APPENDIX V

MITIGATION AND MONITORING PLAN
for
Transformation of the 2d Armored Cavalry Regiment and Installation Mission Support, Joint Readiness Training Center (JRTC) and Fort Polk, Louisiana, and Long-Term Military Training Use of Kisatchie National Forest Lands

1. *MITIGATION AND MONITORING MEASURES*

The Joint Readiness Training Center (JRTC) and Fort Polk and the Kisatchie National Forest (KNF) have developed this mitigation and monitoring plan as a part of the Final Environmental Impact Statement (FEIS) for proposed actions relating to force transformation, installation mission support, and long-term use of adjacent Forest Service lands. A set of 15 mitigation and monitoring measures are proposed to address potential adverse effects to the human environment identified in the FEIS. These measures would augment existing and proposed Army and Forest Service environmental stewardship programs and practices, and taken collectively, would mitigate adverse effects through time, in accordance with Council on Environmental Quality regulations at 40 CFR 1508.20, by avoiding, minimizing, reducing or rectifying adverse effects to soils, vegetative cover, water quality and biological resources.

Figure V-1 portrays the conceptual approach used in development of the proposed mitigation and monitoring measures. Measures were developed within five functional areas that contribute to sustainment of military training lands and natural resources. Each of the functional areas serves to integrate the achievement of training requirements and environmental stewardship activities and principles through time and space. The five functional areas are:

- Training Area Maintenance;
- Training Land Resource Allocation (i.e., scheduling of training and non-training activities);
- Facilities Design and Construction Process Oversight;
- Soldier Sustainable Range Awareness Training; and
- Environmental Monitoring and Resource Protection.

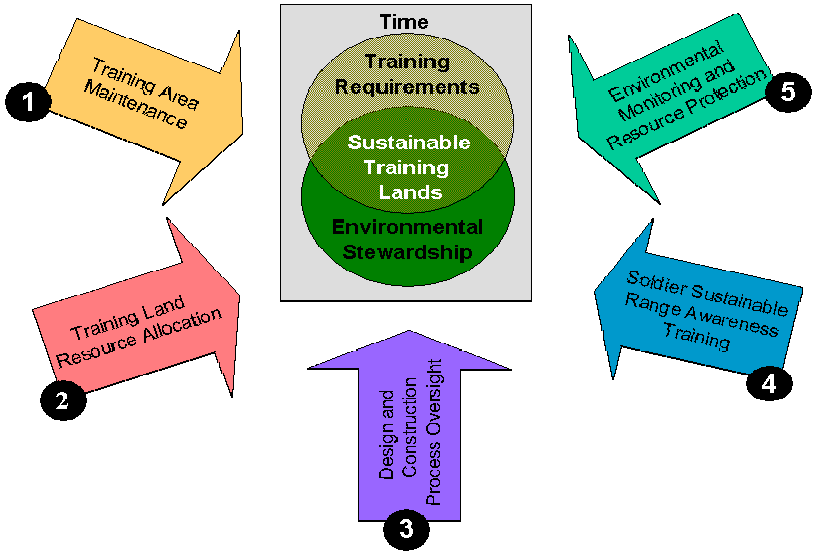

Figure V-1. Conceptual Framework for Mitigation and Monitoring Plan

The sections below provide descriptions of the proposed mitigation and monitoring measures within each functional area; objectives to be achieved; the affected resources (i.e., those expected to benefit from implementation of the mitigation and monitoring measures); Army and Forest Service roles and responsibilities; and the key tasks to be conducted.

TRAINING AREA MAINTENANCE

Proposed Environmental Stewardship/Mitigation Measure 1A

Description

Maneuver Damage Inspection and Monitoring. The JRTC and Fort Polk's maneuver damage inspection and repair program would be expanded to include identification, repair, and monitoring for damages from routine home station training events and to track compliance with applicable environmental protocols and restrictions on Army and Forest Service lands. All training lands would be inspected for maneuver damage to soils, vegetation, streams and wetlands, and sensitive environmental resources following each training exercise, and corrective actions would be conducted as required. A point of contact within each unit, such as the unit Environmental Compliance Officer (ECO), would be designated to ensure that repairs conducted by the unit were completed appropriately. In addition, a written agreement between the garrison and mission commanders would establish responsibilities and funding mechanisms for maneuver damage repairs. Corrective actions such as grading, seeding and fertilizing to reestablish vegetative cover would be monitored and evaluated for effectiveness.

It should be noted that expansion of JRTC and Fort Polk's existing maneuver damage inspection and repair program is included as a part of the proposed action (see Section 2.4.6.1 of the FEIS). However, the proposal has been refined to include a written agreement for funding of repairs and is included in the mitigation and monitoring plan due to its linkage to measures 1D, 2A, 2B, 2C, 5B and 5D.

Objectives

- Minimize or avoid degradation of training lands and long-term damage to soils, vegetation, streams and wetlands, and sensitive environmental resources through identification and correction of maneuver damages and soldier Sustainable Range Awareness education
- Comply with JRTC and Fort Polk (FP) Regulation 385-1 and Forest Service Special Use Permit (SUP)/Operating Plan, including restrictions on activities within red-cockaded woodpecker (RCW) clusters, cultural resource sites, and other marked environmentally sensitive resources.
- Minimize long-term maintenance and rehabilitation costs.

Affected Resources

- Vegetative cover
- Soils
- Water resources
- Endangered species
- Cultural resources

Roles and Responsibilities

- Garrison Commander institutes a program for maneuver damage inspection, corrective actions, monitoring, and reporting. Program managed by Chief of Staff, Garrison and executed by Directorate of Plans, Training and Mobilization, Directorate of Public Works (DPW), and Directorate of

Resource Management (DRM), in coordination with Assistant Chief of Staff, G3 (Operations and Plans) and Forest Service.

Key Tasks

- Inspect all training lands following each training exercise.
- Conduct corrective actions.
- Monitor effectiveness of corrective actions.
- Track compliance with JRTC and FP Regulation 385-1 and SUP/Operating Plan.
- Report and evaluate overall performance.

