (IAW State law (§§20-21 BWNatSchG) as authorized by Federal law Section §§14-19 BNatSchG)

Mitigation

An impact is considered to be mitigated when there are no overall permanent negative effects on the ecosystem. This can be done by re-creating or improving the landscape within its overall structure or by substituting appropriate measures. These substitutes are landscaping measures that serve as an equivalent for ecosystem functions or qualities of the landscape appearance disturbed by the impact. If substitute measures are not practical, compensation may be in the form of payment according to §21 BWNatSchG, if the nature protection and compensation goals are still met.

Examples of substitute measures include: hedge planting, planting a grove of trees in a field, cutting trees to expand fields, planting a small orchard, stream re-naturalization, creating small water bodies for amphibians, etc. These measures may also be carried out in advance in anticipation of future impacts and stored in a so-called eco-account (Ökokonto §22 B-WNatSchG). If at a later date, negative impacts occur, necessary compensation measures can be balanced out from this eco-account.

While this eco-account process has been implemented at USAG Bavaria, it has not yet been implemented as a land management option for the USAG Stuttgart. The measures proposed by the Garrison were found not compliant by the German Federal Forest Service due to conflict with State forest law. For details on proposed management measures, please see the TES and NATURA 2000 Management issues in Section 6.

Evaluation

The evaluation and computation model for impact mitigation is different in each state. In Baden-Württemberg, it is described in the pamphlet “Bewertung der Biotoptypen Baden-Württembergs zur Bestimmung des Kompensationsbedarfs in der Eingriffsregelung” - “Evaluation of the biotope types of Baden-Württemberg for determining compensation requirements for the regulation of impact on the landscape”, published by the Landesanstalt für Umweltschutz Baden-Württemberg(available for download from: http://www.lubw.baden-wuerttemberg.de/servlet/is/12718/).

In the first step, the species inventory, the existing biotopes, and types of use are recorded for the area in question. Special attention is paid in this step to biotopes and ecosystems covered by §32 of the NatSchG of Baden-Württemberg (i.e. specially protected biotopes). In addition to the biotopes, all of the protected items relevant to planning must be included in the survey. Protected items include species and ecosystems, as well as water, soil, climate/air and the appearance of the landscape. Included in this are interactions between biotopes and, especially, their role in habitat connectivity.

It is especially important to determine whether the following protected items will be affected by the impact:

- Specially and strictly protected species according to §10, Paragraph 2, Numbers 10 & 11 BNatSchG.
- Areas or individual components of nature in accordance with Section IV, NatSchG (Baden-Württemberg) (biosphere reserves, nature protection areas, national parks, natural landmarks, landscape conservation areas, nature parks, and specially protected portions of landscape).
- In Baden-Württemberg: specially protected biotopes in accordance with §32 of the NatSchG. These include:
    1. Bogs; swamps; near-natural swamps, alder swamps, and floodplain forests; hay meadows; reed beds; marshes; wet meadows rich in sedges and rushes.
    2. Natural and near-natural sections of inland streams and ponds, including their banks and the respective natural and near-natural vegetation along the banks, and their natural or near-natural emergent plant zone vegetation; abandoned streambeds, and regularly flooded areas; natural springs; near-natural bank regions and near-natural shallow water zones of Lake Constance.
    3. Open inland sand dunes; dwarf shrub, broom, and juniper heathland; dry and nutrient-poor grassland; shrub land and near-natural forests of dry, warm locations, each with their respective herbaceous edge vegetation; Krummholz.
    4. Exposed rock outcroppings; open slopes with natural, bolder, broken stone, or rubble screes; clay and loess embankments.
    5. Caves, sinkholes.
    6. Hedges, small woods, sunken lanes, dry masonry walls, and stone walls, each in the open landscape.
- Natura 2000 areas of community importance (FFH areas) and European bird sanctuaries.
- For forested areas, the provisions of §9, LWaldG (Landeswaldgesetz Baden-Württemberg) also have to be observed. In accordance with these laws, clearing activities require a permit and may require replacement reforestation.

All construction in FFH areas or other protected biotopes shall be coordinated between the project proponents and planners, the Environmental Division and the Federal Forest Service. In practice, mitigation is especially required when construction occurs in the vicinity of the training areas, because the training areas offer the greatest habitat for protected species, and, therefore, have been identified in large part as FFH areas or European bird sanctuaries.

Table 2-1: Initiating projects in environmentally sensitive areas

Step	Recommendation
1	**Avoid protected areas and biotopes**, e.g.: • Specially and strictly protected species according to BNatSchG and BWNatSchG. • Protected areas in accordance with Sections IV, BW NatSchG (biosphere reserves, nature protection areas, national parks, natural landmarks, landscape conservation areas, nature parks and specially protected portions of landscape.) • Protected biotopes in accordance with §32 BWNatSchG (e.g. moors and swamps, reed banks, damp meadows, short grass meadows, heaths, matt grass communities, thermophile fringe communities, clay and loess walls, exposed boulder, talus, and scree deposits, exposed rock, etc.) • In FFH areas or European bird sanctuaries, in particular avoid protected habitat types and habitats of species that are protected in accordance with Attachments I and II of the FFH directive and Attachment I or Article 4, Paragraph 2 of the Bird Protection Directive • Water protection areas
2	**Coordinate the project well in advance with the Environmental Office.**
3	**Explore alternatives with less of an effect on protected areas and biotopes.**
4	Bear in mind that evaluation and approval processes take **additional time** and that **additional costs** can be accrued through compensation measures.
5	Determine if a **direct procedure or an indirect procedure** is to be used. The Indirect Procedure (Auftragsbauverfahren) is the preferred method for all environmentally sensitive projects to include ranges. In contradiction to Direct Procedure (Truppenbauverfahren) method it's the Bauamt's responsibility to: • Perform required coordination with all approval agencies in a timely manner. • Prepare adequate project documentation required to obtain construction permits. • Assure that project planning and execution will be performed in accordance with appropriate Host Nation regulations. The indirect procedure can also be selected in projects that are carried out in the direct procedure (minor new construction, alterations, and extensions with total estimated cost up to 375,000€).

This page intentionally left blank

3.0 Current Conditions and Use

3.1. SETTING

3.1.1 Location and Land Ownership

The USAG Stuttgart's area is divided into nine locations: eight cantonment areas (barracks, housing and a golf-club) and one training area. Some locations consist of several individual installations (see Table 3.1). Altogether, the USAG Stuttgart comprises 18 installations, all belonging to the same Command and Administration. These installations are in the Stuttgart area but belong to the regions of four cities/ counties. The installations belonging to Patch- (Patch Barracks, Steuben & Weicht Village Family Housing, Kefurt & Craig Family Housing) Kelley- (Kelley Barracks, Moehringen Family Housing) and Robinson Barracks (Robinson Barracks, Robinson-Grenadier Family Housing, and Stuttgart Dependent School) as well as Weilimdorf Warehouse and the Stuttgart Admin Facility (buildings at Olgastraße and Richard-Wagner-Straße) belong to the City of Stuttgart. The Kornwestheim Golf Course belongs to the County of Ludwigsburg, the Air Field Echterdingen belongs to the County of Esslingen and the Training Area (Boeblingen LTA, Boeblingen Range) and the Panzer Kaserne (Panzer Kaserne, Boeblingen Family Housing, Boeblingen Officers Club) installations belong to the County of Boeblingen.

Figure 3-1 shows an overview map of the USAG Stuttgart and its installations. In Appendix 10, 29 detailed topographical maps of the installations are presented.

The Federal Republic of Germany (FRG), as owner of all the installation lands of the USAG Stuttgart, allows the USAG Stuttgart to be used as a military installation by the U.S. Army to fulfill their defense responsibilities within the NATO. The Supplementary Agreement (SA) to the NATO SOFA delineates the scope of U.S. authority within the installation boundaries. In brief, this authority entitles the U.S. forces to take the measures necessary to satisfactorily meet their defense responsibilities. USAREUR has an obligation to act responsibly and effectively in the management and use of natural resources and lands under its administrative control.

3.1.2 Acreage and Acquisition

The present total acreage of the USAG Stuttgart is approximately 2,401 acres (971 hectares) based on data provided by Real Property. The cantonment areas include 983 acres (398 hectares). More than half of the total acreage is occupied by the Boeblingen Local Training Area (1,419 acres respectively 574 hectares).

Table 3-1: USAG Stuttgart Sites - acreage and location

CANTONMENT AREAS		Buildings			Land		Region
ARLO	Site Name	Count	Area (SF)	Area (m²)	Acres	Hectares	City / County
GE09D	BOEBLINGEN FAMILY HOUSING	28	531,225	49,352	22	9	Boeblingen
GE09F	BOEBLINGEN OFFICERS CLUB	3	25,332	2,353	2	1	Boeblingen
GE19B	ECHTERDINGEN AIRFIELD	28	185,46	17,229	54	22	Esslingen
GE43X	KEFURT AND CRAIG VILLAGE FAMILY HOUSING	42	1,048,808	97,437	38	15	Stuttgart
GE44F	KELLEY BARRACKS	76	802,515	74,556	72	29	Stuttgart
GE46J	KORNWESTHEIM GOLF COURSE	5	22,371	2,078	320	129	Ludwigsburg
GE55T	MOEHRINGEN FAMILY HOUSING	32	390,387	36,268	32	13	Stuttgart
GE643	PANZER KASERNE	67	1,316,118	122,271	90	36	Boeblingen
GE656	PATCH BARRACKS	92	1,525,867	141,757	110	45	Stuttgart
GE70V	ROBINSON-GRENADIER FAM HSG	75	1,506,023	139,914	135	55	Stuttgart
GE72T	ROBINSON BARRACKS	9	100,093	9,298	24	10	Stuttgart
GE80J	STEUBEN AND WEICHT VILLAGE FAM HSG	56	556,467	51,697	48	19	Stuttgart
GE82A	STUTTGART ADMIN FACILITY	6	37,871	3,518	2	1	Stuttgart
GE82B	STUTTGART DEPENDENT SCHOOL	5	168,097	15,616	11	4	Stuttgart
GE93B	WEILIMDORF WAREHOUSE	2	61,758	5,737	4	2	Stuttgart
GE09C	BOEBLINGEN TNG AREA	71	49,682	4,615	1,419	574	Boeblingen
GE09G	BOEBLINGEN RANGE	7	8,747	812	18	7	Boeblingen
	Totals	**78**	**58,429**	**5,427**	**2,401**	**971**	

Source: Master Planning Division

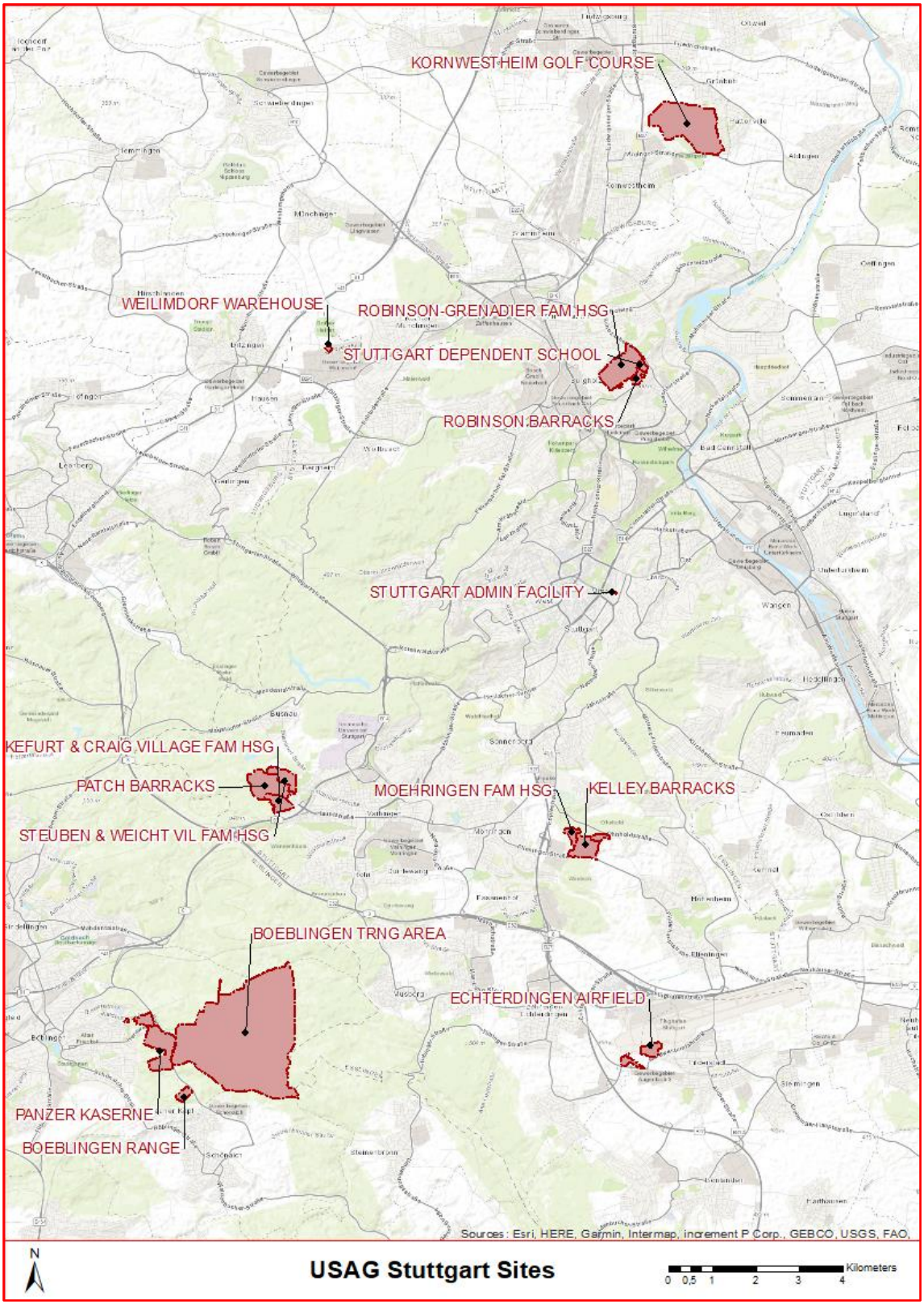


Figure 3.1: Overview Map of the USAG Stuttgart

3.1.3 Land Uses

Land Uses in Cantonment Areas

The cantonment areas cover approximately 983 acres (398 hectares). Land uses in the cantonment areas include administration, housing, community facilities, outdoor recreation, industrial, medical facilities, military training, small arms ranges, barracks, equipment maintenance and airfield. For details on the provided facilities see Table 3-4.

Land Uses in Training Areas

The training area at the USAG Stuttgart Installations supports multiple land uses and encompasses 1,419 acres (574 hectares). The training area is primarily used for training for Special Forces (minimal training with heavy equipment) as an ammunition storage area and as a training site for dogs. There is a shooting range and an advanced mobility course, which provides a location to improve driving skills. The course provides real world situations and supports Humvees, 4-wheel drive pickups and all-terrain vehicles. Furthermore, a Military Training on Urban Terrain (MOUT) site serves as an urban training environment.

3.1.4 Land Management Units

Several types of land management units exist at the USAG Stuttgart Installations due to the variety of land uses and the fact that the U.S. Army and the host nation share management responsibility. The USAG Stuttgart Installations can be divided into three principle land management units: improved grounds, semi-improved grounds and unimproved grounds.

Improved grounds are defined as those lands on which intensive maintenance activities must be planned and performed annually as fixed requirements. *Semi-improved grounds* are those areas where periodic, recurring maintenance is performed but to a lesser degree than on improved grounds. Approximately 17% of the installation consists of semi-improved grounds. *Unimproved grounds* include areas requiring limited or no maintenance. The majority of the USAG consists of unimproved grounds. Details on grounds maintenance activities associated with each category are provided in Section *6.6. Vegetation* Management.

Table 3-2: Grounds Classifications at the USAG Stuttgart Installation

Location	Grounds Classification (Hectares)			Total
	Improved	Semi-improved	Unimproved	
Kelley Barracks	4	7	14	25
Patch Barracks	25	8	44	77
Robinson Barracks	18	21	31	70
Panzer Kaserne	20	20	30	70
Echterdingen Airfield	35	15	0	50
Training Area	0	12	572	584
Golf Course Kornwestheim	65	13	51	129
Totals	**167**	**96**	**742**	**1005**

Land Management Units in Cantonment Area

The cantonment areas consist of the following principle land management units:

- Improved grounds – 413 acres (167 hectares) proportionate 39%;
- Semi-improved grounds – 208 acres (84 hectares) proportionate 20%.;
- Unimproved grounds – 420 acres (170 hectares) proportionate 41%.

Secondary land management units within the cantonment areas can be identified for grounds maintenance purposes. These units include developed areas (e.g., buildings, roads, other paved areas, etc.), landscaped areas, and mowed areas (based on frequency of required mowing). Landscaped areas and mowed areas are discussed in more detail in Section 6.6.

Land Management Units in Training Area

The training area consists of the following principle land management units:

- Semi-improved grounds – 29.6 acres (12 hectares), proportionate 2.1% and
- Unimproved grounds – 1.413 acres (572 hectares), proportionate 97.9%.

Semi-improved grounds in the training area include bunkers. These areas are mowed two times per year. The majority of the training area can be classified as unimproved grounds. Maintenance activities are performed as needed on unimproved grounds within the training area to protect the environment and sustain realistic and safe training conditions.

About 10% of the LTA (135 acres/ 55 hectares) is classified as 'environmentally sensitive' (*Landschaftspflegeplan für den Standortübungsplatz Böblingen – Bezirksstelle für Naturschutz und Landschaftspflege Stuttgart – July 2002*). Not all

environmentally sensitive areas are off limits for military activities. Most of these areas are non-forested, open areas. Further details on environmentally sensitive areas in the training area are provided in Sections 4 and 6.

Sheep grazing takes place on about 46 hectares of the LTA and is funded through the State and partly through EU funds. One shepherd is assigned to the grazing areas.

3.1.5 Designated Nature Conservation Areas

There are a wide variety of areas and objects in Germany that are designated by Host Nation law as relevant to nature conservation and are protected. The FGS-G states that these "*areas designated by the German government, as applicable, must be addressed in the Natural Resources Management Plan*" (FGS-G, Chapter 13, C13.3.3.1). Table 3-3 lists the different types of nature conservation areas and highlights those present on the lands of the USAG Stuttgart.

