APPENDIX A

ANNUAL REPORT FOR THE DMPRC MITIGATION AND MONITORING PLAN, FORT BENNING, GA

13 FEBRUARY 2006*

***NOTE: THE TIMEFRAME COVERED BY THIS REPORT IS FROM 20 JULY 2004 THRU 31 DEC 2005**

ANNUAL REPORT
for the
DIGITAL MULTIPURPOSE RANGE COMPLEX
MITIGATION AND MONITORING PLAN
FORT BENNING, GEORGIA

February 13, 2006

INTRODUCTION

This document provides the status of the environmental mitigation and monitoring for the Digital Multi-Purpose Range Complex (DMPRC) as detailed in the Final Digital Multi-Purpose Range Complex Mitigation and Monitoring Plan (Fort Benning, 2005) (hereinafter, the Plan). The Plan was prepared as part of the Army's compliance with the National Environmental Policy Act (NEPA), the Council on Environmental Quality regulations (40 CFR 1500), and Army implementing regulations (32 CFR 651, also known as Army Regulation 200-2 abbreviated AR 200-2). The Plan was incorporated into the Record of Decision (ROD) for the DMPRC environmental impact statement (EIS) (Fort Benning, 2004a and 2004b); therefore, the Plan elaborates on environmental mitigation and monitoring required by the DMPRC EIS and ROD. In accordance with the Plan, this Annual Report summarizes the progress of the required mitigation and monitoring and notes any deficiencies and corrective action. Part of the mitigation was achieved by designing the DMPRC to avoid environmental impacts by careful placement of the range components, thereby avoiding significant impacts not only due to construction but also due to the future operation of the range. Modifications have been made to the DMPRC design since the ROD. This Annual Report will summarize those design modifications, as well as provide a brief analysis of any changes in associated environmental impacts or mitigation or monitoring.

Army implementation of NEPA (32 CFR 651.5(g)) requires that the design changes be evaluated to determine if they constitute "substantial changes in the proposed action that are relevant to environmental concerns; or significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impact." If so, then supplemental NEPA documentation would be required. Mitigation monitoring can also lead to preparation of supplemental NEPA documentation and additional monitoring if changes in project activities occur (32 CFR 651 Appendix C (e)(5)). Therefore, this Annual Report also is being used to document the evaluation of the redesigns and the resulting determination that supplemental NEPA documentation is not required. While substantial change has been made via the redesigns, all range components will be contained within the original DMPRC footprint, adverse environmental impacts are not expected to be significant, and plans for DMPRC training and range operations activities have not changed.

The timeframe covered by this Annual Report is from the conclusion of the NEPA process with the signing of the ROD on 20 July 2004 through 31 December 2005. This timeframe was chosen to coincide with a practical stage of DMPRC redesign. Currently, the DMPRC is under construction. The DMPRC site was divided into four areas or phases, Phases 1 through 4, for

ease in identifying work areas (Figure 1). Initial timber harvest, vegetation removal and grading have been completed on about one-third of the range construction areas, which include areas for: tank trails, maintenance roadways, target foundations, training facilities and administrative buildings. Removal of timber and vegetation to achieve line of sight (LOS), so that the Soldier will be able to see from the firing point to the target, has also been completed based on the April 2004 design except for jurisdictional wetland areas and other areas where the soil was too wet for access. Background information regarding LOS can be found in Section 2.2 of the EIS for the DMPRC, which is available for review on the Installation website (https://www.benning.army.mil/emd/_program_mgt/legal/index.htm). The phasing of the construction aids in minimizing environmental impacts. More detail will be provided on the DMPRC construction progress in the following discussion of the mitigation and monitoring status. Because the operational and maintenance phase of the DMPRC (as presented in the Plan) has not yet begun, the status of that phase will not be addressed in this Annual Report.

The overall view of the design changes, known or planned as of December 2005, are shown on Figure 2. Since the April 2004 design (DMPRC Corrected Final Design Submittal dated April 30, 2004), which was used as the basis of the DMPRC EIS and ROD analysis, the Savannah District, Army Corps of Engineers (SCOE) via design consultants has prepared redesigns for all construction areas Phases 1 through 4, to include: DMPRC Modification P00004 (Baseline Road) dated August 11, 2005; DMPRC Phase 2 Redesign dated October 13, 2005; DMPRC Phase 2 and 4 Redesign dated December 14, 2005. A further revision to the Phase 2 Redesigns was prepared on January 4, 2006 including specified areas proposed for borrow sites. All the redesigns were compiled in a complete set of drawings titled Conformed Final Redesign Submittal dated January 20, 2006. Because the Conformed Final Redesign Submittal drawings combine the prior redesign efforts through the end of 2005, that January 2006 design will be used in this Annual Report. See Figure 2 for a comparison of the April 2004 design and the January 2006 design. The general effect of the redesigns to date is expected to reduce wetland and streambank impacts, and may increase land disturbance and vegetation removal, as compared to the potential environmental impacts presented in the EIS and ROD; however all the redesigns stay within the boundaries of the original DMPRC footprint. The Erosion, Sedimentation and Pollution Control Plan (ESPCP) was updated to provide appropriate erosion control measures that corresponded to the designed changes for Phases 1 and 2, but revisions to the ESPCP has not yet been submitted for many redesigns in Phases 3 and 4.. More information pertaining to the design revisions and associated environmental mitigation will be presented in the following sections.

PLANNING PHASE

Summary of Design Changes

Design changes were made to account for corrections to the topography survey, training requirements and safety, financial constraints and environmental mitigation. A summary of many of the design changes is provided below and is depicted in Figure 2. Further details on design changes are available by contacting Mr. John E. Brown, NEPA Program Manager,

Environmental Management Division (EMD), Directorate of Public Works (DPW), Fort Benning, GA.

The portion of Trail 6 between Baseline Road and Underwood Road was relocated further north and more in alignment with Trail 5; therefore that section was renamed Trail 5. This moved disturbance for prior Trail 6 configuration out of a long stretch of jurisdictional wetlands and streambanks associated with Bonham Creek. Trail 5 now crosses a much smaller portion of that wetlands and streambank system.

Sections of Trails 5 and 6 at the eastern part of the DMPRC were also removed, with the ending loop of Trails 5 and 6 no longer crossing Sally Branch. This relocation reduced wetlands and streambank impacts, ground disturbance, and grading in that area.

The eastern loop of Trails 3 and 4 was truncated to end at Resaca Road rather than extending to Buena Vista Road. This new trail configuration also avoids some of the Pine Knot Creek wetlands near Resaca Road.

Due to these trail redesigns, the water crossings have been reduced by two; there are still four crossings of Bonham Creek but only 2 crossings of Sally Branch.

Low water crossings have been changed to elevated crossings called pipe arch culverts. As a result, the tank trails will cross streams about 15 feet above the stream bank. The culvert spans approximately 22 feet with concrete footers on each streambank. The associated built-up slopes will be armored with high performance turf reinforcement mat.

Another water crossing change is the straightening of a bend in Bonham Creek in order to install the pipe arch culvert where Trail 5 crosses it. The stream realignment would affect approximately 150 feet of stream and streambank area. Evaluation of revisions to the Section 404 wetlands permit or requirements for a stream variance is underway, and applicable permit modifications and variance request will be submitted prior to any related fill or disturbance of the wetlands or streambanks.
Many targets and defilades were relocated within the DMPRC footprint. The type and numbers of these range components remain the same between the April 2004 and the January 2006 design except for the addition of one more defilade position for a total of 19 defilade positions.

Two MATs east of the intersection of Resaca Road and Buena Vista Road and near the K15 ordnance impact area (indicated in Figure 2 as the old locations of M9 and M10) were relocated due to unexploded ordnance (UXO) concerns. Other targetry as well as the associated maintenance road and electric lines were also removed from this range area. In that area, most of the timber harvest was completed to support the April 2004 design construction and LOS needs, but construction disturbance will be avoided in that area with the redesign. MAT 10 was moved near the trail crossover 4 (labeled XOVER4 on Figure 2) and between Trails 3 and 4. MAT 9 was relocated between Resaca Road and Buena Vista Road near the end of the shortened Trails 3 and 4 ending loop.

Other target relocation important for environmental analysis includes placement of one stationary infantry target (T14) close to an eligible historic property (site 9Ce1735); however the mitigation of constructing a berm between the target and the historic site will adequately protect the site.

A couple of targets or associated grading for the targets (T22, T28, T25, T35, M5, and M11) and maintenance roads (leading to T19 and T22) appear to overlap jurisdictional wetlands or streambanks in Figure 2. These targets and their associated grading and disturbance will either be moved out of jurisdictional wetlands and streambanks areas, or the Section 404 wetlands permit for the DMPRC will be revised as required to account for any changes in impacts.

Some tank trails, defilade access roads, crossover trails, Baseline Road areas, and tank trail sections in wetland areas were revised to a four-to-one slope to allow the contractor to stabilize the required fill in these areas, utilizing a lesser grade of slope.

Two borrow areas totaling 20 acres are identified in Phase 2 areas between Trails 1 and 3 and between Trails 4 and 6 (indicated on Figure 1) for fill material use in Phase 2.

Other changes in the January 2006 design include: deletion of the misfire pit; identification of First Division Road and Hourglass Road as an Alternative Haul Route; deletion of the secondary construction contractor staging area; addition of location of cameras to record and monitor training (FLIR cameras); identification of 19 power center and several range limit marker locations.

Some information for the redesigns through the end of calendar year 2005 is not yet available and therefore cannot be adequately addressed in this Annual Update. The April 2004 design indicated locations of offensive maneuver boxes, i.e. locations in which the Tanks and Bradley Fighting Vehicles may fire ordnance at targets while traversing the tank trails. The January 2006 redesign does not provide the locations of the offensive maneuver boxes. Also, the line of sight analysis for the January 2006 redesign (defensive and offensive shots) is not available; therefore any revisions to the amount of vegetation removal and "leave tree" locations cannot be determined at this time. When this information is available, SCOE and Master Planning will ensure the LOS analysis is submitted to EMD for environmental review.

The Master Planning representative submitted design changes to the Fort Benning NEPA Program Manager, EMD, DPW; however, some of the design changes were implemented prior to submission for NEPA review or completion of NEPA review. For instance, SCOE allowed the construction contractor to start work on the Phase 2 redesign prior to submitting those redesigns for environmental review and NEPA compliance. In those cases, the NEPA review and other environmental review was conducted as soon as possible after the beginning of redesign implementation.

The SCOE and the construction contractor were made aware of the need to submit design changes to EMD for prior approval through the DMPRC construction specifications Section 01355A Environmental Assessment of Contract Deviations at 1.10 (required that any deviations from the drawings or plans that may have environmental impacts would be subject to the

approval of the EMD) as well as the EIS and ROD. The failure to submit some of the redesign for NEPA evaluation prior to implementation was a violation of NEPA and AR 200-2; however, upon discovery by Range Division personnel and EMD and notice to the Garrison Commander, appropriate corrective action was taken, including NEPA review of redesigns and updates to the NEPA administrative record after the fact. The GC directed the SCOEs to stop any work in areas proposed for new disturbance until compliance with NEPA has been confirmed. Monitoring of the area indicated that work was not immediately stopped at that point. The SCOE was advised that continuing work prior to NEPA compliance could also result in noncompliance with other environmental requirements (e.g. as soil erosion control permitting coverage). See more on this situation in the Construction Phase below.

CONSTRUCTION PHASE

Personnel Status

The DMPRC Construction Phase 1 includes both the harvest of marketable timber through one contracting mechanism and the separate construction actions via a separate construction contractor, which includes slash and other vegetation removal, grading, etc. To help Fort Benning monitor the mitigation, an Environmental Monitor position was filled by a consultant providing one person whose full-time job is to review the DMPRC progress and environmental mitigation, prepare reports regarding the same, and help resolve any noted discrepancies. The Environmental Monitor (EM) also acts as an information liaison between Fort Benning environmental and range personnel, the SCOE representatives, the construction contractor and subcontractors, and other contractors performing mitigation for the DMPRC. The EM consultant has experience and training in both construction and environmental protection. The EM started work in January 2005 and has provided much of the information regarding mitigation and monitoring via reports, which give a basis for much of this Annual Report.

The construction contractor was required to engage an environmental engineer with at least three years of experience to provide quality control on environmental aspects of the DMPRC per DMPRC contract specifications regarding Contractor Quality Control, Section 01451A 3.4.3. The construction contractor has not employed an environmental engineer to date for this purpose. No coordination, reports or other matters have been generated as part of the construction contractor's responsibility to engage an environmental engineer. SCOE personnel report that the construction contractor fulfilled a separate personnel requirement when the contractor engaged the services of a local firm, Hill-Staton Engineers beginning in January 2005. A representative of Hill-Staton Engineers has been identified in the Environmental Protection Plan as the person qualified and responsible for manifesting hazardous waste disposal from the DMPRC site during construction in accordance with construction contract specification 01355A paragraph 1.7.2.

Environmental Related Construction Plans

Per the Plan and construction contract specifications, the construction contractor was to prepare and submit an Environmental Protection Plan (EPP) prior to starting work. The construction contractor did not submit a plan in a timely manner, and due to various concerns regarding

environmental impacts on the DMPRC construction site, Fort Benning asked the SCOE to obtain the EPP from the construction contractor in early 2005. An initial EPP was submitted via the SCOE to EMD; the EPP was reviewed by EMD and the ELS and was returned for further revision. The construction contractor submitted a revised version dated February 22, 2005, which the SCOE approved on March 2, 2005. For a copy of the EPP or related information, please contact Mr. John E. Brown, NEPA Program Manager, DPW, Fort Benning, GA.

The construction contractor's delay in preparing and submitting the EPP was a possible contract violation and noncompliance with mitigation described in the DMPRC EIS and ROD. This failure to submit the EPP for environmental coordination and review prior to construction start also meant less effective implementation of the environmental mitigation requirements in the construction operations.

The construction contractor was also required by the contract specifications to prepare and submit a Slash Removal Plan (SRP), however a SRP has never been submitted to EMD. The construction contractor indicated that an SRP would be impossible to generate because the designs/plans for the DMPRC are constantly changing. The construction contractor initially used a method of slash removal that involved grading in areas that were not covered by NPDES permitting requirements, however the grading areas were within the DMPRC construction footprint (see Figure 3 additional clearing areas). Coordination with EMD via a SRP would likely have avoided this NPDES violation. Fort Benning continues to work with the SCOE on this matter.

SOILS AND VEGETATION and UNIQUE ECOLOGICAL AREAS:

Timber Harvest

Timber harvest on Fort Benning is subject to mitigation processes and restrictions established by the Georgia Forestry Commission known as Forestry Best Management Practices (BMPs). Contractors removing timber on Fort Benning are required to adhere to these Forestry BMPs via specifications in their contract with Fort Benning. A Timber Harvest Plan was used to coordinate the SCOE contractor(s) who removed the marketable timber. Timber was removed in phases as much as possible to reduce the amount of exposed ground areas that may be subject to erosion. Most marketable timber has been harvested from the construction areas as well as for the LOS areas, with the exception of newly identified redesign construction areas and wetlands areas.. Harvestable timber also was not removed in some areas where the ground was too wet to maneuver the equipment. Instead the construction contractor is removing timber left in construction areas that the timber harvest contractor did not harvest. Additional LOS timber removal may be required after the LOS analysis for the redesign is available to ensure that the Soldier can see targets from firing points.

Per the Plan, the SCOE personnel supervising the timber harvest were to generate weekly monitoring reports and submit those to EMD; however, in this instance, EMD personnel generated the reports daily. Action was taken against one contractor who removed timber outside of the marked boundaries and in the leave tree area. Once this deviation had been noted

by EMD personnel and the Fort Benning Resident Forester's Office representative, the contractor was ordered to stop cutting trees in these areas and was fined triple stumpage for all trees cut within the leave trees area. The incident did not result in any environmental violations.

Slash Removal and Construction Grading

The construction contractor is responsible for removal of non-marketable timber and vegetation, i.e. slash removal, to support the DMPRC construction. Initially, the construction contractor used a bulldozer for slash removal. This method was appropriate for the constructions areas, however it was determined that this caused ground disturbance where not planned for the LOS areas. Approximately five acres were disturbed in Phase 3 areas near Trails and 1 and 2 (Figure 3). Coordination between Fort Benning, SCOE and construction contractor staff was supplemented with Georgia Department of Natural Resources (GA DNR) advice on this matter. Upon SCOE request, GA DNR NPDES regulators gave a courtesy inspection of the DMPRC site on October 5, 2005. The regulators gave direction on BMP installation and maintenance, forestry exemption for timber harvests, and revising submissions to include the graded areas. The method of slash removal was altered to minimize ground disturbance outside of the construction areas. The construction contractor, SCOE and design consultants are revising the ESPCP that accompanies the NOI for the NPDES permit to capture the areas that have been disturbed due to the initial method of slash removal or work outside areas showing on plans. These areas are included in the January 2006 redesign drawings.

The redesigns resulted in additional areas of timber and slash removal in some instances due to relocation of range components, as well as non-use of some areas already cleared. EMD in coordination with Range and SCOE will evaluate options to replant trees or other vegetation in those areas. As of October 2005, acreage estimates were available from the SCOE for the redesign effort. The overall totals for the timber and slash removal associated with the construction areas were reduced by about 3.75 acres for Phase 2 but increased by about 9.25 acres for phases III and IV, increasing the construction area grubbing and clearing area by about 5.5 acres. These figures reportedly do not include some defilade and target realignment, nor the additional borrow areas to support Phase 2 construction, so additional vegetation removal and grubbing areas would be more accurately estimated as at least 25.5 acres (5.5 acres from October 2005 information plus 20 acres for the borrow areas) but may be more.

Some land disturbance for the redesign work in Phase 2 preceded the revision and submission of the ESPCP, however the ESPCP has been revised to incorporate the Phase 2 areas redesigns. That ESPCP revision was reviewed by EMD and then submitted to GA DNR on January 18, 2006. Although attempts were made to balance out earthwork so that soil exposure and movement would be minimized, borrow areas have to be used to support Phase 2 as redesigned. Approximately 160,000 cubic yards will be moved from these hilltop areas for use as fill. The ESPCP revision associated with the borrow areas was submitted to GA DNR. Redesigns for Phases 3and 4 are still under review and will be incorporated into a revised ESPCP submission; however substantial additional fill material is expected to be required to construct the current redesigns in phases 3 and 4. While improvements in NPDES submissions are being made,

reports indicate that the construction contractor clears areas outside of the NPDES permitted areas.

The design engineer firm representative (PolyEngineering) conducted site visits to certify the soil erosion prevention BMPs: Phase 1 on March 11, 2005, Phase 2 on May 10, 2005, and Phase 3 on June 29, 2005. Initially the design engineer noted that the construction contractor was not following some requirements of the ESPCP and recommended that all work stop until corrective action was taken. The SCOE stopped new construction work on the project until the construction contractor corrected the deficiencies. The construction contractor, the SCOE and Fort Benning staff (primarily the EM but also EMD and OSJA) continue coordination and monitoring of BMPs.