Mitigation Measure 1B

Description

*Development and Implementation of Watershed Management Plan*s. Watershed management plans would be updated or developed for all subwatersheds on Fort Polk main post, Intensive Use Area (IUA), Limited Use Area (LUA) and Peason Ridge where ground disturbing military activities are permitted. Management plans would be reviewed annually and updated on a rotating basis at 3-5 year intervals according to watershed conditions, priorities for land rehabilitation, and availability of funds. Watersheds in the northeastern portion of Peason Ridge containing tributaries to Kisatchie Bayou would receive first priority for update of management plans and land rehabilitation measures. Within other watersheds, sites requiring rehabilitation or maintenance would be prioritized by identification of severity of erosion problem areas. Implementation of the plans would involve design and installation of Best Management Procedures (BMPs) such as a sediment basin network or individual sediment basins in specific watersheds, silt fences, check dams, riprap in drainage pathways, erosion mats, reseeding, gabions, or enhancement/ preservation of wider vegetated buffers adjacent to streams.

Objectives

- Sustain training land conditions and long-term soil productivity by implementing land rehabilitation and maintenance practices designed to minimize soil erosion and compaction, limit soil loss, restore or maintain vegetative cover, and restore disturbed or degraded areas to natural conditions.
- Minimize sediment loading to streams and wetlands.

Affected Resources

- Vegetative cover
- Soils
- Water resources

Roles and Responsibilities

- Garrison Commander implements updated watershed management plans for rehabilitation of damaged sites. Program managed by Chief of Staff, Garrison through review/approval of annual Integrated Training Area Management (ITAM) Work Plan and development of long-term priorities, in coordination with Assistant Chief of Staff, G3 and Forest Service.

Key Tasks

- Develop/update management plans for watersheds on Fort Polk main post, IUA, LUA and Peason Ridge where ground-disturbing training activities are permitted
- Conduct annual review of watershed management plans and prioritize sites for rehabilitation.
- Conduct site work, restore vegetative cover and eliminate excessive erosion from damaged sites.

Mitigation Measure 1C

Description

*Annual Maintenance of Sediment Basin*s. All sediment basins would be inspected to insure that they are functioning properly. Basin maintenance would be prioritized based on need. Excess sediment would be removed from basins, applied to upland areas and stabilized.

Objectives

- Ensure that sediment basins are functioning properly to trap soil particles before they enter streams and wetlands.

Affected Resources

- Soils
- Water resources

Roles and Responsibilities

- Garrison Commander conducts annual maintenance of sediment basins across the installation.
- Program managed by Chief of Staff, Garrison and executed by DPTMS, DPW, DRM, in coordination with Assistant Chief of Staff, G3 and Forest Service.

Key Tasks

- Inspect sediment basins and develop priority list and schedule for maintenance.
- Remove excess sediment from basins according to schedule and apply in upland areas.

Mitigation Measure 1D

Description

*Temporary Closure of Site*s. Maneuver damage inspectors would identify sites on Army and Forest Service needing protection to facilitate recovery from maneuver damage to soils, vegetation, streams and wetlands, and sensitive environmental resources. Sites would be marked as temporarily off-limits to digging/driving, and recovery would be monitored. Closed areas would be added on a quarterly or as needed basis to the "No Dig/No Drive" map used to help military trainers for planning purposes.

Objectives

- Maintain training through identification and correction of maneuver damages to soils, vegetation, streams and wetlands, and sensitive environmental resources.
- Protect sensitive environmental resources.

- Minimize long-term maintenance and rehabilitation costs.

Affected Resources

- Vegetative cover
- Soils
- Water resources
- Endangered species
- Cultural resources

Roles and Responsibilities

- Garrison Commander approves temporary closure of sites as needed to facilitate recovery.

Key Tasks

- Maneuver damage inspectors identify sites needing protection to facilitate recovery.
- Sites are temporarily marked as off-limits to digging/driving.
- Inspectors monitor condition of sites.
- "No Dig/No Drive" training map overlay is updated quarterly.

TRAINING LAND RESOURCE ALLOCATION

Mitigation Measure 2A

Description

Integration of Maneuver Damage Inspection and Repair into Annual Training Calendar. Sufficient time on the Annual Training Calendar would be scheduled for maneuver damage inspection and repair following all training events. Updated protocols for scheduling of maneuver damage inspections, repairs and other resource management needs on Army and Forest Service lands would be incorporated into JRTC and Fort Polk Regulation 350-10. These protocols would provide enhanced opportunities for damage inspection, corrective actions, and monitoring.

Objectives

- Provide opportunities for maneuver damage inspections, corrective actions and monitoring.
- Comply with SUP/Operating Plan.

Affected Resources

- Vegetative cover
- Soils
- Water resources
- Endangered species
- Cultural resource

Roles and Responsibilities

- Assistant Chief of Staff, G3 integrates time on annual training calendar for mandatory inspection, repair and clean-up periods following all training events.

Key Tasks

- Assistant Chief of Staff, G3 schedules sufficient time for maneuver damage inspection and clearance following all training events.

Mitigation Measure 2B

Description

Scheduling of Non-Training Activities During Green Period. Non-training activities such as land rehabilitation and maintenance, prescribed burning, forest thinning, and other forest management activities, and maneuver damage repair would be scheduled at the at the monthly Resource Allocation Conferences (RAC) rather than the subsequent Non-Training Allocation Conferences (NTAC). This would ensure that damage repair and forest management would receive top priority during the Green Period, and that restoration and maintenance activities occur according to schedule. Changes to the existing installation protocols for scheduling of non-training activities would be incorporated into JRTC and Fort Polk Regulation 350-10.

Objectives

- Provide opportunities for forest thinning, natural resource management, land rehabilitation and maintenance on Army and Forest Service lands.
- Comply with SUP/Operating Plan.

Affected Resources

- Vegetative cover
- Soils
- Water resources
- Forests/vegetation communities
- Endangered species
- Sensitive and conservation species
- Management Indicator Species (MIS) for longleaf pine landscapes

Roles and Responsibilities

- Garrison Commander ensures that non-training activities receive priority during the Green Period and disciplines the training calendar to ensure adequate opportunities are provided for repair of maneuver damages, land rehabilitation and maintenance, prescribed burning and other forest management requirements on Army and Forest Service lands.