Table 3-3: Designated Areas for Nature Conservation

Designated areas	German term	Applicable German Law and Reg.	Yes/No
Nature Protection Area (Reserve)	Naturschutzgebiet	BNatSchG §23, B-WNatSchG §26	No
National Park	Nationalpark	BNatSchG §24, B-WNatSchG §27	No
Biosphere Reserve	Biosphärenreservat	BNatSchG §25, B-WNatSchG §28,	No
Landscape Protection Area (Reserve)	Landschaftsschutz-gebiet	BNatSchG §26, B-WNatSchG §29	**Yes**
Nature Park	Naturpark	BNatSchG §27, B-WNatSchG §30	No
Natural Landmark	Naturdenkmal	BNatSchG §28, B-WNatSchG §31	**Yes**
Protected Portions of Landscape	Geschützter Landschaftsbestandteil	BNatSchG §29, B-WNatSchG §33	**Yes**
Special Protected Area (SPA) & Special Area of Conservation (SAC) NATURA 2000	Vogelschutzgebiet & FFH Gebiet NATURA 2000	BNatSchG §33, B-WNatSchG §36	**Yes**
Protected Biotope	Geschützte Biotoptypen	BNatSchG §30, B-WNatSchG §32	**Yes**
Protected Forests	Schutzwald / Bannwald / Erholungswald	BundeswaldG §§12 and 13, B-WWaldG §§29, 32, and NV Wald	No
Protected Forest Biotopes	Biotopschutzwald, Naturwaldreservat	B-WWaldG § 30a	No
Water Protection Area	Wasserschutzgebiet	WHG §19, B-WWasserG §24	**Yes**
Mineral Spring Protection Area	Heilquellenschutzgebiet	WHG §19, B-WwasserG §§ 40, 24,	**Yes**
Floodplains	Überschwemmungs-gebiete	WHG §31b, B-WWasserG §77	No

The conservation areas that lie within the USAG Stuttgart are shown on maps in the Appendix 3 as well as in Section 4 for water protection areas and mineral spring protection areas. Descriptions of the conservation area categories and the limitations placed on activities in such areas can be found in Appendix 5. For a more detailed picture of each installation, please refer to Appendix 3, which contains large scale maps of every installation and all relevant legally protected areas and objects.

Maps cannot be provided for the category of '*Protected Portions of Landscape*', as this protection status applies to all areas fulfilling certain conditions established in a local ordinance. For example, in the city of Stuttgart, all trees with a stem circumference of 80 cm and more (measured 1 above ground) are protected, according to the Tree Protection Ordinance *(Baumschutzverordnung*) of the City of Stuttgart.

The digital shape files for all areas of nature conservation were downloaded from the website of the Baden-Württemberg State Institute for Environment, Measurements and Nature Protection (LUBW, *Landesanstalt für Umwelt, Messungen und Naturschutz*) on April 3 2009 (http://brsweb.lubw.baden-wuerttemberg.de). The shape files had to be converted to UTM WGS 1984 Zone 32N coordinate system and are included as part of the Data-CD.

When conflicts arise between conservation goals and military use, exceptions can be made for the conservation areas listed in Table 3-3 IAW the following sections:

§4, 34 (4), 45 (7) and 61 (2) BNatSchG :

"…for areas that support ***national defense."***

§45, BWaldG:

*"**In areas that serve the purposes of national defense**, to include protection of the civil population, the federal police, or civil aviation, federal state codes under Sections §§6, 7 and 9-13 of this law are only to be enforced in so far as they do not interfere with the intended use of these areas."*

3.2 FACILITIES AND TRANSPORTATION SYSTEM

The cantonment areas provide a range of facilities including administrative, housing, warehouse, maintenance, and quality of life/community support facilities. Table 3-4 gives details on facilities and transportation systems of each installation.

The permanent population of the installation, according to the Plans, Analysis and Integration Office (PAIO), consists of approximately 26,000 service members, civilians, retirees, contractors, Local Nationals and their families.

Table 3-4: Facilities and transportation systems

Locations	Facilities and Transportation Systems
BOEBLINGEN FAMILY HOUSING	This location provides housing and youth service facilities. There is a paved road netw system with car parks.
BOEBLINGEN OFFICERS CLUB	This location provides an historic ambience for workshops, meetings and formal occasions.
BOEBLINGEN RANGE	This location provides military training facilities (shooting range). There is a paved road network system.
ECHTERDINGEN AIRFIELD	This location provides administrative buildings, fire station and some hangars for aircra maintenance. There is a paved road network system.
KEFURT AND CRAIG VILLAGE FAMILY HOUSING	This installation provides housing, shops, a restaurant and a 'special events cente There is a paved road network system with car parks.
KELLEY BARRACKS	This location provides administrative buildings, housing, warehouse facilities maintenance an quality of life/community support facilities. For example, headquarters for the USAG, headqua for U.S. Africa Command (AFRICOM), DPW, CDC, gymnasium, commissary, recycling cen hotel and German canteen. There is a paved road network system with car parks and a helipad.
KORNWESTHEIM GOLF COURSE	This location consists of a golf course.
MOEHRINGEN FAMILY HOUSING	This location provides housing. There is a paved road network system with car parks.
PANZER KASERNE	This location provides administrative buildings, housing, warehouse facilities maintenance an quality of life/community support facilities. For example tenant units like special forces navy, elementary school, bowling alley and commissary. There is a paved road network syste with car parks.
PATCH BARRACKS	This location provides administrative buildings, housing, warehouse facilities maintenance an quality of life/community support facilities. For example, headquarters for EUCOM, clinic, high school, elementary school, sports fields, restaurants and PX. There is a paved road network with several one way roads with car parks.
ROBINSON-GRENADIER HSG	This facility provides housing, baseball fields and a thrift shop. There is a paved road network system with car parks.
ROBINSON BARRACKS	This location provides housing and PX facilities. There is a paved road network system with parks.
STEUBEN AND WEICHT VILLAGE FAM	This location provides housing. There is a paved road network system.
STUTTGART ADMIN FACILITY	This location consists of administration buildings.

Locations	Facilities and Transportation Systems
STUTTGART DEPENDENT SCHOOL	This location consists of a school.
WEILIMDORF WAREHOUSE	This location consists of a warehouse.
BOEBLINGEN TRAINING AREA	This location provides military training facilities, mainly for the Special Forces; details are g Section 0.

3.3 REGIONAL LAND USE

The main land uses adjacent to the USAG Stuttgart are described below.

The sites at **Kelley** (**Kelley Barracks & Moehringen Family Housing**) are surrounded by rich woods, fertile farmland and admin buildings from local industries (see Photograph 3-1, Photograph 3-2, Photograph 3-3, Photograph 3-4 and Photograph 3-5).

Rich woods surround almost two thirds of **Patch** (**Patch Barracks, Steuben & Weicht Family Housing and Kerfurt & Kraig Family Housing**). The remaining land consists of a neighborhood of a residential quarter of *Stuttgart Vaihingen*, small, privately used gardens, and a cemetery. About a half kilometer north-west from Patch the *Katzenbachsee,* a small lake, serves as reservoir for drinking water for the City of Stuttgart (see Photograph 3-6, Photograph 3-7, Photograph 3-8 and Photograph 3-9).

Panzer Kaserne and the **Boeblingen Family Housing Area** are completely enclosed by forests. Only a few roads pass through the territory. (see Photograph 3-10, Photograph 3-11, Photograph 3-12 and Photograph 3-13).

Robinson (**Robinson Barracks, Robinson Grenadier Family Housing, Stuttgart Dep. School**) is in the north of Stuttgart on a hill between the district *Zuffenhausen* and *Bad Canstatt*. This land was originally an agricultural area. In the vicinity of Robinson, there are still some vineyards which contribute to local wines, although all the fields are no longer present. In the immediate vicinity of Robinson, on released Army ground, a new cantonment area was built in the late nineties. Not far from the cantonment area, on the east side of Robinson is the Stuttgart weather bureau, located in a park like area with playgrounds and tennis courts. Also typical for the surroundings are small private used gardens with scattered old fruit trees (see Photograph 3-14 and Photograph 3-15).

The **Kornwestheim Golf Course** is situated five kilometers north of Robinson Barracks in the north-east of the town of Kornwestheim. A commercial area boarders the golf course in the south-east and housing areas adjoin to the west and north of the golf course. In the south-east, the golf course adjoins the *Pattonville* airstrip, formerly known as “Ludwigsburg Army Airfield”, which was under U.S. Army control until 1992. The areas in the north-west of the golf club are used for agriculture.

Echterdingen Airfield is situated on the south side of the civil airport from Stuttgart. On the south side of the airfield is farmland consisting of cabbage-fields, which is typical for this region.

The **Boeblingen Local Training Area** is separated from the Panzer Kaserne by a road. The DODDS school, finished in 2018, is located in within the real property boundary of the LTA. The remaining borders are completely enclosed by woods. In the immediate vicinity, the County of *Böblingen* runs an incinerator for household waste. The Boeblingen Range located in the southwest is also surrounded by woods (see Photograph 3-16).

The **Stuttgart Admin Facility** buildings are situated within the city of Stuttgart in an urban environment.

Photograph 3-1: Small private used gardens west of Kelley

Photograph 3-2: Admin buildings from local industry west of Kelley

Photograph 3-3: Road passing the main gate south of Kelly, on the right side typical forest

Photograph 3-4: Farmland on the east side of Kelly

Photograph 3-5: Typical landscape south east of Kelley

Photograph 3-6: Eastern boundary of Patch and its housing areas. On the left side are private used gardens with old apple and prune trees

Photograph 3-7: Residential quarter on the east border of Patch

Photograph 3-8: Cemetery south of Patch

Photograph 3-9: View of typical Forest as it is around Patch

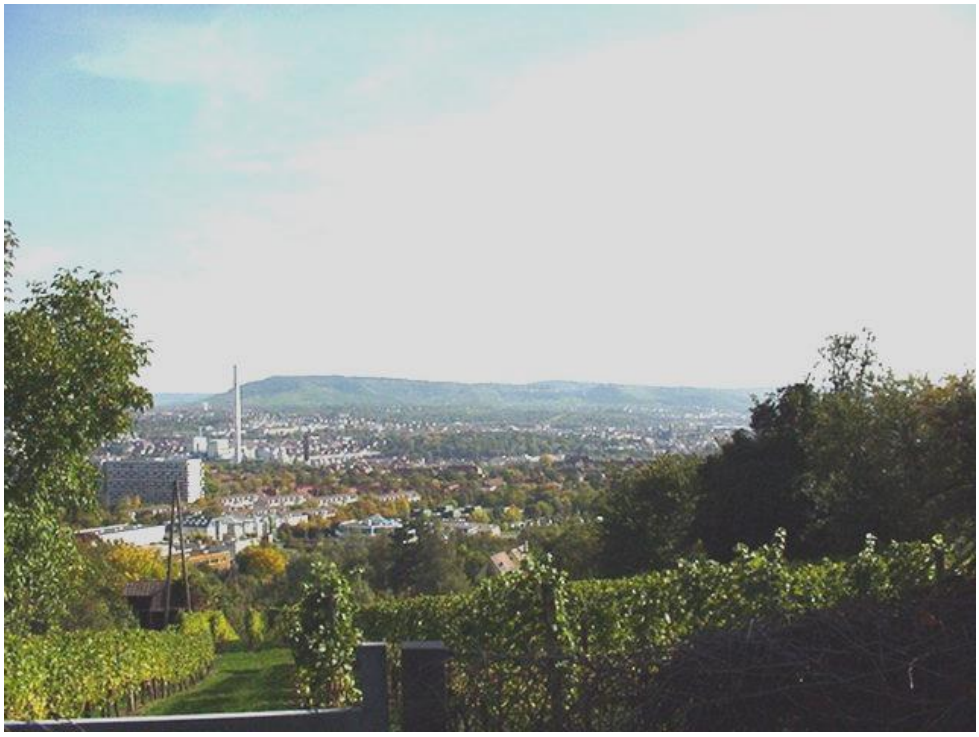
Photograph 3-10: Road which separates Panzer Kaserne from the Training Area

Photograph 3-11: Road between Panzer Kaserne and Boeblingen Family Housing

Photograph 3-12: Typical Community Gardens (Kleingärten) North West of Panzer Kaserne

Photograph 3-13: Ancient Water Tower in the Boeblingen Family Housing

Photograph 3-14: Road separating vineyards from the West side of Robinson Housing



Photograph 3-15: View towards the River Neckar valley from the East side of Robinson Housing

Photograph 3-16: Entrance to a Hunting Tunnel in the Boeblingen Training Area

3.4 SHORT HISTORY AND PRE-MILITARY LAND USE

Stuttgart's history begins with the foundation of a studding grounds (in old German language '*Stuotengarten*') by Duke *Liudolf von Schwaben*. The actual name of the city was derived from this old German term. In the first half of the 13th Century, Stuttgart was made a city. In the 19th Century, it became the capital of *Württemberg*. Since 1945, Stuttgart has been the capital of the counties *Baden* and *Württemberg* which were combined into *Baden-Württemberg*. In 1952, Stuttgart became the seat of government for *Baden-Württemberg* (www.stuttgart.de).

Stuttgart is known worldwide as the home of the two car factories Mercedes-Benz and Porsche. A second famous attraction is the '*Canstatter Volksfest*', which is similar to the *Oktoberfest* in Munich. Not as well-known but also important for the region are the mineral water wells. After Budapest in Hungary, Stuttgart is the city with the second highest number of mineral water wells in Europe (www.stuttgart.de).

For details on the USAG Stuttgart's history and its cultural resources please refer to the *USAG Stuttgart Integrated Cultural Resources Management Plan (2013)*.

4.0 NATURAL RESOURCES AND CLIMATE

4.1 GEOGRAPHICAL SETTING

The USAG Stuttgart Installations lie in four different geographical regions (natural landscape units according to the German landscape classification) as presented in Table 4-1.

Table 4-1: USAG Stuttgart and the natural landscape units

Installation	Natural Landscape Unit	Natural Landscape Unit Number	Major Geographic Region
Weilimdorf Warehouse Kornwestheim Golf Course	*Neckarbecken*	123	*Neckar- und Tauber-Gäuplatten*
Robinson Barracks Installatio Stuttgart Admin Facility	*Stuttgarter Bucht*	105	*Schwäbisches Keuper-Land*
Patch Barracks Installations Panzer Barracks Installations Boeblingen Training Area	*Schönbuch und Glems*	104	*Schwäbisches Keuper-Land*
Kelley Barracks Installations Echterdingen Airfield	*Filder*	106	*Schwäbisches Keuper-Land*

Source: http://brsweb.lubw.baden-wuerttemberg.de

4.2 CLIMATE

The Stuttgart region is situated primarily in the sub-maritime region with an average annual air temperature fluctuation of 17° to 18°C. The climatic referred to below is taken from *Deutscher Wetterdienst, Klimadaten* online at http://www.dwd.de.

Regarding climate change, the TES Survey (IVL 2008: Threatened and Endangered Species Habitat Survey Final Report, pg. 265) for the Boeblingen LTA states that: “According to the latest Climate Atlas for Baden-Württemberg, a pronounced temperature increase is to be expected within the coming decades. Scientists predict +2°C for the Stuttgart region by the year 2100. If these predictions come true, the average temperature in the large forest districts around Boeblingen will be just below 10°C toward the end of the century.”

The average temperature at Stuttgart-Echterdingen was compared for two 30 year periods. The yearly average from 1959-1988 was measured at 8.8 °C and the yearly average from 1989-2018 was 9.9, already an increase of 1.1 °C . In the last 30 years, the warmest month was July with an average of 19.2 °C, and the coldest month was January with an average of 1.12 °C. In the winter months, minimum temperatures of less than ±0 °C are common as well as up to 1 cm (seldom more than 5 cm) of snow.

The average annual precipitation at the same location was compared for two 25 year periods, and was 715 mm from 1959-1984 and 690 mm from 1994-2018. The driest month in the last 25 years was February, with an average of 33.8 mm. The most precipitation occurs in summer months, reaching the maximum in June with an average of 86.1 mm.

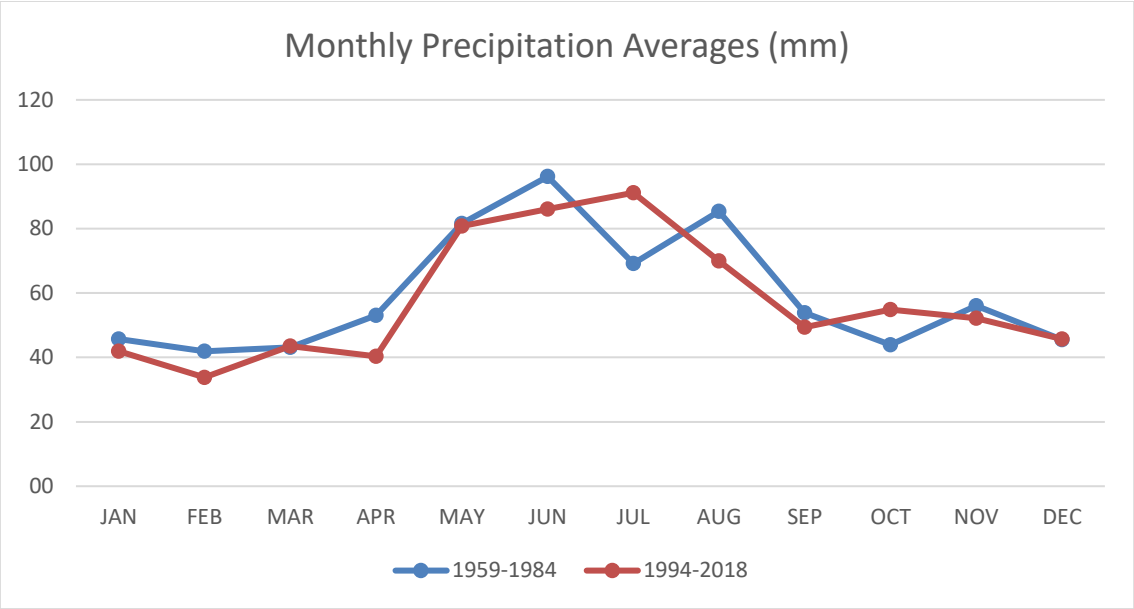


Figure 4-1: Monthly average precipitation in S.-Echterdingen [mm] – 25 year comparison

Source: *Deutscher Wetterdienst, Klimadaten* (http://www.dwd.de)

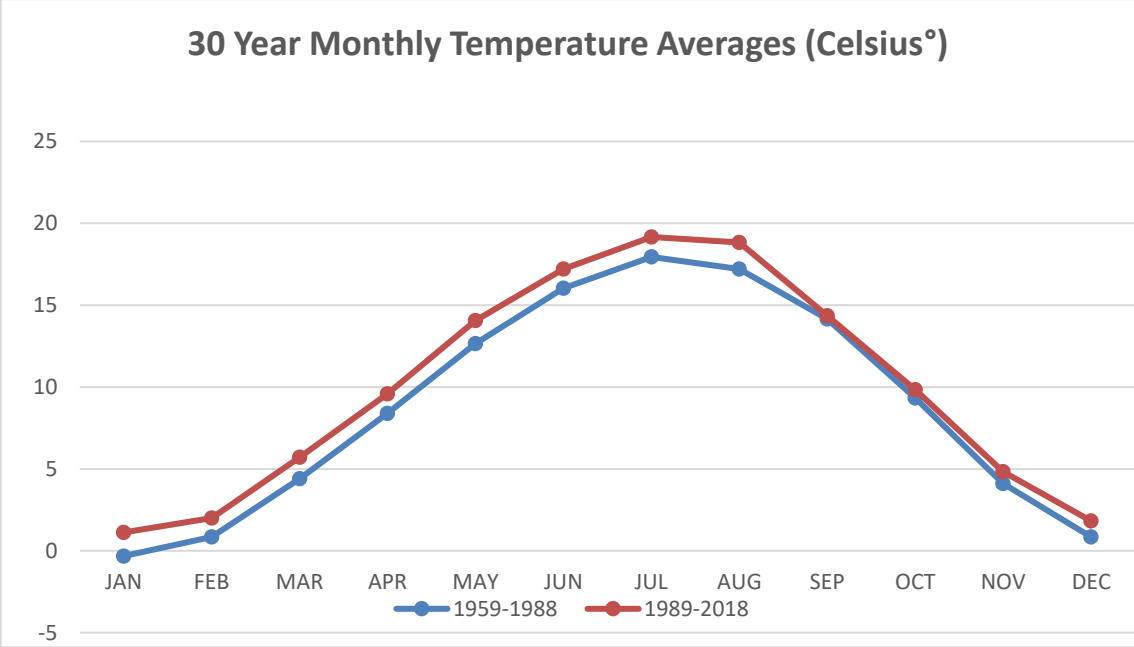


Figure 4-2: Monthly average temperature in S.-Echterdingen [°C] – 30 yr. comparison

Source: *Deutscher Wetterdienst, Klimadaten* (http://www.dwd.de)

4.3 TOPOGRAPHY

The topography of the Stuttgart area is very hilly, causing large differences in the elevations above mean sea level. The lowest site is the Admin Facility in Stuttgart with an elevation of about 255 m above sea level. The highest elevation is in the Panzer Housing area with about 520 m above sea level. Topographical maps of the individual sites are shown in Appendix 10.