The construction contractor and Fort Benning are both primary permittees on the NPDES permit. The construction contractor made the periodic monitoring reports in accordance with the ESPCP and NPDES permit. The construction contractor is required under the NPDES permit to make routine and frequent inspections of the soil erosion control measures, and those are documented by the contractor, and those reports were given to SCOE. The EM also makes nearly daily inspections of the erosion control measures as well as other aspects of the DMPRC site, and documents these for submission to EMD, who passes them on to the SCOE and OSJA as needed. The EM makes every effort to promptly share information and coordinate with the SCOE and the construction contractor regarding reports of any environmental concerns. The SCOE documents authorization of any changes to the ESPCP or BMPs through normal contracting mechanisms.

Due to rainy weather, maintenance issues, etc., not all BMPs have been installed and maintained properly at all times. Fort Benning sent several letters of self-notification for noncompliance with GA DNR NPDES regulations or the general permit on the DMPRC project and a description of corrective actions. For more information or a copy of these letters, contact Mr. John E. Brown, NEPA Program Manager, DPW, Fort Benning, GA. Corrective actions that have been taken include:
- installation/repair of sediment fences and brush barriers
- installation of additional turn-outs, check dams and emergency sediment pits
- coordination on site between the construction contractor, SCOE and EM/EMD to make and document minor adjustments to the ESPCP based on differing on-site conditions than detailed on design plans, which will be routinely submitted to the GA DNR (although no submission to capture these minor, on-site revisions has yet been submitted).

Any of these additional measures that involve hydrology or state waters are required to be submitted to GA DNR as a revision to the ESPCP.

Markings of boundaries for vegetation removal and for timber harvest were red painted. To mark revised removal areas due to redesigns, the construction contractor re-marked the trail and target boundaries at the time the surveying of the area occurs. There have been some excursions outside the vegetation boundaries noted. These were reported by EM to the Chief of EMD and the SCOE for resolution. Some corrective actions were taken as appropriate to the situation.

Low impact methods of vegetation removal are required in wetlands, streambank buffers and other areas that are not construction areas. Vegetation removal for non-construction areas has not occurred yet so the related mitigation and monitoring will not be addressed in this Annual Report.

Optional mitigation included leaving more trees in the support area. The redesigns did not reduce the amount of tree and vegetation clearing around the buildings and other support area structures as previously identified in the EIS and ROD.

Ground water not previously identified as water of state for NPDES purposes was uncovered during construction activities. Unfortunately, what is now a small stream is within 25 feet of a tank trail and emplaced range target (Phase 2 area at Trail 1, STA 17+00); therefore construction activities took place within 25 feet of the newly identified stream. Moving that target and tank trail would involve additional ground disturbance, cost, and delay as well as affect the training capabilities of the DMPRC. Ft Benning and the SCOE are working with GA DNR to reach a resolution that is protective of the newly uncovered stream while not degrading the DMPRC training facility.

No work has occurred in the Unique Ecological Areas (UEAs) to date so the associated mitigation will not be addressed in this Annual Report.

The overall disturbance to the DMPRC site is expected to increase by at least 25.5 acres due to redesign. Any changes in the disturbed areas that have not been incorporated into an ESPCP revision and submission will be completed as soon as feasible. Ft B EMD, OSJA and SCOE personnel met in November 2005 to identify those areas and plan for ESPCP revision and submission. The January 2006 redesign includes all disturbed areas. Also some areas outside of the redesign parameters have been disturbed before revision of the ESPCP. The SCOE will ensure that no land disturbing changes are implemented prior to meeting the NPDES requirements, including timely submission of a revised ESPCP.

While rainy weather causes serious challenges for maintenance of BMPS, the construction contractor is required to ensure that the designed BMPs are installed and maintained properly. Any revisions to or adding of BMPs will be appropriately documented and incorporated into the ESPCP, with a copy to EMD for recordkeeping. Focus on maintaining adequate vegetative cover where called for and reducing the timeframe needed for corrective action will also improve compliance. The construction contractor, SCOE and EM/EMD will continue to document any deficiencies or noncompliance and send self-notifications to GA DNR in accordance with the NPDES general permit requirements.

WATER QUALITY and HAZARDOUS MATERIALS:

Low water crossings were going to be used for tank trails across streams. Instead elevated crossings using piped arch culverts will be constructed at tank crossings. This design change was needed because initial work to construct a low water crossing at Trail 1 at Bonham Creek uncovered unsuitable soil that would have required extensive excavation. Also, diversion

channels associated with low water crossing construction can be avoided, reducing stream and vegetation impacts. Concrete footers and banks to support the elevated structure are required; however this design change may reduce adverse impacts to water quality as use of an elevated crossing would not produce sediment during crossings and may reduce chances of spills running directly into the water. Detailed design information for the pipe arch culverts is available from Mr. John E. Brown, NEPA Program Manager, DPW, Fort Benning, GA.

Stormwater management measures also are used to reduce sedimentation into surface water, as discussed above. During periodic monitoring of the BMPS called for in the NPDES permit and ESPCP, a few minor instances of sediment reaching the surface water was noted, again during very rainy periods. Corrective measures appropriate for each instance were taken, as indicated above.

The Spill Prevention Control and Countermeasure Plan (SPCC) and the Spill Contingency Plan (SCP) are also important components in managing hazardous materials and safeguarding water quality. An SPCC was not required for the DMPRC project because less than 1320 gallons of hazardous materials are stored on site. The ESPCP for the construction phase calls for periodic inspection for spills, quick response to any spills noticed, and use of drip pans. These measures where carried out as indicated by inspections by the construction contractor as well as the EM. The SCP gives procedures and responsibilities for responding to spills of hazardous materials and other contaminants. Only small spills have occurred and these were cleaned up as required.

The Strategic Environmental Research and Development Program (SERDP) is the Department of Defense's corporate environmental research and development program. SERDP initiated the SERDP Ecosystems Management Project (SEMP) to address the requirement of implementing ecosystems management policy. In order to take advantage of the scientific opportunities afforded by this large (>1100 acre) disturbance in the Sally Branch, Bonham Creek and Pine Knot Creek watersheds, SERDP is funding an extension of the Oak Ridge National Laboratory Riparian Project (ORNL3 SI-1186) and an EPA Rapid Biological Assessment monitoring (RBP) regime.

Sensors for water level, temperature and velocity were established on Bonham Creek and Sally Branch in 1999 prior to the initiation of any timber harvest or construction at the DMPRC project site. These stations were supplemented with bimonthly measurement of basic water perimeters (pH, Spc, Temp, Turbidity, DO) from 2002-2004. RBP data (macro-invertebrates and in-stream habitat) was also collected at these locations and provided a strong pre-construction characterization of the two streams most likely to be affected by the DMPRC. In response to the DMPRC, RBP data collection was initiated in Pine Knot Creek and at additional locations on Sally Branch and Bonham Creek, upstream of the construction area.

In mid 2004, the SERDP-funded project was expanded to capture some of the ecological impacts of DMPRC construction. This project established study areas both upstream and downstream of the DMPRC on Bonham Creek and Sally Branch. ORNL3 conducts quarterly stormwater, baseflow and macro-invertebrate monitoring, as well as monitoring soil movement into the riparian area. Storm water sampling is accomplished by using a sampler that collects samples at

programmed intervals after being initiated by increasing water levels during rainfall events. These samples are analyzed for various chemical perimeters and Total Suspended Solids (TSS).

CERL and Fort Benning established semi-permanent facilities for water sampling on Bonham Creek, Sally Branch and Pine Knot Creek in December 2004. These stations combine continuous measurement of basic water quality perimeters (pH, Temp, DO, Turbidity) with the water level triggered sample collection during storm events. This study will develop a relationship between turbidity and TSS in order to facilitate economical monitoring of sediment transport.

The data collected by these research projects is being compiled for post-construction analysis of the ecological impacts on the affected streams. Raw turbidity data is being provided to Fort Benning EMD as a means to verify regulatory turbidity monitoring. Data results for studies indicated above are not yet available.

WETLANDS AND STREAMBANKS

The jurisdictional wetlands and streambank impacts analyzed in the EIS and ROD may be reduced overall due to the redesigns. Estimated direct wetlands impacts may be reduced by up to 4 acres, however calculations and coordination is in process. The DMPRC designers considered using articulated concrete at low water crossings to reduce the amount of disturbance required. Instead, low water crossings have been eliminated and the pipe arch culvert crossings described above will be constructed and used at four Bonham Creek crossings and two Sally Branch crossings. Trails 5 and 6 were truncated short of Sally Branch, which reduces the impacts to jurisdictional wetlands and streambanks substantially. Due to the redesigns of the DMPRC, some different areas of wetlands and streambanks will be affected than portrayed in the EIS or the Section 404 permit application. These design changes will continue to be coordinated with the SCOE Regulatory Office. The 404 permit and associated mitigation credits may have to be revised to incorporate the redesigns.

As indicated above, wetlands and streambank buffer zones were marked prior to timber harvest and construction. The construction contractor did push some of the brush barriers into the edge of the wetlands on a few occasions. This practice was revised shortly after discovered by the EM. Due to rain events and due to some of the NPDES noncompliance noted above, there have been several instances of sediment entering into wetlands and waters of the state. These instances were identified in the self-notification of noncompliance letters mentioned above.

Even though the impacts to regulated wetlands and streambanks may be reduced, Fort Benning plans to continue restoration of the Clear Creek site as mitigation. Fort Benning may pursue reductions in the credits from the Clear Creek restoration site that would be used for DMPRC mitigation. The Clear Creek restoration site design was completed and a restoration contractor has been engaged. The Clear Creek Mitigation Plan gives a more detailed description of the restoration plan for portions of Clear Creek. A Conceptual Mitigation Plan was submitted to the SCOE Regulatory Office as part of the wetlands permit application for the DMPRC, which was finalized on March 25, 2004. Fort Benning had additional surveying and modeling done to

prepare the site-specific Clear Creek Mitigation Plan, which has all required details for establishing and monitoring the restoration site, and was approved by the SCOE Regulatory Office on August 26, 2004.

The timing of the restoration has been somewhat delayed due to difficulty locating a contractor to perform the work, so that the updated schedule planned for Clear Creek site restoration includes: removal of 56 beavers completed in January 2006; removing beaver dams and obstructions starting in March 2006; then returning for required excavations in June 2006.

Planting of vegetation to support the wetlands restoration will occur about December 2006, and vegetative monitoring will start in the Spring of 2007 vice the Fall of 2005. This vegetation monitoring will be conducted annually for at least five years at the Clear Creek restoration site. If SCOE Regulatory Branch requires the Clear Creek restoration plan to be revised and resubmitted to indicate the changes mentioned above, that will be done promptly.

FEDERALLY PROTECTED SPECIES

The red cockaded woodpecker (RCW) is the only federally protected species located within the boundaries of the DMPRC area. In the initial design, attempts were made for the LOS to avoid affecting any RCW clusters. A Biological Opinion (BO) for the DMPRC project was issued on July 22, 2004 and includes six Reasonable and Prudent Measures (RMP): 1) Manage and monitor the seven groups within 0.5 miles of the range footprint that were given incidental take, 2) Notify the Service within five working days of any revisions to the June 7, 2004, LOS viewshed, 3) Monitor foraging habitat for signs of degradation from live fire, 4) Protect cavity trees in all seven clusters from any impacts due to heavy machinery and soil erosion associated with earth moving and fill operations, 5) Clear timber within RCW clusters outside the RCW breeding season, and 6) Provide annual reports throughout the duration of the BO and a final report five years after initiation of training.

In order to satisfy the first RPM, a Monitoring Management Plan was developed that details a home range and habitat use monitoring project for the seven clusters receiving incidental take (D03-02, D13-02, D14-04, D15-01, J06-01, K22-02, and K22-03). This consists of directly following RCW group members in each of the seven clusters once per month and geo-referencing their locations. Additionally, all unbanded RCW group members (adults, sub-adults and nestlings) have been and will continue to be banded for identification purposes. Also, all birds within a three mile radius of the DMPRC are banded and identified to determine if the range construction is having any adverse impact to bird dispersal across the range. To satisfy RMP 6, results of these efforts are included in annual reports to USFWS (Attachment 1 is the 2004 report) and will be summarized at the conclusion of the project.

The second RPM addresses design changes and the associated LOS. The redesigns were planned to avoid RCW cluster or habitat impact as much as possible; however, the LOS analysis that will indicate the beaten path from repeated DMPRC operation has not yet been completed for the redesigned areas. The SCOE will pass on the LOS analysis to EMD as soon as available, and Fort Benning will provide the design changes and the LOS analysis to the USFWS within five days. EMD has been informally coordinating with local USFWS representatives regarding the

design changes. Analysis of the range design changes will also involve consideration of protective berms for clusters and habitat behind targets that may otherwise be adversely impacted.

RPM 3 will not be initiated until operation of the range begins. Adherence to the fourth and fifth RMPs has not been necessary as no habitat was removed from any RCW cluster. .

Approximately 237 acres of RCW habitat was removed from the foraging polygons associated with the following clusters but outside of the cluster boundaries:

Cluster	Acres
J6-1	8.5 acres
D13-2	30.9 acres
D14-4	129.3 acres
D3-2	68.3 acres

Prior to the timber harvest and other construction activities, the boundaries of the RCW clusters and habitat were marked.

The BO for the DMPRC allowed for take of seven RCW clusters, D03-02, D13-02, D14-04, D15-01, J06-01, K22-02 and K22-03, and required EMD personnel to determine the impacts of the construction (and eventual operation) of the range on these clusters. Four clusters were later added to the monitoring study. D04-01 and K22-01 were added because of noted interactions with other clusters (see below), even though they are not within 0.5 miles of the DMPRC footprint. D13-01 was previously inactive and therefore not considered, but it became active during the 2005 season and was therefore added. J06-02 was previously not considered because it was inactive. It remains inactive, but was added because of the potential for it to be activated as was D13-01. D13-01 and J06-02 are within 0.5 miles of the DMPRC footprint. These four clusters do not have incidental take status. The status of these four clusters will be discussed at the annual DMPRC BO meeting for the 2005 calendar year which will occur in March 2006.

Detrimental impacts or trends to the clusters around the DMPRC have been observed. Impacts on RCW groups range from cluster abandonment to possible increased home range competition between neighboring RCW groups. Adverse impacts also potentially resulted from the removal of known or potential foraging habitat.

Several clusters saw increased home range competition for foraging habitat that may have resulted in clusters going inactive. K22-01 and K22-02 were active and had nests during the 2004 breeding season. Soon after the clearing of the DMPRC construction areas, the K22-01 birds disappeared and have not been documented in any other cluster on Fort Benning. The K22-02 birds were seen occupying and foraging in both territories, seemingly having pushed the K22-01 birds out and ultimately roosting in and defending the K22-01 cluster site. K22-02 then went inactive during the breeding season (April – July). In September 2005, a single male took up residence in K22-02 and has remained the only bird roosting in the site. By the end of 2005,

K22-01 was defended by a potential breeding pair and K22-02 was defended by a single male. This interaction facilitated the decision to add K22-01 to the monitoring program.

A similar scenario occurred with the D03-01 and D04-01 birds. The male from D04-01 and the female from D03-01 combined and occupied the D03-01 site. These birds continued to forage in the D04-01 area but did not occupy any of those trees. The female from D04-01 and the male from D03-01 have not been documented in any other cluster on Fort Benning. The D03-01 female eventually disappeared and anther female began occupying the D03-01 cluster with the D04-01 male. The D03-01 female has not been documented in any other cluster on Fort Benning. The D04-01 cluster remained inactive until September 2005, when a single male began defending the site. He was joined by a female in October 2005. The two groups have since been seen defending their respective territories from the other groups. This interaction facilitated the decision to add D04-01 to the monitoring program.

The D14-04 group appears to have been adversely impacted by foraging habitat removal. This group had the most habitat removed of all groups being monitored. The D14-04 group abandoned the cluster within 5 weeks of the habitat removal and, to date, have not been documented in any other cluster on Fort Benning. The habitat was removed during the latter part of October 2004. According to the USFWS RCW recovery coordinator (Ralph Costa), it will be assumed that the habitat removal will be responsible or related to cluster abandonment if the cluster stays abandoned during the subsequent breeding season. The cluster was not active during the 2005 breeding season; however a single male bird that originated from cluster E02-01 has been occupying it since September 2005.

Minimization for the loss of RCW clusters and habitat involves the reclaiming of 7 active RCW clusters in the A20 ordnance impact area. With the cooperation of Range Division as described in an approved access plan for A20, RCW staff documented 7 potential breeding groups in 11 clusters during spring 2005. To date, no UXO clearance has been done; however, personnel from Range Division who accompanied the RCW staff during the spring 2005 nest checks documented one instance of UXO,. but it was not in any of the 11 clusters.

Additional staffing to support the increased monitoring and management requirements was also required. Two new RCW positions were filled by contract on February 14, 2005 and August 15, 2005 for a term of one year each. These additional RCW staffers have done all the monitoring, banding and bird follows in the clusters listed above during the time covered by this Annual Report.

For the state protected species mitigation, the gopher tortoise is the primary species of concern. Gopher tortoises in the area were relocated from the DMPRC site prior to construction activities as part of an ongoing research project conducted and permitted by Auburn University. Four Gopher Tortoises have been discovered on the Range since the start of construction. All four tortoises were discovered in Phase 2I near the same portion of Trail 1. In each of the four cases, the construction contractor ceased work in the area and notified the EM, who coordinated with EMD personnel for the removal and subsequent relocation of the tortoises back into suitable habitat near where they were found. Gopher tortoises that return to the DMPRC site during the

operation and maintenance phase will, when feasible, be relocated to other similar suitable habitat on the Installation.

LAND USE and UTILITIES

As part of encroachment monitoring, EMD and the Real Property Officer, DPW, verify that community projects near the Installation boundary have been properly coordinated with Fort Benning per the Georgia legal requirement to notify the Installation Commander of rezoning, with one known exception. This exception is not near the DMPRC part of Fort Benning and does not impact the DMPRC.

Sustainable design was incorporated into the DMPRC by inclusion of contract specifications. Most of the sustainable design measures focus on buildings and structures. No reports have been submitted and the construction contractor has not prepared a SPiRiT notebook as required. The SCOE have not provided reports of monitoring and assessment of the sustainable design efforts to the EM or other Fort Benning personnel yet. Utility design plays a part in the sustainable design. To date, electric, water and communication lines have been partially installed in Phase 1 of the DMPRC. The construction contractor has submitted a sustainable design plan, the SPiRiT Compliance Plan, to the SCOE contracting officer to address how energy efficiency and/or renewable energy will be used in DMPRC support buildings; however that plan requires revision to incorporate more detail.