Key Tasks

- Schedule non-training activities at the RAC.
- Integrate training and non-training requirements in time and space.
- Conduct thinning operations on IUA according to schedule.
- Conduct land restoration, natural resource management and maintenance activities according to schedule.

Mitigation Measure 2C

Description

*Scheduling of Non-Training Activities Outside Green Perio*d. Non-training activities such as land rehabilitation and maintenance, prescribed burning and other forest management activities, and maneuver damage repair that would occur outside the Green Period would also be scheduled at the RAC. This would ensure that scheduling for damage repair and forest management activities would be coordinated with scheduling for training activities, and opportunities for resource management, including thinning of upland pine stands on the IUA, would be maximized. Changes to the existing installation protocols for scheduling of non-training activities would be incorporated into JRTC and Fort Polk Regulation 350-10.

Objectives

- Provide opportunities for forest thinning, natural resource management, land rehabilitation and maintenance on Army and Forest Service lands.
- Comply with SUP/Operating Plan.

Affected Resources

- Vegetative cover
- Soils
- Water resources
- Forests/vegetation communities
- Endangered species
- Sensitive and conservation species
- MIS for longleaf pine landscapes

Roles and Responsibilities

- Garrison Commander ensures adequate opportunities for non-training requirements are available outside the Green Period on Army and Forest Service lands, including prescribed burning and timber thinning on the IUA, land maintenance, rehabilitation and repair.

Key Tasks

- Schedule non-training activities at the RAC.
- Integrate training and non-training requirements in time and space.
- Conduct thinning operations on IUA according to schedule
- Conduct land restoration and maintenance activities according to schedule.

DESIGN AND CONSTRUCTION PROCESS OVERSIGHT

Mitigation Measure 3A

Description

*Environmental Screening/Alternatives Analysis for Construction Project*s. The installation Master Planner would provide project footprint and alternative sites to the Environmental and Natural Resources Management Division (ENRMD) before the plans are presented to the Real Property Planning Board (RPPB) for development of a screening analysis of effects and identification of environmentally preferred

siting and design options. The environmentally preferred options would be presented to RPPB, along with other options under consideration, to ensure that environmental factors and concerns are integrated early in the planning process. Potential benefits are reductions in future construction and mitigation costs, reduction or avoidance of adverse cumulative effects to environmental resources, streamlining of design and construction processes, and promotion of sustainability, conservation, and compliance with environmental regulations.

Objectives

- Avoid or minimize impacts to environmentally sensitive resources and promote installation sustainability through early integration of master planning and environmental concerns.
- Streamline design and construction process and reduce future construction and mitigation costs.

Affected Resources

- Soils
- Water resources
- Forests/vegetation communities
- Endangered species
- Sensitive and conservation species
- MIS for longleaf pine landscapes, riparian landscapes, and streams

Roles and Responsibilities

- DPW conducts environmental screening/alternatives analysis during early master planning and sight selection process for all new facilities with potential environmental impacts.

Key Tasks

- Master Planner provides project footprint and alternative sites to ENRMD before RPPB meeting.
- ENRMD conducts screening analysis of impacts and identifies environmentally preferred options.
- Master planner presents environmentally preferred options and others to RPPB, as appropriate.

Mitigation Measure 3B

Description

*Construction Process Oversigh*t. Procedures to ensure that environmental compliance requirements and measures to reduce adverse effects to environmentally sensitive resources are included in contract specifications for military construction projects. Contracting Office Representative (COR) would ensure compliance with specified limits of construction, construction sequencing, Section 404 permit conditions, storm water pollution prevention plans (SWPPPs), and other environmental considerations during construction, as specified in construction specifications, National Environmental Policy Act (NEPA) and permit documents. The COR would review environmental requirements before construction, coordinate with the ENRMD NEPA document point-of-contact to ensure compliance, and have authority to halt construction if work is not performed in accordance with environmental requirements.

Objectives

- Ensure that new facilities are designed and constructed to comply with requirements under the Clean Water Act (CWA), Clean Air Act (CAA), Endangered Species Act (ESA), and NEPA.

Affected Resources

- Soils
- Water resources
- Forests/vegetative communities
- Endangered species
- Sensitive and conservation species
- MIS for longleaf pine landscapes, riparian landscapes, and streams

Roles and Responsibilities

- COR ensures compliance with construction sequencing, Section 404 permit conditions, SWPPPs and other environmental considerations during construction, as specified in NEPA and permit documents.

Key Tasks

- COR reviews environmental documents prior to construction.
- COR coordinates with ENRMD point of contact during construction to ensure compliance with environmental requirements.
- COR stops construction if work not performed in accordance with environmental requirements.

Mitigation Measure 3C

Description

*Design Adjustments to Proposed IUA Road*s. Selected pipe culverts as originally proposed would be replaced with arched spans on the proposed IUA east-west roads where the alignments cross larger perennial (third order) streams. In addition, portions of proposed road segments designated as SMC1 and ZH3 would be realigned to minimize effects to RCW clusters located near the alignments. Benefits include reductions in road and stream crossing maintenance costs, minimization of effects to RCW, promotion of responsible environmental stewardship, and compliance with the CWA and ESA.

Objectives

- Reduce impacts to stream hydrology, aquatic communities, and the RCW.
- Comply with requirements under the CWA and ESA.
- Reduce road and stream crossing maintenance costs.

Affected Resources

- Water resources
- Aquatic species
- Endangered species
- MIS for streams

Roles and Responsibilities

- DPW replaces pipe culverts with arched spans or box culverts for stream crossings on IUA east-west roads and adjusts segments of SMC1 and ZH3 roads to minimize effects to the RCW.

Key Tasks

- Redesign selected road segments and stream crossing structures on IUA roads.
- Obtain updated Section 404 permit for stream crossing structures and implement permit terms and conditions.

SOLDIER SUSTAINABLE RANGE AWARENESS TRAINING

Mitigation Measure 4A

Description

*Initiation of Sustainable Range Awareness Training Progra*m. Modules and instructional aids would be developed to train soldiers to promote responsible environmental stewardship during field activities. Examples of topics include Louisiana pine snake identification and discourse on its protection status, and other subjects ranging from forest and water quality management to waste minimization. The training program would also educate soldiers involved in the operation of Stryker vehicles on the importance of lower tire inflation settings while driving off-road. Training modules would be available both in a classroom and on-line format, and would be provided to all military units training at Fort Polk down to the squad level unit of organization. Certificates would be disbursed upon completion.