4.4 GEOLOGY

In the Stuttgart area, the underlying geology is lower and middle Keuper (Golf Course, Robinson, Panzer and Patch) and Lias formations of the lower Jurassic system (Echterdingen, Kelley). The Triassic Muschelkalk formations found in the north are the oldest geological units surfacing in the depicted area. In a south-eastern direction upper Triassic layers (Keuper) cover the Muschelkalk. In the south-east the younger lower Jurassic subsequently overlaps the Keuper. Quaternary sediments (Loess) have been deposited in many areas and dominate the local geology at these locations.

The nutrient-poor and non-calcareous Stubensandstein (sandstone) is predominant within the Boeblingen LTA. It belongs to the Keuper, a part of the upper Triassic. Other layers of Keuper exist, but they only play a minor role. A geological fault extends through the installation from northwest to southeast, where layers of the lower Liassic (Jurassic) are predominant over a width of 200 to 400 meters. Detailed information on the geology of the LTA can be found in Gastel, Rolf (1994): Beantragtes Naturschutzgebiet Panzerübungsplatz Boeblingen, Hennecke-Verlag.

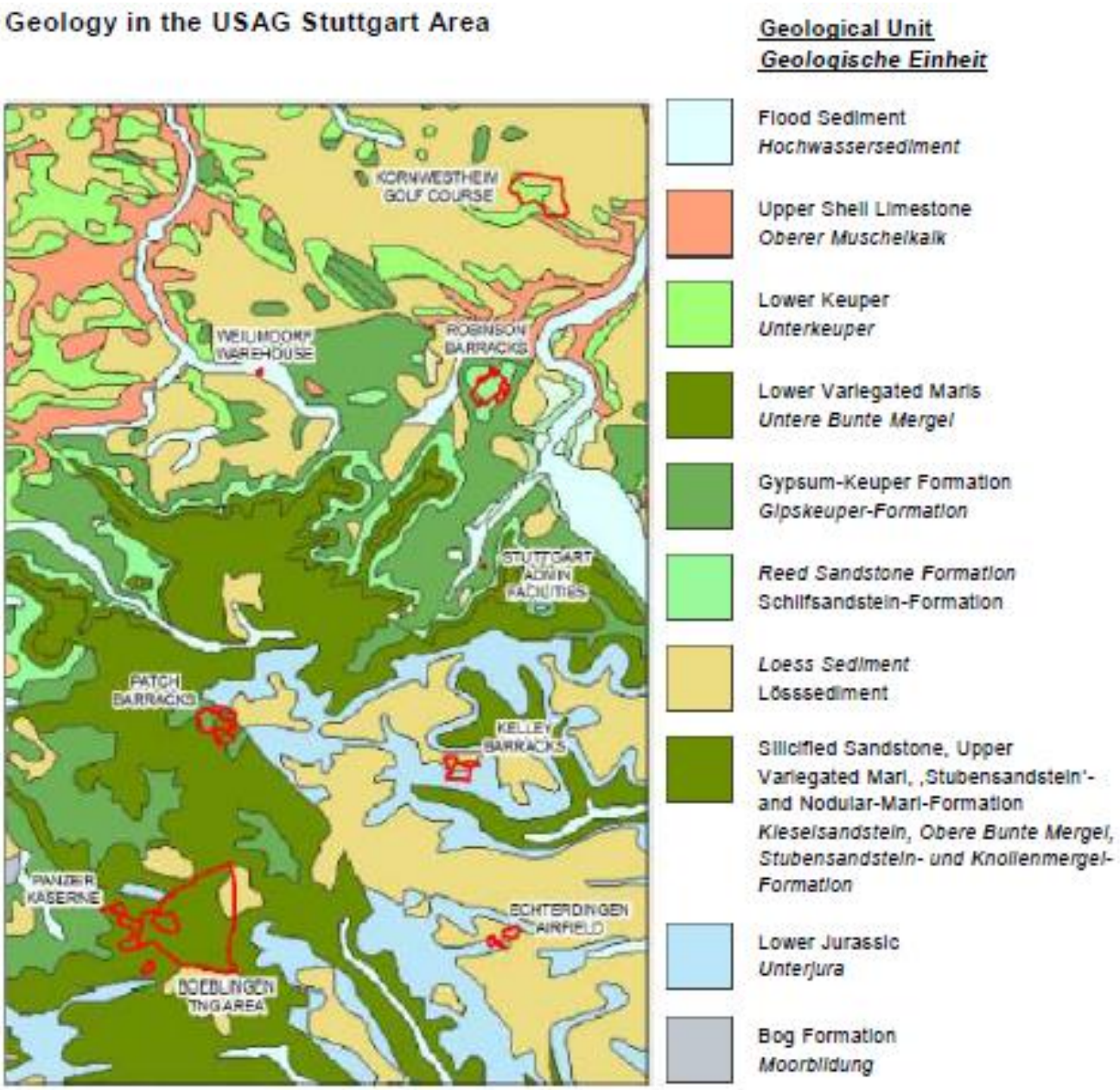


Figure 4 4: Overview of the geology in the USAG Stuttgart area

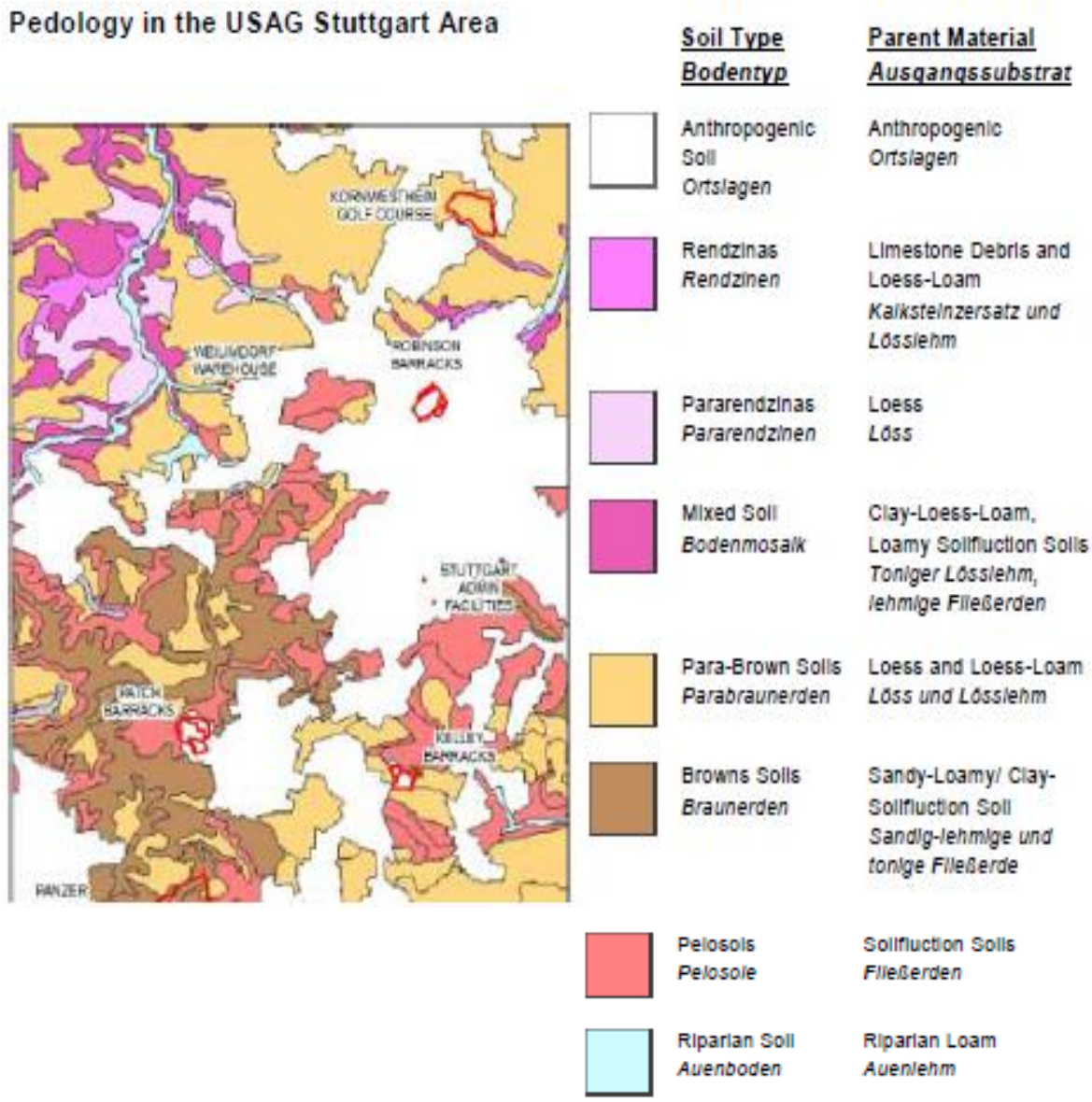
An overview of the geology of the USAG Stuttgart is shown in

Source: http://www.lgrb.uni-freiburg.de/lgrb//lgrb_mapserver/mapserver

4.5 SOILS

Most of the cantonment areas have heavily anthropogenic influenced soils. Where natural soils are still prevalent, the pedology is determined by the underlying rock properties. In the Pleistocene Period, a lot of coarse clay (*Loess*) was deposited in the whole area. Most of the large amount of deposited clay has been diminished by natural erosion and can now be found as an addition in several soils. Figure 4-3 shows an overview of the pedology in the USAG Stuttgart area.

Large parts of the LTA are dominated by Pseudogley-Peolosol-Braunerde, podzolic Braunerde, Braunerde/Pelosol, and Pseudogley. For more detailed information on the Pedology of the Boeblingen LTA please refer to the TES Survey & Management Plan (IVL 2008).



Source: http://www.lgrb.uni-freiburg.de/lgrb//lgrb_mapserver/mapserver

4.6 WATER RESOURCES

4.6.1 Surface Water

Several small creeks have their source in the **Local Training Area Boeblingen**. The LTA lies on a divide between the watersheds of the *Enz* and the *Aich*, which are both discharging to the *Neckar* (and later the Rhine). Most of the LTA belongs to the *Aich* watershed, however, the areas north and west of the Dump site discharge into the E*nz*-watershed.

The creeks in the central and southern part run into the *Sulzbach,* which discharges into the *Aich* and subsequently into the *Neckar* and Rhine. In the northern part of the LTA, the *Mahdenbach* originates and leaves the LTA in the north-eastern corner. The further recipients of this creek are the *Reichenbach*, the *Aich*, the *Neckar* and finally the Rhine. In the northwest of the training area, southeast of the settlement Waldheim, the *Berstbach* rises. This creek leaves the LTA to the northwest, discharging into the *Schwippe*, the *Würm*, the *Nagold*, the *Enz,* the *Neckar* and finally the Rhine.

A small creek called *Frauenriedbach* rises in the **Kornwestheim Golf Course**, discharging into the *Gänsbach,* which flows into the *Neckar* about three kilometers to the southwest.

The *Lindenbach* creek boarders **Weilimdorf Warehouse** in the southwest. This creek runs into the *Glems* (then *Enz, Neckar* and Rhine).

Approximately 100 meters east of **Patch Barracks**, the *Katzenbach* flows in a northern direction. This creek discharges into the Glems (then *Enz*, *Neckar* and Rhine).

The Weidachbach runs approximately 400 meters north of **Kelley Barracks** This creek flows to the east into the *Ramsbach* (then *Körsch*, *Neckar* and Rhine).

At **Echterdingen Airfield**, a creek also called *Katzenbach* runs eastward between the two Army property sections. Its recipients are the *Binsach*, the *Sulzbach*, the *Körsch*, the *Neckar* and finally the Rhine. The *Brühlgraben* creek flows to the northwest of the road just north of the Naval Unit 2 Maintenance Hangar (Building 3215).

There are almost no standing water bodies in the USAG Stuttgart with the exception being in the local training area at Böblingen. The waters in the training area are man-made. One small lake was created about thirty years ago and has a maximum depth of about two meters; and it is fed by groundwater (see Photograph 4-1). The groundwater level in many parts of the training area is very close to the surface. The training with tanks until 1992 and the high groundwater level resulted in the creation of a high number of shallow water bodies, which give some parts of the area a wetlands-like appearance. These wet biotopes support a number of rare amphibians, water insects, and migrating birds, and add substantially to the training area's biodiversity. Water quality in these wet biotopes is high because fertilizers, pesticides and herbicides typically used in agriculture are not used at the training area.

Photograph 4-1: Lake at the Boeblingen LTA

4.6.2 Groundwater

Section 4.4 discusses the geological variety of the installations. This section is concerned with the hydro-geology of the land occupied by the USAG Stuttgart. The territory of USAG Stuttgart is divided into three major hydro-geologic zones. The most important aquifers are:

- Gypsum-*Keuper* and Lower *Keuper* in the north and west. This unit is characterized by alternating layers of aquitards and joint aquifers
- Upper *Keuper* and Upper Middle *Keuper* in the southern and central region. This unit is also characterized by alternating layers of aquitards and joint aquifers.
- Middle and Lower Jurassic in the south-east. This unit is characterized by its low permeability and is thus classified as an aquitard.

For more details on the local hydrogeological units, their lithology and characteristics, please consult the webpage of the Baden-Württemberg Ministry of Environment at http://themenpark-umwelt.baden-wuerttemberg.de/servlet/is/6277/?path=4422;

Figure 4-4 shows the hydro-geological units found in the USAG Stuttgart area. The depicted hydro-geological components are those that are closest to the surface. Underlying these surface units are the older units. For example, the Middle and Lower Jurassic unit in the southeast is underlain by Upper Keuper and Middle Keuper.

Hydrogeological Units in the USAG Stuttgart area

Hydrogeological Unit **Hydrogeologische Einheit**	***Hydraulic Conductivity*** **Leitertyp**
Late Quaternary River-Grave –Sands Jungquartäre Flusskiese und sande	*High Conductivity* Grundwasserleiter
Upper Shell Limestone Oberer Muschelkalk	*High Conductivity* Grundwasserleiter
Gypsum-Keuper and Lower Keuper Gipskeuper und Unterkeuper	*Medium Conductivity* Grundwasserleiter/ -geringleiter
Upper Keuper and Upper Me Keuper Oberkeuper und Oberer Mittelkeuper	*Medium Conductivity* Grundwasserleiter/ -geringleiter
Medial and Lower Jurassic Mittel- und Unterjura	*Low Conductivity* Grundwasser-geringleiter

Figure 4-4: Overview map of the hydrogeological units in the USAG Stuttgart area

Source: http://www.lgrb.uni-freiburg.de/lgrb//lgrb_mapserver/mapserver

4.6.3 Water Protection Areas

According to § 19 WHG and § 24 B-WWasserG, **water protection areas** are established by a German state agency to protect public water supplies, supplement groundwater, or prevent harmful runoff of precipitation and flooding, as well as to prevent entry into the water of soil constituents or substances used to treat and fertilize plants. The state publishes a set of restrictions for each area designated applicable to all, including DoD components. Each water protection area is composed of three zones, known as Water Protection Zones I, II and III.

- **Zone I** – the immediate protection zone is defined by a distance of at least 10 m from the water well, no less than 20 m in upstream direction of a spring and at least 30 meters in case of a karst aquifer. This zone provides protection against direct contamination at the well and should be an enclosed area. The zone is usually within 10 meters to 20 meters around the well; no operational activities are permitted within this zone;
- **Zone II** – the inner protection zone is defined by the 50-day travel time but must not be less than 100 meters from the well or spring. Groundwater from the external border will need at least 50 days to reach the well (this is the time period it will take for the water to be sufficiently cleaned of pathogens). The size of the area of this zone is dependent on the groundwater flow, the underlying geology and the rate of precipitation. The designation of this zone provides protection against pollution generated by human activities (for example wastewater); and
- **Zone III** – the outer protection zone encompasses the entire contribution zone of the groundwater catchment area. Further divisions of Zone III such as Zone IIIA and Zone IIIB are possible, depending on the aquifer and underlying geological structure. It provides protection against far-reaching pollution, in particular arduous or non-degradable chemicals and radioactive substances. There are fewer restrictions on the location of buildings and structures within this zone, if the wastewater generated within is in confined sewers and treated at a wastewater treatment plant. The further a facility/activity is from the well, the fewer the restrictions. Restricted facilities/activities include landfills and refineries.

For a specific listing of activities prohibited in each Water Protection Area zone, please refer to FGS-G 2012 **C3.3.1.3.1**.