CULTURAL RESOURCES

The design changes are not expected to impact eligible or not yet designated cultural resources adversely. The relocation of range components was planned to avoid known historic properties. Although the redesign placed a SIT close to an eligible historic property of Euro-American origin on the DMPRC footprint, the protective berm that will be installed will avoid adverse impacts and no further mitigation is required. Because impacts to historic properties are also possible from munitions during operation of the DMPRC, Fort Benning will make further evaluation when the LOS analysis for the redesigns are available. Fort Benning will submit project changes to the GA SHPO for continued coordination, however Fort Benning anticipates a determination of no historic properties impacted..

For mitigation, ground disturbing activities were prohibited and low impact vegetation removal was required within the boundaries of eligible historic properties. The boundaries of the protected historic property sites were demarcated prior to construction. Berms around two eligible sites that would otherwise be subjected to munition rounds were also required. The construction contractor made minor intrusions into one of the eligible sites, 9Ce1735, another Euro-American historic property, during berm construction in May 2005. Encroachment into the historic site occurred after the construction contractor began construction of the protective berm and removed trees and placed fill within the site boundary. The site was signed and painted, however the contractor proceeded to place the berm in the location as it was shown on the contract drawings per SCOE direction. Work in that area was immediately halted once the situation came to the attention of EM, EMD, SJA and GC. Investigation showed that the historic

components of that site had not been damaged and that most of the ground disturbance was limited to the buffer area around the historic components. For Benning notified the GA SHPO and provided related information. The GA SHPO concurred with Fort Benning's determination that the historic components of the site had not been damaged, and that plans to ensure protection of that and other historic properties for the DMPRC should be redoubled. The construction contractor has now taken additional precautionary measures by installing orange fencing around eligible historic properties to prevent unauthorized disturbance by construction activities. Fort Benning also has ensured that the other eligible historic property on the DMPRC footprint has been clearly identified by painting, flagging and signage on the boundary.

As required by the Plan, the EM has inspected the eligible cultural resource sites monthly prior to the construction phase and weekly during the construction phase. It was through this inspection process that the above intrusion was discovered and reported. No previously unknown cultural resources or historic properties have been discovered on the DMPRC area.

NOISE

Although the redesigns of the DMPRC involve relocation of many firing points and targets, the relocations probably would not generate a noticeable difference in the noise analysis presented in the EIS and ROD; therefore additional noise modeling is not required and the mitigation and monitoring requirements do not need to be revised. Fort Benning is coordinating with noise experts at the Center for Health Promotion and Preventive Medicine for verification that no substantial change in the noise environmental is expected from the DMPRC redesigns.

Construction noise was not an issue and operational noise from training has not begun, so neither will be addressed in this Annual Report.

AIR QUALITY

As mitigation during construction, the construction contractor is required to follow existing applicable air requirements. The construction contractor has routinely taken measures to control air pollution, including fugitive dust and particulate matter, including: covering trucks transporting rock, watering down unpaved roads, etc. For a couple short periods, watering trucks were unavailable due to repair requirements; however the contractor made every effort to minimized these incidents by renting a water truck. The construction contractor has not made opacity readings and determinations to ensure the 20% fugitive dust restriction is not exceeded as stated in the Plan. EMD will bring this situation to the attention of the SCOE.

The construction contractor is using the slash vegetation for brush barriers and has not disposed of any construction debris by burning; therefore no associated air requirements for burning vegetation have arisen.

CONCLUSION:

This Annual Report identifies the status of DMPRC mitigation and monitoring from the ROD to the end of calendar year 2005. All four phases of the project area have been redesigned, and any modifications to potential environmental impacts or mitigation requirements have been identified in this document. During the construction phase, there have been notable deviations to the required mitigation. These deviations have either been corrected or are in process of correction via coordination between Fort Benning, SCOE and construction contractor personnel. Fort Benning and the SCOE coordinated any reports of construction contractor environmental violations or mitigation noncompliance. The SCOE has evaluated the situations reported above and taken the following contractual actions: stop work orders to evaluate intrusion into an eligible historic property during protective berm construction, and another order to direct efforts to correct erosion control BMP implementation in Phase 1.

Enforcement of environmental requirements has occurred: the Fort Benning GC required that construction in new, redesign areas cease until environmental requirements were met; a timber harvest contractor was fined. Efforts to incorporate and conform to the required mitigation as detailed in the ROD, BO, various permits, and the Plan are critical to continued NEPA and other environmental compliance.

The DMPRC redesigns through December 2005 are at the same general location, and are of the same type and kind as those identified in the EIS and ROD. A reduction in some adverse impacts is expected, while some may be increased. Fort Benning and the SCOE are coordinating the redesigns with the appropriate regulatory agencies and will incorporate any additional environmental mitigation required via that process. The redesigns do not constitute substantial changes or significant new circumstances about the DMPRC project or the environmental impacts; therefore supplemental NEPA documentation is not required.

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Colonel, IN
Garrison Commander

MAR 1 6 2006
Date

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REFERENCES

Fort Benning, Record of Decision for the Final Environmental Impact Statement for the Digital Multi-Purpose Range Complex, April 2004a.

Fort Benning, Final Environmental Impact Statement for the Digital Multi-Purpose Range Complex, April 2004b.

Fort Benning, Final Digital Multi-Purpose Range Complex Mitigation and Monitoring Plan, November 2005.

ATTACHMENT 1

FORT BENNING'S ANNUAL REPORT OF RCW MITIGATION EFFORTS TO USFWS FOR 2004

FORT BENNING'S DIGITAL MULTI PURPOSE RANGE COMPLEX
ANNUAL REPORT
(partial fulfillment of Biological Opinion / FWS Log No: 03-0584)

Reporting Period (July through December - 2004)

I. Reporting Requirements

In order to remain exempt from the prohibitions of Section 9 of the Endangered Species Act (ESA), each year for five years, Fort Benning Army Installation is required to submit an annual report to the US Fish and Wildlife Service (FWS) on the affects of developing, using and maintaining the Digital Multi Purpose Range Complex (DMPRC) located near the south/southwest corner of the K15 Impact Area. Each report and the associated project datasets, will examine the cause and effect relationships between developing and using the DMPRC, and how all red-cockaded woodpeckers (RCW) within the project action area, may be affected. In part, this report will reference those actions taken to adhere to the Terms and Conditions (TC), which implement the Reasonable and Prudent Measures (RPM), of the July 22, 2004 Biological Opinion (BO / FWS Log No 03-0584). Each yearly report is due by March 31, which should reflect the previous years work. At the end of the fifth year, a final report is due which not only provides the findings of the fifth year, but also combines the analysis and results for all years. ***Note*** *– Although this reporting period is July through December 2004, we have included pertinent information through March 2005.*

II. Milestones as of March 31, 2005

March 11, 2004, DMPRC Final Biological Assessment (BA) submitted to FWS.

April 2004, DMPRC Environmental Impact Statement (EIS) finalized.

May 27, 2004, Garrison Commander signed approval letter for Access Plan.

July 22, 2004, FWS issued Final BO.

August 2004, Projects Biologist, and two newly hired RCW field staff began DMPRC monitoring/management requirements.

September 19, 2004, Forest clearing for DMPRC began.

October 22, 2004, Detailed Access Plan, and Final Monitoring and Management Plan submitted to FWS.

December 20th through the 30th, A20 Impact Area surveyed for potential RCW clusters to offset those projected for "*Take*" from DMPRC impacts.

January 14, 2005, On-site Environmental Management Division (EMD) observer hired to monitor timber and construction operations.

February 18, 2005, Range clearing completed.

March 7, 2005, Building of range infrastructure began.

III. Current Status for each Term and Condition

Listed below is each TC (paraphrased from July 22, 2004 Biological Opinion), followed by the measures taken by the Installation to comply with the conditions listed in FWS Log No 03-0584.

Term & Condition 1 - a. develop a management and access plan to include the following: access to clusters within 0.5 miles of the range footprint for at least four hours per day (all year for five years) to conduct all required management and monitoring needed to detect early warning signs of habitat degradation and demographic impacts; and b. provide access for radio telemetry follows.

Status:
a. on May 27, 2004, a Transmittal Letter from the Installations Garrison Commander (GC) was delivered to the FWS defining the commitment the Army would make to manage and monitor those RCW clusters/potential breeding groups (PBG) associated with the DMPRC project (i.e. A20 area and K15 area). Additionally, on October 22, 2004, the *"Access Plan for Monitoring and Managing the Red Cockaded Woodpecker in Association with the DMPRC"* was given to the FWS. The Conservation Branch (CB) and Land Management Branch (LMB) along with Range Division cooperatively negotiated and developed this Plan. ***Note*** – *Item b. the aforementioned Access Plan also accounted for the requirements that would have been needed to implement a radio telemetry initiative, however; do to circumstances outside the control of the Installation, both RCW foraging and dispersal behaviors will be collected in there traditional manner and not with telemetry.*

Related Works:
From December 20th-30th, RCW staff members surveyed the A20 Impact Area for seven active clusters to offset clusters/PBGs potentially taken because of the DMPRC project. Although the total number of known clusters/PBGs will be better realized during the 2005 breeding season, it is possible that as many as six to seven active clusters were located during the December 2004 survey. In the 2005 breeding season, while the total number of PBGs are validated in A20, assessments and clearing (if needed) of unexploded ordnance (UXO) will be conducted.

While conducting the post treatment (i.e. range timber clearing) RCW foraging follows, access for the seven *take* clusters has been periodically interrupted due to UXO clearing. Once completed, access to the area is anticipated to be unencumbered up to the point of opening the range for military training (projected in 2007). At that time, we anticipate implementing the Access Plan agreement (i.e. four hours per day and predominantly daylight hours).

Term & Condition 2 - Monitor and manage the seven RCW groups (D3-02, D13-02, D14-04, D15-01, J6-01, K22-02, and K22-03) within 0.5 miles of the range footprint.
Note – *Clusters D3-01, D4-01, D13-01 and K22-01 have been added to the Tier 1 monitoring effort.*

Status:

Breeding season monitoring, neighborhood analysis, translocations and cluster shifts have not been conducted. Breeding season monitoring will not start until April 2005. The neighborhood analysis cannot be conducted until after the 2005 breeding. Intratranslocations designed to pair females with single male RCWs will not occur until the fall 2005. Potential cluster shifts will not occur until the fall or winter 2005.

Present monitoring and management efforts of the DMPRC RCW groups include: monthly cluster activity inspections (see Table 1.), monthly foraging range follows (geo-referencing foraging locations to determine overall foraging range) (see Table 2. and Figures 1 and 2a. – 2i.) and monthly RCW identification to determine group composition (see Tables 3a. – 3k.)

Monitoring of RCW group foraging ranges started in August 2004. Foraging range and habitat use follows will continue to be conducted on a monthly basis until August 2005. Thereafter, data will be evaluated and analyzed to determine if changes in the frequency of foraging range follows should be made. It should be noted that foraging ranges outlined in this report do not necessarily reflect true full foraging ranges. For example, we determined that foraging range follows lasting four hours do not yield the same results as eight hour long follows. More eight hour long follows will need to be conducted to determine foraging ranges more accurately.

Red-cockaded woodpecker groups from clusters D3-02, D13-02, D14-04, D15-01, J6-01, K22-02, and K22-03 (Tier I clusters) were monitored initially. After completing several foraging range follows, it was determined that an additional four groups/clusters (D03-01, D04-01, D13-01, and K22-01) needed be included in the monitoring efforts. Clusters D03-01, D04-01, and K22-01 were added because of their close proximity to neighboring Tier I clusters. We assumed that the timber harvest, construction and operation of the DMPRC could indirectly affect the foraging ranges, habitat use and composition of groups associated with clusters D03-01, D04-01, and K22-01. Cluster D13-01 was initially inactive and therefore was not included in the list of Tier 1 clusters. It was added to the Tier I list after it was "*captured*" by two RCWs from neighboring Tier I cluster J06-01.

Identification of leg bands on individual RCWs to determine group composition during foraging was conducted during almost every follow. Since group composition does vary from time to time, it should be noted that variations could be the result of a variety of reasons other than being a direct affect of the DMPRC timber harvest. For example, group members may temporarily forage elsewhere for days or even weeks, and suddenly reappear. Some RCWs choose to periodically forage separately from the rest of the group throughout the foraging sessions making it difficult to document their presence. Furthermore, group composition during foraging range follows may not always represent the composition of group members residing in the cluster.

Term & Condition 3 - A meeting will be held between FWS, CB and Range Division within five working days of notification to the FWS if changes in the Line Of Sight (LOS) Veiwshed occur. Impacts are limited to those that may have potential impact to RCWs within the action area (3-mile buffer from range footprint).

Status:
Not applicable during this reporting period.

Term & Condition 4 - a. conduct RCW habitat monitoring protocols within the specified sampling area to determine a rate of habitat degradation caused by military training. The habitat monitoring plan should be delivered to the FWS within 90 days from the signature date of the BO; b. sampling area and sampling plots must be rigorous enough to detect changes of statistical significance. Tree measures should include but not be limited to dbh, extent of damage, photo points, extent of damage within plots, type of damage, tree health. Plots will be georeferenced, attempts to determine distance and direction should be applied, pre training tree measures should be collected to establish baseline measures and then post measurements at least twice per year; c. range use data should be tabulated so correlations can be made with habitat degradations; and d. These data will be used to minimize impacts to effected RCW clusters.

Status:
Refer to sections B. and E. of the final version of "*Red-cockaded Woodpecker Monitoring and Management Plan for the Fort Benning Digital Multi-Purpose Range Complex*" for RCW habitat monitoring protocols.

Data collection for foraging habitat has only been conducted in compartment D14. A total of 215 1/5 acre plots were inventoried in 20 days (i.e. 10.75 plots/day). The inventory effort was conducted under a major time constraint (i.e. inventorying had to be done prior to timber removal within DMPRC RCW foraging habitat.). Data collected from the D14 timber stands were analyzed to determine appropriate sample sizes for future timber stand (i.e. RCW foraging habitat) inventorying. Sample size analyses indicate that the minimum sample size needed to accurately represent general timber stand over, mid and under story composition and structure is at least 25%. That is to say, the number of 1/5-acre plots will need to cover approximately 25% of the landscape (i.e. timber stand) being sampled. The plan is to collect the rest of the habitat data after the 2005 RCW breeding season.

Term & Condition 5 - Implement soil erosion practices to protect all RCW cavity trees within 0.5 miles of the range footprint during range construction.

Status:
Soil erosion and consequently soil control, have been a chronic challenge during the post harvest and early construction phases of the project. Several locations that are being prepared for infrastructural support (i.e. road widening, buildings, etc) have had breaches to the retaining silt fence, however, no RCW buffer areas or cavity trees have been negatively affected.

Term & Condition 6 - Before timber harvesting within core cluster area (i.e. 200' buffer around each tree) begins, notify FWS for site visit. Notify FWS upon completion of harvest within clusters.
Status:
Not applicable as harvesting did not take place within any of the seven RCW cluster buffers.

Term & Condition 7 - Provide annual report to FWS Athens, Fort Benning and Clemson Field Offices. Reports should document, summarize, evaluate and analyze collected data. Reports should reference the action, consultation number, and summarize progress. If take occurs, report information will include all tabular data, mapped locations, narrative on circumstances and group dynamics prior to take. Of particular interest is documenting and reporting when TC and RPM are implemented, also cluster changes, recruitment clusters added to the action area and their status.

Status:
Incidental Take has not occurred as of this reporting period. Implementation of TCs and RPMs are covered individually throughout this report.

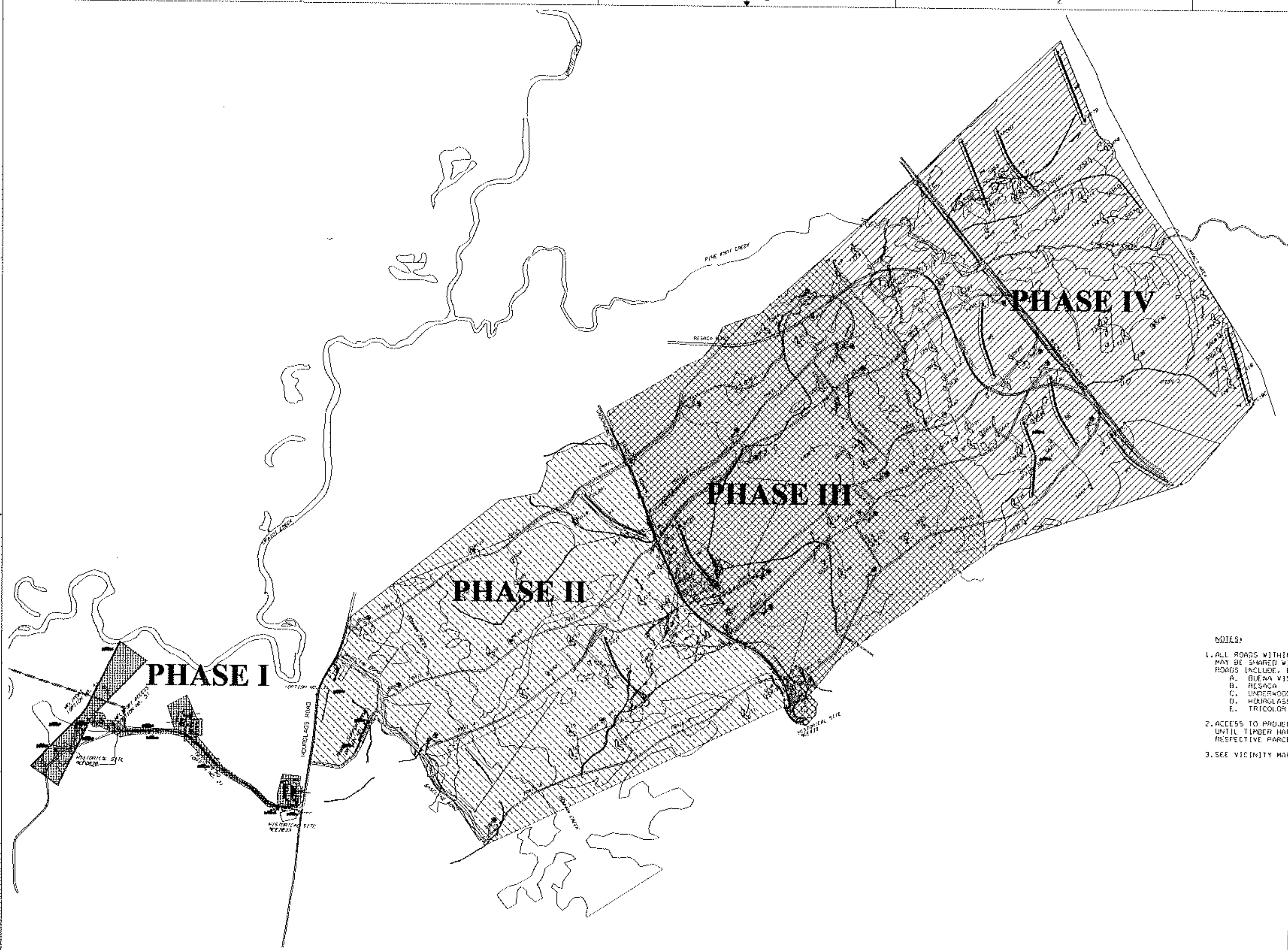
III. Conservation Recommendations

Long-Term RCW Population Planning
Item a. assessment of suitable and potential RCW habitat; b. implement models to assess forest decline and its effects on RCWs; c. in order to better plan for the Installations population recovery goals, model the Installations future needs with the RCW recovery goals; and d. intensify the current Installation program to reduce feral hogs and assess the impacts on longleaf pine seedlings.