Objectives

- Promote responsible stewardship of the natural and cultural environment.
- Minimize potential for listing of the Louisiana pine snake as a threatened/endangered species.
- Comply with SUP/Operating Plan.

Affected Resources

- Vegetative cover
- Soils
- Water resources
- Forests/vegetation communities
- Endangered species
- Sensitive and conservation species
- MIS for longleaf pine landscapes, riparian landscapes, and streams
- Cultural resources
- Waste minimization and management

Roles and Responsibilities

- Garrison Commander institutes a web- and classroom-based Sustainable Range Awareness training program for soldiers down to squad level.

Key Tasks

- Develop Sustainable Range Awareness modules and instructional aids (including aids to help soldiers identify Louisiana pine snake and encourage its protection).
- Post training modules on intranet and conduct classes at regular intervals.
- Soldiers from all units complete modules/classes and receive certification.

ENVIRONMENTAL MONITORING AND RESOURCE PROTECTION

Mitigation Measure 5A

Description

Development of Stream Gage Network. US Geological Survey (USGS) and Fort Polk ENRMD would establish a network of stream gaging stations to monitor stream flow and water quality parameters, for the purpose of assessing stream responses to changes in training intensity or land use. Six gaging stations would be established to collect baseline data on stream characteristics and water quality. The data collected by the gages would help estimate and mitigate sedimentation rates, a water quality issue of concern because of the highly erodible nature of the native soils and the potential for proposed construction and training activities to increase soil erosion and delivery of sediment to streams.

Objectives

- Monitor stream responses to changes in training intensity, land use, and rehabilitation and maintenance practices through time
- Assess effectiveness of mitigation measures for training land maintenance.

Affected Resources

- Water resources

Roles and Responsibilities

- DPW-ENRMD, with assistance from the USGS, establishes a network of stream gaging stations to monitor stream flow and water quality parameters.

Key Tasks

- DPW-ENRMD and USGS establish 6 gaging stations on selected streams
- DPW-ENRMD and USGS collect baseline data on stream characteristics and water quality.
- DPW-ENRMD and USGS conduct ongoing monitoring and evaluation.

Mitigation Measure 5B

Description

*Bog Mapping and Monitorin*g. ENRMD would digitally map and monitor bogs on Army land to complement a map already developed for the IUA and Limited Use Area (LUA). Bogs would be inspected for maneuver damage following training exercises and during annual training land

inspection events, and corrective action to protect wetlands and rare/sensitive plant species would be implemented as appropriate.

Objectives

- Protect wetlands habitats and rare/sensitive plant species.

Affected Resources

- Bogs
- Water resources
- Sensitive and conservation plant species

Roles and Responsibilities

- DPW-ENRMD maps and monitors bogs on Army and Forest Service land (IUA and LUA).

Key Tasks

- Survey for bogs on Army lands, collect Geographic Positioning System (GPS) locations, and develop Geographic Information System (GIS) data layer.
- Inspects bogs for maneuver damages during post-exercise inspection and/or annual training land inspection.
- Implement appropriate corrective action.

Mitigation Measure 5C

Description

*Louisiana Pine Snake Conservatio*n. To avoid or reduce future construction-related effects to the Louisiana pines snake (LPS), Fort Polk would conduct surveys for the snake and/or pocket gopher mounds within proposed construction footprints for all new construction projects within the range and maneuver training areas. Pocket gopher mounds would be avoided during construction wherever feasible.

Objectives

- Conserve LPS habitat and minimize the potential for listing of the LPS as a threatened/endangered species.

Affected Resources

- Sensitive species
- Candidate species

Roles and Responsibilities

- Garrison Commander considers effects of future actions and management strategies on the LPS.

Key Tasks

- Conduct surveys for LPS and/or pocket gopher mounds at proposed construction sites.
- Where feasible, site and design facilities to avoid LPS locations and pocket gopher mounds.

Mitigation Measure 5D

Description

*Implementation and Effectiveness Monitorin*g. A joint Army-Forest Service committee for implementation and effectiveness monitoring would be established. The purpose of the committee is to evaluate implementation and effectiveness of proposed mitigations, range sustainability, compliance with SUP/Operating Plan conditions, and installation environmental policies and regulations. The committee would identify and report on performance indicators, evaluate performance, and conduct mid-course correction as needed, in accordance with the installation's Environmental Management System. Examples include testing the effectiveness of BMPs by monitoring downstream water quality for total suspended solids, turbidity, dissolved oxygen, temperature, metals, and total nitrogen during base flow periods and storm events. The committee would also publish an annual Sustainability and Environmental Monitoring Report for review by members of the public, federally recognized tribes, state and federal agencies, and other stakeholder groups.

Objectives

- Jointly monitor to document annual progress for the implementation and effectiveness of mitigation measures identified in the Records of Decision for the EIS;

Affected Resources

- Vegetative cover
- Soils
- Water resources
- Forests/vegetation communities
- Endangered species
- Sensitive and conservation species
- Cultural resources
- MIS for longleaf pine landscape, riparian landscapes, and streams

Roles and Responsibilities

- Garrison Commander establishes joint Army-Forest Service committee for implementation and effectiveness monitoring and publishes annual Sustainability and Environmental Monitoring Report.

Key Tasks

- Draft committee charter and appoint members.
- Identify and report on performance indicators, evaluate performance, and conduct mid-course correction as needed, in accordance with installation Environmental Management System.
- Publish results in annual report.

2. *SUSTAINABILITY AND ENVIRONMENTAL MONITORING PLAN*

2.1 *Purpose and Objectives of Monitoring*

This section describes the Sustainability and Environmental Monitoring Plan (SEMP, Table V-1) developed by Fort Polk and the KNF. The SEMP identifies measurable goals and objectives for the continuation of sound environmental stewardship and compliance, and for achieving and maintaining sustainability with respect to training land conditions, facilities, and relationships with neighboring residents and communities. It is designed to track the implementation of mitigation measures described in Section 1 above and in the EIS, and to evaluate their effectiveness.