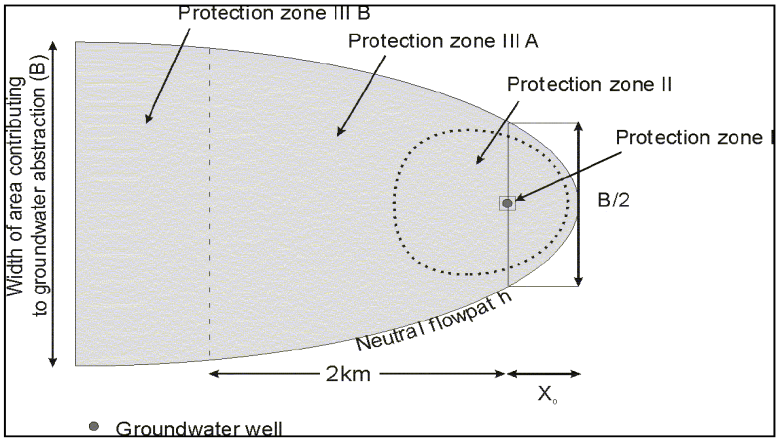


Figure 4-5: Water Protection Zones

In addition to water protection zones, according to § 19 WHG and § 40 B-WWasserG, **mineral spring protection areas** can be established by a German state agency to protect state-approved mineral springs. Generally, the same restrictions and zonings apply for mineral protection areas as for water protection areas. The state may also publish a set of restrictions (sometimes in form of an ordinance) for each area designated applicable to all, including DoD components.

The Stuttgart region is famous for its large number of mineral springs. An extensive mineral spring protection area was established by the state in 2002 to protect the mineral wells and their catchment areas. Almost half of the city of Stuttgart and parts of the counties of *Böblingen*, *Esslingen*, *Ludwigsburg* and *Rems-Murr*, lie within the 300 square kilometers large mineral spring protection zone of Stuttgart (*Heilquellenschutzgebiet Stuttgart*).

For details on the restrictions that apply for the mineral spring protection area, please refer to the respective ordinance (*Verordnung des Regierungspräsidiums Stuttgart zum Schutz der staatlich anerkannten Heilquellen in Stuttgart - Bad Cannstatt und Stuttgart – Berg, 11. Juni 2002*) available online at:
http://www.stuttgart.de/img/mdb/item/192672/17077.pdf

Figure 4-6 shows the water protection areas and the mineral spring protection area in the vicinity of the USAG Stuttgart. It is visible that Robinson Barracks, Stuttgart Admin Facility, Panzer Kaserne, Patch Barracks and parts of the LTA lie within the mineral protection area of Stuttgart. Those installations are situated in the outer zone (similar to Zone III of a water protection zone) of the mineral protection area.

The eastern part of Patch Barracks lies within Zones II and III of the water protection area *No. 1110000000070*. For a more detailed depiction of the water protection area at Patch please see the Environmental Consideration Map in Appendix 11.

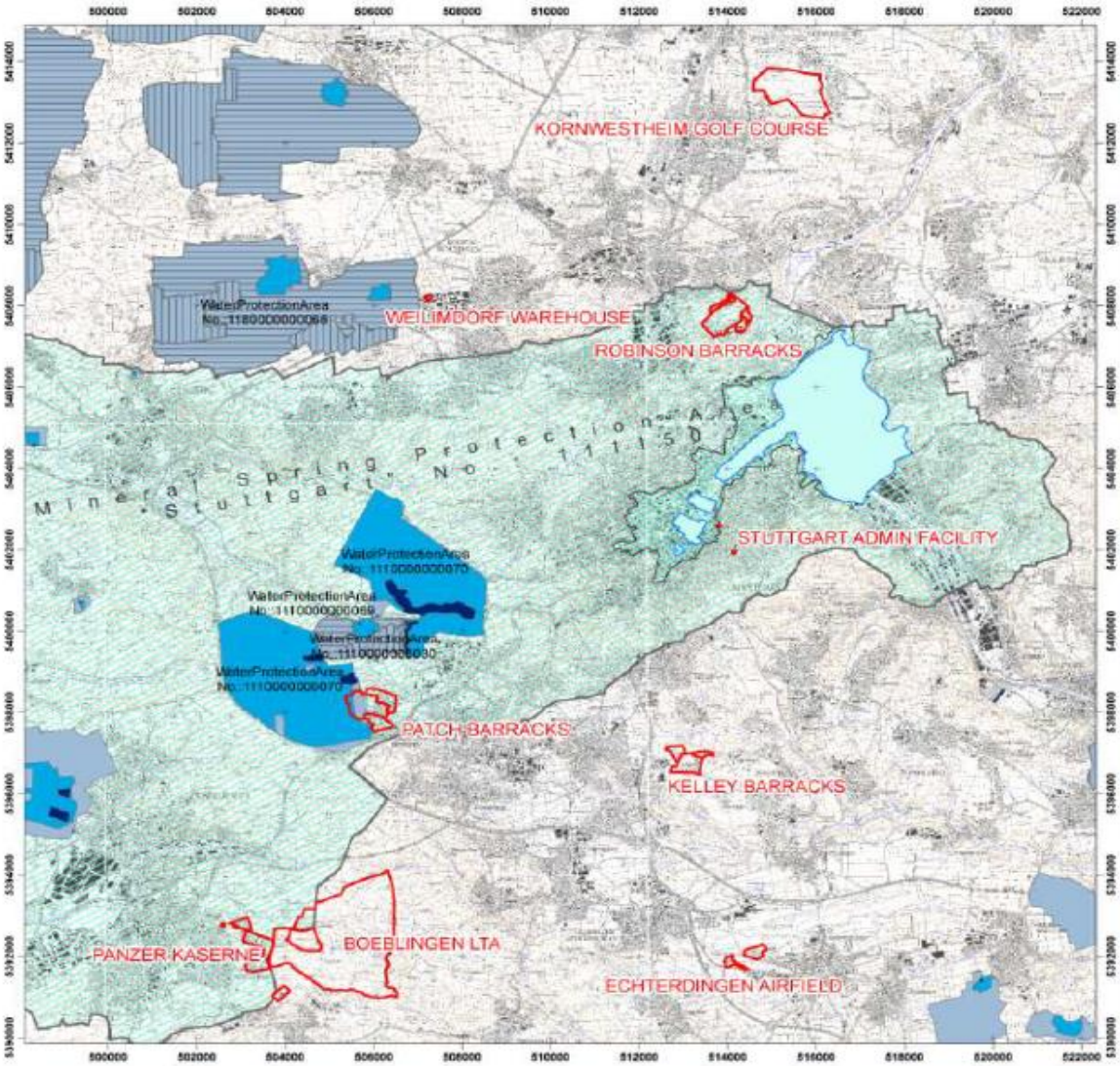


Figure 4-6: Overview Map: Water Protection Areas

Data-Source: Räumlichen Informations- und Planungssystem (RIPS) der Landesanstalt für Umwelt, Messungen und Naturschutz Baden-Württemberg (LUBW)

Legend

Installation Boundary

Water Protection Area

Zone I
Zone II
Zone III
Zone IIIA
Zone IIIB

Mineral Spring Protection Area

Core Zone
Inner Zone
Outer Zone

N

0 1.000 2.000 3.000 4.000 5.000 Meters

4.7 ECOLOGICAL COMMUNITIES AND BIOTOPES

This section describes the types of vegetation or ecological communities that may have occurred within the USAG Stuttgart Installations prior to human influence as well as existing communities. The term potential natural vegetation (PNV) is used to describe the ecological community that is expected to develop if human influence was completely removed. Determination of the PNV is a standardized process and is based on several factors such as physical location, geology, climate, aspect, and exposure. The PNV for a given site can be used to assess the extent that human influences have changed native plant communities.

4.7.1. Potential Natural Vegetation (PNV)

The PNV in the whole Stuttgart area would consist of forests characterized by beech (Fagus sylvatica) and oak (Quercus spec.). Data regarding the PNV is available only for the training area and was taken from the TES Survey & Management Plan (IVL 2008). According to this document, the Shadow Sedge formations of the Woodrush/beech forest, primarily in the typical and Wood Millet formations represent the characteristic potential natural vegetation of the training area. For further details, please refer to the management plan, which is available at the DPW-ED office at Kelley Barracks.

4.7.2. Existing Vegetation

A comprehensive Planning Level Survey of the cantonment areas, including vegetation were conducted in 2013, excluding the Boeblingen LTA and the Airfield.

The vegetation of Patch, Kelley and Panzer is very similar; all three were built in forested areas between the years 1936 and 1938. Remnants of these forests can still be seen today; many beech and oak trees between 200 and 300 years old still exist in these areas. In all three of these caserns, there are still areas of a high forestation with poor ground vegetation. Most parts have a park-like character with lawn areas.

Robinson housing was built after World War II in the farmland area between Robinson Barracks and Grenadier Kaserne. The former farmland was mainly used for the cultivation of fruit trees. An area with orchards in the north and northwest part of Robinson is one remnant of the farmland. This orchard consists of several dozen old apple and prune trees of various kinds and shall be maintained like a protected area under natural and cultural resources. In Robinson, there is also a type of memorial park where many different tree species were planted over the last fifty years. An alley of chestnut trees is another valuable component of the landscape at this location. The buildings in the Robinson area, including the school, are concentrated along the border on the east, south and west side, creating a horseshoe design. In the middle of this “horseshoe”, gentle, grass-covered slopes form a kind of valley.

The vegetation on the Stuttgart airfield consists primarily of maintained grassland with few trees.

Besides the expansive grassland, the golf course vegetation consists of a high variety of tree and bush species. The majority are broad-leafed trees like birch, popular and maple,

and to a lesser extent, beech and oak. Coniferous trees are also present; particularly abundant are spruce trees.

For Boeblingen LTA, the following independent studies and surveys provide information for some of the locations:

- Gastel, Rolf (1994): Beantragtes Naturschutzgebiet Panzerübungsplatz Böblingen, Hennecke-Verlag, 103 p.
- Wahrenburg, Wolfram (1996): Entwicklungskonzept für den Standortübungsplatz Böblingen (Phase I); BNL Stuttgart, 103 p. and Appendixes
- Steingeber, Thomas/ IVL (2002): Bericht zur Zwischenrevision auf der Liegenschaft Böblingen – Naturschutzfachlicher Beitrag; BIMA, BFoA Heuberg
- Wahrenburg, Wolfram (2002): Landschaftspflegeplan für den Standortübungsplatz Böblingen – Pflege der Freiflächen; BNL Stuttgart, 30 p. and Appendixes.

The 2008 TES Survey & Management Plan also provides detailed information on the vegetation of the Boeblingen LTA:

- IVL (2008): Threatened and Endangered Species Habitat Survey at the Local Training Area Böblingen 2008; Final Report, 265 p.

According to the 2008 TES Survey, the forest biotopes in Boeblingen are generally predominant, covering 85% of the overall area. Of these areas, near-natural forests (beech forests, riparian forests, moist forests, a Stitchwort/hornbeam/oak forest, succession forests, small stands of shrubs and trees, and willowherb shrub communities) cover 27% of the overall area or 32% of the forest area. Ecologically significant stands dominated by oak and oak/beech are also represented and cover approximately 17% of the overall area. The pine stands are predominant among the conifers and cover 24% of the overall area. The open areas are dominated by the nutrient-poor, disturbed and undisturbed grassland biotype with 7.5% of the overall area.

4.8 THREATENED AND ENDANGERED SPECIES (TES)

4.8.1 Regulatory Levels for Species and Habitats

There are multiple jurisdictions and respective regulations that apply to the protection of species and habitats within the USAG Stuttgart, which are defined by three categories;

1. European Union
2. Federal Republic of Germany
3. State of Baden-Württemberg

European Union Natura 2000 Directives

Natura 2000 is a network of core breeding and resting sites for rare and threatened species, and some rare natural habitat types which are protected in their own right. It

stretches across all 28 EU countries, both on land and at sea. The aim of the network is to ensure the long-term survival of Europe's most valuable and threatened species and habitats listed under both the Birds Directive and the Habitats Directive. These directives constitute European Law, which is to be implemented as national law by the respective member states.

- Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds **(Birds Directive)**

  The following appendices and designations were established in connection with the Habitats Directive:

  Appendix I of the Bird Conservation Directive contains a list of bird species that are to be protected in special reserves.

  Appendices II and III include lists of bird species for which certain regulations regarding hunting (Appendix II) or trade (Appendix III) apply.

  The Birds directive does not directly impact any of the USAG Stuttgart sites.

- Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora **(Habitats Directive)**

  The following appendices and designations were established in connection with the Habitats Directive:

  Appendix I contains a list of habitat types that are to be protected in special reserves.

  Appendix II includes a list of plant and animal species that are to be protected in special reserves.

  Appendix IV includes a list of plant and animal species that are to be strictly protected.

  Appendix V includes a list of species whose removal from nature may be subject to national regulations in order to protect their populations.

  ** Priority habitat types and species of Appendices I and II are marked with an asterisk (*).*

  There are three sites in the USAG Stuttgart that are directly impacted by the Habitats Directive (SAC).

Federal Republic of Germany

The Federal Nature Conservation Act (§ 30 BNatSchG) places the wild animal and plant species that are listed in specific annexes of the following regulations under special or strict protection. This also covers provisions on the (economic) use of these species, including regulations on the removal from nature, import and export provisions, and provisions for keeping, breeding, marketing, etc. The relevant regulations include the

Federal Regulation on the Protection of Wild Fauna and Flora Species (BArtSchV, *Bundesartenschutzverordnung*). Within these regulations and directives, two categories of protected species are designated:

b Specially protected species according to §7, (2) 13, BNatSchG.

s Strictly protected species according to §7, (2) 14, BNatSchG.

The Federal Office for Nature Protection (BfN, Bundesamt für Naturschutz) publishes a comprehensive Red List for the whole of Germany which reflects the situation of species on a national level.

State of Baden-Württemberg

The Baden-Württemberg Nature Conservation Act, specifically paragraph § 32 (BWNatSchG, *Naturschutzgesetz Baden-Württemberg*) includes similar (almost identical to the Federal) lists of habitat and biotope types especially protected under these laws. These laws stipulate that …"measures, that may cause the destruction or other considerable damage or change to the characteristic condition of the biotope types of particular ecological value as specified in the annex of this regulation, are subject to permission" (BWNatSchG). The following provisions apply:

§ 32 Geschützter Lebensraumtyp nach Naturschutzgesetz Baden-Württemberg

§ 30 Geschützter Lebensraumtyp nach BNatSchG.

In addition, each state within Germany publishes a *Red List*, which identifies threatened and endangered species in that state. The species identified are categorized in both state and federal Red Lists according to their endangerment level using the following designations:

Table 4.8.1 English Definitions of German Red List Categories

Category - German	English
keine Gefährdung	not endangered
V-Vorwarnliste	pre-warning list
D-Datenstand defizitär	deficient data
G-Gefährdungsstatus unklar	threat level unclear
R-seltene Arten	rare species
3-gefährdet	endangered
2-stark gefährdet	severely endangered
1-vom Aussterben bedroht	threatened with extinction
0-ausgestorben/verschollen	extinct/disappeared

4.8.2 Threatened and Endangered Species (TES) in the USAG Stuttgart

In 2007/2008, a U.S. Army financed TES Survey & Management Plan (IVL 2008: Threatened and Endangered Species Habitat Survey at the Local Training Area Boeblingen 2007/2008) was conducted for the Boeblingen Training Area. In 2013, a survey was also completed in the cantonment areas. The Böblingen LTA is the area with the most natural environment within the Stuttgart USAG. The LTA is unique in that it probably is the only U.S. military-controlled LTA in Germany on which ecosystem management is performed by the U.S forces, the federal forestry administration and local nature protection interest groups. Additionally, the State Nature Protection Authorities contribute by funding sheep grazing, as part of the maintenance concept

The 2007/2008 study is the most comprehensive survey of the entire LTA, it was used as the main source of information on TES and NATURA 2000 for this INRMP. Comprehensive vegetation and biotope mapping, including the recording of FFH types, was carried out within the installation. In addition, the species spectrum of three selected, ecologically representative animal groups was surveyed at recording locations, supplemented by a special survey regarding the population of the Dune Tiger Beetle (*Cicindela hybrida*). Since the 2008 study, there have been multiple Planning Level Surveys done for individual species groups.

The installation provides habitat for large numbers of plants and animals that have vanished in the surrounding landscape. According to the TES Survey & Management Plan, the "*Boeblingen Local Training Area is a complex habitat of supra-regional significance for the conservation of rare species, habitats, and biocoenoses (ecosystems)*". This conclusion can be explained by the following factors:

- Rich structural diversity of the open areas;
- Absence of biocides and fertilizers over large parts of the installation;
- The installation has not been affected by other civilian activities;
- Dynamic processes changing the landscape (formerly through training activity).
- Military training used to produce varied stages of natural succession and a highly diversified landscape, thus creating conditions that are favorable to certain species, especially species that depend on large, non-forested habitats. Due to the declining number of training activities for more than 15 years, land management actions have substituted the military activities.

Table 4.8-2 below shows the survey results for the different species groups included as part of the TES Survey & Management Plan (IVL 2007)(in black) and the most recent numbers (IVL 2013)(in green). Most recently, 437 plant species and 303 animal species were identified altogether. A total of 71 Red List species were recorded.

*Table 4.8-2: Results of the TES Survey & Management Plan (IVL 2007) and **(IVL2013)***

Group	Species total		RL species		RL species 0/1/2	FFH Annexes II/IV[2]	Significance
Vascular plants	437	**437**	24	**24**	6	0/0	Supra-regional
Amphibians	9	**10**	4	**4**	4	2/2	Supra-regional
Bats	11	**11**	11	**11**	4	2/9	regional
Ground beetles[3]	1	**68**	1	**6**	0	0/0	Supra-regional
Birds	-	**63**	-	**4**	-	-	local
Dragon Flies	-	**22**	-	**3**	-	-	regional
Butterflies	-	**35**	-	**4**	-	-	regional
Wild bees	-	**80**	-	**13**	-	-	Supra-regional
Grasshoppers	17	**14**	2	**2**	0	0/0	regional
Total	475	**740**	42	**71**	14	4/11	Supra-regional

Vascular Plants

Based on the occurrence of 24 species on the Red List of Baden-Württemberg and another 14 species on the Early Warning List, Boeblingen Local Training Area is at least of supra-regional significance throughout the natural landscape. Extraordinary features within the natural landscape include the stable, numerous occurrences of the Strict Blue-eyed Grass, the population of the Lousewort and the Sulphur Clover, the occurrence of species of the dwarf rush communities, the occurrence of two severely endangered small sedges, and the occurrence of the Silver Hair-grass and the Small Cudweed.

The occurrence of almost all rare and endangered species is restricted to the open areas, although these areas cover only about 15% of the total area surveyed.