Status:
a. Installation foresters and biologists are currently assessing the suitable and potential RCW habitat on Fort Benning and will present the determination during the annual briefing on 6 April 2005; b. our growth and yield model will not be completed during this reporting period, however, we are attempting to create a priority ranking system for RCW cluster vulnerabilities. Vulnerability assessments are based on the projected effects from forest decline. The current paradigm takes the sum of available foraging habitat for each cluster, considers how much forage could be lost from the affects of forest decline (i.e., using on-site observations of crown vigor and using the high and moderate projected impacts from our Forest Decline Risk Map), and then adds in the positive aspects from the known amount of planted or existing longleaf within the ½ and ¼ mile RCW partitions (i.e. the more longleaf available, the less aggressive the timber treatment). The total amount of available forage and cavity-aged trees is then measured against a minimum threshold of available partition acres (i.e. 120 acres). Once each cluster has a projected foraging acreage sum, they will be ranked by a predetermined range (ex. 200+ available forage acres = very low priority; 200 to 120 = low/moderate; 120 to 75 = moderate/high; 75 and below = high) and then receive the prescribed management treatment (i.e. clearcut, underplant, thin, etc). c. currently, Fort Benning is beginning to revise the Integrated Natural Resource Management Plan (INRMP) which is planned for completion in September 2006. During this process, the military will be asked to update and predict their future training needs which will contribute to meeting this recommendation; d. the hunting season for feral hogs has been increased to year round, a feral hog damage report form and database is currently under development and planned for distribution to all natural resources professionals on the Installation, and finally, funding for feral hog control has been submitted through the Environmental Program Requirement (EPR) system for FY06.

Radio Telemetry
As stated previously, due to circumstances beyond the Installations control, the telemetry project has been terminated.

FIGURE 1



NOTES:

1. ALL ROADS WITHIN THE LIMITS OF CONSTRUCTION MAY BE SHARED WITH THE TIMBER LOGGERS. THESE ROADS INCLUDE, BUT ARE NOT LIMITED TO:
   A. BUENA VISTA
   B. RESACA
   C. UNDERWOOD
   D. HOURGLASS
   E. TRICOLOR

2. ACCESS TO PROJECT SITE PARCELS IS NOT PERMITTED UNTIL TIMBER HARVESTING IS COMPLETED IN THE RESPECTIVE PARCELS DEFINED AS PHASES I, II, III, AND IV.

3. SEE VICINITY MAP, PLATE G-3, FOR ALL ROAD LOCATIONS.

GRAPHIC SCALE

600' 300' 0 600' 1200'

SCALE: 1" = 600'-0"

*NOTE: SEE LEGEND ON PLATE SP-1

POLYENGINEERING, INC.
ARCHITECTS & ENGINEERS
DOTHAN, ALABAMA

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
SAVANNAH, GEORGIA

DIGITAL MULTIPURPOSE RANGE COMPLEX
TIMBER HARVEST PHASING

FORT BENNING GEORGIA

SIZE	FILE NO	PLATE
F	178-68-01	SP-04A

SCALE: 1" = 600'

SHEET ADDED BY AMENDMENT 0001

SYMBOL	ZONE	DESCRIPTION	DATE	BY

REVISIONS

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APPENDIX B

ANNUAL REPORT FOR THE DMPRC MITIGATION AND MONITORING PLAN, FORT BENNING, GA

2 OCT 2007*

***NOTE: THE TIMEFRAME COVERED BY THIS REPORT IS FROM 1 JAN 2006 THRU 31 DEC 2006**

ANNUAL REPORT

FOR THE

DIGITAL MULTI-PURPOSE RANGE COMPLEX MITIGATION AND MONITORING PLAN

FORT BENNING, GEORGIA

OCTOBER 2007

Prepared for:
Environmental Management Division
Directorate of Public Works
Fort Benning, Georgia

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DRAFT ANNUAL REPORT
for the
DIGITAL MULTIPURPOSE RANGE COMPLEX
MITIGATION AND MONITORING PLAN
FORT BENNING, GEORGIA

2 October 2007

1.0 INTRODUCTION

This document provides the status of the environmental mitigation and monitoring for the Digital Multi-Purpose Range Complex (DMPRC) as detailed in the Final Digital Multi-Purpose Range Complex Mitigation and Monitoring Plan (Fort Benning, 2005) (hereafter, the Plan). The Plan was prepared as part of the Army's compliance with the National Environmental Policy Act (NEPA), the Council on Environmental Quality regulations (40 CFR 1500), and Army NEPA Regulations (32 CRF 651, also known as Army Regulation 200-2, abbreviated AR 200-2). The Plan was incorporated into the Record of Decision (ROD) for the DMPRC Environmental Impact Statement (EIS) (Fort Benning, 2004a and 2004b). Therefore, the Plan elaborates on environmental mitigation and monitoring required by the DMPRC EIS and ROD. In accordance with the Plan, this Annual Report summarizes the progress of the required mitigation and monitoring and notes any deficiencies and corrective action. Part of the mitigation was achieved by designing the DMPRC to avoid environmental impacts by careful placement of the range components, thereby avoiding significant impacts resulting from construction and future operation of the range. Modifications have been made to the DMPRC design since the previous Annual Report, which was dated 13 February 2006 and covered the timeframe from the conclusion of the NEPA process with the signing of the ROD on 20 July 2004 through 31 December 2005. This Annual Report will summarize those design modifications, as well as provide a brief analysis of any changes in associated environmental impacts, mitigation, or monitoring (Fort Benning, 2006).

Army NEPA Regulation (32 CFR 651.5(g)) requires that the design changes be evaluated to determine if they constitute "substantial changes in the proposed action that are relevant to environmental concerns; or significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impact." If so, then supplemental NEPA documentation would be required. Mitigation monitoring can also lead to preparation of supplemental NEPA documentation and additional monitoring if changes in project activities occur (32 CFR 651 Appendix C (e)(5)). Therefore, this Annual Report also is being used to document the evaluation of the redesigns and the resulting determination that supplemental NEPA documentation is not required. While redesigns have been made, all range components still will be contained within the original DMPRC footprint, adverse environmental impacts are not expected to be significant, and plans for DMPRC training and range operations activities have not changed (Fort Benning, 2006).

The timeframe covered by this Annual Report is from 1 January 2006 through 31 December 2006. This timeframe encompasses all changes made in the design of the DMPRC since the last Annual Report, dated 13 February 2006, through the end of 2006. Currently, the DMPRC site is under construction. The DMPRC site was divided into four phases (Figure 1): Phase 1, which includes the administrative structures and staging area; Phase 2, which includes the area from Hourglass Road to Underwood Road; Phase 3, which includes the area from Underwood Road through Sally Branch; and Phase 4, which includes the area from Sally Branch northeastward to the end of the DMPRC footprint.

2.0 SUMMARY OF ACTIVITY

2.1 Design Changes

Design changes for the DMPRC were made to account for corrections in the topography, to meet training requirements and safety, and to reduce environmental impacts. A summary of the design changes is provided below and is depicted in Figures 2 and 3. Further details on design changes are available by contacting Mr. John E. Brown, NEPA Program Manager, Environmental Management Division (EMD), Directorate of Public Works (DPW), Fort Benning, Georgia.

A. Tank Trail Modifications

- The planned alignment of Trail 3 in Phase 3 was shifted to cross perpendicular to Sally Branch Creek in order to reduce the impacts resulting from the construction of a pipe arch culvert crossing.
- The planned alignment for Trail 4 in Phase 3 was shifted in order to avoid impacting several braided channels of Sally Branch. The new alignment allows for a single-channel crossing of Sally Branch.
- On Trail 1 in Phase 2, an unnamed stream channel to Bonham Creek was stabilized with rip rap from STA 10+50 to Bonham Creek. The work was performed as an "emergency repair," performed under the NPDES Permit in order to correct the stream bank erosion problem that was occurring during rain events.
- The planned alignment of Trail 4 in Phase 2 was shifted to allow for a perpendicular crossing of an unnamed tributary of Bonham Creek which was then permitted under the US Army Corps of Engineers (USACOE) Nationwide Permit.

B. Target and Defilade Modifications

- The planned locations of 21 targets and defilades have been altered on the DMPRC design. These include SA26, SA28, SA32, SA33, T19, T22, T24, T25, T28, T30, T31, T34, T35, M3, M4, M5, M8, M10, M11, D4C, and D4D. The moving of these targets avoid wetlands impacts and to reduce land disturbance.
- The planned location for T14 has been moved to a location near a historic grist mill. In 2006, no protective berm was planned for placement between the target and the cultural resources site. Design plans are being altered in 2007 to include a protective berm. These plans will be addressed in the FY 2007 Annual Report.
- A target placement area that was not shown on the initial redesign drawings was added at M9 and SA43 in Phase 3.

C. Erosion, Sedimentation, and Pollution Control Plan Modifications

- In Phase 3, the locations of six check dams along Trail 3 were revised.

- In Phase 3, the side slopes of Trail 4 were revised in order to avoid the State-enforced 25-foot buffer of a relocated ditch that is jurisdictional under the Georgia Department of Natural Resources and the USACOE.
- In Phase 2, an additional ditch turnout was added along Trail 1.
- In Phase 3, six additional check dams were added and silt fence was added to catch surface water that is running around the check dams.
- In Phase 2, the grading was adjusted to provide a swale between PC2C and SA1. Riprap and a check dam were added at the ending point of the swale. In addition, a 3-foot wide diversion ditch with approximately 2 percent slope was added between PC2C and SA1 to divert surface water flow away from PC2C. A check dam was added at the ending point of the ditch.

D. Miscellaneous Item Modifications

- A grading area was added near Buena Vista Road in Phase 4.
- Trench 3 in Phase 2 was relocated.
- A misfire pit in Phase 2 was relocated.

A 270-acre area in Phase 4 that was harvested and originally designed for the location of targets in the original clearing and grading plans is no longer designated for construction activities and will be turned over to forestry personnel to plant longleaf pine after the project is completed. A portion of this area was designated in July 2006 to be graded in order to satisfy the fill requirements for Targets in Phase 3 and 4 that were changed due to the re-design of the project.

2.2 Permit Applications and Modifications

The original USACOE permit allowed for impacts to jurisdictional wetlands and streams associated with the proposed DMPRC totaling 8.93 acres of wetlands and 1,275 linear feet of streams. These impacts are associated with excavation and fill for tank trails, maintenance roads, targets, and low-water crossings. The required compensatory mitigation called for the provision of 63.42 wetland credits and 4,061.25 stream credits. In February 2006, a permit modification was requested from the USACOE for the reduction of wetlands impacts by 0.72 acres and the reduction of stream impacts by 280 linear feet. These reductions result from the realignment of tank trails and the changing of tank trail crossings from low water crossings to arched culvert pipe crossings. The permit modification was authorized by the USACOE.

In March and April 2006, separate applications for a 25-foot Stream Buffer Variance were sent to the Georgia Department of Natural Resources, Environmental Protection Division for proposed impacts from tank trails crossings over Waters of the State, which are also jurisdictional streams. While these trail crossings were included in the initial design plans for the DMPRC, the construction methods for accomplishing the crossings have been altered since that initial design, resulting in the submission of the March and April 2006 applications. The March application was for the crossings of Trails 3, 4, and 5 over Bonham Creek. The

April application was for the crossings of Trails 3 and 4 over Sally Branch. These trail crossings are needed to satisfy training requirements for the range.

2.3 Construction Activities

The NPDES permit for the DMRPC requires the construction contractor to conduct routine and frequent inspections of the DMPRC construction site to evaluate the integrity of the soil erosion control BMPs. The Fort Benning Environmental Monitor also makes daily, weekly, and monthly compliance inspections of the site to insure compliance with NEPA, NPDES, and all applicable Environmental Laws and Regulations and submits monitoring reports to Fort Benning EMD. The monitoring reports are then forwarded to the USACOE and the OSJA as needed.

During 2006, numerous instances of failed BMPs and noncompliance with NPDES permit requirements were recorded by the Environmental Monitor. Incidences resulted from accumulated sediment in streams; sediment barriers being improperly installed, undercut, failed, torn, or knocked over by equipment; culvert pipes becoming clogged with sediment; containment berms becoming eroded; sediment barriers being undercut, becoming torn, or being knocked over by equipment; and numerous areas where implementation of proper vegetative cover either was delayed or not implemented. Internal inspections show that delays in correcting BMP failures occurred many times and lasted for several weeks or more.

Self-notification Letters of Noncompliance were issued to the Georgia Department of Natural Resources (GA DNR) EPD for several incidences of noncompliance with NPDES permit requirements.

In February and March 2006, internal site inspections noted that the construction contractor had begun installing stream channel crossings for tank trails without having secured the required 25-foot Stream Buffer Variance. Specifically, the crossings were being constructed on Trails 3, 4, and 5 over Bonham Creek. Internal recommendations were made to correct this violation of NPDES permits.

On 15 March 2006, a 25-foot Stream Buffer Variance application was submitted to the GA DNR for the installation of stream channel crossings for Tank Trails 3, 4, and 5 over Bonham Creek.

On 24 March 2006, the Directorate of Public Works sent a Notification of Noncompliance to the Georgia Department of Natural Resources (GA DNR) reporting the violation and stating that the variance application that was submitted on 15 March 2006 was incomplete.

On 31 March 2006, the GA DNR requested additional information. In response to the submission of the buffer variance application, GA DNR conducted a site visit, at which time they recommended to stop work and implement BMPs as required. A later GA DNR site visit resulted in an official Expedited Enforcement Compliance Order and Stop Work

Agreement (EECO) for Stream Buffer Violations at Trails 3, 4, and 5 crossings of Bonham Creek.

On 22 May 2006, GA DNR conducted another site visit to follow up on the buffer variance violations. It was determined at that time that proper BMPs still had not been completed at Trails 3, 4, and 5 crossings of Bonham Creek. The decision was made not to rescind the Stop Work Order.

On 30 May 2006, GA DNR issued a letter to DPW stating that work could be resumed in the areas outside of the buffer of Bonham Creek. The letter stated that the EECO Stop Work Agreement would remain in effect for all areas inside the buffer at the site until a stream buffer variance was obtained.

On 7 July 2006, the stream buffer variance was authorized.

The construction contractor is required to engage an environmental engineer with at least three years of experience to provide quality control on environmental aspects of the DMPRC per DMPRC contract specifications regarding Contractor Quality Control, Section 01451A 3.4.3. The construction contractor has not employed an environmental engineer to date for this purpose. No coordination, reports or other matters have been generated as part of the construction contractor's responsibility to engage an environmental engineer.

In November 2006, the USACOE and the construction contractor initiated work on a diversion channel that was identified in the Erosion, Sedimentation, and Pollution Control Plan as a drainage ditch. During the submission of a 25-foot Stream Buffer Variance Application to work in the vicinity of this ditch at Sally Branch, the design professional failed to identify the ditch as a state water under the National Pollutant Discharge Elimination System (NPDES) permit requirements. As a result, the adjacent unidentified State water 25-foot buffer was encroached by vegetation removal and construction activities. Fort Benning EMD and the USACOE directed the construction contractor to immediately implement corrective actions and to reestablish the diverted channel with Best Management Practices (BMP) identified in the *Georgia Manual for Erosion and Sediment Control*. The channel stabilization was considered a success.

In December 2006, a subcontractor for the construction contractor initiated timber removal activities in an area designated for a helipad approach area. During the timber removal, a small, unnamed tributary to Upatoi Creek was encroached for a distance of approximately 60 feet. Fort Benning EMD and the USACOE directed the subcontractor to mulch and seed the disturbed areas within a 50-foot buffer zone around the stream to ensure protection of the stream. No construction activities are proposed in the vicinity of the helipad approach area other than the recently constructed landing zone that was built under the current construction design.

2.4 Clear Creek Mitigation Site

Outside of the DMPRC footprint is the Clear Creek mitigation site. This area is designated as a stream and wetland restoration area to compensate for the stream and wetland impacts that have and will occur during construction of the DMPRC. Part of the restoration includes the draining of a pond to restore the original stream and riparian habitat in the area. Included in the process of draining the pond was an effort to remove beavers from the area and dismantle the beaver dams that impound water in the pond. At the beginning of 2006, beaver trapping was continuing from the previous year. Through January 2006, approximately 50 beavers had been removed from the area and seven dams were dismantled.

In February 2006, following the dismantling of the beaver dams, the construction contractor began work on the mitigation site. After land disturbance began, it was discovered that the required NPDES permit and stream buffer variance were not obtained prior to the work being commenced. Work was immediately stopped and the area was stabilized with the proper BMPs.

In March 2006, it was determined that approximately four acres of the pond would not drain following the dismantling of the beaver dams. The USACOE Regulatory Office initially required that these four acres be removed from the mitigation acreage calculations. Subsequently, however, the Fort Benning EMD gained approval from the USACOE Regulatory Office for the area to be included in the mitigation calculations by filling the area and planting with trees, grasses, and shrubs.

During the remainder of 2006, the required NPDES permit and stream buffer variance were obtained. As of the end of 2006, work on the area had not commenced.

3.0 AFFECTED AREAS

3.1 Soils, Vegetation, and Unique Ecological Areas

All saleable timber harvest on the DMPRC construction site was completed prior to 2006. No timber harvest activities took place during 2006.

The construction contractor is responsible for removal of all non-saleable timber and vegetation, or slash that is left at the site after the initial timber harvest. Since the completion of last years annual report the contractor has not performed slash removal other than the current practice of utilizing some of the material for brush barriers.

The only Unique Ecological Area on the DMPRC site is the area around Pine Knot Creek. During 2006, no work has occurred in this area. Therefore, the associated mitigation will not be addressed in this Annual Report.