The SEMP provides a framework for conducting monitoring and evaluation to determine whether mitigation measures, environmental stewardship practices, and BMPs are meeting goals and objectives for sustainability, and for compliance with applicable environmental laws, regulations, and SUP/ Operating Plan terms and conditions. Monitoring refers to measuring or observing results for a defined purpose, whereas evaluation interprets or assesses the meaning of results generated from monitoring. Both monitoring and evaluation will be conducted by Fort Polk and KNF staff throughout the year, so that adjustments and corrective actions can be made in a timely manner. Joint agency evaluations will also be conducted each year as part of the publication of an annual *Sustainability and Environmental Monitoring (SEM) Report.* When the results of monitoring are outside the acceptable range of established performance targets, adjustments and corrective actions may be needed as described in the sections below.

In addition to mitigation measures identified in the EIS, the SEMP also incorporates Army and Forest Service commitments for mitigation and monitoring contained in the *Final Environmental Assessment (EA) for Increased Military Training Use of the Vernon Unit, Calcasieu Ranger District, Kisatchie National Forest* and the associated Decision Notice/Finding of No Significant Impact (DN/FNSI) issued in September 2000. That EA and DN/FNSI identified a number of mitigation measures for protection of natural resources, as well as for protection of the quality of life for residents living in the Limited Use Area (LUA) portion of the Vernon Unit. The EA and DN/FNSI also specified that Fort Polk and the KNF would publish an annual monitoring report to document the implementation of these measures and their effectiveness. Since September 2000, the *Compliance and Effectiveness Monitoring (CEM) Report for the Limited Use Area, Calcasieu Ranger District, Kisatchie National Forest* has been published for fiscal years 2001 and 2002. The CEM report will be published again in 2004 to document mitigation and monitoring activities and results for fiscal year 2003. In subsequent years, the CEM report will be replaced by the annual SEM Report.

2.2 *Types of Monitoring*

The SEMP includes three types of monitoring to be conducted by Fort Polk and the KNF:

- Implementation monitoring;
- Effectiveness monitoring; and
- Validation monitoring.

Implementation monitoring is meant to answer the question: Did we do what we said we would do? It determines if mitigation measures and related environmental stewardship and natural resource management practices are implemented as designed. Evaluation of implementation monitoring may lead to adjustment of installation- or organizational-level management practices, operating procedures, regulations, or other administrative adjustments.

Effectiveness monitoring is meant to answer the question: Did what we said we would do accomplish our goals and objectives – or, did it work? It determines whether mitigation measures and related environmental stewardship practices are effective in achieving established goals and objectives. Evaluation of the results of effectiveness monitoring is used to adjust SEMP objectives, targets, mitigation measures, environmental stewardship practices and BMPs, and could lead to changes to the SUP/Operating Plan or installation planning documents.

Validation monitoring is meant to answer the question: Are our assumptions valid or are there better ways of meeting our goals and objectives? It helps determine whether the initial assumptions used in developing the mitigation and monitoring plan are correct, or if there are betters ways of meeting established goals and objectives. Evaluation of results from this type of monitoring can also be used to adjust management practices or suggest changes to the SUP/Operating Plan or other planning documents.

2.3 *Monitoring Process*

The SEMP process incorporates the concepts of continuous improvement in the internationally recognized ISO 14001 Environmental Management System (EMS) standard and conforms with the EMS established by JRTC and Fort Polk. The continuous improvement loop consists of four phases:

Phase 1 – Planning. The organization identifies how its operations might adversely impact the environment and develops measures to reduce this impact.

- This phase was accomplished through the environmental impact analysis process, preparation of the EIS, and development of the mitigation and monitoring plan.

Phase 2 – Doing. The organization implements the measures to reduce adverse impacts and conducts them for a designated time period.

- This phase will be accomplished through the 20-year term of the SUP/Operating Plan.

Phase 3 – Checking. The organization assesses whether the measures it is implementing to reduce environmental impacts are proving effective.

- This phase will be accomplished through the implementation, effectiveness and validation monitoring and evaluation practices established by the SEMP.

- This phase will also involve identification of performance metrics and performance targets associated with the monitoring questions found in the SEMP. Performance metrics are contained in the process records for the EIS. Fort Polk and the KNF will also develop "Green", "Amber" and "Red" performance targets to indicate whether objectives are being met at a satisfactory level.

Phase 4 – Acting. The organization determines what changes are necessary based on the performance assessment of the measures designed to reduce adverse environmental impacts (see Phase 3).

- This phase will be accomplished through annual Fort Polk and KNF joint reviews of monitoring results, as well as through interim evaluations conducted during the year, as needed.

Determinations made during Phase 4 may indicate the need for adjustments to mitigation measures, BMPs or environmental stewardship practices in order to achieve established environmental objectives. As part of the feedback loop, output from Phase 4 is fed back into Phase 1 promote continual improvement of the SEMP and the JRTC and Fort Polk EMS.