Amphibians

A total of ten amphibian species were recorded during the surveys, including four that are severely endangered on a statewide scale and are on the Red Lists of Germany and/or Baden-Württemberg. Three species are on the Early Warning List of Baden-Württemberg. Thus, almost all species theoretically expected to occur within the installation were recorded. Compared to earlier surveys (Wahrenburg 1996), only the

---

[1] Red List of Germany or Baden-Württemberg

[2] If species are included in Annex II as well as in Annex IV, only the higher category applies.

[3] Special survey involving only one species: *Cicindela hybrida.*

Fire Salamander and the Palmate Newt, two species with exclusive or concentrated occurrences in forests, were not found. No forested areas were defined as recording locations for the amphibian survey. However, the probability of recording newts in heavily overgrown pools is generally very low. Hence, it is possible that an occurrence of the Palmate Newt was overlooked. Creeks and rivers, areas inhabited by the Fire Salamander, were also not included in the survey.

The large populations of the FFH species Yellow-bellied Toad (Annexes II + IV; RL 2), Warty Newt (Annex II, RL BW: 2), and Common Tree Frog (Annex IV, RL: 2) are extraordinary records of special conservational significance.

The Yellow-Bellied Toad is one example of fauna that thrives in the conditions created by training:

Bombina variegata Yellow-bellied Toad Gelbbauchunke

RL G 2 (severely endangered)

FFH II und IV (Natura 2000 priority species)

The toad is a typical inhabitant of anthropogenic (man-made) secondary habitats such as sand and gravel pits, rock quarries and training areas. The yellow-bellied toad requires temporary open puddles free of vegetation, such as those created during tracked maneuver activities, in order to lay its eggs and reproduce.

Another notable species identified during the survey is the Natterjack Toad (*Bufo calamita*), a species severely endangered on a statewide scale and included in Annex IV of the FFH Directive. However, only very few individuals of this species were found.

Bats

The bat species on the Red List include two species in Annex II of the FFH Directive: the Greater Mouse-eared Bat (Myotis myotis) and Bechstein's Bat (Myotis bechsteinii).

In 2012, a comprehensive survey of the Endangered Bechstein Bat was conducted for the entire USAG Stuttgart in order to assess and inventory critical bat habitat and make management recommendations in a 5-year plan for improving bat habitat.

The reproduction record of the Bechstein's Bat is especially significant. The Greater Mouse-eared Bat uses the extensive forest districts as foraging habitat and possibly as quarters of individual males.

Ground Beetles

The TES Survey & Management Plan (IVL 2008) results represented only a very small section of the ground beetle species spectrum recorded within the installation to date. Including historical data, 147 ground beetle species have been recorded within Boeblingen Local Training Area to date. Due to the random nature of recording and the small number of individuals recorded, no well-founded, conservational relevant statements regarding the ground beetles at the USAG Stuttgart could be made in the TES Survey & Management Plan (2008). But by 2013, a total of 68 different ground beetle species have been registered.

Grasshoppers

A total of 17 grasshopper species were recorded in 2007, including only two on the Red List of Germany and none on the Red List of Baden-Württemberg. The populations of only three of these species are considered to be declining and therefore are on the state Early Warning List. In 2013, the number of observed grasshopper species went down to 14.

In general, results of the TES surveys confirm the high value of the installation as a rare species habitat for large numbers of plants and animals that have vanished in the surrounding landscape. In many cases, these species are also found in large populations. Consequently, the installation makes up a complex habitat of Central European importance for the survival of endangered species.

4.9 NATURA 2000

4.9.1 Natura 2000 Network Fundamentals

The purpose of the European ecological Natura 2000 network is to preserve biodiversity by maintaining or restoring natural habitats of community importance.

To prevent the serious decline in biodiversity, and following closely on the 1992 Rio conference, the European Union adopted the Birds Directive 79/409/EEC (ger. *Vogelschutzrichtlinie or SPA*) of 1979 and the Habitats Directive 92/43/EEC (ger. *FFH-Richtlinie*) of 1992 on the conservation of habitats and species. The Natura 2000 network was established as a result. Further information regarding Natura 2000 regulatory requirements can be found in Appendix 4.

The Birds Directive requires the establishment of Special Protection Areas (SPA) for birds. The Habitats Directive similarly requires Special Areas of Conservation (SAC) to be designated for other species, and for habitats. Together, SPAs and SACs make up the Natura 2000 sites. However, only the SACs apply in the case of the Boeblingen LTA.

Both directives were implemented as national and state law in 1998 in the course of the amendments to the *Bundesnaturschutzgesetz* (*BNatSchG* = Federal Nature Conservation Law) and the *Baden-Wuerttemberg Naturschutzgesetz* (*NatSchG BW* = Nature Protection Law for Baden-Württemberg).

The key stipulations in the Natura 2000 Directives that apply to the USAG Stuttgart, the continuation of its mission, and the management of its valuable habitats apply to the designated areas as follows;

- **No priority habitat shall be degraded in any way. This stipulation is otherwise known as the "degradation prohibition"** (*Verschlechterungsverbot*). Due to the fact that the open maneuver areas in the LTA form an integral part of the priority habitats and that many of these habitats resulted from the use of the area as training land, the prohibition of open land habitat degradation supports the continued use and preservation of the land needed for training.

- **New projects in Natura 2000 areas must be consistent with the management goals defined in the Natura 2000 Management Plan** (see section 4.9.3)

- **New projects in Natura 2000 areas require an Environmental Compatibility Assessment (Verträglichkeitsprüfung)**

- **The U.S. Army's construction planning process, if executed properly, already provides for the early assessment of scope and cost for compensation measures that need to be entered into a DD 1391. The continued funding of the Planning Level Surveys for critical species and habitats are therefore key to military construction project execution.**

LIFE, Natura 2000 and the military (EU-brochure)

"…., most of the military areas, and especially those used for training and testing, contain significant, even spectacular, amounts of natural and semi-natural habitats and landscapes, with corresponding abundances of wildlife. Sometimes they are among the richest and most important sites for biodiversity in their country. …" (European Communities, 2005)

4.9.2 NATURA 2000 Areas within the USAG Stuttgart

As shown on the map in Appendix 3, large parts of the LTA and small portions of Patch and Kelley lie within FFH areas.

A small portion of land in the north of Kelley Barracks (approximately 2.8 ha) lies within the 697 ha large FFH area 'Filder' (No.: 7321-341. The predominant vegetation consists of deciduous trees, however.

Approximately 4.1 ha of land in the north-west of Patch Barracks lie within the FFH Area 'Glemswald' (No.: 7320-341). The total FFH area covers 3,056 hectares and consists of several non-contiguous areas. The vegetation consists mainly of deciduous trees.

A detailed NATURA 2000 study has been conducted for the LTA as part of the TES Survey & Management Plan (IVL 2008). 78 % of the LTA (approximately 446.5 ha) lies also within the FFH area 'Glemswald' (No.: 7320-341). The FFH habitat types found within the LTA and the area they cover are shown in the following table 4-3 (priority habitat types are marked with an asterisk ("*") in front of the FFH Code):

Priority Habitats

The presence of the priority habitat types (Annex I Habitats Directive) are particularly noteworthy. These valuable and rare habitat types (see table 4.3) are coincidentally enhanced by the efforts to maintain the open character of the training area for maneuver training, which in turn fulfills the ultimate management goal of the natural resources in the Stuttgart Training Area. Priority natural habitat types and species mean those in danger of disappearing.

Table 4-3: FFH Habitat Types occurring at the LTA

FFH Code	Brief Habitat Characterization	Total [ha]
3130	Oligotrophic to mesotrophic, base-poor standing waters with dwarf rush commun	1.68
3140	Oligotrophic to mesotrophic, calcareous waters with benthic vegetation of stonew	
3150	Natural eutrophic lakes with Magnopotamion or Hydrocharition-type vegetation	1.11
*6210	Near-natural, calcareous, dry grasslands and their shrub invasion stages (Fest Brometalia)	0.06

FFH Code	Brief Habitat Characterization	Total [ha]
*6230	Species-rich montane Mat-grass grasslands (and submontane areas in contin Europe) on siliceous soils	2.22
6410	Moor-grass meadows on calcareous, peaty or clayey, silt-laden soils (Mol caeruleae)	1.22
6510	Nutrient-poor lowland hay meadows (Alopecurus pratensis, Sanguisorba officina	2.61
9110	Woodrush/beech forest (Luzulo-Fagetum)	8.88
9130	Woodruff/beech forest (Asperulo-Fagetum)	4.73
9160	Pedunculate oak forest or oak/hornbeam forest	1.61
91E0	Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)	6.59

Source: TES Survey & Management Plan (IVL 2009)

For more information on the FFH habitat types present at the LTA, as well as their quality and geographical distribution, refer to the TES Survey & Management Plan (IVL 2008).

Natura 2000 Relevant Species

In addition to the habitat types, priority species exist in accordance with Annex II of the Habitats Directive. The habitats of these valuable and rare species are also greatly enhanced by the efforts to maintain the open character of the training area for maneuver training.

4.9.3 Natura 2000 Management Plan - Glemswald and Stuttgarter Bucht

Specific and detailed management strategies for the management of the Natura 2000 habitats at Boeblingen LTA are detailed in the Natura 2000 Management Plan for the "Glemswald and Stuttgarter Bucht" (Area Id # 7220-311). The Council Draft (Beiratsfassung) was finished in June 2018 for the Nature Protection and Landscape Maintenance section of the Stuttgart Regional Council (*Regierungspräsidium Stuttgart – Naturschutz und Landschaftspflege*).

Key Points Relative to the U.S. Military Mission

The management plan states several important facts in relation to the U.S. Army's use of the areas designated for the Natura 200 Directives;

- The preservation of biological diversity does not depend on the protection of individual habitats alone, but also through a coherent network of protected areas.
- The management plan establishes goals and measures to preserve and develop the habitats and species in close cooperation with the land owners and tenants.
- Most Natura 2000 Areas have only reached their valuable status through their anthropological use, therefore the continued use of the area is also valuable for it's preservation.

Significance of the Boeblingen LTA

The FFH Area by the name of "Glemswald und Stuttgarter Bucht" includes crucial, contiguous regions of the Stuttgart metropolitan area in the northwest and important sections of the Glemswald, a mixed-forest area of approximately 13,500 hectares in the southwest. The Glemswald FFH area consists of at total of 3,056 hectares, 19% of which is non-forested and meadow. With 447 hectares of the FFH area falling inside the Boeblingen LTA, and of that over 100 hectares of open land (23%), making the open meadow areas found in the LTA especially valuable for the maintenance of the biological diversity in the entire area.

The area is also subject to a dense network of roads and trails and is a meaningful recreation area for the Stuttgart region. For that reason, the relative lack of use and access by the public provides another unique factor that raises the ecological value of the LTA.

Management Goals

The overall goal in the FFH Management Plan is the preservation of the habitat types in their present range and condition with characteristic and regionally typical flora and fauna species. Due to the high density of urban settlements in the area, a high priority management goal is the preservation and maintenance of near-natural forest conditions, as well as the maintenance of the open land habitats.

Forested Habitats
Management specific to forested habitats involves silvicultural and harvest techniques that preserve the natural conditions normally found in an old-growth forest such as high portions of forest floor debris, deadwood, dead snags and low impact logging techniques that avoid high soil compaction.

Wet biotopes
The nutrient-poor, limestone rich ponds in LTA Boeblingen are specifically mentioned in the FFH Management plan as important habitats for the candelabrum algae [3140], the crested newt [1166] and the yellow-bellied toad [1193]. The current use and management of the area is considered sufficient for the maintenance of these habitats.

Open Meadow Habitats
Specific to calcareous grasslands [6210], Nardus pasture [6230], lean lowland meadows [6510], and Moor grass meadows [6410], maintain the current surface form with open, sun-exposed locations with the current natural vegetation mosaic. Additional

preservation goals involve protection from input of additional organic material, fertilizers or changes in current land use. Sustainment of these habitats require extensive maintenance through grazing or mowing. Additional populations can be developed with introduction of extensive land use (eg. military training).

4.10 WETLANDS AND DEEP WATER HABITATS

In Germany, wetlands are protected on the basis of the vegetation type alone. The Federal Nature conservation act provides a framework for state laws regarding the protection of these habitats. At the USAG Stuttgart, wetlands are protected by the Baden-Württemberg Nature Conservation Act (B-WNatSchG, *Naturschutzgesetz Baden-Württemberg*). Article 32 outlines the types of vegetation to be protected. According to the TES Survey & Management Plan (IVL 2008), there are a number of natural and man-made structures where wet biotope types have developed. Table 4-4 shows the protected wetland habitat types which have been documented in the training area during the 2008 TES biotope mapping and the corresponding protection status.

Table 4-4: Protected Wetland Habitat Types at the LTA

Biotope Types	§32	FFH Code	RL BW
Moist/litter/wet meadows			
Moist/litter/wet meadows, unspecified	§	-	-
Oligotrophic moist/litter/wet meadows	§	6410	1
Wood Club-rush swamp	§	-	2
Sedge reeds			
Lesser-pond-sedge swamp	§	-	3
Reeds			
Common Reed swamp	§	-	V
Small Reed swamp with Bur-reed, Spike-rush, Floating Sweet-g	§	-	V
Swamp with tall rushes	§	-	V
Spring areas			
Seeping spring	§	-	2
Standing water bodies, undisturbed, with hydrosere vegetation			
Pond < 1 hectare	(§)	(3150)	2-3
Temporary small water bodies	§	(3130/40)	2-3
Water retention basins	§	(3140/50)	
Creeks and rivers, undisturbed			
Creeks and rivers, undisturbed	§		2
Moist forests			
Moist forest, unspecified	(§)	-	2-3
Riparian forests of creeks			

Bird Cherry/alder riparian forest	§	*91E0	3
Remote Sedge/ash/alder riparian and headwater forests	§	*91E0	3

Legend for table 4-4:

Protection Provisions

RL BW *Red List of Baden-Württemberg for biotope types (LUBW, 2007)*

§ 32 *Paragraph 32 of the Baden-Württemberg State Nature Protection Act (NatSchG) dated 13 December 2005*

FFH *Fauna/Flora Habitat (FFH) Directive (92/43/EEC): Code number of the FFH type protected unde FFH Directive*

*** *Priority habitat according to Annex (I) FFH Directive*

( ) *Figures in parentheses designate biotope types or inseparable biotope complexes that only mee protective divisions in subsections*

Categories of Endangerment and Protection

1 *Threatened with extinction*

2 *Severely endangered*

3 *Endangered*

V *Early Warning List*

§ *Protected according to the relevant paragraph (§32 NatSchG)*

( ) *Belonging only in part*

The TES Survey & Management Plan (IVL 2008) report provides more information on the biotope types. A map showing the mapped biotope types across the LTA can be found in this report. Section 6.3 of this INRMP deals with the management of wetlands and deep water habitats.

4.11 FLORA

The typical flora, many old trees, within the USAG Stuttgart cantonment area gives many installations the character of a park. Many oak and beech trees are more than 200 years old; in Patch Barracks, some oak trees might even be more than 400 years old.

The trees in the cantonment areas were surveyed several times between 2001 and 2015. The results of the surveys showed that approximately 10.000 trees composed of approximately 40 different species are found within the cantonment areas of the USAG Stuttgart. Spruce (*Picea abies*), beech (*Fagus sylvatica*) and different oaks (*Quercus spec.*) dominate the composition of the forested areas. In the Robinson housing area, there is an old orchard, which contains several old fruit trees and is of local importance. No threatened or endangered plant species have been recorded within the cantonment areas.

A total of 437 vascular plant species were identified at the LTA during the TES Survey & Management Plan (IVL 2008). 21 species were found, that are on the Red List of *Baden-Württemberg* and another 14 species on the Early Warning List. See Section

“4.8.2”, “Threatened and Endangered Species within the USAG Stuttgart” and “4.7.2” for more information regarding the flora of the LTA.

4.12 FAUNA

This section provides an overview of the species that are known to exist within the LTA area. There was no detailed information available on the fauna for the cantonment areas.

Nature protection groups in connection with the *Bezirksstelle für Naturschutz und Landschaftspflege Stuttgart* carried out fauna surveys several years ago (Wahrenburg 1996 and Wahrenburg 2002). A total of 12 animal groups were recorded in these surveys. Some groups were intensively surveyed while others were recorded only by occasional observations. In addition to these surveys, the TES Survey & Management Plan (IVL 2008) gives current information on animal species from particular species groups. The following table contains the results of the fauna surveys from 1996 and 2002, supplemented by the more current information from the TES Survey & Management Plan (IVL 2008) for bats, amphibians and grasshoppers.

Table 4-5: Number of species per animal group

Animal Group	Number of Species
Birds (nesting in the LTA)	64
Reptiles	3
Amphibians	9
Bats	11
Ground Beetles	147
Water Beetles	40
Butterflies	51
Bees	47
Water Bugs	14
Dragonflies	24
Grasshoppers	17
Ephemeroptera	12
Trichoptera	~60
Water Snails & Mussels	11
Total	**510**

The results presented in table 4-5 cannot be regarded as a comprehensive inventory of all species to be found at the training area. Nonetheless, the high number of the species

recorded during the last 12 years is impressive and serves as an indication of the high biodiversity at the LTA. For all animal groups that were intensively surveyed, at least one third of all species occurring within the state of *Baden-Württemberg* were recorded within the LTA. For some groups, more than 50% of all species occurring in the state were recorded within the LTA. Therefore, it can be concluded that the fauna found at the LTA has a high ecological significance.

5.0 NATURAL RESOURCES PROGRAM STRUCTURE

The Environmental Management Office (ED) has primary responsibility for implementation of the INRMP at USAG Stuttgart.

5.1 INSTALLATION ORGANIZATIONS

Within the Installation, land management programs are divided into two major proponents: Environmental Natural Resource Directorate (ENRD) and Integrated Training Area Management (ITAM).

The Natural Resources program is implemented by two Environmental Protection Specialists.

The Integrated Training Area Management (ITAM) program is a core program of the Sustainable Range Program and is responsible for maintaining the land to help the Army meet its training requirements. It accomplishes this mission by: articulating the land requirements, repairing maneuver damage, and by reconfiguring the training lands. The ITAM program is implemented by the TSC Stuttgart and consists of a Chief, one LRAM Coordinator and two more individuals.

5.2 OTHER DEFENSE ORGANIZATIONS

Other sections of DPW and the Directorate of Morale, Welfare and Recreation (DMWR) share responsibility for the implementation of the activities addressed by the INRMP. The DMWR is responsible for the implementation of the Outdoor Recreation Management Program. Several other management programs are not applicable to the Garrison, and are therefore absent from the organization chart.

The Army Corps of Engineers, Europe District provides technical, project management, and contracting support to USAG Stuttgart. In addition, technical support is provided by HQ IMCOM-EUROPE. At the present time, no other defense organizations are directly involved with the implementation of the INRMP.