3.2 Federally Protected Species

The red-cockaded woodpecker (*Picoides borealis*) (RCW) is the only federally protected species with habitat located within the boundaries of the DMPRC. Originally, there were seven RCW clusters identified that were located within 0.5 miles of the boundaries of the DMPRC, or to have foraging habitat within DMPRC boundaries, that would receive incidental take. These clusters include D03-02, D13-02, D14-04, D15-01, J06-01, K22-02, and K22-03. D13-01 was previously inactive and therefore not considered, but it became active during the 2005 season and was therefore added. J06-02 was previously not considered because it was inactive. It remains inactive, but was added because of the potential for it to be activated, as was D13-01. D13-01 and J06-02 are within 0.5 miles of the DMPRC footprint. During the 2006 breeding season, three additional clusters were identified as potentially being affected by the construction and were, therefore, included in the monitoring. These clusters include D04-01, D13-01, and K22-01.

A Biological Opinion (BO) was issued on 22 July 2004, that includes six Reasonable and Prudent Measures (RPM) for the protection of the RCW. These measures include 1) managing and monitoring the RCW groups within 0.5 miles of the range footprint that were given incidental take, 2) notifying the U.S. Fish and Wildlife Service (USFWS) within five working days of any revisions to the 7 June 2004, LOS viewshed, 3) monitoring foraging habitat for signs of degradation from live fire, 4) protecting cavity trees in all clusters from any impacts due to heavy machinery and soil erosion associated with earth moving and fill operations, 5) clearing timber within RCW clusters outside of the RCW breeding season, and 6) providing annual reports throughout the duration of the BO and a final report five years after initiation of training.

In order to satisfy the first RPM, an RCW Monitoring Management Plan was developed that details a home range and habitat use monitoring project for the eleven clusters receiving

incidental take. The plan consists of directly following RCW individuals in each of the eleven clusters once per month and mapping their locations. All birds within a three-mile radius of the DMPRC are banded and identified to determine if the range construction is having any adverse impact to bird dispersal across the range.

The second RPM addresses the notification of the USFWS of any changes to the LOS viewshed.

The third RPM requires the monitoring of RCW foraging habitat for signs of degradation from live fire after the DMPRC becomes active. Presently, the EMD is conducting a home range and habitat use analysis for the eleven RCW clusters impacted by the DMPRC. The home range analysis includes following RCW individuals during the non-breeding season to determine the size and area of the home range of clusters. During 2006, the home range was determined for seven of the eleven clusters impacted by the DMPRC. The foraging habitat analysis includes a forest inventory, which categorizes the overstory, midstory, and understory vegetation of RCW habitat. Tree density, basal area, tree height, and species composition of the habitat are being recorded as part of this analysis. This data will give a baseline description of the RCW habitats and will allow a before-and-after comparison of habitats when firing begins on the DMPRC.

The fourth and fifth RPM address the protection of RCW clusters during earth moving and fill operations. During 2006, no such activities took place in any of the clusters that are impacted by the DMPRC. Therefore, these RPMs have not been necessary.

The sixth RPM addresses the requirement of providing an annual report on the status of the RCW management activities in response to the BO. The annual report for 2005 was completed in March 2006 (Attachment 1). The annual report for 2006 was completed in March 2007 (Attachment 2).

The gopher tortoise (*Gopherus polyphemus*) is the primary state-protected species of concern in the DMPRC area. Gopher tortoises were relocated from the site prior to the beginning construction activities. During 2006, four gopher tortoises that previously had been relocated were discovered to have come back onto the DMPRC construction area. In each case, the construction contractor ceased work and notified EMD staff. All gopher tortoises were relocated back into suitable habitat near where they were found.

3.3 Water Quality and Hazardous Material

The Strategic Environmental Research and Development Program (SERDP) is a Department of Defense program that is designed to improve the understanding of riparian function and assess impacts of military training and land management activities on riparian ecosystems. The research focuses on the effects of excessive sedimentation in riparian zones and streams from upland disturbances resulting from military training activities, and on the direct effects of prescribed burning on riparian ecosystems. The program has been expanded to evaluate the ecological impacts of DMPRC construction activities (Mulholland et al., 2006).

With regard to DMPRC impacts, SERDP analyzes three parameters: 1) water quality impacts, 2) effects of sedimentation in riparian areas, and 3) impacts on macroinvertebrates and benthic organisms. These parameters are analyzed quarterly to determine the impacts of construction activities. During 2006, water quality samplers were placed upstream and downstream of the construction activities on Sally Branch and Bonham Creek, macroinvertebrate and benthic organisms were sampled on Sally Branch and Bonham Creek, and sediment samples were collected in riparian areas (Mulholland et al., 2006).

Analysis of data collected during 2006 indicate that water quality in Bonham Creek and one of its tributaries has been significantly impaired by large sediment inputs and, to a lesser extent, by increased inorganic nitrogen concentrations. Assessment of DMPRC impacts on stream water quality involves grab sampling at 3 to 6 week intervals (mostly representing baseflow conditions) and sampling during stormflow events during different times of the year. The impairments result from an increase in total suspended sediment (TSS) and dissolved inorganic nitrogen (DIN) in these waterways. During four storms sampled from November 2005 through May 2006, TSS in Bonham Creek were high, with peak values of 1,000 to >4,000 milligrams per liter (mg/L). Similarly, in the tributary to Bonham Creek, increases in TSS concentrations during several storms in late 2005 and 2006 were very large (1,000 to 1500 mg/L) and considerably higher than TSS increases during six storms in 2004 (prior to forest clearing) and during the first half of 2005 (after clearing but prior to large-scale construction activities. Bonham Creek and its tributary also appear to have increases in DIN concentration during storms in 2006 compared with those during 2005. Prior to 2006, peak storm DIN concentrations in Bonham were usually < 100 micrograms of nitrogen per liter (µgN/L). During February and May 2006 storms, however, DIN concentrations increased more sharply with peak concentrations of approximately 600 µgN/L. No impacts were indicated in Sally Branch (Mulholland et al., 2006).

In addition to this research, the Construction Engineering Research Laboratories (CERL) and Fort Benning have established semi-permanent facilities for water sampling on Sally Branch, Bonham Creek, and Pine Knot Creek. These facilities include continuous samplers for measuring several water quality parameters, including pH, temperature, dissolved oxygen, and turbidity. These parameters are measured after storm events to determine the relationship between turbidity and Total Suspended Solids in the water. Data was collected throughout 2006 and collection is continuing. Results from these studies are not yet available.

The timeframe of these water quality impacts corresponds to the failed BMPs and noncompliance with NPDES permit requirements that were recorded by the Environmental Monitor, as discussed in Section 2.3 of this report. The impacts resulted from the previous construction subcontractor's practices, including not properly installing or maintaining BMPs and not implementing stabilization measures as required. These impacts resulted in large amounts of sediment entering the streams at the project site. These impacts were reported regularly during the previous construction subcontractor's tenure at the site.

In order to mitigate for water quality impacts, the prime construction contractor has released the subcontractor that was responsible for many of the failed BMPs and NPDES permit

violations, and has obtained a new construction subcontractor. As a result, and the prime construction contractor, the USACOE, and the Fort Benning EMD have worked together to take steps to decrease the impacts to water quality. The contractor has now improved the installation of the failed BMPs and has performed additional work in these areas to ensure that the stream banks and drainage areas, which were previously eroding during the time of the study, are now mostly stabilized. The Fort Benning EMD has determined that additional mitigation for water quality impacts is not warranted. Rather, these corrective measures have been implemented in order to ensure that the existing mitigation plan is implemented.

3.4 Land Use and Utilities

As part of encroachment monitoring, EMD and the Real Property Officer, DPW, verify that community projects near the Installation boundary have been properly coordinated with Fort Benning per the Georgia legal requirement to notify the Installation Commander of rezoning, with one known exception. This exception is not near the DMPRC on Fort Benning and, therefore, does not impact the DMPRC.

Sustainable design was incorporated into the DMPRC by inclusion of contract specifications. As part of meeting the requirements of the SPiRiT Compliance Plan, the construction contractor is required to keep notebooks that document steps that are taken to incorporate sustainable design into the DMPRC. Most of the sustainable design measures focus on buildings and structures. Presently, the contractor has begun compiling the SPiRiT notebooks, but they have not been completed.

3.5 Cultural Resources

The design changes are not expected have adverse impacts on eligible or not yet designated cultural resources. The relocation of range components was planned to avoid known historic properties. Although the planned location for target T14 is near a culturally significant grist mill (cultural resources site 9Ce1735), and no protective berm was planned in 2006 to be located between the target and the site, advanced discussions regarding redesign plans in 2007 indicate that a berm is planned for future redesigns. The Fort Benning Cultural Resources Manager has determined that the insertion of the protective berm will have no adverse effect on historic properties or on the DMPRC project.

Protective measures taken for cultural resources site 9CE433 include demarcation of the site by painted trees, fencing, and posting signs. These measures are intended to prevent inadvertent encroachment into the historic site by the construction contractor during construction and subsequently by users of the DMPRC during training operations. As such, the Fort Benning Cultural Resources Manager has determined that there will be no adverse impacts on this historic site.

The EM inspects all eligible cultural resources sites weekly during the construction phase. No previously unknown cultural resources or historic properties have been discovered on the DMPRC site.

3.6 Noise

Although the redesigns of the DMPRC involve relocation of many firing points and targets, the relocations probably would not generate a noticeable difference in the noise analysis presented in the EIS and ROD. Therefore, additional noise modeling is not required and the mitigation and monitoring requirements do not need to be revised. Fort Benning is coordinating with noise experts at the Center for Health Promotion and Preventive Medicine for verification that no substantial change in the noise environment is expected from the DMPRC redesigns.

Construction noise was not an issue and operational noise from training has not begun. Therefore, neither of these potential sources of noise will be addressed in this Annual Report.

3.7 Air Quality

As mitigation during construction, the construction contractor is required to follow existing applicable air quality requirements. The construction contractor has routinely taken measures to control air pollution, such as fugitive dust and particulate matter. These measures include covering trucks that transport rock, periodic watering unpaved roads, etc. The construction contractor has not made opacity readings to ensure that the required 20-percent fugitive dust restriction is not exceeded. In addition, although watering of unpaved roads has been conducted, the contractor has not consistently performed this measure, as required. There have been difficulties locating a water truck throughout the year and a water truck was, therefore, not always on site to perform the watering, as required. The EMD has brought these situations to the attention of the USACOE.

The construction contractor is using some of the slash vegetation for brush barriers and has used a mulching machine to dispose of some of the slash, as described in Section 3.1 of this document. This method of slash removal does not require any burning. Therefore, no associated air quality problems have arisen from slash removal.

4.0 CONCLUSIONS

This Annual Report identifies the status of DMPRC mitigation and monitoring from 1 January 2006 to 31 December 2006. In the design phase of the project, several design changes have occurred. Any potential environmental impacts or modifications to mitigation requirements have been identified in this Annual Report. In the construction phase, there have been several deviations from the required mitigation. These deviations either have been corrected or are in the process of being corrected.

Impacts to water quality on the construction site have been reported during the monitoring period, primarily in Bonham Creek and one of its tributaries. In order to mitigate for these impacts, the prime construction contractor has obtained a new subcontractor and has improved the installation of the failed BMPs, resulting in the stabilization of impacted stream banks and drainage ways. As such, the Fort Benning EMD has determined that additional mitigation for water quality impacts is not warranted. Rather, these corrective measures have been implemented in order to ensure that the existing mitigation plan is implemented.

The design changes are not expected to have adverse impacts on the environmental resources on Fort Benning. Fort Benning and the USACOE are coordinating the redesigns with the appropriate regulatory agencies and will incorporate any additional environmental mitigation required via that process.

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Annual Progress Report: Cover Letter For Power Point Presentation

March 31, 2006

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Impact of the Digital Multipurpose Range Complex Timber Harvest and Construction on Red-cockaded Woodpecker *(Picoides borealis)* Home Range, Habitat Use and Breeding Season Group Demographics on Fort Benning, GA

Monitoring Period

The report covers a data collection period from September 2004 to January 2006 for non-breeding season home range and habitat use monitoring, and April 2004 through July 2004 and April 2005 through July 2005 for breeding season monitoring (demographics). Future reports will cover RCW group spatial distributions before and after DMPRC timber harvest, range construction and range use.

Project Phase

The digital multi-purpose range (DMPRC) red-cockaded woodpecker (RCW) home range and habitat use-monitoring project is currently at the beginning of Phase II (post harvest/construction of range). Although it is estimated that it will take two years form the construction of the range to take place, it appears that the construction process is currently six months behind schedule due to construction planning and environmental protection compliance issues. As a result, Phase II of the DMPRC RCW home range and habitat use-monitoring project may take longer than two years.

RCW Non-Breeding Season Home Range (Slide 3)

Slide three lists the general methodology that is followed during the non-breeding season home range part of the monitoring project. Two changes were made in the home range estimation methodology. Firstly, the interval for taking (GPSing) RCW locations was changed from every fifteen minutes to every 30 minutes (see Slide 6, Figure 1.). This helped ensure that documented consecutive home range locations were adequately separated by both time and distance without significantly sacrificing collection of useful biological data (i.e. locations are independent in both time and space without significant changes is home range size or shape). For example, minimum

convex polygons generated from home range location points taken at 15 min and 30 min intervals show little variation in polygon size or shape (see slide 7, Figure 2.). The polygon created from location points taken at 30 min. intervals is only 3.89 acres (2.9%) smaller than the one created from points taken every 15 min. Both polygons were created from the same original set of data from four eight-hour home range follows. These types of results are similar to those found when the same procedure is done using data from any of the other RCW group home range follows.

Secondly, home ranges were determined using fixed kernel density estimation (FKDE) in addition to using minimum convex polygons (MCP). The FKDE method is considered a more useful method of home range estimation since the home range size estimate is dependent upon extent of habitat use, whereas the MCP does not indicate extent of habitat use.

RCW Habitat Use (Slide 4)

The FKDE can delineate home range areas based on the probability that the entire home range estimate is being represented (see Slide 7, Figure 2.). Additionally, the FKDE method can delineate home ranges into core (most used) and peripheral habitat (least used) (i.e. habitat utilization distributions) (see Slide 7, Figure 2.). For example, delineated core habitat does not represent the complete home range size estimate (probability 50%), however it does represent the most used habitat (i.e. densities of home range locations are highest in core habitat).

Information concerning habitat use such as home range habitat (over, mid and understory) inventory data, home range habitat preference analysis, and habitat use correlation analyses will be conducted in the future after the 2006 breeding season.

RCW Spatial Distribution (Slide 5)

All RCWs occupying clusters within a 3 mi. radius of the DMPRC are identified by their leg band combination during each breeding season. All unbanded individuals are captured and banded either during the breeding season (e.g. nestlings) or non-breeding season (e.g. sub-adults or adults).

An RCW spatial distribution/neighborhood analysis will be conducted after the 2006 breeding season.

Home Range Follows: Morning vs. Afternoon (Slide 8)

Red-cockaded woodpeckers typically forage further away from the cluster during the afternoon than during the morning (see Slide 8, Figure 3.). This may prove to be an issue if home range follows are limited to the first four hours of the morning during Phase III (live fire training) of the monitoring project.

DMPRC Home Range Map (Slide 9)

Figure 4. on slide 9 shows all estimated home ranges of eleven RCW groups located around the edge of the DMPRC foot print.

Pre- and Post Timber Harvest Home Range Map (Slide 10)

Figure 5. on slide 10 indicates that RCWs occupying cluster D14-04 did forage in habitat that was located within the DMPRC footprint. Home range location points were under sampled prior to the DMPRC timber harvest.

RCW Home Range and DMPRC Timber Harvest Data (Slide 11)

Table 1. on slide 11 lists home range and DMPRC data. The data is pooled from all but two columns so that means and ranges could be calculated. This data will changed over time due to changes in home range sizes and updated DMPRC footprint size.

See comments beneath Table 1.

RCW Group Composition Data: Pre-Timber Harvest (2004 Breeding Season) and Post Timber Harvest (2005 Breeding Season) (Slide 12)

Table 2. on slide 12 lists pre and post timber harvest breeding season group composition data. It is difficult to determine if the DMPRC timber harvest was responsible for the drop in breeding pair numbers during the 2005 breeding season.

See comments beneath Table 2.

Cluster Activity Status During Breeding Seasons Before and After the DMPRC Timber Harvest (Slide 13)

Table 3. on slide 13 lists cluster activity status during the 2004 and 2005 breeding seasons in addition to the present status. It is unclear if the DMPRC timber harvest led to the inactivity of two clusters during the 2005 breeding season. If the timber harvest were responsible, it is possible that the inactivity could have been a temporary response to the timber harvest considering all clusters are presently active.

See comments beneath Table 3.

Annual Progress Report:
Cover Letter For
Power Point Presentation

April, 2007

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Impact of the Digital Multipurpose Range Complex Timber Harvest and Construction on Red-cockaded Woodpecker *(Picoides borealis)* Home Range, Habitat Use and Breeding Season Group Demographics on Fort Benning, GA

This report in partial fulfillment of the DMPRC BO TC (7) [RPM (6)].

Log #: FWS 03-0584

Monitoring Period

The report covers a data collection period from December 2004 to March 2007 for non-breeding season home range and habitat use monitoring, and April 2004 through July 2004, April 2005 through July 2005, and April 2006 through July 2006 for breeding season monitoring (RCW group demographics).

Project Phase

The digital multi-purpose range (DMPRC) red-cockaded woodpecker (RCW) home range and habitat use-monitoring project is currently in Phase II (post harvest/construction of range).

Power Point Presentation

Slide 1: Title of presentation.

Slide 2: List of areas of emphasis in the presentation.

Slide 3: General outline of project methodology to determine RCW non-breeding season home range.

Slide 4: Table 1. RCW Cluster Activity Status Pre and Post DMPRC Timber Harvest

This table indicates that the cluster activity status during the breeding season varies from year to year. All but one cluster is active as of April 2007.

Slide 5: Table 2. DMPRC RCW Home Range Data (December 2004 to March 2007)

This table lists estimated home range sizes in acres for each of the eleven groups. The data includes estimated home range size during the period when groups from clusters D13-01 and J06-01 foraged together for 13 consecutive follows.

Slide 6: Figure 1. DMPRC RCW Home Range Map (Non-breeding Season: December 2004 – March 2007)

This figure shows estimated home ranges for all eleven DMPRC RCW groups surrounding the DMPRC footprint. Home ranges for five RCW groups (D03-02R, D15-01R, K22-01, K22-02, K22-03R) were estimated using data collected from December 2004 to March 2007 (see slide 9-Figure 2. to slide 20-Figure 13. for home ranges per RCW group with the period of time home range data was collected). Figure 1. does not include the home range during the period when groups from clusters D13-01 and J06-01 foraged together for 13 consecutive follows.

Slide 7: General outline of project methodology to determine RCW non-breeding season habitat use.

Slide 8: Table 3. RCW Non-Breeding Season Home Range Estimates Using Fixed Kernel Density Estimation

This table lists home ranges using the fixed kernel density estimator method. Home ranges are broken down into three categories (i.e. habitat utilization distribution) for each RCW group. Each habitat utilization distribution represents the probability (50%, 75%, 95%) that a home range location will occur within it. The table includes data from when groups from clusters D13-01 and J06-01 foraged together for 13 consecutive follows.