TABLE V-1. SUSTAINABILITY AND ENVIRONMENTAL MONITORING PLAN

Goals & Objectives	Implementation Question	Effectiveness Question	Validation Question
Goal 1 – Ensure that training lands are sustained for long-term use and maintained in world-class conditions. Protect and conserve basic soil, water and land resources so that forest ecosystems endure for future generations.			
Objective 1-1: Minimize or avoid degradation of training lands and long-term damage to soils, vegetation, streams and wetlands, and sensitive environmental resources through identification and correction of maneuver damages and soldier Sustainable Range Awareness education.	Are maneuver damages identified following all home station and rotational training exercises? Are maneuver damages corrected within reasonable time periods?	Are programs for identification and correction of maneuver damages, installation range regulations for environmental protection, and soldier education programs minimizing or avoiding long-term damage to soils, vegetation, streams and wetlands, and sensitive environmental resources?	Is the maneuver damage inspection and repair program adequately identifying and repairing damages that need corrective action? Are maneuver damage inspection and repair procedures adequate?
	Are adequate opportunities for maneuver damage inspections and repairs provided on the training calendar?		
	Are soldiers with all units training at JRTC and Fort Polk provided Sustainable Range Awareness instruction on ways to protect soils, vegetation, streams and wetlands, and sensitive environmental resources during field operations?		
Mitigation Linkages: EIS Mitigation Measures 1A, 1D, 2A, 2B, 2C and 4A; and LUA EA [(1)] Mitigation Measures 12, 13, 14, 18, 19, and20.			
Objective 1-2: Sustain training land conditions and long-term soil productivity. This is accomplished by implementing land rehabilitation and maintenance practices designed to minimize soil erosion and compaction, limit soil loss, restore or maintain vegetative cover, and restore disturbed or degraded areas to natural conditions. Develop and update watershed management plans for Fort Polk and Kisatchie National Forest (KNF) training lands and prioritize land rehabilitation and maintenance activities within and across watersheds based on watershed conditions and training area carrying capacity.	Are land rehabilitation and maintenance practices being implemented to minimize erosion, compaction, and loss of soil productivity?	Are disturbed and degraded areas being restored and revegetated to a natural condition?	Are land rehabilitation and maintenance practices improving or maintaining conditions within training areas and watersheds?
	Are adequate opportunities for LRAM or other training land sustainment activities provided on the training calendar?	Are allowable soil loss rates being exceeded? Are bare or sparsely vegetated areas increasing within some or all training areas?	
	Are watershed management plans completed or in development for all training lands where ground disturbing activities are permitted? Are plans reviewed annually to evaluate the need for updates?		
	Are rehabilitation and maintenance activities prioritized and applied within and across watersheds based on watershed conditions and training area carrying capacity?		
Mitigation Linkages: EIS Mitigation Measures 1B, 2B and 2C; and LUA EA [(1)] Mitigation Measures 12 and 13.			

TABLE V-1. SUSTAINABILITY AND ENVIRONMENTAL MONITORING PLAN

Goals & Objectives	Implementation Question	Effectiveness Question	Validation Question
Objective 1-3: Protect and maintain high water quality and aquatic ecosystems by preventing excessive siltation to surface water resources due to training activities, conserving wetlands and streamside/riparian areas, providing for stream bank stability and natural flow regimes. This is achieved through maintenance of stream and wetland crossing structures, roads and trails; maintenance of sediment basins; and restrictions on training activities within streams, wetlands and riparian areas	Are stream and wetland crossing structures, roads and trails on Fort Polk and KNF lands maintained to prevent siltation to streams and wetlands and to preserve natural flow regimes?	Are maintenance practices for stream and wetland crossing structures, roads and trails preventing siltation to streams and wetlands and maintaining natural hydrology?	Are management practices protecting and maintaining water quality and aquatic ecosystems?
	Are sediment basins inspected and maintained in a functional condition?	Are sediment basins protecting downstream water resources?	
	Are training aids kept current on designated stream/wetland crossing points for military vehicles?	Are troops crossing stream/wetland areas at designated sites only?	
Mitigation Linkages: EIS Mitigation Measures 1A, 1C, 2B, 2C, 4A and 5A; and LUA EA [(1)] Mitigation Measures 13, 16, 17, 33, and 34			
Goal 2 – Manage for biological diversity and ecological integrity. Protect and conserve threatened, endangered and rare species, and restore and maintain ecosystems and ecological processes at landscape and local scales.			
Objective 2-1: Promote recovery of the Vernon-Fort Polk Red-Cockaded Woodpecker (RCW) population through cooperative Fort Polk and KNF management and monitoring strategies. Conduct population monitoring in accordance with the Joint Monitoring Plan, educate soldiers on the RCW and its habitat, and maintain RCW cluster resources to minimize the occurrence of unauthorized training activities within cluster boundaries and reduce the threat of cavity tree loss due to military related wildfires.	Are Fort Polk and the KNF cooperating to promote recovery of the Vernon-Fort Polk RCW population? Is RCW population monitoring conducted in accordance with the Joint Monitoring Plan?	Are management practices, installation regulations, and troop educational programs preventing damage or disturbance to RCW clusters due to training activities?	Is the Vernon-Fort Polk RCW population growing? Are population recovery goals being met?
	Are soldiers with home station and rotational units provided instruction on the RCW, its habitat, and restricted activities within RCW clusters?		
	Are RCW cavity trees and cluster boundaries painted and marked with signage so that they are identifiable during daytime and nighttime hours by troops in the field? Are excess fuels removed within RCW clusters to reduce the potential for loss of cavity trees due to military related wildfires?		
Mitigation Linkages: EIS Mitigation Measure 1A and 4A; FWS BO [(2)] Terms & Conditions 1, 6, and 7; and LUA EA [(1)] Mitigation Measures 18, 19, 20,24, 25, 27, 4-4, BO-3, BO-4.			

TABLE V-1. SUSTAINABILITY AND ENVIRONMENTAL MONITORING PLAN

Goals & Objectives	Implementation Question	Effectiveness Question	Validation Question
Objective 2-2: Provide high-quality habitat for the red-cockaded woodpecker (RCW), Louisiana pine snake, and other rare species native to longleaf pine landscapes. Use prescribed fire to maintain open longleaf pine forest conditions and natural plant communities, with an emphasis on growing season burns, and conduct thinning as planned on approximately 21,500 acres of upland pine stands within the Intensive Use Area to achieve Desired Future Conditions. Maintain suitable RCW habitat at the appropriate scale and distribution as identified in the Fort Polk Endangered Species Management Plan (2003) and the Revised Land and Resource Management Plan for the Kisatchie National Forest (1999).	Are open, frequently burned longleaf pine forest conditions being maintained to provide suitable habitat for the RCW and other native species?	Are both Fort Polk and the KNF meeting annual prescribed burning goals? Are sufficient opportunities provided on the annual training calendar for prescribed burning, both inside and outside of designated Green Periods?	Is suitable habitat for the RCW available at the scale and distribution designated in the Fort Polk ESMP and Revised KNF Plan?
		Is the KNF meeting annual goals for thinning of upland pine stands on the IUA? Are sufficient opportunities provided on the annual training calendar for IUA thinning, both inside and outside of designated Green Periods?	
Mitigation Linkages: EIS Mitigation Measures 2B and 2C; FWS BO [(2)] Terms & Conditions 2, 3, 4 and 5; and LUA EA [(1)] Mitigation Measure 24 and 25.			
Objective 2-3: Promote viability of the Louisiana pine snake (LPS) through cooperative management strategies designed to minimize the potential for listing of the LPS as a threatened/endangered species. Minimize or avoid adverse impacts to the snake and its habitat through soldier education, identification of probable LPS habitat, and through integration of LPS habitat/pocket gopher mound survey and monitoring data with project planning.	Are Fort Polk and the KNF conducting management strategies designed to minimize the potential for listing of the LPS as a threatened/ endangered species, in accordance with the Candidate Conservation Agreement for the Louisiana Pine Snake on Federal Land in Louisiana and Texas?	Are Fort Polk and KNF management strategies minimizing or avoiding harm to the LPS and pocket gopher mounds or other areas identified as probable habitat?	Is the LPS population responding positively to Fort Polk and KNF management strategies?
	Are soldiers training at the JRTC and Fort Polk provided instruction on the LPS and ways to identify and protect it and its habitat?		
	Are surveys for LPS and its habitat/pocket gopher mounds conducted at proposed facilities construction sites or sites proposed for other fixed operations or improvements (e.g., LRAM projects, log decks, firing points and assembly areas)?		
Mitigation Linkages: EIS Mitigation Measures 1A, 4A and 5C.			