5.3 GERMAN AGENCIES

A number of German federal and state agencies are responsible for managing certain resources that are addressed in the INRMP. The Federal Forestry Service *(Bundesforst*) is responsible for the management of forested areas within USAG Stuttgart. For a more detailed explanation of their role refer to Section 6.4 and Section 6.5. The Institute for Federal Real Estate (*BImA / Bundesanstalt für Immobilienaufgaben*) represents the landowner within the boundaries of the USAG Stuttgart, and is therefore the main partner for U.S. Personnel in dealing with other State, County and City authorities and with private persons. Contracts for agricultural and grazing leases are established between the *BImA* and the interested third party directly. The U.S. forces can initiate subject contracts and must review them to avoid interference with the mission.

5.4 CONTRACTORS

Contractors are used by the ED and ITAM to provide assistance with a variety of natural resources projects. For example, contractors currently provide the following support:

- Conservation Advisory Services
- Threatened and Endangered Species Management
- Elaboration of management plans
- Landscaping and renovation as part of the Buildings and Grounds Maintenance Program;
- Tree surveys/inventories.

6.0 NATURAL RESOURCES MANAGEMENT PROGRAMS

6.1 INTRODUCTION TO MANAGEMENT PROGRAMS

This section presents the natural resources program structure for USAG Stuttgart, discusses management issues and concerns, and establishes goals and objectives to address management issues. The program structure is based on the installation-specific management situation and is designed to facilitate issue identification and prioritization, as well as project funding, implementation and tracking.

The following information is presented below for each of the management programs: responsibilities and points of contact at the installation and the German Government; a description of the program and its current status; standard operating procedures; management issues and concerns; inventory and surveying; management goals and objectives, project/program priorities; cost saving opportunities; implementation schedule; implementation funding options; and command support.

Applicable regulations and guidance associated with the respective Program are described in Appendix 4.

6.1.1 Funding for cantonment areas

The funding of natural resources management programs falls into major categories:

- Environmental funds (VENQ Environmental Quality)
- Operations and Maintenance (OMA) funds

The Compliance, Conservation, and Pollution Prevention environmental program areas are now managed under Management Decision Package (MDEP) Environmental Quality (VENQ). It "*enables installations to comply with legal environmental mandates and critical stewardship responsibilities that impact management and modernization of installations, while sustaining natural and cultural resources in a manner that provides continued access and long-term use of training lands to support the Army's installation missions*." (IMCOM FY19 Funding Guidance, 8 February 2019)

It should be noted that VENQ funds can be used to bring a program into compliance, but once a program is brought into compliance, these funds cannot be used again if the program goes out of compliance at a future date. OMA funds are used for projects that do not fall into any of the other categories.

Other funding sources (DDODS, AFH) may be available for natural resources programs.

Requirements eligible for funding by other MDEPs shall not be funded with environmental funds. This includes facility SRM; Real Property Maintenance (QRPA); Public Works and Municipal Activities (QDPW); Energy Conservation (QUTM); Logistics (QLOG); Integrated Training Area Management (TATM); etc.

6.1.2 Funding for training areas

The ITAM Program (which is not applicable to cantonment areas because no training lands are present) is one of the mechanisms for achieving the overall goals of the INRMP. Resource-specific management programs cover other planning requirements needed to meet U.S. Army and Host Nation sustainability goals. There is significant overlap and interaction between ITAM and resource-specific management programs, just as there is significant interaction between resources that are managed under these programs. Details are provided under 6.9.

For the training area, two additional funding sources are available. As such, the funding of natural resources management programs within the training area(s) falls into four principal categories:

- Environmental (ENV);
- Operations and Maintenance (OMA):
- ITAM (Integrated Training Area Management); and
- Agricultural and Grazing fund (AG funds).

ITAM core capability is funded through the MDEP separately from the Army's Environmental program. The MDEP code for ITAM is TATM. TATM may utilize Operations and Maintenance (OMA) funds for ITAM core areas such as RTLA, the former Land Condition Trend Analysis (LCTA). USAREUR strives to achieve the following distribution of funds attributed to individual components of the ITAM Program: 40% distributed between RTLA, Training Requirements Integration (TRI), and Sustainable Range Awareness (SRA) and 60% for Land Rehabilitation and Maintenance (LRAM).

In order to obtain ITAM funds, each ITAM installation is required to submit an annual ITAM work plan detailing potential ITAM projects via the Regional Training Support Center (RTSC) to their relevant Major Army Commands (MACOMs) (in this case USAREUR). The Project Management Review (PMR) is a semi-annual discussion process, by which MACOMs present their total ITAM requirements for all their installations. The main objective of the first PMR forum is to discuss and review the annual ITAM work plans and subsequently to develop a recommended draft Annual Program Plan (APP). The second PMR forum is held in conjunction with the annual Department of the Army ITAM Workshop. The objective of this second PMR is to confirm the Annual Program Plan and to discuss and validate technology initiatives and projects that have Army-wide ITAM impact.

Agriculture and Grazing (AG) funds tend to be for smaller value amounts and are directed at projects with a high ecological or public relations value.

Command support for natural resources management programs within the training area is determined by funding category:

- Command support for VENQ funds is through the USAG Stuttgart or IMCOM-Europe;
- Command support for OMA funds is through the USAG Stuttgart, and the Program Management Review (PMR);

- Command support for ITAM funds is through the Directorate of Training and the Program Management Review (PMR) Board;
- Command support for AG funds is through IMCOM-Europe.

6.2 TES MANAGEMENT & NATURA 2000 MANAGEMENT

6.2.1 Responsibilities and Points of Contact

The responsibility for the Threatened and Endangered Species (TES) program rests with the DPW-ED. All TES activities within the USAG Stuttgart must be coordinated with the respective landowners, the Federal Forest Service as well as with the relevant nature protection authorities within the state of Baden-Württemberg. Point of contact information relating to the Rare, Threatened and Endangered Species Management Program is included in 1.8.3.

6.2.2 Program Overview and Status

Currently, TES and Natura 2000 management is focused on the LTA. A draft Natura 2000 management program exists for the training area and cantonment areas. FFH habitat types and species are accounted for in the TES Survey & Management Plan (IVL 2008) for the training area.

As part of the TES Survey & Management Plan (IVL 2008), a management and development concept was developed for the LTA. The concept is based on the field surveys and field visits carried out during the survey, as well as on the development concept including a landscape management plan devised by Wahrenburg (1996 & 2002) by order of the state nature conservation administration of *Baden-Württemberg*.

The following development goals are set forth in this concept:

1. **Re-expansion of dwarf shrub heaths and nutrient-poor grasslands** as habitat of a unique flora and fauna with numerous rare and several extremely endangered species;
2. **Preservation of the diversity at sun-exposed standing water bodies** of various succession stages as habitat of an amphibian and dragonfly fauna of supra-regional significance, and as habitat of numerous regionally rare plant species of the dwarf rush community;
3. **Natural further development of unused succession forests** as a very rare forest type on a nationwide scale;
4. **Development of pasture woodland-like, open stands of old growth, closely interlinked with heaths and nutrient-poor grasslands**, e.g. as habitat for breeding bird and xylobiotic beetle species, which are dependent on these habitat types.

These development goals were also adopted as a model for the current management plan. Within the TES Survey & Management Plan project, the concept of 2002 was studied in detail and analyzed in relation to the current conditions. Several sections of the management plan were modified and/or supplemented where deemed necessary from today's perspective. This resulted in the creation of a series of recommendations for future TES management measures. More details on the management measures are shown in Appendix 13.

6.2.3 Inventorying and Surveying

Inventorying

As previously mentioned, the most current TES and habitat survey for the LTA is the study conducted by IVL in 2008. Additional data is available from various Planning Level Surveys (PLS), in particular the PLS conducted in 2013 covering the cantonment areas, as well studies conducted by German agencies some years before. For example, the *Bezirksstelle für Naturschutz und Landespflege* (BNL) Stuttgart performed surveys in the course of their land development plan (see Section 4.5).

Surveying

TES surveys are required by European legislation (Council Directive 92/43/EEC Article 11 on the conservation of Flora, Fauna Habitat (FFH) within the European NATURA 2000 network). Reports are required by FFH Directive (92/43/EEC Article 17) at regular intervals addressing developmental status and trends of threatened and endangered (T&E)/FFH species populations. According to the FFH Directive, "*Every six years from the date of expiry of the period laid down in Article 23, Member States shall draw up a report on the implementation of the measures taken under this Directive*".

Since spring 2009, a formal TES and NATURA 2000 surveying program has been in place for the LTA Böblingen. Generally, the projects are carried out in the form of biotope or habitat surveying, rather than surveying of certain species (groups). The surveying of the different habitats is done in cooperation with the following relevant parties: the BNL, the Bundesforst and the USAG Stuttgart. The surveying of the performance of some measures is recommended in the TES Survey & Management Plan.

The continuous observation of the TES and the Natura 2000 areas regarding an improvement or a deterioration of the ecological condition of species and habitats consists of the following individual activities:

Habitats are being observed that are either:

- Protected IAW FFH directives
- Protected IAW §32 of the Nature Protection Act (NatSchG BaWü)

Or, habitats that fulfill one of the following criteria:

- Habitat of species, which are highly endangered IAW the Red List
- Habitat of species, which are protected IAW FFH - or Bird Protection Directives
- Habitat of rare species that have their supra-regional core area within the LTA
- Habitat which is not or hardly represented outside of the LTA.

The surveying efforts are intended to assess the effectiveness of habitat management measures. Details on the surveying program for 2014-2018 are shown in Appendix 10. An overview of the surveying efforts 2014-2018 are shown below.

Group # of areas	**2014**	**2015**	**2016**	**2017**	**2018**
Vegetation					
16 Open Land (ol)	3rd Survey. 50% ol	4th Survey. 50% ol	4th Survey. 50% ol	5th Survey. 50% ol	5th Survey. 50% ol
9 Forest					
Bats					
180		4th Survey.		5th Survey.	
Amphibians					
13	Pioneer species	4th Survey.	Pioneer species	5th Survey.	Pioneer species
Tiger Beetles					
1		4th Survey.		5th Survey.	
Grasshoppers					
7	3rd Survey..		4th Survey.		5th Survey.
Birds					
5		3rd Survey.		4th Survey.	
Butterflies					
6	3rd Survey.		4th Survey.		5th Survey.
Dragonflies					
6		3rd Survey.		4th Survey.	
Ground Beetles					
6	2nd Survey.		3rd Survey		4th Survey.
Xylobiotic					
5		2nd Survey.		3rd Survey.	
Wild Bees					
5	2nd Survey.		3rd Survey.		4th Survey.
	6 Groups	**7 Groups**	**6 Groups**	**7 Groups**	**6 Groups**

Table 6.1: Overview of Surveying Program 2014-2018

6.2.4 Standard Operating Procedures

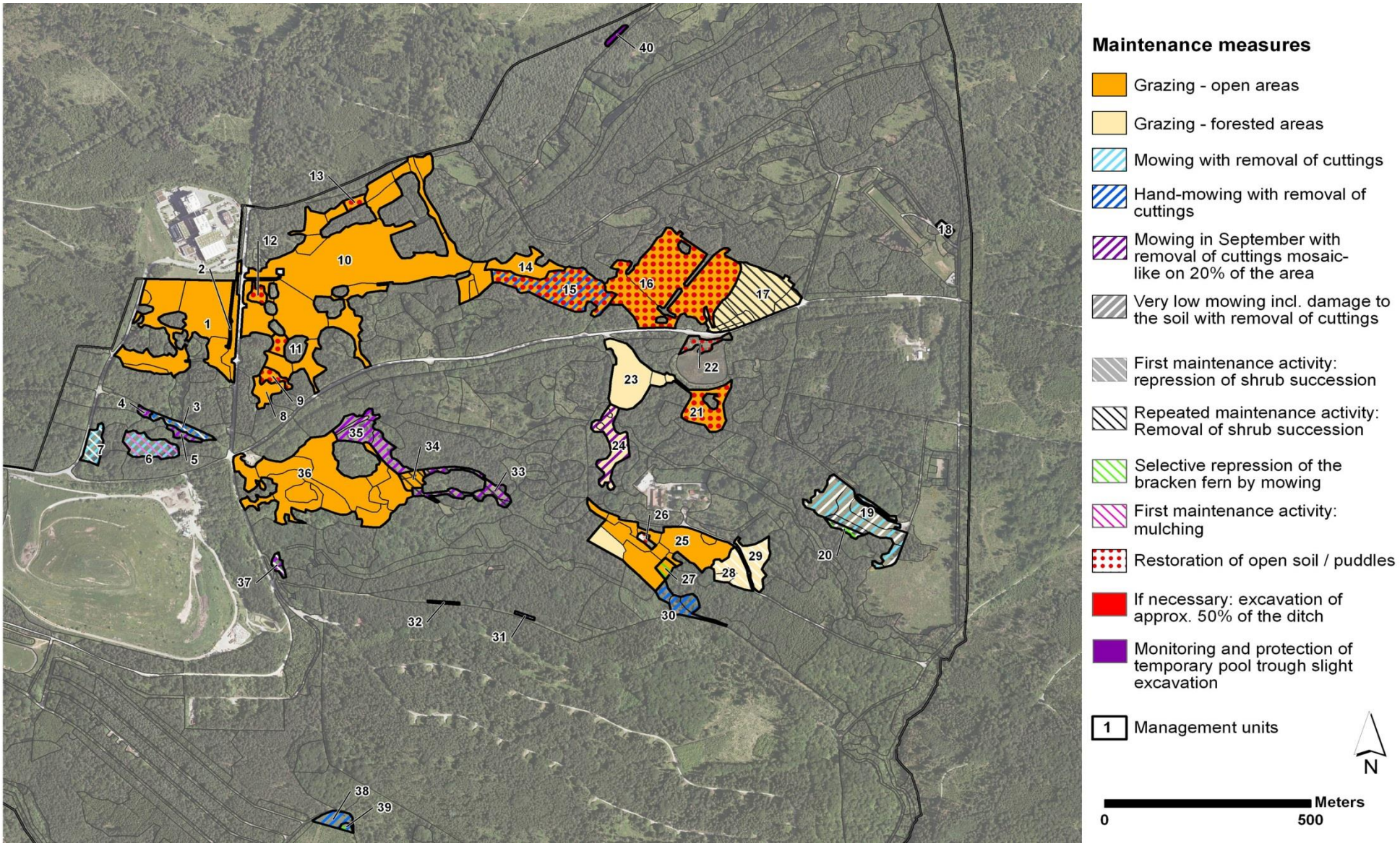
At present, no formal SOPs on TES management activities or surveying efforts have been developed for the USAG Stuttgart. Nevertheless, ED staff internally follows operating procedures and involves all relevant departments in decision processes, even though written SOPs do not exist.

6.2.5 Management Issues and Concerns

The rich species diversity within the LTA is a result of the rich habitat diversity and the military training activities (formerly of much higher intensity), which have created a mosaic of numerous highly diverse habitat structures within a relatively small area. The scope of military training activities at Boeblingen LTA was altered about ten years ago, and training with tanks and heavy equipment was discontinued. The result was that the early stages of habitat development began disappearing. Small water bodies began silting-up, and bare ground became overcrowded.

Since then, the main TES management task is to substitute for the missing disturbance, formerly created through heavy training activity. As current military use of the installation is restricted almost completely to infantry (i.e. foot soldier) activities, land management actions such as grazing, various mowing regimes, reduction and/or removal of succession in various areas, etc. have been used to provide the dynamic environment previously furnished by military vehicle operations.

Years ago, the ED started to implement and realize projects for the protection of the highly diversified habitat structures and the TES. These projects were carried out in cooperation and coordination with the BNL and the *Bundesforst*. Since 2009, the recommended TES management projects are being implemented by a contractor in cooperation with local landscaping enterprises, closely following the management recommendations given in the TES Survey & Management Plan (IVL 2008). Within a regional contract, a map outlining the TES management measures on the corresponding areas can be found on the following page. The grazing projects financed by the *Regierungspräsidium* (RP) Stuttgart and one EU program have been adapted to the management measures outlined in the TES Survey & Management Plan (IVL 2008). For this purpose, the RP Stuttgart, who is responsible for the projects and maintains the contracts, needs to be contacted through ED.


Maintenance measures
Grazing - open areas
Grazing - forested areas
Mowing with removal of cuttings
Hand-mowing with removal of cuttings
Mowing in September with removal of cuttings mosaic-like on 20% of the area
Very low mowing incl. damage to the soil with removal of cuttings
First maintenance activity: repression of shrub succession
Repeated maintenance activity: Removal of shrub succession
Selective repression of the bracken fern by mowing
First maintenance activity: mulching
Restoration of open soil / puddles
If necessary: excavation of approx. 50% of the ditch
Monitoring and protection of temporary pool trough slight excavation
1 Management units
N
Meters
0
500

6.2.6 Management Goals, Objectives, and Resources Required for Implementation

Management Goal #1: Implement TES Management Measures – Management of Critical Habitats

In order to comply with Host Nation and EU law, it is mandatory to implement the necessary measures to prevent deterioration of the protected habitats on the LTA. The TES and NATURA 2000 management program at the USAG Stuttgart has already formulated appropriate management goals within the TES Survey & Management Plan (IVL 2008), which was developed in close coordination with the ED, the Bundesforst and the RP. The recommended management measures focus on the most important TES and T&E habitat protection issues and should be implemented according to the time schedule outlined in the TES Survey & Management Plan (IVL 2008).

Objectives

1. To comply with Host Nation and EU law.
2. To prevent a deterioration of protected habitats by implementing appropriate management measures.
3. To protect the current populations of rare, threatened and endangered species and their habitats.

Resources Required for Implementation

In-house Staff: In-house staff will be needed to ensure the funding required for the TES management program and to coordinate the work, attend meetings etc. Estimated time required for one person: 2 weeks/year

Contractors: Contractors will be utilized to carry out the management measures. Estimated cost: $ 170,000 per year

Equipment: No anticipated equipment is needed to achieve this goal.

Materials: No anticipated materials are needed to achieve this goal.

Management Goal #2: Develop and Implement a TES Surveying Program

The main objective of TES Surveying is to control the populations of threatened and endangered species identified in the respective surveys that are carried out in an annual or biannual rotation along permanent transects or other definite recording locations. Chapter 13 of the FGS-G states that the Garrison shall manage to prevent damage to protected species and biotopes. This surveying will allow the Garrison to assess the progress in preventing the loss of important habitat and the deterioration of TES populations.

Objectives

1. To maintain the current list of known threatened and endangered species occurring on the site as required by the FGS-G (DoD, Jul 2012).
2. To survey areas where specific actions influence habitats or species of interest.

To guarantee continuity, the scheme and frequency of the surveying efforts during the 2009-2013 Program will be adapted and continued during the 2014-2018 period.