Slides 9 to 20: Figures 2 to 13 are home range maps. All home ranges represent home range sizes of all three habitat utilization distribution probabilities (50%, 75%, 95%).

Slide 21: Table 4. RCW Home Range and DMPRC Timber Harvest Data (December 2004 – March 2007)

This table lists comparisons of home range sizes, foraging partition sizes, size of DMPRC timber harvest within foraging partitions and within home ranges.

Slide 22: Table 5. Group Composition Data: Pre-Timber Harvest (2004 Breeding Season) and Post Timber Harvest (2005 and 2006 Breeding Seasons)

This table compares group composition during pre and post DMPRC timber harvest breeding seasons. Cluster D14-04R was occupied by a single male during the 2005 and 2006 breeding seasons.

Slide 23: General outline of project methodology to determine RCW spatial distribution and dispersals.

Slide 24: This slide is blank in the electronic version of the presentation. Table 6. is inserted in place of the blank slide in the hard copy version of the presentation.

Table 6. RCW Dispersal Data: Leg Band Identifications and Consecutive Cluster Locations (June 1999 - April 2007)

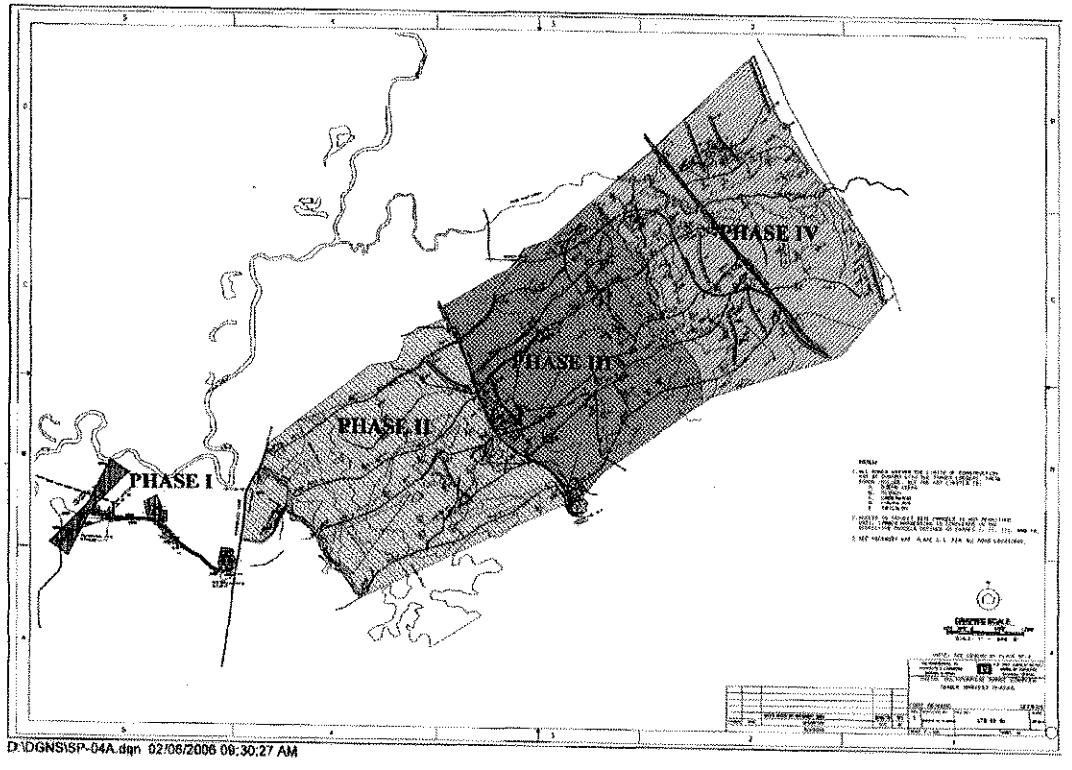
This table includes only the groups/individuals that could potentially have flown across the DMPRC when dispersing from one cluster to the next.

Slide 25: Figure 14. Cluster Locations and Possible RCW Dispersal Directions Across the DMPRC (Data from Tier I DMPRC monitoring clusters/groups only)

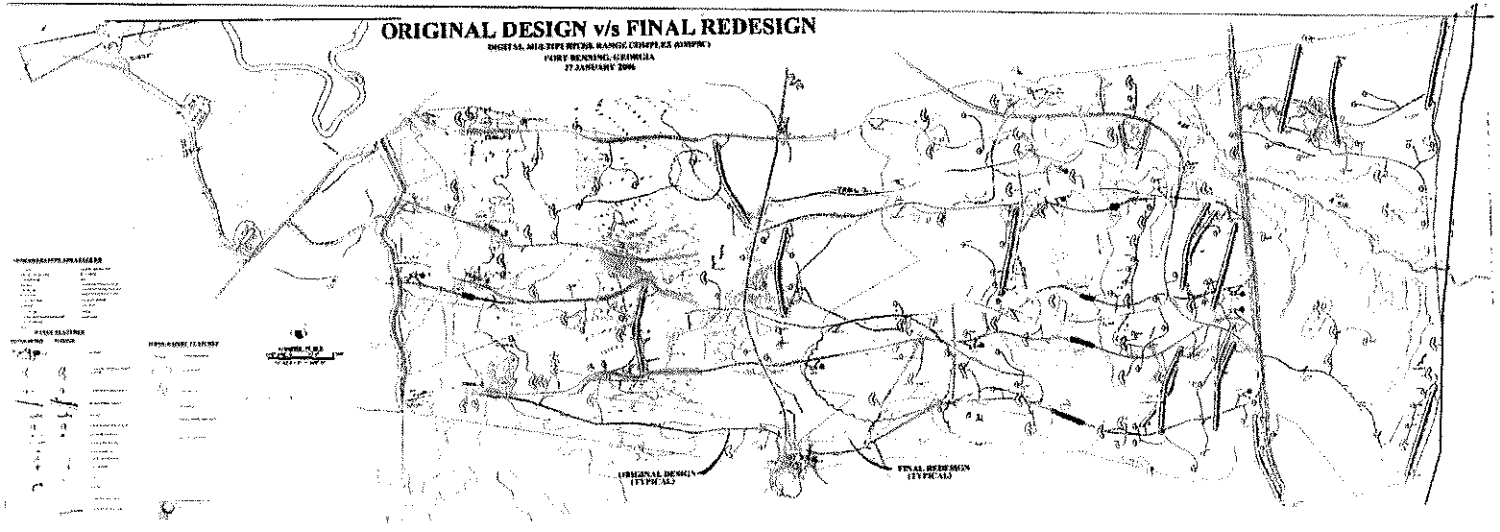
This figure shows the path of six potential dispersals across the DMPRC. The individuals that could have dispersed across the DMPRC are listed in bold lettering in Table 6.

Slide 26: List of work to be conducted prior to startup of DMPRC live fire training.

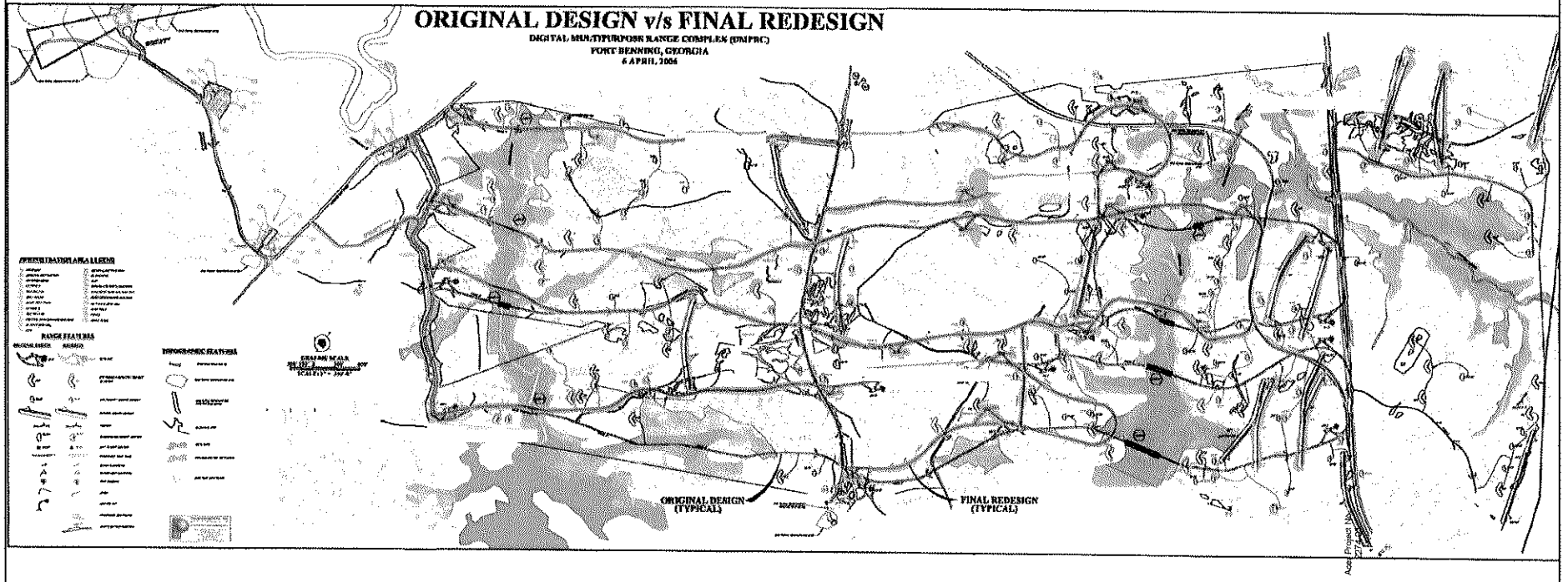
Slide 27: List of work to be conducted after startup of DMPRC live fire training.



ACER Environmental, Inc.	1325 Capital Circle Suite C Lawrenceville, GA. 30043 Phone: 770-682-9731 Fax: 770-682-6164 www.acerenvironmental.org	Prepared For: USACE	Figure 1 DMPRC Construction Phases	DMPRC Construction Phases Fort Benning, Georgia	Acer Project No. 2252-01



ACER Environmental, Inc.	1325 Capital Circle Suite C Lawrenceville, GA. 30043 Phone: 770-682-9731 Fax: 770-682-6164 www.acerenvironmental.org	Prepared For: USACE	Figure 2 DMPRC Design Changes January 2006	DMPRC Design Changes Fort Benning, Georgia	Acer Project No. 2252-01



ACER Environmental, Inc.	1325 Capital Circle Suite C Lawrenceville, GA. 30043 Phone: 770-682-9731 Fax: 770-682-6164 www.acerenvironmental.org	Prepared For: USACE	Figure 3 DMPRC Design Changes April 2006	DMPRC Design Changes Fort Benning, Georgia	Acer Project No. 2252-01

APPENDIX C

FINAL DMPRC MITIGATION AND MONITORING PLAN

Final Digital Multi-Purpose Range Complex Mitigation & Monitoring Plan November 30, 2005[1]

1. Introduction

a. Definitions of Mitigation

The President's Council on Environmental Quality (CEQ) describes mitigation as:

Avoidance: Avoid the impact by changing the plan. Do not take certain actions that would cause the environmental effect.

Minimization: Minimize impacts by changing the intensity, timing, or duration of the action and its implementation.

Rectifying: Fix, repair, or restore damage that may be caused by implementing the proposed action.

Reducing: Reduce or eliminate the impact over time.

Compensation: Compensate for the impact by replacing the damage by improving the environment elsewhere or by providing other substitute resources such as funds to pay for the environmental impact.

b. Mitigation Planning Process

Fort Benning proposes to use a variety of measures that will mitigate potential environmental impacts resulting from construction, operation, and maintenance of the Digital Multi-Purpose Range Complex (DMPRC). Implementation of proposed mitigation measures is dependent upon regulatory requirements, public and agency comments on the Environmental Impact Statement (EIS), and funding availability.

As discussed in Section 2.3 of the EIS, mitigation by avoidance has already occurred during the initial DMPRC site-screening phase. An interdisciplinary team of environmental, engineering, regulatory, military operations, and planning professionals used GIS data and existing information to validate and to eliminate potential DMPRC sites. The process helped mitigate potential environmental impacts through avoiding further consideration of sites with potentially more significant environmental impacts, focusing design on sites that would support the mission and cost requirements while reducing environmental impacts. There are reasonable mitigation measures that were considered but rejected; these are discussed in Chapter 4 of the EIS. Additional mitigation by avoidance was accomplished during the design process for the preferred alternative, Alternative III.

[1] *The main revisions to this Plan from the draft Plan presented with the DMPRC EIS are shown by italics text.*

Many mitigation measures are mandatory in order for Alternative III (the preferred alternative) to proceed, and all mitigation measures presented in this document are mandatory unless otherwise indicated as optional. Timing of mitigation measures can be significant and has been described as necessary to ensure proper execution of the mitigation plan. Some avoidance and minimization of impacts will occur prior to the initiation of any phase of construction. This will include measures to protect several types of resources before work on the construction phase commences. *Environmental planning processes that were not finalized by the time of the record of decision (ROD) also resulted in identification of mitigation that has been incorporated into this plan. The mitigation measures updated in this plan after issuance of the ROD include* the U.S. Fish & Wildlife Service (USFWS) requiring reasonable and prudent measures, terms and conditions as part of its Biological Opinion (BO); and the Army Corps of Engineers (COE) requiring conditions to the Section 404 Clean Water Act wetlands permit.

The mitigation proposed in the EIS was subject to public review, in addition to coordination and consultation with stakeholders. The Army considers public and stakeholder comments received on the final EIS, and a decision will be made on which DMPRC alternative to select and what mitigation actions to implement. While this document contains tentative plans for funding the mitigation and monitoring, that funding is dependent upon public and stakeholder review of the final EIS and decision-making in the Record of Decision. For proposed mitigation measures identified in this EIS, Fort Benning generally is requesting funds from the Army Installation Management Agency, Southeastern Regional Office (SERO) and the Army military construction program. Additionally, the DMPRC Mitigation and Monitoring Plan will serve as a working document for compliance monitoring and may be modified to reflect adaptations during the implementation process.

Alternative III (preferred) was selected in the ROD , so mitigation for that alternative will be implemented during the planning, construction, operation, and maintenance phases of the proposed DMPRC as described in the following sections. The FEIS concluded that no additional mitigation is required beyond current actions for socioeconomics, environmental justice, migratory birds, and human health and safety; therefore, those topics are not addressed in this DMPRC Mitigation and Monitoring Plan.

2. Mitigation Phases

a. DMPRC Planning Phase:

During design, considerable effort was made to avoid siting the range targets and the equipment in areas with environmental concerns, such as wetlands, red-cockaded woodpecker clusters, and cultural resource sites. Placement of each range component (including road and utility access and support facilities) is a critical aspect of the preferred alternative. The design modifications also reduced the standard number of water crossings by using four tank trails, rather than six, for a portion of the range. One lane was also shortened to avoid additional crossings of Pine Knot Creek. Tree clearing under this alternative would consist of approximately 1,500 acres, with approximately 300 acres of trees remaining within the DMPRC. Further details and other avoidance mitigation impacts are discussed below and by media in Section 4 of this DMPRC Mitigation and Monitoring Plan. In addition to range siting and range equipment placement, numerous soil erosion control measures were inserted to address concerns about soil erosion and potential effects on wetlands, water quality, protected species habitat,

Unique Ecological Areas, and other media that is further addressed in the FEIS. Also there was consideration of utilizing materials that would minimize any risk of contamination and/or require hazardous waste disposal; however, operational, safety and economic factors prohibited implementation of all of the recommendations. For instance, recommendations to recycle the inoperable tank tracks and using them for low water crossings or tank turn-around pad areas was not acceptable to the engineer reviewers. Another proposal was utilizing concrete segments rather than pressure treated wood for portions of the targetry support equipment and defilade positions, because maintenance activities may result in replacement of these materials and the concrete may be recycled but the pressure treated wood may have to be disposed as hazardous waste. This was not economically acceptable to the range designers.

b. Construction Phase Mitigation:

Some of the potential impacts that would have occurred during the construction phase were mitigated through the planning and design processes. After the interdisciplinary DMPRC team received community input during public scoping meetings held in 2003, the DMPRC design was initiated. This construction phase includes the timber harvest and slash removal that precedes the other construction activities. Fort Benning will utilize its normal process to harvest the marketable timber where required on the range footprint via the COE, then the construction contractor will remove the remaining vegetation and slash. More details on the mitigation for the timber harvest and other vegetation removal are provided below.

The DMPRC May 2004 design (and the amendments to the request for proposals) includes detailed construction contract specifications that indicate materials, procedures and requirements that the construction contractor will follow during the construction of the DMPRC. Many requirements that mitigate potential environmental impacts have been incorporated into the design drawings and construction specifications.

The May 2004 construction specifications require the construction contractor to:

- Designate Environmental Engineer with at least three years experience to provide construction contractor quality control
- Comply with all applicable Federal, State, and local environmental protection laws and regulations
- Comply with all DOD, Army and Fort Benning regulations that are specified, which includes numerous environmental requirements
- Submit a pre-construction Environmental Protection Plan (EPP) to the Contracting Officer and Environmental Management Division (EMD) for review and approval. The EPP would include:
    - Erosion sedimentation and pollution control plan including monitoring and reporting requirements
    - Recycling and waste minimization/disposal plan
    - Air pollution control plan
    - Contaminant prevention plan
    - Waste water management plan
    - Cultural and natural resources and wetlands plan
    - Pesticide treatment plan
    - Employee Environmental Training

- Spill Prevention Control & Countermeasure Plan (SPCC)
- Spill Contingency Plan (SCP) (PolyEngineering, 2004).

The May 2004 design identifies proposed locations for a primary staging area, and if a secondary contractor staging area is needed, the Contracting Officer will consult with EMD. These *staging areas are proposed* in areas that are already cleared of most vegetation; however, potential impacts to some environmental media should be avoided, such as eligible or potentially eligible cultural resources and protected species. The construction contractor will be required to submit to EMD a more detailed plan for the staging area(s) prior to authorization for use. Then EMD will identify any location restrictions or other mitigation of potential environmental effects, and establish any additional monitoring of that mitigation.

After the construction contract, Simulation, Training, & Instrumentation Command (STRICOM) will coordinate the installation of targetry and the associated power and communication systems, probably via another contract. This is also part of the construction phase to make the DMPRC ready for operation. The target and support system installation will also follow the appropriate mitigation identified herein and will be monitored as specified.