TABLE V-1. SUSTAINABILITY AND ENVIRONMENTAL MONITORING PLAN

Goals & Objectives	Implementation Question	Effectiveness Question	Validation Question
Objective 2-4: Protect rare plants and unique wetlands habitats through identification, marking and monitoring of hillside seeps and bogs. Develop and maintain GIS locations and data on the condition of high quality seeps and bogs on Fort Polk and KNF training lands, and monitor annually for potential training impacts. Maintain signage marking high quality seeps and bogs "off-limits" to vehicle movement and digging in the Limited Use Area.	Are GIS locations and data maintained on the condition of high quality hillside seeps and bogs on Fort Polk and KNF lands? Are high quality seeps and bogs monitored annually for potential training impacts?		
	Are signs maintained around high quality hillside seeps and bogs in the LUA, including a buffer area, to identify them as off-limits to vehicle movement and digging?	Are management strategies adequately protecting high quality seeps and bogs from adverse impacts due to training?	
Mitigation Linkages: EIS Mitigation Measures 1A and 5B; and LUA EA [(1)] Mitigation Measures 28 and 29.			
Goal 3 – Provide for and maintain functional, healthy, low-impact and cost-effective facilities and infrastructure by integrating master planning, engineering and environmental concerns. Conserve natural resources and energy, and reduce generation of wastes and pollutants by fully incorporating the principles of sustainable design and development.			
Objective 3-1: Avoid or minimize impacts to environmentally sensitive resources and promote installation sustainability through early integration of master planning and environmental concerns.	Are screening/ alternatives analyses conducted as needed during the site selection process for new facilities?	Are new facilities sited to avoid or minimize impacts to sensitive environmental resources?	Are master planning practices helping to promote sustainable facilities and infrastructure in a cost effective manner?
Mitigation Linkages: EIS Mitigation Measure 3A.			
Objective 3-2: Ensure that new facilities are designed and constructed to comply with requirements under the Clean Water Act (CWA), Clean Air Act (CAA), Endangered Species Act (ESA), and National Environmental Policy Act (NEPA). This is achieved by including limits of construction and clearing, Section 401/404 permit requirements, site-specific mitigation measures and other environmental conditions in construction design plans and specifications; ensuring that Storm water Pollution Prevention Plans (SWP3) are implemented for all construction sites one acre or more; and by monitoring during and after construction to ensure adherence to plans and specifications. (Note: initial monitoring to be conducted for transformation MCA projects, other projects to be monitored as determined by joint oversight committee.)	Do construction plans and specifications clearly identify environmental protection requirements under the CWA, CAA, ESA and NEPA, including Section 401/404 permit conditions, US Fish and Wildlife Service Biological Opinions, mitigation measures and other environmental requirements?	Are new facilities constructed in accordance with applicable requirements under the CWA, CAA, ESA and NEPA?	Are facility design and construction programs and procedures adequate to ensure compliance with the CWA, CAA, ESA and NEPA?
	Is an SWP3 implemented for each construction site one acre or greater (cumulative acreage for project)?	Are construction practices, including storm water management practices, preventing excessive discharge of pollutants to streams and wetlands?	
	Are construction sites monitored at appropriate intervals during and after construction to ensure compliance with construction plans and specifications and other applicable environmental requirements?		
Mitigation Linkages: EIS Mitigation Measures 3B and 3C; and FWS BO [(2)] Terms & Conditions 8 and 9.			