Resources Required for Implementation

In-house Staff: In-house staff will be needed to ensure the funding required for the TES surveying program, attend meetings, etc. Estimated time required for one person: 1 week/year

Contractors: Contractors will be utilized to develop a surveying plan and to conduct the surveys of TES as planned in the surveying program. Estimated cost: $25.000 per year

Equipment: No anticipated equipment is needed to achieve this goal.

Materials: No anticipated materials are needed to achieve this goal.

Management Goal #3: Assess, Manage and Survey Invasive Species

The objective is to identify the invasive species and their location within the garrison. Invasive species almost always have the potential to jeopardize TES. A rigorous program for the control of those invasive species will be pursued. Results will then regularly be surveyed.

Objectives

1. To identify and locate invasive species.
2. To determine and execute sound control programs

Resources Required for Implementation

In-house Staff: Coordination with RP, IMCOM-E and *Bundesforst*. Estimated time required for one person: 1 week

Contractors:

1. Objective 1: One contractor should be used to perform all field surveys and prepare the respective reports including GIS for all data found. Estimated cost: $60.000
2. Objective 2: Annual removal of critical plants. Est. cost: $35.000

Equipment: Mowing/cutting, plowing and digging equipment may be needed to achieve this goal.

Materials: No anticipated materials are needed to achieve this goal.

Management Goal #4: Update TES Baseline Survey from 2008 on entire LTA

The available civil studies regarding T&E species and the current TES management plan (IVL 2008) do not yet provide a comprehensive picture of the ecology of the LTA. Some TES species-groups have last been surveyed many years ago and no current data is available. The AR 200-1 requires Planning Level Surveys that include fauna, flora, and endangered species. A Phase II TES survey is required to provide a sufficient

baseline inventory for future management activities. Projects will be entered for alternating surveys e.g. beetles, butterflies.

Objectives

1. To update the current list of the threatened and endangered species occurring on the LTA as required by the FGS-G (DoD, Jul 2012).
2. To survey the species groups of birds, butterflies, moths, xylobiotic beetles, dragonflies, ground beetles and wild bees.

Resources Required for Implementation

In-house Staff: Provide available information to the contractor, participation in meetings and managing and coordinating the contractor's work. Estimated time required for one person: 1 week

Contractors: One contractor should be used to perform all field surveys and prepare the respective reports including GIS for all data found. Estimated cost: $50.000

Equipment: No anticipated equipment is needed to achieve this goal.

Materials: No anticipated materials are needed to achieve this goal.

6.2.7 Project/Programs Priorities and Funding Options

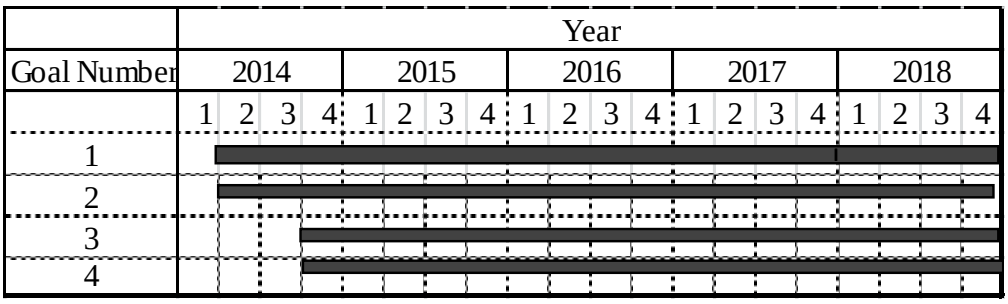
Goal Number	Priority	Development Responsibilities	Possible Funding Options
TES Goal #1 Implement TES Management Measures	Highest	Contractors	VENQ
TES Goal #2 Develop and Implement a TES Surveying Program	Highest	Contractors	VENQ
TES Goal #3 Control of Invasive Species	Important	Contractors	VENQ/TATM
TES Goal #4 Extend Current TES Survey to Include Additional Species Groups	Important	Contractors	VENQ

6.2.8 Cost Saving Opportunities

Regular surveying can save money by keeping track of the condition of habitats and TES, and by evaluating the success of measures taken. Subsequently, the most effective and most efficient measures can be determined.

6.2.9 Implementation Schedule

The implementation schedule shown below is specific for the intended life span of the INRMP. It should be noted that the schedule might change due to adaptive management and the availability of funding.



6.2.10 Command Support

General information regarding command support can be found in Section 6.1. Additional information on command support for individual projects can be obtained from the ED USAG Stuttgart.

6.3 WETLANDS AND DEEP WATER HABITATS MANAGEMENT

A number of legally protected wetlands and deep water habitats have been identified through the TES Survey (see Section 4.8.2). Although these biotope types only account for a small percentage of the LTA area, some are of high ecological value (e.g. the moor-grass meadows west of the MOUT site).

As the wet habitat types are of limited size only, there is no need for a separate wetlands and deep water habitats management program. Those habitats are accounted for in the TES management program.

6.4 FISH AND WILDLIFE MANAGEMENT

The overall responsibility for the management of fish and wildlife in Germany rests with the Host Nation through the *Bundesforst*, and is therefore included in the Forest Management Program, Section 6.5. However, effective operation of fishing and hunting activities requires close cooperation with the staff of the USAG Stuttgart.

Within the USAG Stuttgart, fishing and hunting is coordinated by the Directorate of Morale, Welfare & Recreation (MWR), and is therefore included in the Outdoor Recreation Program (Section 6.11). The ED is responsible for the Threatened, Rare and Endangered Species Program, which is addressed in Section 6.2. POC information for all relevant programs is given in Section 1.8.

6.5 FORESTRY MANAGEMENT

6.5.1 Responsibilities and Points of Contact

The U.S. Army has no direct responsibility for forest management on the military installations in Germany. IAW the NATO-SOFA Agreement, this authority rests with the Host Nation. Responsibility for all forestry activities within USAG Stuttgart rests with the Federal Forestry Service (Bundesforst).

The Federal Forestry Service is an independent area of technical responsibility, representing the *Bundesanstalt für Immobilienaufgaben* (BImA, Institute for Federal Real Estate) and thus one of the largest land administrators in Germany. The Federal Forestry

Service is responsible for the administration of woodland, open land and waterways owned by the federal government. In addition to managing silviculture, the *Bundesforst* is responsible for providing realistic training settings in forests, preventing hazards (e.g. from deadwood) and establishing protective forests. The *Bundesforst* maintains protective forests with various functions, such as emission prevention (e.g. dust), fire prevention and the protection of water bodies, soils (e.g. on slopes), biotopes and species.

Its program of services is widely diversified and includes, in brief:

- Timber production and sales.
- Hunting opportunities and the sale of game.
- Nature protection planning and direct execution e.g. in terms of the implementation of the EU directive NATURA 2000.
- Procedural and technical support in spatial planning and measures such as compensation measures.
- Forest services including purpose-specific land management, inventories and technical plans for the various users.
- The care and management of woodland, waterways and open land.

(*Bundesanstalt für Immobilienaufgaben* / BImA, Institute for Federal Real Estate, October 2007)

6.5.2 Regulatory Requirements and Enforcement

Applicable regulations and guidance associated with Forest Management Program are described in Appendix 5.

The Federal Forestry Office Stuttgart is responsible for the management of all forests, as well as non-forested areas and wildlife. This responsibility is authorized according to § 2 of the Institute for Federal Real Estate Act (*BImA-G / Gesetz über die Bundesanstalt für Immobilienaufgaben*).

The Supplementary Agreement (Article 53) to the NATO SOFA defines that within an accommodation made available to the US Forces for its exclusive use, a force or civilian component may take all the measures necessary for the satisfactory fulfillment of its defense responsibilities. In a decree dated 15 Feb 02, the Federal Ministry of Finance (FMOF) states that defense requirements always have priority at military facilities made available to the US Forces.

During a meeting at the FMOF (10 Mar 04) Ministerialrat Leyendecker (BImA) confirmed that the US Forces have the right to do everything necessary to safeguard their military interests as long as these actions are IAW German law. Herr Leyendecker further reinforced that NATO SOFA Article 53 establishes the Federal Forest Agencies' sole interest to support the forces in their military mission. Other typical forestry interests such as forest management and hunting shall be performed in a manner that they do not impact the military mission. U.S. Army Europe has since based its protocol and management

policies on these landmark decisions which ensure the support of BImA and the Bundesforst and makes military training the overriding priority in all matters dealing with training area operations and management of training area resources.

6.5.3 Organization of the Bundesforst

The *Bundesforst* is organized at the national level and consists of one "*Zentrale*" (Main authority) and 17 "*Bundesforst Betriebe*" (formerly *Forstämter* = forestry offices). Each forestry office is responsible for forest districts (*Forstreviere*). The forestry office responsible for the USAG Stuttgart is the forestry office *Heuberg*. A forest district for the forested areas at the USAG Stuttgart was created and responsibilities assigned to a District Forester (*Revierförster*). The district forester's office is located in Boeblingen. Table 6-1 gives an overview of the *Bundesforst* POCs for the USAG Stuttgart.

Table 6-1: USAG Stuttgart Bundesforst POCs

Agency		**Primary Point of Contact**		
Name	**Address**	**Title**	**Name**	**Telephone Nr**
Forestry Office Heuberg	Hauptstrasse 56 72469 Meßstetten	Director Forestry Office *(Leiter Bundesforstbetrieb)* *(Ständiger Vertreter Leiter Betriebsbereich)*	Dr. Goetze Hr. Duve	07431/94933-0 07431/94933-0
District Office Boeblingen	Friedrich List Str. 24 71032 Boeblingen	District Forester *(Revierförster)*	Hr. Ganz	07031/287239

6.5.4 Program Overview and Status

The main goal is to maintain and develop sustainable and ecologically sound forests and ecosystems. The forest management practices - mainly performed by the Federal Forestry Service *(Bundesforst*), which is responsible for the areas of extensive training - shall fulfill particular (military) interests and limit the negative impacts on the civilian surroundings. The natural functions of the forest and its transition zones, with regard to soil, water economy, climate, landscape, plants and animals should be maintained and developed, and ecosystem development should be encouraged. These goals should be achieved within a balanced financial framework.

The main tools to achieve these goals are the following data collection activities:

- Forest Inventory (*Forsteinrichtung*)

  This management plan is valid for 10 years. The Forest Inventory is a medium-term planning instrument and includes a recording of the forest condition. The plan outlines the medium-term forestry policy according to sustainability criteria. The USAG Stuttgart Forest Inventory was compiled on 1.10.2014.

- Forest Site Survey (*Standortkartierung*)

This site survey is a major part of the *Forsteinrichtung.* The survey characterizes the environmental conditions (e.g. soil, water, nutrients) of the forest area.

- Forest Biotope Inventory (*Waldbiotopkartierung/2012*)

  The Forest Biotope Inventory gathers and evaluates the most important ecological parameters of the forest. This survey acts as a basis for medium-term planning in regard to conservation and management of valuable biotope types.

- Forestry Functional Map (*Waldfunktionskarte*) was developed in 2013 in coordination with ED and TSC.

Wildlife Management

The annual animal harvesting plan (Abschußplan) for the training area allows for the culling of, on average 27 roe deer (7 roebucks, 8 adult females and 8 fawns). No numbers are given for other game species. On average, 5 roe deer and 4 boars are shot by U.S. citizens stationed at the installation per year. Hunting is only permitted with a hunting license and under the guidance of the district forester.

Communication

The U.S. Forces Liaison Office (USFLO) Baden-Württemberg in Stuttgart is the office for liaising with the *Bundesforst*. But the ED, the Local Range Office and the *Bundesforst* also frequently coordinate together on a case by case basis. All actual or potential conflicts between forest management activities and the military mission are discussed on the appropriate level and brought to a solution. When necessary, IMCOM-E and higher-level officials from the Bundesforst participate in these meetings as well.

6.5.5 Inventorying and Surveying

The Forest Inventory translates general goals into concrete management instructions applying to distinct areas. The Forest Inventory was completed for Boeblingen LTA in 2014 and is valid for 10 years. The basis for this management manual is the Forest Site Survey. This survey maps the soils, together with soil attributes such as type, moisture and other attributes influencing the growth potential of the area.

The Annual Forestry Plan is the main guide for the district forester's daily work. It shows the single management activities necessary to fulfill the goals of the 10-year Forest Management Regulation.

6.5.6 Standard Operating Procedures

There is no specific SOP concerning forest management.

6.5.7 Management Issues and Concerns

Since the U.S. Army has no authority or responsibility for forest management, the rest of this section has been intentionally left blank.

6.6. VEGETATION MANAGEMENT

6.6.1 Responsibilities and Points of Contact

The O&M Grounds Maintenance Coordinator has primary responsibility for administering and implementing grounds management activities. Secondary responsibilities are assigned to the Base Maintenance Contract. Point of contact information relating to the Vegetative Management Program is included in Section 1.8.

6.6.2 Program Overview and Status

Most grounds maintenance and vegetation management work at the USAG Stuttgart is carried out in the cantonment areas. Within the training area, only the grass in the bunkers area is mowed twice a year. In order to avoid repetition, the grounds maintenance and vegetation management information for both cantonment and training areas has been detailed within this section.

Maintenance of grounds is essential to the military mission. Lands, facilities, and equipment must be protected continuously from dust and erosion. Welfare and morale of personnel is fostered by pleasant surroundings and it is therefore important to develop and enhance the natural terrain and vegetation through appropriate plantings. To accomplish these objectives, grounds maintenance operations should be conducted to take advantage of the varied local ecological features without damaging them.

Grounds consist of all land and water bodies for which an installation commander has responsibility. Grounds are grouped into three categories: ‘improved’, ‘semi-improved’, and ‘unimproved’ (Department of the Army, July 1982). This classification is intended to provide a means of standardizing the level and intensity of maintenance in particular areas. The degree of maintenance performed should be in accordance with the classification of the area. For example:

- Improved grounds – This category includes grounds on which intensive maintenance activities must be planned and performed annually as fixed requirements. These are generally areas within built-up sections of an installation. Maintenance operations can include: mowing, irrigating, fertilizing, cultivating, aerifying, sodding, pruning and trimming, weed control, insect and disease control, landscape planting, maintenance of tamped areas, maintenance of artificial surfaces, for example running tracks and maintenance of playgrounds. The types of areas included are: lawns, landscaped areas, athletic facilities, parade and drill fields, golf courses, cemeteries, playgrounds, road shoulders and grassed runways, taxiways and parking areas.

- Semi-improved grounds – These are grounds on which periodic recurring maintenance is performed but to a lesser degree than on improved grounds. Maintenance practices normally include: mowing, weed and brush control, erosion control, dust control and drainage maintenance. Types of areas included are: antenna fields, airfield shoulders along runways, ammunition storage areas, clear zones, drop zones, firebreaks, golf course roughs, small arms ranges, picnic areas, railroad beds, road shoulders and wildlife food plots.
- Unimproved grounds – This category includes all acreage not classified as improved or semi-improved grounds. Maintenance activities are generally unpredictable and normally evolve from the military mission, and are also geared toward soil, water and wildlife conservation, floods, fires, insect infestations and disease epidemics. Types of areas include: gunnery areas, impact areas, training and maneuver areas; agricultural and grazing land; forest areas; agricultural and grazing land, lakes, ponds and swamps and areas under buildings and covered by pavement.

  (AR 200-1, Department of the Army, December 2007).

The majority of grounds maintenance operations is carried out by Base Maintenance Contract (BMC), but some work is undertaken by occupants of the housing areas: occupants have to mow the grass within 15 meters of their building. Grounds maintenance services covered under the BMC include: grass cutting, pruning, weed control, bush and hedge trimming, watering of small trees, fertilizer application, sand replacement, leaf raking, road remarking, sweeping of roads and sidewalks, trash collection and snow and ice removal/control on roads and sidewalks.

Trees on the cantonment areas

Responsibility for the maintenance of trees is split between the *Bundesforst* and O&M (Base Maintenance Contract) staff. A tree with a diameter greater than 10 cm is considered to be a tree and as such is to be considered under tree management.

As part of the legal duty to maintain safety (*Verkehrssicherungspflicht*), the responsible urban tree manager from O&M carries out inspections of trees on the barracks areas. With the help of the tree-inventory (*Baumkataster*), the tree manager identifies measures that should be performed, e.g. clearing of hazardous crowns on trees that provide nesting to TES. The O&M urban tree manager has the responsibility for all tree-maintenance measures within the cantonment areas. The maintenance work itself is carried out by the BMC and supervised by O&M. Every 3-5 years, IMCOM-E also provides funding to contract a professional arborist to carry out maintenance measures related to trees.

If trees need to be cut, O&M will receive the request for removing trees (*Baumfällantrag*), which is reviewed and finally forwarded to the local forester (Revier*förster*), who carries out the cutting.

All work on trees, such as pruning and felling, shall be in strict accordance with the USAG Policy Letter for Urban Tree Management and the IMCOM-E Policy on Urban Tree Management. (Appendix 8)

Trees on the training area

Trees on the training area are under the responsibility of the *Bundesforst.* Information regarding forestry management is contained in Section 6.e.

6.6.3 Inventorying and Surveying

Inventorying

An inventory of all trees in the cantonment areas is kept in the urban tree inventory database (latest partial update 2018).

Surveying

- Trees within the cantonment area are surveyed semi-annually.(see previous page);
- Landscaped areas are surveyed to determine the level of maintenance required during the growing season;
- Paved areas and building surroundings are surveyed for weeds during the growing season;
- Records of annual pesticide usage are maintained by the BMC and O&M Division;
- Accumulation of leaf litter is monitored during the season for safety and aesthetic reasons.

6.7 INVASIVE SPECIES MANAGEMENT

No separate Invasive Species Management Program exists at the USAG Stuttgart. All invasive species issues are handled by the TES Management Program (Section 6.2) and the Pest Management Program (Section 6.8), which is in turn managed by the Environmental Division.

6.8 PEST MANAGEMENT

6.8.1 Responsibilities and Points of Contact

The pest management coordinator at the O&M Division has primary responsibility for implementing pest management activities. Secondary responsibilities are assigned to building occupants.

Point of contact information relating to the Pest Management Program is included in Table 1.8.1.

6.8.2 Program Overview and Status

The Pest Management Program shall implement Integrated Pest Management (IPM) procedures that prevent pest problems, or conditions conducive to pest problems, in order to minimize the use of pesticides. When pesticide use is warranted, the least toxic and most effective product will be used (FGS-G, July 2012).

The Pest Management Program is implemented through the Pest Management Plan for the installation. The plan, which must be updated annually, provides a framework through which effective pest management is defined and performed on the installation. The framework provides guidelines for health and environmental safety; pest identification and surveillance; pest management; and pesticide storage, transportation, use, and disposal. The plan is also intended to be used to reduce reliance on pesticides, enhance environmental protection, and maximize the use of integrated pest management techniques.