Any additional requirements identified through continuing coordination and consultation with stakeholders *have been and will continue to be incorporated* into the construction phase through compliance with regulations and construction specifications. The Clean Water Act requires mitigation for wetland and streambank impacts, *and a wetlands permit and supporting studies indicate the details of the required mitigation.* NPDES requires preparation of an Erosion Sedimentation Pollution Control Plan (ESPCP), *which was prepared and incorporated* Best Management Practices (BMPs) into the construction process. The ESPCP details BMPs to be implemented and the timing of implementation. The Endangered Species Act requires preparation of a BO by the USFWS, *which was issued and specified the mitigation requirements* for impacts or potential impacts to Federally listed species. This DMPRC Mitigation and Monitoring Plan uses the best information available to identify the mitigation and monitoring planned *and has been revised and finalized using information available as of September 2004. Further* revisions to this DMPRC Mitigation and Monitoring Plan to reflect the changes in the mitigation or monitoring proposed herein will be made as necessary.

Fort Benning prefers to designate an Environmental Monitor to act as a liaison between the timber harvest personnel, construction contractor, STRICOM personnel, contracting officers, the Directorate of Operations and Training Range Division, and EMD personnel to ensure compliance with this DMPRC Mitigation and Monitoring Plan. This position will require thorough knowledge of Fort Benning environmental policies and familiarity with appropriate contacts for specific resource issues. Any modification to this plan in accordance with field conditions will be coordinated by the Environmental Monitor with the appropriate EMD Program Manager and Range Division. The duties of the Environmental Monitor are further addressed with each media issue. If an Environmental Monitor position cannot be filled or is vacant, the Chief of EMD or designee will take over the duties of the Environmental Monitor that are specified in this Mitigation and Monitoring Plan.

The public and stakeholder comments received during draft EIS and final EIS public review periods facilitated selection of the DMPRC Alternative III that will help sustain military training missions and the environment. *Comments received were considered by Army planners for any changes* to timber harvest, construction specifications and construction contractor's

Environmental Protection Plan. Additional mitigation measures for the construction phase are discussed in more detail in the following sections for each media.

c. Operation and Maintenance Phase Mitigation:

The operation and maintenance phase would begin after construction is complete and as Soldiers begin training on the new facility. EMD and Range Division would continue to work closely to ensure all mitigation requirements are implemented and maintained as planned. Additional mitigation measures and the monitoring requirements for the operation and maintenance phase are discussed in more detail in the following sections for each media.

3. Mitigation Monitoring Strategy

An important key to success in mitigation of potential project impacts is the continuous monitoring of mitigation implementation and effectiveness, and informing the public and decision makers of monitoring results. An adaptable policy will incorporate flexibility into the environmental management of the project. This DMPRC Mitigation and Monitoring Plan includes a description of how Fort Benning proposes to monitor mitigation and adjust plans and operations as needed to help ensure actual environmental impacts are not significantly different than predicted in this EIS. Fort Benning will respond to individual inquiries about monitoring programs, and it will place updates on the Fort Benning DMPRC website. EMD and Range Division will conduct an annual review of the status of mitigation to determine if monitoring updates are needed in the future.

Fort Benning plans to monitor implementation and effectiveness of any mitigation selected to implement the proposed DMPRC. Each media has its own method listed in this plan for monitoring; however, because several mitigation and monitoring actions overlap, the appropriate sections of this plan will be referenced. Another purpose of this plan is enforcement monitoring, which will help the proponent and lead agency (the Army and Fort Benning) who is ultimately responsible for performing any mitigation activities, establish responsibilities and procedures with those who will actually perform the mitigation, such as contractors, educational facilities, etc. For the DMPRC, the enforcement monitoring has been incorporated into each aspect of this DMPRC Mitigation and Monitoring Plan to indicate the responsible entity, the communication and coordination mechanisms within Fort Benning and with those entities, incorporation of mitigation and monitoring requirements into contracts, procedures to enforce those contract provisions, appropriate funding mechanisms for all identified mitigation and monitoring, and other means. The Office of the Staff Judge Advocate, Environmental Law Specialist (ELS), will be informed regarding any potential legal violations relating to mitigation or monitoring, and *will coordinate with other legal staff as necessary*; specifically the Contracting Law Specialist may be of assistance, when warranted.

The Installation would use a combination of more staff (e.g. an Environmental Monitor and at least two RCW Biologists), and existing systems such as the Environmental Performance Assessment System (EPAS) to track mitigation compliance. Although compensatory mitigation implementation and some monitoring will be contracted, the Environmental Monitor will again act as a liaison for Fort Benning environmental and range personnel, notifying them of any significant deviation from plans and coordinating any digression with EMD, or others as requested by EMD, as well as updating the publicly accessible website indicating DMPRC

mitigation and monitoring status. The Army has directed each Installation to develop and implement an Environmental Management System (EMS), based on ISO 14001, to improve environmental performance, prevent pollution, and comply with environmental requirements and policies. Fort Benning's EMS is currently under development. Mitigation and monitoring specified in this Plan may be worked into that EMS as appropriate. For information on EMS and ISO 14001, see the Appendix or the following website: https://www.denix.osd.mil/denix/Public/Library/EMS/ems.html.

4. Proposed Mitigation and Monitoring Measures

This section identifies proposed mitigation measures, by media, for the DMPRC. It is applicable for both the construction and operation and maintenance phases of the proposed action.

a. Soils and Vegetation

Impacts to soils and vegetation are anticipated from construction of the DMPRC. Construction of the DMPRC and its associated support facilities will disturb an area greater than one acre, and Georgia requires the construction contractor to prepare and to obtain a National Pollution Discharge Elimination System (NPDES) permit, which mandates the preparation and implementation of an Erosion Sediment Pollution Control Plan (ESPCP). *A draft ESPCP was prepared in May 2004; the ESPCP was revised and submitted to Georgia Department of Natural Resources (GA DNR) with the notice of intent to comply with the applicable NPDES general permit conditions.*

Mitigation

Avoidance of impacts to soils and vegetation has occurred during the reduction of the size of the proposed construction area. The optimal standard DMPRC design consists of the construction of a 2500-by-8000 meter (approximately 4,942 acres) range and target firing area; however, this optimal standard design was reduced in size to account for site limitations, environmental concerns, and other factors at the site, resulting in the Alternative III range and target firing area of about 1800 acres. During evaluation of the Alternative III design, efforts were made to avoid potential environmental impacts due to tree/vegetation removal. Vegetation removal cannot be avoided on the portions of the range complex needed for construction of support facilities, roads, trails, targets, and berms. Tree removal for construction purposes, such as target emplacement and trail/access road development, will require stump removal and grubbing. For Line of Sight (LOS), removed trees would be cut to four-to-eight inch stump height, with no grubbing, disking, or stump/root removal occurring (See FEIS Appendix I, Timber Harvest Plan).

The specifications of the NPDES permit will be discussed in more detail under water quality, but it is relevant to minimization mitigation for soils in that it includes submission of an ESPCP to the Georgia Environmental Protection Division, with a copy furnished to Chief of EMD or designee. The *June 1, 2004* ESPCP includes a project description, soil information, changes to existing contours, existing drainage patterns, general location of structural best management practices (BMPs), BMP specifications, quantity, and cost estimates, BMP

inspection and maintenance requirements, detailed construction drawings, and a construction schedule (PolyEngineering, 2004). The BMPs include erosion control matting, channel stabilization, silt fencing, brush barriers, storm drain outlet protection, stone check dams, rock filter dams, temporary and permanent seeding and the application of mulch. Erosion control matting would be used on slopes steeper than 2.5:1. Silt fencing, stone check dams, and rock filter dams will be used to trap sediment on the site. A majority of the disturbed areas will be seeded with temporary and permanent grasses to stabilize the area. Disturbed areas will be planted with native and non-native seed. Alamo Switchgrass is included in the warm season grasses to be planted. Some wetland areas may already contain a cache of viable seed and may not need to be planted. Brush barriers will be constructed on the perimeter of the wetlands to trap sediment. Stone check dams will be constructed at turnouts to reduce sedimentation from tank trails. The construction contractor will submit a NPDES permit as required and will make any modifications to the ESPCP at that time to meet all requirements at the Alternative III site.

Other BMPs to be used during the construction phase to mitigate soil and sedimentation issues would include: buffer zones, dust control on disturbed areas, streambank stabilization, construction exit, construction road stabilization, stream diversion channel, temporary stream crossing, and storm drain outlet protection. Construction exits would be built in areas where traffic will be leaving the construction site to a major roadway (to include paved roads such as Buena Vista Road) to reduce or eliminate the transport of mud from the construction area. Gravel roads that provide access to the DMPRC facility may not require a construction exit.

Selective cutting in the wetland and stream buffer areas within the LOS is required, and these areas to be cleared or selectively cut using low-impact methods and will the clearly marked. Forestry BMPs for water quality, streamside management zones (SMZs), and timber harvesting will be implemented. Forestry BMPs for water quality would include SMZs to prevent movement of soil or other potential pollutants and maintain streambank integrity. Forestry BMPs for timber harvesting will include strategic placement for log decks and skid trails to minimize rutting and soil movement.

Further, some vegetation will benefit from mitigation requirements for other media; notably, some vegetation outside the boundaries of the range firing and target area which comprises RCW habitat will be protected by the construction of the protective berms discussed under endangered species mitigation. Further range modeling of the LOS and the associated tree cutting area may result in keeping all rounds within the range and target area and the impact area, so that a berm for protection of RCW habitat would not be required.

Optional mitigation proposed in the FEIS for construction would be limiting the cutting of trees and shrubs during construction of the DMPRC, *and vegetation that fall below the LOS would not be disturbed.* The DMPRC Timber Harvest Plan details the procedures that will be used to comply with the mitigation measures set forth in this document. Optional mitigation measures that are under consideration for construction include leaving more trees in the support area. Site disturbance, including earthwork and vegetation clearing, would be to 40 feet beyond the perimeter of support buildings; five feet beyond roadways, walkways, and main utility branch trenches; and 25 feet beyond parking areas that require a staging area. (FEIS Appendix L).

Monitoring

A COE representative will monitor the timber harvest contractor and prepare a written report each week to document compliance with all applicable mitigation requirements and/or

restrictions, any deviations from the same and any corrective action that was taken or is proposed. The report will be provided to the Environmental Monitor and the Chief of EMD or designee. Any deviations from the requirements and/or other violations will be immediately reported to the Contracting Officer or their representative and Chief of EMD.

The design engineer is required to conduct a site visit to certify BMPs. Monitoring requirements are stated in the ESPCP. Per Georgia NPDES requirements, the construction contractor must provide qualified personnel to conduct inspections, sampling and monitoring of BMPs from the ESPCP. The Contracting Officer for the construction contract should monitor mitigation measures described in the ESPCP to further ensure the success of mitigation. The ESPCP includes detailed vegetation establishment specifications, which ensure the timely installation and establishment of vegetation (PolyEngineering, 2004). Vegetation is significant because it controls soil erosion rather than captures eroded sediment. It is also the most effective BMP with success percentages in the ninety percent range as opposed to half that for some non-structural BMPs such as silt fence (Fifield 2001). It will be the responsibility of the Environmental Monitor to monitor compliance with relevant contract specifications and applicable requirements, and report any deviations to the Chief of EMD or designee.

The construction contractor must adhere to the ESPCP and NPDES permit. The content and frequency of the reports the construction contractor must prepare are detailed in the June 1, 2004 ESPCP and related construction specifications. The monitoring requirements are:

- Daily – Inspect all areas where petroleum products are stored, used, or handled for spills and leaks. Inspect all locations where vehicles exit or enter the site for evidence of off-site tracking. Measure rainfall once each twenty-four hour period at the site.
- Once every 7 calendar days and within 24 hours of a storm that is 0.5 inches or greater – Inspect disturbed areas and storage areas that are exposed to precipitation that have not undergone final stabilization. Inspect structural control measures.
- Once per month during term of permit – Inspect areas that have undergone final stabilization for evidence of or potential for, pollutants entering the drainage system and receiving waters.

Based on the results of each inspection, the site description and pollution prevention and control measures identified in the ESPCP shall be revised no later than 7 calendar days following each inspection. The contractor has an additional obligation to sample all receiving waters or outfalls at two times during the construction process as detailed in the ESPCP.

1. After the first rain event that reaches 0.5 inch and allows monitoring during normal business hours when construction activity is being conducted that occurs after all clearing and grubbing operations have been completed in the drainage area.
2. The first rain event that reaches or exceeds 0.5 inch and allows for sampling during normal business hours that occurs either 90 days after the first sampling event or after all mass grading operations have been completed. Additional monitoring and sampling may be required if corrective action is mandated by the sampling results.

Construction contractor will submit applicable reports to the GA EPD per the NPDES requirement as specified in the ESPCP, with a copy to the Construction Contracting Officer and to EMD.

Additionally, Fort Benning's Environmental Monitor will prepare detailed mitigation and monitoring reports during the construction phase, and the beginning phases of operation, as appropriate. These reports will address compliance, deficiencies and maintenance of soil erosion and forestry BMPs, and will be forwarded to the Chief of EMD or designee, and the Chief of Range Division. Specific practices that will be considered include:

- The condition of all markings (flags, stakes, paint, etc.) that delineate sensitive areas
- The condition of BMPs (i.e. Are all BMPs installed according to requirements outlined in the ESPCP? Are sediment loads below allowable quantities?)

Discrepancies in actual versus planned impacts to soils and vegetation will be addressed by the Chief of EMD or designee through the construction Contracting Officer. During the construction phase, there should be no adverse impacts to vegetation outside of the footprint and support areas for the DMPRC.

After the construction phase, Range Division would monitor the DMPRC at least quarterly to determine any needs for erosion control and/or re-vegetation to maintain realistic training areas and sustain the range. Monitoring reports will be submitted to the Chief of Range Division and the Chief of EMD, and appropriate action will be taken. Range Division would ensure any problem areas are re-vegetated as soon as possible, and the area is monitored closely until it is stabilized. EMD staff will also make note of any needs for erosion control and/or vegetation anytime they are in the DMPRC area, and will document and forward the results of any such monitoring to the Chief of EMD.

b. Water Quality

Adherence to applicable Federal and state laws and regulations and Army regulations, as required, would minimize impacts. All tree clearing and construction activities greater than one acre in size and/or as part of a common development area, such as this proposed action, require a NPDES Permit for Storm Water Discharges under the *Erosion and Sediment Control Act* (ESCA). The general permit establishes requirements such as:

- Notice of Intent and Notice of Termination
- Payment of Fees
- Development and implementation of a ESPCP
- Site inspections for facilities with discharges authorized by the permit
- Amendments to plans as necessary to keep them current
- Retention of records for at least three years from the date of final stabilization.

Mitigation

During the design process, minimization mitigation was incorporated when Fort Benning decided to use low water crossings rather than standard road crossings to minimize impacts to

water flow and quality. To construct low-water crossings, the construction contractor will need to divert streams temporarily; the stream diversion channel BMP will be utilized to minimize erosion and other water quality impacts. Sampling locations are upstream and downstream of each low water crossing to monitor water turbidity requirements. Elevated stream crossings were considered to further reduce impacts; however, concerns about the safety of tanks crossings (i.e. preventing a tank from falling into a stream) dismissed the use of an elevated crossing.

Additional minimization of impacts is provided in the construction contract specifications, which includes stormwater management measures that reduce the average annual total suspended solids load in the development site's post-construction runoff by eighty-percent. This would be accomplished through conveyance of stormwater through BMPs, as discussed under Soils and Vegetation Mitigation, which in turn would lessen the deposition of sediments into adjacent surface waters at the site of disturbance, primarily Pine Knot Creek, Sally Branch and its tributaries, and Bonham Creek. The designer has supplied pre-construction drawings illustrating what, when, and where sediment control structures are installed, inspected, and maintained. This will ensure that after construction is complete, there are measures in place to mitigate the new circumstances created during construction such as concentrated flows in specific areas.

The SPCC is just one aspect of the larger ESPCP that will be required for construction to commence. The ESPCP *specifically addresses* the implementation of discharge from control areas for equipment maintenance or repair, waste locations, wash-down locations, and sanitary facility areas. The preparation and implementation of a SPCC Plan and/or its requirements during construction activities will prevent and/or minimize spill/release from hazardous materials into waterways. In addition, SPCC requirements would be implemented during training exercises to avoid/minimize impacts to desirable habitat. Operation and maintenance requirements on the newly constructed DMPRC at this alternative would also be similar to those described in the EIS Section 4.1.1, as would the proposed mitigation measures described under Wetlands and Streambanks.

Monitoring

Monitoring for the timber harvest will be done in accordance with the Soils and Vegetation section above. During the construction phase, the construction contract specifications require all water areas affected by construction activities to be monitored. The construction contractor would submit required monitoring results to the Contracting Officer and the Environmental Monitor, in addition to the Georgia required submittals. The Environmental Monitor will review the mitigation and monitoring reports and also take any additional samples or conduct additional monitoring to evaluate adherence to environmental requirements in the construction specifications and this DMPRC Mitigation and Monitoring Plan. This is to ensure that the erosion and sediment control plan is working as envisioned through adherence to regulatory requirements and the implementation of erosion control BMPs, stream habitats and water quality would improve over time relative to conditions during construction.

After construction is complete and operations begin, the Range Division should visually monitor surface water quality at least quarterly to identify any water quality concerns such as spills, oil sheen, sediment build-up or other pollution. Monitoring reports will be submitted to the Chief of Range Division and the Chief of EMD, and appropriate action will be taken.

Fort Benning is concluding the first phase of ecosystems research under the Defense Department's Strategic Environmental Research and Development Program (SERDP). This SERDP Ecosystem Management Project (SEMP) had more than 20 researchers from 12 universities and four government laboratories conducting ecological research at over 800 sites on Fort Benning. The SEMP Ecosystem Characterization and Monitoring Initiative (ECMI) is developing a long-term ecological monitoring plan that will be incorporated into the Installation's ecological monitoring plan. Fort Benning and SEMP researchers would evaluate how SEMP monitoring would be useful for pre-construction and post-construction monitoring, and Fort Benning would seek adjustments to the ECMI monitoring plan to help ensure some monitoring occurs on, and downstream from, the DMPRC site. SEMP researchers would submit any monitoring results related to DMPRC to the Chief of EMD or designee.

c. Wetlands and Streambanks

Impacts to jurisdictional wetlands and streams associated with the proposed DMPRC total approximately 8.93 acres for wetlands and 1,275 linear feet (lf) (6.59 acres) for streams. Wetlands and stream impacts were determined to be limited to those locations, as shown on the September 2003 design drawings, where low water crossings, targets, and maintenance roads are proposed. Wetland impacts include 7.45 acres of wetlands for tank trails, 1.31 acres for target orientation, and 0.17 acres of wetlands for low-water crossings. Stream impacts consist of 1,175 lf for low-water crossings, and 100 lf for a tank trail. Compensatory mitigation required for the DMPRC includes approximately 63 wetland credits, and 4,061 stream credits. *A site for wetlands restoration on Fort Benning, an area of Clear Creek, was selected to re-establish wetlands for the needed credits as part of mitigation.* More detailed information is provided in the Wetland and Stream Impact Analysis Report (Dial-Cordy, 2004a) and the Clear Creek Mitigation Plan (Dial-Cordy, 2004c). Changes in the DMPRC design and further restoration site surveys and modeling may result in modifications to these specific figures.