TABLE V-1. SUSTAINABILITY AND ENVIRONMENTAL MONITORING PLAN

Goals & Objectives	Implementation Question	Effectiveness Question	Validation Question
Goal 4 – Act as "good neighbors" to residents and communities near Fort Polk and the KNF and serve as good stewards of public lands and resources. Manage training lands and resources for public safety and provide fair public access to training lands for recreation and other non-training uses.			
Objective 4-1: Support opportunities for public recreational and other multiple use activities on the Fort Polk and Peason Ridge Wildlife Management Areas (WMAs), the Limited Use Area (LUA) and Special Limited Use Area (SLUA). This is accomplished by providing up-to-date information on area closures, training schedules and activities on the WMAs, LUA, and SLUA; maximizing opportunities for hunting on opening weekends/ special hunts for deer (modern fire arms), turkey and squirrel seasons; scheduling training activities to accommodate recreational events and other public activities on the LUA and SLUA; and by educating soldiers on training restrictions for the use of recreational facilities and maintained recreational trails.	Is up-to-date information on training schedules/activities in the LUA and SLUA, and on areas open for hunting on the WMAs published on the internet, information kiosks and other media?	Are methods adequate for publicizing information on training schedules/activities in the LUA and SLUA, and on areas open for hunting on the WMAs?	Overall, are hunting and other approved recreational uses of the WMAs, LUA and SLUA adversely affected by military activities?
	Are opportunities provided for hunting during opening weekends/special hunts for deer (modern fire arms), turkey and squirrel seasons?	Have opportunities for hunting on the Fort Polk or Peason WMAs, or in the LUA, been affected by military training activities? Are areas and time periods that are not used for training made available for hunting?	
	Are recreational events or other public activities in the LUA and SLUA accommodated?	Are conflicts that arise between training activities and recreational events in the LUA/SLUA effectively resolved?	
	Are soldiers provided instruction on restrictions for use of recreational facilities and maintained recreational trails in the LUA/SLUA?	Are military activities resulting in damages to recreational facilities or maintained recreational trails in the LUA and SLUA?	
Mitigation Linkages: LUA EA [(1)] Mitigation Measures 2, 4, 5, 8, 11, 18, 19, 20, 30, 32, 4-1, and 4-3.			
Objective 4-2: Protect the quality of life for residents and communities living in the LUA and near the installation boundaries. This is accomplished by monitoring of noise levels in the LUA and near the Peason Ridge Training Area boundary; maintaining land line markings, fire lines and wildfire fire response plans to avoid trespass and damage to private property; repairing military-related damages to public roads in the LUA in accordance with agreements with Vernon Parish Policy Jury, and upgrading LUA roads as required to support military traffic; and responding expeditiously to public concerns and complaints regarding military activities.	Are noise levels monitored continuously in the LUA and adjacent to the NE boundaries of Peason Ridge?	Are Fort Polk guidelines for off-post noise levels exceeded?	Overall, are military activities adversely affecting the quality of life for LUA residents and communities living near the installation? Is Fort Polk experiencing encroachment on its training mission from development or other uses or policies governing private lands?
	Unless otherwise requested by the property owner, are land lines between private property and KNF lands clearly marked on the ground as needed to alter soldiers to avoid private lands?	Are land line markings and other mechanisms adequate to avoid trespass by troops on private lands?	
	Are permanent fire lines maintained around private property in the LUA? Is the use of incendiary devices suspended as needed on "high risk" days for forest fires? Are plans in place to respond to military-related wildfires in the LUA?	Are fire control and response measures adequate to protect public safety, private property and natural resources in the LUA from training-related wildfires?	

TABLE V-1. SUSTAINABILITY AND ENVIRONMENTAL MONITORING PLAN

Goals & Objectives	Implementation Question	Effectiveness Question	Validation Question
	Are maneuver damages to LUA roads repaired in a timely manner? Are LUA roads upgraded when necessary to support increased military use?	Is military traffic adversely affecting the condition of public roads in the LUA? Are military activities causing disruption of civilian traffic in the LUA?	
	Is the Fort Polk PAO complaint hotline operational? Is an initial response to public concerns/complaints regarding training activities in the LUA and SLUA provided within 24 hours of receipt?		
Mitigation Linkages: LUA EA (1) Mitigation Measures 6, 7, 14, 16, 17, 21, 22, 23, 37, 38, 39,and 4-1.			
Objective 4-3: Conduct military activities in a manner to avoid risks to public safety or conflicts with other activities in the LUA approved under Forest Service Special Use Permits (SUP) or other authorizations. This is achieved by scheduling military convoys to avoid school bus routes; conducting blackout driving in accordance with SUP/Operating Plan terms and conditions; identifying pipelines and utility lines on the ground and on training maps; scheduling/conducting training activities to provide access for other permitted uses; and by educating soldiers on other permitted uses and activities in the LUA and related training restrictions.	Are military convoys scheduled to avoid school bus routes in the LUA? Is blackout driving in the LUA conducted in accordance with SUP/Operating Plan terms and conditions?	Are conflicts occurring between military convoys and school buses? Have damages or conflicts occurred involving blackout driving in the LUA?	Overall, are military activities compatible with civilian activities and land uses in the LUA?
	Are pipelines and utility lines identified on the ground and on training maps/overlays, as needed? Are training activities scheduled and conducted to avoid conflicts with oil and gas operations or other permitted activities in the LUA?	Have damages or conflicts occurred involving military activities and pipelines, utility lines, or other permitted uses in the LUA?	
	Are soldiers provided instruction on cattle grazing allotments and other permitted activities in the LUA, and related training restrictions?	Are military activities resulting in conflicts between cattle grazing allotments or other permitted activities in the LUA?	
Mitigation Linkages: LUA EA (1) Mitigation Measures 15, 36, 37, 38 and39.			
Goal 5 – Monitor to provide feedback regarding progress toward accomplishing mutual Fort Polk and KNF goals and objectives. Evaluate opportunities for continuous improvement of environmental and natural resource management practices and procedures, and adapt management strategies according to new information.			
Objective 5-1: Jointly monitor to document annual progress for the implementation and effectiveness of mitigation measures identified in the Records of Decision for the EIS on 2d ACR transformation, installation mission support, and long-term military use of KNF lands; and the Decision Notice for the EA on increased military use of the LUA.	Are Fort Polk and the KNF preparing and distributing an annual Sustainability and Environmental Monitoring Report?		
Mitigation Linkages: EIS Mitigation Measure 5D; and LUA EA (1) Mitigation Measure 4-2.			

TABLE V-1. SUSTAINABILITY AND ENVIRONMENTAL MONITORING PLAN

Goals & Objectives	Implementation Question	Effectiveness Question	Validation Question
Objective 5-2. Jointly evaluate and report monitoring results, and adapt operations and management accordingly.	Are Fort Polk and the KNF jointly implementing and evaluating mitigation measures and monitoring results? Are operations and management practices adapted through time and identified in the annual Sustainability and Environmental Monitoring Report, and in the Special Use Permit/Operating Plan, as needed?		
Mitigation Linkages: EIS Mitigation Measure 5D; and LUA EA (1) Mitigation Measure 4-2.			

Notes:

1. LUA EA refers to the Final Environmental Assessment for Increased Military Training Use of the Vernon Unit, Calcasieu Ranger District, Kisatchie National Forest Lands dated September 2000, and the associated Decision Notice and Finding of No Significant Impact.

2. FWS BO refers to the Biological Opinion issued by the U.S. Fish and Wildlife Service on December 17, 2003, regarding the effects of proposed Army and Forest Service actions on the red-cockaded woodpecker (see Appendix R of the Final Environmental Impact Statement)