There are 34 pests targeted in organized control programs at the installation, including numerous arthropods (ants, cockroaches, crickets, earwigs, etc.), rodents (mice and rats), birds (pigeons, starlings), and vegetation. Methods of controlling pests include mechanical/physical, biological, and chemical methods, which do not always aim at and result in killing the pest. This is certainly the case with birds, which are protected by law. Where possible, preventive measures are taken like the installation of fly screens to reduce the need for pesticide usage. Furthermore, ‘pest-aware’ behavior of the staff is promoted by supervisors (e.g. hygiene practices, dumping of food scraps etc.).

For more details please refer to the USAG Stuttgart Pest Management Plan (June 2019), available through O&M.

6.8.3 Inventorying and Monitoring

Apart from the Kornwestheim Golf Course, the Stuttgart Installations have contracted out all pest management work. The contractor does not have pesticide storage capability on the USAG installations and therefore there is no need for a pesticide inventory.

Pest surveillance and pesticide use monitoring are conducted by the contractor in accordance with the Pest Management Plan. Monthly Pest Management Reports (DD FORM 1532) are prepared and submitted to the Garrison.

At the golf course, pest management is carried out by in-house personnel. All pesticide applicators possess the required DoD and Host Nation qualifications. Pesticides are mixed and stored on site in a recently adopted building.

6.8.4 Standard Operating Procedures

SOPs for pest management are contained in the Pest Management Plan for the installation.

6.8.5 Management Issues and Concerns

Potential pest management issues and concerns related to natural resources management at the USAG Stuttgart include improper application or accidental spills of pesticides that could harm sensitive natural resources (e.g. TES, surface water, and wetlands). To this date, no pest management-related impacts to sensitive natural resources have been identified at the installation. The Pest Management Plan contains a general list of prohibited activities and procedures to avoid impacts. For example, no pesticides are applied directly to wetlands or water areas, unless use in such a site is specifically approved on the label and the proposed application is approved by the Environmental Division. Effective coordination of pest management activities between pest management, grounds maintenance, and the ED is essential for avoiding impacts to natural resources.

Reducing pesticide usage is an overall environmental management issue and concern of the Department of Defense (DoD). In order to further reduce dependence on and use of pesticides, non-chemical pest reduction should always be favored where appropriate. The annual use of pesticides is monitored using the data from the monthly reports (1532) which are entered annually in the Measures of Merit (MoMs). These MoMs reflect any increase or decrease in the amounts of actually applied pounds of active ingredients for any given FY.

6.8.6 Management Goals, Objectives and Resources Required for Implementation

For many years, Pest Management in USAG Stuttgart area has worked well. The coordination between O&M and ED has room for improvement.

6.9 TRAINING AREA LAND MANAGEMENT

Integrated Training Area Management (ITAM)

As the Department of Defense's premiere land force, the U.S. Army relies on land to achieve its training objectives and maintain readiness standards. Consequently, training lands are one of the U.S. Army's most valuable assets. In order to achieve its missions, the U.S. Army must have lands that are capable of supporting training and other functions indefinitely into the future. The ITAM Program was developed by the Department of Army to integrate training and other mission requirements for land use with sound natural resources management of the land. The ITAM Program is a core program of the Sustainable Range Program (SRP), which is the U.S. Army's overall approach for improving the way in which it designs, manages, and uses its ranges to ensure long-term sustainability. The ITAM Program relies on its five components and an integrated management from Department of the Army Headquarters, ACOM (Army Commands) /ASCC (Army Service Component Commands) /DRU (Direct Reporting Units), and installations to accomplish its mission. The five components are:

- Range and Training Land Assessment (RTLA);
- Land Rehabilitation and Maintenance (LRAM);
- Training Requirements Integration (TRI);
- Sustainable Range Awareness (SRA);

and as the foundational support element of the Sustainable Range Program,

- Geographic Information Systems (SRP-GIS);
  the SRP GIS Program provides standard geospatial range information capabilities at all echelons of the U.S. Army, including the RTLP and ITAM programs.

These components combine to provide the means to understand how the U.S. Army's training requirements impact land management practices, what the impact of training is on the land, how to mitigate and repair the impact, and communicate the ITAM message to soldiers and the public. SRP GIS provides spatial information that assists land managers in making their decisions.

The ITAM Program and its status at USAG Stuttgart are briefly described below. Detailed information on these subprograms and the overall ITAM Program strategy provides the SRP Website https://srp.usareur.army.mil/SRPsite/Default.aspx

The current LRAM 5 year plan (2014-2019) recommends a number of maintenance and repair measures for the 5 year cycle.

6.9.1 Responsibilities and Points of Contact

Overall responsibility for ITAM is assigned to the Office of the Deputy Chief of Staff for Operations and Plans (G3/5/7), with specific responsibility residing in the Training Directorate (DAMO-TR). There are coordinating roles for the implementation of ITAM assigned to USAREUR in the Directorate of Training (DAMO-TR). The POC for the ITAM

Program in USAREUR coordinates the ITAM Program implementation at USAG Stuttgart with the Directorate of Training. All POCs for the ITAM Program are given in Table 1.8.1.

6.9.2 Regulatory Requirements and Enforcement

Applicable regulations and guidance associated with Integrated Training Area Management (ITAM) are described in AR 350-19 – The Army Sustainable Range Program, and applicable chapters of the regulation (Chapters 5 and 8) are found in Appendix 4.

6.10 GEOGRAPHIC INFORMATION SYSTEM (GIS) MANAGEMENT

6.10.1 Responsibilities and Points of Contact

GIS is currently in operation at the DPW (ED, Master Planning) and at Range Operations. GIS coordination duties are assigned to the Plans, Analysis and Integration Office (PAIO), which ensures that the flow of information within the USAG, and between the USAG and the headquarters office. GIS technology support services for the DPW-ED are provided by IMCOM-E. The responsibilities and points of contact related to GIS are listed in Table 6.10-2.

Table 6.10-2: GIS Points of Contact

Department/Activity	POC
IMCOM-E Regional Support Center - GIS Suppo Services	Mr. Christoph Graner
USAG Stuttgart DPW-ED GIS Data/Project Management	Mrs. Inga Gebhard

6.10.2 Program Overview and Status

System Description

The GIS software programs currently used at the USAG Stuttgart are ArcGIS from Environmental Systems Research Institute (ESRI), MicroStation and ITAM Viewer. The MicroStation base maps (detailed maps of installation layout) are maintained by the Master Planning Division. Other divisions build program specific geographical data layers to use in conjunction with these base maps. All the data within DPW is stored on a shared hard drive available to the entire directorate. Large amounts of data are also created by the Environmental Division and IMCOM-E. IMCOM-E is the coordinating agency for GIS work. IMCOM Headquarters in San Antonio purchases required software licenses and guides installation on U.S. Army Garrisons.

The ED still primarily uses the shapefile format for vector data management. It is, however, planned, to convert the data into geodatabase format. Master Planning primarily uses the MicroStation format. The data compiled by Range Operations are predominantly in the ITAM Viewer format. Raster data are in MrSID, GeoTIFF or IMG format.

During the last several years, large amounts of GIS data (single layers as well as ArcGIS and Access database systems) have been created.

Future Plans

Currently, the ED GIS Program focuses on the development of conservation and compliance related geospatial databases. All ongoing projects for GIS data development are based on the AR 115-13.

6.10.3 Standard Operating Procedures

GIS technology has advanced consistently during the past few years. Guidelines for the U.S. Army's Installation Geospatial Information and Services (IGI&S) program are

found the AR 115-13 (most recently dated 24 May 2017). The regulation defines general requirements for GIS data for the IGI&S program (Section II) and also specifies the performance of Quality Assurance on each IGI&S layer through Quality Assurance Plans (QAPs).The goal is to increase data compatibility, eliminate redundant GIS work, and integrate installation-specific GIS databases and applications. The *Spatial Data Standard for Facilities, Infrastructure and Environment* (SDSFIE), originally developed by the Standards Working Group of the CADD/GIS Technology Center, provides the necessary standards for geospatial table structure, nomenclature, attributes, and symbology to allow for data integration. SDSFIE has been adapted by OACSIM and evolved to the Army Gold SDSFIE 4.1.

The **Memorandum DAIM-ZA** includes the IGI&S Data Layer Proponency Matrix, a list of standard *Installation & Environment* (I&E) geospatial data layers that support installation management processes. Some of those datasets are indicated as *Common Installation Picture* (CIP) datasets, which are defined as minimum sets of data needed to support Army military installation mapping and display.

6.11 OUTDOOR RECREATION

6.11.1 Responsibilities and Points of Contact

Outdoor Recreation activities at the USAG Stuttgart belong to the Recreation Division, which is under MWR. The Outdoor Recreation Center is located at Panzer Kaserne. No Outdoor Recreation Management Plan currently exists. Point of contact information for the Outdoor Recreation Program is provided in Table 1.8.1.

6.11.2 Program Overview and Status

Outdoor recreation activities include both natural resources-based activities and other recreational activities, for example basketball, which are not addressed in this INRMP.

Generally speaking, one focus of outdoor recreation programs is to facilitate optimum and multiple-use of natural resources in a manner that does not interfere with mission activities. Outdoor recreation opportunities support the military mission by providing quality of life benefits to military personnel, their families, and the USAG Stuttgart. In addition, participation in these activities increases natural resources awareness and fosters good sustainability of the land.

On the lands of the USAG Stuttgart, natural resource-based activities are limited by the availability of appropriate natural resources and by the military mission. At Boeblingen LTA, the only regular outdoor recreation activity is hunting, offered through the Rod and Gun Club. Game management and hunting at the LTA are the responsibility of the *Bundesforst* (see Section 6.5 Forestry Management). U.S. citizens may hunt at the LTA in accordance with local regulations and procedures. All U.S. citizens hunting on the installation must be accompanied by a local forester.

There is also the possibility to play paintball on the antenna field at the LTA, and once a year, a mountain bike race through the LTA is held.

No further natural resource-based outdoor recreation activities are provided at the installations. However, the Outdoor Recreation Center offers outdoor adventure activities in the surrounding area and equipment rentals. The offered outdoor adventure activities include white-water rafting, alpine hiking, mountain biking, rock climbing and paragliding. Equipment for biking, camping, canoeing, kayaking, skiing or snowboarding, and for special events (canopies, BBQ Grills, etc) can also be rented from the Outdoor Recreation Center.

Additionally, the Rod and Gun Club offers fishing at a leased fishing stream in the Black Forest.

6.12 WILDLAND FIRE MANAGEMENT

The Fire Chief, under direction from the DPW (Community Fire Marshal), has primary responsibility for implementation of the fire management activities. Point of contact information is provided in Table 1.8.1.

A Mutual Aid Agreement in relation to fire protection exists between the USAG Stuttgart and the local civilian fire departments.

At the present time, controlled burning is not used as a natural resources management tool at the USAG Stuttgart.

6.13 TRAINING OF NATURAL RESOURCE PERSONNEL

Competency training of personnel responsible for the management of natural resources is essential to uphold the quality of the program. In the past, a number of training opportunities were offered by IMCOM-E, such as the Natural Resources Training Workshop and the Pest/Land Management Training Workshop. Both events offered excellent venues for attendees to acquire information on state-of-the-art techniques and methodologies.

Unfortunately, funding restraints have resulted in the abolition of these valuable annual events.

6.14 WATER RESOURCES MANAGEMENT

6.14.1 Responsibilities and Points of Contact

Management responsibilities for water resources are shared between the Environmental Division and Operations & Maintenance Divisions, which are both under the DPW. In general, drinking water quality, storm water management, and protection of groundwater are managed by the ED, while the daily operation and maintenance of the water distribution system and storm/sanitary sewer lines are performed by the O&M. There are no wastewater treatment facilities on any of the installations. The Army, through a Base Maintenance Contract, maintains two wastewater lift stations and two rain retention basins located at Kelley Barracks, four wastewater lift stations at Patch Barracks, one wastewater lift station at Moehringen Family Housing and one lift station at Echterdingen Airfield. All wastewater is channeled off site to the local publicly owned wastewater treatment plants. The monthly

monitoring and maintenance of Oil/Water Separators is performed through a local contract executed by the ED.

Point of contact information relating to the Water Resources Management Program is included in Table 1.8.1.

Overview and Status

Water resources management in the cantonment areas addresses four main considerations: drinking water quality, storm water management, surface water monitoring, and protection of groundwater. Details of each installation's water distribution system are described in the February 2009 USAG Stuttgart Potable Water System Master Plan (PWSMP), which is available in the DPW-ED office. The purpose of the PWSMP is to provide a management tool for the safe and continuous operation of a potable water system. In the event of an emergency, the USAG has a Water Emergency Contingency Plan, which offers recommended actions and alternative water sources. A Storm Water Pollution Prevention Plan was prepared in 2005 and last updated in 2013. Drinking water and wastewater programs are managed in accordance with the Environmental German Final Governing Standards (FGS), Chapters 3 and 4, respectively.

Drinking Water Quality

The USAG purchases its potable water from local suppliers, then treats it with chlorine and fluoride prior to distributing it to the local community (only at Kelley, Patch, Robinson and Panzer). The water for Kelley, Robinson and Patch Barracks is purchased from ENBW, which obtains it predominantly from the Bodensee. The water distribution systems and the chlorination stations at these installations have been recently privatized. Water for the Panzer Kaserne is purchased from Stadtwerke Boeblingen, whose main source of water is also the Bodensee. The water is pumped to a reservoir located near the Kaserne and then transported via the treatment plant to the pump station, which supplies the pressure to the water distribution system. The USAG plans on pursuing privatization of the Panzer water distribution system and the chlorination following the other privatization initiatives. At Echterdingen Airfield, water is purchased from the Flughafen Stuttgart GmbH, with groundwater being the predominant source of water. The water system at the airfield is also privatized. At the golf course, Pattonville Energie & Wasser GmbH is the local supplier. They also derive their potable water from groundwater.

All chlorination stations at Patch, Kelley and Robinson have been converted from gas injection to the safer electrolytic system since the preparation of the last INRMP.

Provisions for an emergency water supply and development of an emergency contingency plan are requirements according to AR 420-49 and Chapter 3, of the FGS. The current plan in use at the USAG was prepared in 2005. It provides a vulnerability assessment and water emergency response procedures. Provisions for a one day's supply of bottled water have been established at each Stuttgart installation in the event of an emergency.

Storm Water Management

The responsibility for Storm Water Management lies with the DPW-O&M and the DPW-ED. Most of the storm water flow from Patch Barracks, Panzer Kaserne, and Robinson Barracks flows to the respective local wastewater treatment plant. In Kelley, storm water is discharged into two adjacent creeks (see Chapter 4.6). Two storm water retention basins at Kelley assure that the discharge limits are not exceeded. The retention basins are designed to retain storm water produced in a once-in-a-hundred-years maximum precipitation event. Storm water flow from the Echterdingen Airfield flows into the subsurface. Specific outfall information for storm water that may not drain to the sanitary sewer is provided in Appendix 2 of the Storm Water Pollution Prevention (SWP2) Plan, including the assigned outfall number, associated industrial activities, building and structure numbers, and the receiving stream.

Please refer to the *USAG Stuttgart Storm Water Pollution Prevention Plan (2017)* for more details on storm water management.

Surface Water Monitoring and Protection of Groundwater

Groundwater, soil, and soil gas sampling takes place whenever groundwater contamination is suspected. Groundwater monitoring wells are currently located at the Advanced Mobility Course (AMC) within Boeblingen LTA. Here, the groundwater is polluted through effluents from the former dump site located beneath the AMC. Detailed information about the contamination and its remediation can be obtained through the ED.

A *Spill Prevention and Response Plan* (SPRP) exists for the USAG Stuttgart. The plan was updated in 2018 and is scheduled for a major update in 2021. The SPRP applies to all installations, facilities, units, activities, and organizations associated with the USAG Stuttgart that use, transport, store, handle, or dispose POL and/or hazardous substances.

No surface water monitoring is carried out on any of the USAG Stuttgart installations.

7. IMPLEMENTATION

Goals are developed for each natural resources program. Implementation of the goals should support the operational requirements of the USAG Stuttgart, meet sustainability requirements, and enhance quality of life on the installation. Details on natural resources program goals are given in Chapter 6. The following chapters give some information on INRMP implementation.

7.1 PROCESS OF PREPARING PRESCRIPTIONS

The process of preparing prescriptions that drive the projects proposed within the INRMP is straight forward and is tied directly to the USAG Stuttgart funding process. The appropriate USAG Stuttgart DPW ED media manager is responsible for preparing prescriptions, which comprise a major component of each scope of work prepared as part of the funding process.

After developing and defining a project, the project manager prepares a work request (DA FORM 4283). Next, the DPW approval “team” reviews the work order. Part of this process is to enter the project into the ERMS database system. From there, it goes to IMCOM-Europe where the program manager reviews, and when accepted, approves the project and forwards the project for further processing. In case of acceptance and affirmation by DoD, the project is listed for funding on the installation’s annual work plan. It must be taken into account that the timeframe between an initial project idea and the availability of funding averages approximately two years.

7.2 NO NET MISSION LOSS

In short, the established natural resources management strategy for the USAG Stuttgart is to support and enable the mission and concurrently preserve, protect, and enhance the environmental and ecological conditions of USAG Stuttgart. In support of this strategy, appropriate management objectives to protect mission capabilities of installation lands (from which projects are developed) are clearly articulated in this plan. The effectiveness of this INRMP in preventing “net loss” of mission and training capability and safeguarding valuable habitats and species shall be evaluated annually.

In addition to achieving no ‘net loss’, the implementation of the proposed management goals should have the effect of maintaining, and if possible increasing the ecological quality of the various habitats located on the military training lands.

7.3 USE OF COOPERATIVE AGREEMENTS

Cooperative agreements can be regarded as alternative means to “traditional” contracting. Cooperative agreements are a valuable tool for natural resources management. AR 200-1 (2007) states that “an eligible entity that can enter into cooperative agreements with the military can be a state government or political subdivision, or a private entity whose purpose

is land and natural resources conservation, restoration, or preservation." Universities and nonprofit organizations are two examples of potential cooperative partners.

The benefits of cooperative agreements include:

- often cheaper than "traditional" contracting
- partners may offer expertise not found in existing contracts
- flexibility

However, it has to be regarded that the key to success is a good cooperative partner.
The USAG Stuttgart has cooperative relationships with local nature societies, which hold a landscape preservation day every two years. As part of this event, valuable open areas of land are protected from shrub encroachment. Other cooperative agreements for resources management at the USAG Stuttgart could not be identified.

Cooperative agreements could enhance implementation of this INRMP. If opted for, cooperative agreements should be based on a scope of work outlining roles, responsibilities and requirements that the installation and the partner negotiate.

APPENDICES