Mitigation

Mitigation for impacts to wetlands and streambanks by avoidance was incorporated into the design process by eliminating potential sites with greater detrimental effects than the alternatives considered in this EIS. Impacts were minimized by moving tank trails, targets, and roads out of wetlands where practicable; utilizing low-water crossings rather than placement of unconsolidated fill; use of selective vegetation removal in wetlands/ streams, where feasible; and other measures. The design modifications also reduced the standard number of water crossings by using four tank trails, rather than six, for a portion of the range; therefore, tanks and Bradley Fighting Vehicles (BFVs) will use four low-water crossings (approximately 100-350 feet long by 29 feet wide) along Bonham Creek and four low-water crossings (same dimensions) across Sally Branch, for a total of eight crossings. One lane was also shortened to avoid additional crossings of Pine Knot Creek. Since preparation of the 15 percent design (July 2002) to the September 2003 design impacts have been reduced by over 50 percent. Unavoidable wetland and stream impacts account for only 15.52 acres on the 1,800-acre project area (Dial-Cordy, 2004a).

Wetland mitigation and stream bank mitigation measures will be implemented as a part of the mitigation for the proposed DMPRC and will be in accordance with the Section 404 permit for the project. Prior to the initiation of timber harvest and/or construction activities,

streambank buffer zones and wetlands would be marked by EMD and/or construction contractor. To reduce potential sources of sedimentation, logging decks and defined skid trails would be located outside the buffer zones. Brush barriers would be utilized along the edge of the wetlands, which will be marked with stakes. Stream buffer zones will be at least 25 feet on each side of the stream. In many areas the buffer zone will be greater than 25 feet, due to variations in the width of the floodplain. The buffer zones will be marked with red paint and/or stakes. The construction contractor will also utilize additional erosion control measures as needed. Impacted areas within the stream buffer zone would be cleared for construction of low water crossings; however, the following BMPs should be used: stream diversion channels, silt fence, vegetation establishment, and others as needed to minimize sedimentation in the streams.

For LOS, only selective tree removal would occur in wetland areas and stream buffers, consisting of the trees directly impeding LOS. In addition, these removed trees would be cut to four-to-eight inch stump height, with no grubbing, disking, or stump/root removal occurring. Trees not directly affecting LOS and stumps in wetlands and stream buffers would not be removed where feasible, allowing as much vegetative cover as possible to remain.

The SPCC Plan and erosion control BMPs would also be implemented to avoid impacts to desirable habitat during construction (see Water Quality and Soils and Vegetation above for more details). In addition, SPCC requirements would be implemented during training exercises to avoid/minimize impacts to desirable habitat. Operation and maintenance requirements on the newly constructed DMPRC at this alternative would also be similar to those described in the EIS Section 4.1.3, as would the proposed mitigation measures. Military units are required to utilize secondary containment for the storage of hazardous materials/wastes and during refueling operations. Also, routine maintenance of the vehicles helps to identify and repair any conditions that might cause leaks. A spill response protocol has been established Post-wide and personnel on the range should have adequate spill response supplies on hand. Continued adherence to Federal and state laws and regulations and established Installation policies and guidelines, such as erosion control BMPs and spill control measures, should repair or minimize any adverse impacts to wetlands as a result of this alternative.

Wetlands and streambanks at another location on Post, *Clear Creek, will be restored* to further mitigate construction impacts (see EIS Section 4.3.3). Mitigation site development normally involves restoring the wetland hydrology by excavating sediment from a degraded wetland area and planting native trees and shrubs. Fort Benning prefers to use on-Post restoration sites *vice off-Post restoration sites, where reasonable*. After thorough analysis of potential mitigation sites, several sites were selected for final mitigation consideration. A final Mitigation Siting Analysis was prepared, which described six sites that satisfied selection criteria and developed preliminary conceptual mitigation plans for each site. Recommendation of a single, preferred restoration site was based on which site could (a) provide the mitigation credits necessary to satisfy the estimated credit requirements, (b) did not interfere with Fort Benning's training, and (c) could meet mitigation goals in the most cost effective manner possible. Based on those criteria, Clear Creek was selected as the proposed mitigation site, but this selection is contingent upon regulatory approval by the COE Regulatory (Dial Cordy, 2004b).

In order to offset the wetland and stream impacts of the preferred site, approximately 52 acres of the Clear Creek stream channel and forested wetlands located on Fort Benning will be restored. Mitigation will be completed concurrent with construction of the DMPRC. Clear Creek is the only single site assessed that would satisfy the projected wetland credits (63) and

stream credits (4,061) required. Any balance of credits remaining will be reserved as advanced mitigation for future projects if surplus credits are approved.

The *Clear Creek* Mitigation Plan gives a more detailed description of the restoration plan for portions of Clear Creek. A Conceptual Mitigation Plan *was submitted to the COE Regulatory Office* as part of the wetlands permit application for the DMPRC, *which was finalized on March 25, 2004.* Fort Benning had additional surveying and modeling done to prepare the site-specific Clear Creek Mitigation Plan, which has all required details for establishing and monitoring the restoration site, and *was approved by the COE Regulatory Office on August 26, 2004.* The wetlands permit approval *occurred after the DMPRC ROD was final, but the wetlands permit required mitigation consistent with what was presented in the EIS and the ROD.* A brief synopsis of the restoration plan is included here*; however the Clear Creek Restoration Plan should be consulted for further details.* Restoration of the Clear Creek site will include the restoration of approximately *52* acres of bottomland hardwood wetlands and 6,550 lf of stream. Specific tasks required to be implemented include stabilizing a portion of the erodable soils upslope from the wetlands , draining of the impoundment through modification or replacement of the box culvert on Pine Tree Road, removal of all beaver dams and debris during initiated construction and the monitoring period, excavating the soils that have deposited into the lake and downstream wetlands , and stabilizing all stream bank slopes with geotextiles, check dams and/or planted vegetation.

The *Clear Creek* Mitigation Plan provides a description of the existing conditions on the Clear Creek site, proposed restoration treatments and measures, a proposed monitoring and maintenance plan, and success criteria for release of the credits generated from the restoration. *As of planning in September 2004, the restoration efforts would be conducted in four phases, starting in Fall or winter of 2004 and completing in about Spring 2005, but updates to this schedule are expected*. The monitoring of the restoration site is proposed for 5 years after establishment or when the COE Regulatory agrees that restoration has been achieved to compensate for the DMPRC. Since the site is located on a Federal military Installation, preparation of restrictive covenants or conservation easements is not proposed. Land use restrictions will be placed on the Clear Creek restoration area so that no incompatible land use that would negatively impact the restoration is authorized. The land-use designation will be changed to reflect its restricted use through real property management. Restrictions will include the use of "Sensitive Area" signs to identify the site boundary and to prohibit vehicular access and digging.

Detailed technical data, hydrologic/ hydraulic modeling results, and restoration design and specifications, *were* provided as part of the site-specific Clear Creek Mitigation Plan to the COE Regulatory for review and concurrence. *Fort Benning submitted the Section 404 wetlands permit joint application on March 15, 2004, and the 30 day public review and comment period started on April 14, 2004, and the Section 404 permit was issued on August 26, 2004. Based on the joint application, the GA DNR also provided a Water Quality Certification on August 20, 2004 with conditions, including complying with applicable water quality standards, no pollutant discharges to public waters, constructing all low water crossings at grade, and only minor land disturbance allowed within the 25 foot stream buffer zones.*

Monitoring

The Contracting Officers for the timber harvest, range construction and target and equipment installation, and establishment of the Clear Creek restorations area, have responsibilities to ensure the contractors conducting that work comply with the wetland mitigation described in the wetlands permit and supporting documents, as well as this DMPRC Mitigation and Monitoring Plan. The Environmental Monitor and the EMD staff will assist the Contracting Officers by making independent quality control monitoring efforts. Prior to timber harvest or any ground disturbing activity, EMD and COE will ensure that all wetlands and stream buffers to remain relatively undisturbed are marked with paint, flags or preferably stakes to indicate the sensitivity of these areas and signal the necessity of low impact clearing methods in these areas. The Environmental Monitor will check these areas at least weekly and ensure that low impact methods are being utilized in designated areas. Tree and vegetation removal may be conducted in phases, so the Contracting Officer should inform the Environmental Monitor when wetland clearing is anticipated. Throughout this process, the Environmental Monitor will coordinate all actions with the EMD Land Management Branch, the appropriate Contracting Officer(s), Range Division, and other pertinent Fort Benning staff.

After timber harvest, wetland and streambank areas may have to be remarked because the timber operations will likely destroy flags, stakes, and other marking devices. This refreshed demarcation is necessary to ensure no incidental disturbance by construction machinery. During construction, no machinery or other vehicles should enter wetland areas except the designated construction impact areas. The construction contractor must install designated pre-construction erosion controls prior to entry into impacted wetlands and other construction actions. See the Soils and Vegetation category above for more details regarding soil erosion control.

The Clear Creek restoration effort will probably be done with contract assistance to establish and to conduct initial monitoring. Then EMD or other Fort Benning staff will take over long-term monitoring and maintenance. Several factors of the Clear Creek Mitigation site will be monitored for at least five years after the project is completed to ensure COE Regulatory success criteria are met. Until the final details of the mitigation are known, this monitoring scheme may vary in accordance with restoration parameters. Vegetative monitoring will be conducted once during the fall of 2004, and annually during late summer, for five years following completion of construction (Dial Cordy, 2004c). Hydrological monitoring will be conducted by automated monitoring wells and the data collected downloaded bimonthly. Stream channel monitoring would occur through annual collection of geomorphology field data. Maintenance within the restoration area will include periodic cleaning of culverts, clearing of snags and beaver dams, and potentially beaver trapping.

d. Unique Ecological Areas (UEA)

The northwestern corner of the proposed range may impact the Pine Knot Creek Blackwaters Unique Ecological Area, which encompasses Pine Knot Creek. Unique hydrologic characteristics of a Coastal Plain blackwater stream include relatively constant flow and temperature, high acidity, low sediment load, and low fish diversity. Vegetation is typical of a hardwood bottom in the sandhills. Species of conservation concern that are present include the southern brook lamprey (*Ichthyomyzon gagei*), broadstripe shiner (*Pteronotropis euryzonus*) and bog sneezeweed (*Helenium brevifolium*).

Potential impacts to the UEA are detailed in the FEIS and are summarized here for the purposes of describing appropriate mitigation. Some of the UEA overstory trees that are in the footprint of the range will have to be cut for LOS and range construction and some species may

be injured or killed by logging operations. Erosion from adjacent upland target sites and access trails may increase sedimentation in the UEA, lower the water quality, and adversely impact habitat. Trees felled in UEA will be removed by low impact methods. If removal is not feasible then trees will be hand felled and left in place with stem parallel to stream channel. These potential effects may impact on the hydrology of the area and may degrade habitat, increase water temperature, and change and/or reduce aquatic populations.

Mitigation

During the design process, it was possible to avoid construction of tank trails through the UEA, and only several small target locations of the UEA are proposed for fill, resulting in fewer impacts to UEAs. Mitigation for UEAs would consist of adhering to requirements in the NPDES permit, Section 404 permit, and ESPCP for this project, as indicated above. Trees felled in UEA will be removed by low impact methods. If removal is not feasible then trees will be hand felled and left in place with stem parallel to stream channel. Trees removed during the timber harvest and slash removal for LOS would be felled so the stem is parallel with the run of the stream, therefore reducing the obstruction effect. Installation management policies for UEAs would be utilized to the fullest extent possible to reduce the amount of erosion that would occur. All upland areas should be stabilized with erosion control "blankets," vegetation, and/or mulch. Operations and maintenance would be mitigated as discussed under Section 4.c, "Wetlands and Streambanks."

Monitoring

Implementation of the preferred alternative would result overall in potential minor adverse effects to approximately seven percent of the entire area of the UEA but would not impede ecosystem function of the UEA. Monitoring to ensure this situation is essential and would be conducted by the Environmental Monitor during the construction phase (especially timber harvest and slash removal), and other phases of the project as appropriate. The Pine Knot Creek Blackwaters UEA should be demarcated prior to timber harvest to indicate the sensitive nature of the area by the construction contractor in the manner described in his Environmental Protection Plan (required by contract specification 01355A). Before construction, the Contracting Officer and/or Environmental Monitor or EMD personnel shall inform the construction contractor of the susceptible nature of the area, and any marking mechanisms damaged by timber operations should be repaired to keep construction activities only in designated areas. Boundaries of the Pine Knot Creek Blackwaters UEA will be marked by Land Management Branch personnel using red paint (personal communication. James Parker 2004).

Operation and maintenance activities may result in additional potential effects to the UEA due to soil erosion; this would be mitigated as discussed under Section 4.c, "Wetlands and Streambanks." Erosion control at low water crossings will be managed by the Land Rehabilitation and Maintenance (LRAM) component and is monitored by Land Condition Trend analysis component of ITAM. Range Division will provide any LRAM reports regarding any monitoring or erosions problems at the low water crossings to Chief of EMD or designee. If ITAM funding is not available to correct an erosion problem related to the low water crossings, then Fort Benning will need to request other funding. Current strategies to minimize disturbance and siltation are being developed and are planned for implementation. Management activities are expected to be passive in nature, unless significant problems are uncovered (INRMP 2001).

Optional monitoring of the UEA may occur after the construction phase has ended. This will include periodic visual inspections by Range maintenance and inspection personnel as well as Conservation Branch personnel when they are at the DMPRC and in conjunction with other inspections on and near the DMPRC. Ideally, additional monitoring of environmental parameters of the UEA would be conducted, but there are no plans in place at this time. Any UEA monitoring results required by the *Integrated Natural Resource Management Plan* (INRMP) implementation will be forwarded to the Chief of EMD or designee for use in evaluating the DMPRC mitigation strategies as appropriate.

e. Federally Protected Species

Fort Benning presently contains five federally listed threatened or endangered species. They are the red-cockaded woodpecker (RCW), wood stork, relict trillium, bald eagle, and American alligator. The RCW is the only one of these species in proximity to the preferred alternative of the proposed DMPRC; therefore, it is the only federally listed species requiring mitigation. Potential habitat may exist for the relict trillium in the DMPRC area; however, surveys conducted during the spring of 2004, when relict trillium is in flower, indicated no species present in the DMPRC area. If populations are discovered in an area that will be disturbed by the DMPRC, the plants will be relocated. Relocation sites will be selected either on Fort Benning or within public garden areas that are suitable for the species (BA, 2004). Further consultation with USFWS would be required prior to any relocation of relict trillium to determine a suitable location.

The impact to RCWs resulting from construction of the DMPRC at the preferred site is the subject of a biological assessment (BA) performed by Fort Benning (Fort Benning, 2004). The BA details the background of RCW management on Fort Benning and provides scientific analysis to determine the potential effects to RCWs, which are only summarized here for the purpose of providing information on related mitigation. The affected RCW area extends beyond the boundary of the proposed DMPRC due to indirect impacts resulting from construction, range operations, and other factors.

Some background information derived from the BA that will aid in the understanding of the impacts of this project is included within this section for ease of reading. Groups of RCWs nest in an aggregation of cavity trees, a cluster that is surrounded by contiguous foraging habitat. Foraging habitat is coarsely described as having some large old pines, low densities of small and medium pines, sparse or no hardwood midstory, and a bunchgrass and forb groundcover (USFWS, RCW Recovery Plan, 2003). Since 1994, 13 known RCW dispersal (movement of individuals from natal to first breeding location “natal dispersal”, or between consecutive breeding locations “breeding dispersal”) flyways have been documented across the proposed DMPRC footprint. There is also one active cluster (K15-01) downrange in the K15 impact area that is not considered in this mitigation analysis because this cluster has already been accounted for (i.e. incidental take) in the Biological Opinion for the Fort Benning Endangered Species Management Plan (available upon request).

The potential effects of implementation of the proposed DMPRC will be categorized into two classes. Direct effects are those that are likely to occur as evidenced by a large body of scientific substantiation and/or practical explanations. Indirect effects are those that are supposed to occur based on biological assessment but cannot be confirmed with direct evidence because research has indicated that either specific behavioral patterns may vary by group or that

effects of certain activities are unknown. Further, these effects are separated by their occurrence in either the construction or operations/maintenance phases of the project.

Direct effects of construction activities include:

- Timber clearing for the range will directly impact four active RCW clusters (D14-04, D13-02, D3-02, and J6-1)
- Four planned recruitment sites will be displaced due to the timber clearing
- Within 0.50 mile of the range clearing, several clusters are significantly vulnerable to adverse impacts due to the effects from habitat fragmentation
- Loss of 714 acres of RCW habitat
- Potential cluster abandonment due to the scale and magnitude of this action
- Loss of potential cavity trees (trees 60 years and older) within the range footprint
- Sediment loading on RCW cavity tree roots for clusters D14-04 and D3-02 respectively, potentially causing tree mortality

Indirect effects of construction activities include:

- Potential for delayed cluster abandonment due to construction activities
- Seven clusters impacted by proximity to range clearing
- Potential for breeding vacancies to go unoccupied due to a dispersal impediment and therefore limiting the number of potential breeding groups.
- Potential for group fitness to be reduced due to isolation of impacted groups
- Potential for delayed mortality of trees adjacent to construction activities and staging areas (e.g. root compaction, inadvertently scaring tree boles, etc.)
- Potential for delayed sediment loading on RCW cavity tree roots

Because of the more complex nature of effects to RCWs resulting from operations and maintenance activities, brief descriptions of these effects are included for clarification. Direct and indirect effects of maintenance and operations activities include:

- As a result of DMPRC operations and maintenance, there are three active clusters (Clusters D3-02, K22-03, K12-01 that may be negatively impacted (assumes no protective actions). Based on the 30 April 2004 design and the further modifications to the design by Range Division, aforementioned clusters should not be negatively impacted.
- Live-Fire through Foraging Areas - Trees outside of the range footprint should remain in their present structure and density (excludes support areas) to act as a buffer for the surrounding area. Over time, trees surrounding the range footprint will incur some degree of mortality from fired ammunition either directly, or from ricochets as impacts occur not only between the firing points and the targets, but also in the area beyond the targets that ordnance will travel before resting.
- Increased Noise Levels
- Establishment of New Surface Danger Zones (SDZ) - a SDZ is that segment of the range area, which has restricted access during range usage to provide a safety buffer. Although this proposed range would require a new SDZ fan, existing fans from surrounding firing points traditionally cover all RCW clusters within the area. However, the proximity of adjacent RCW clusters to the proposed DMPRC

will be considerably closer and receive more intense noise events than from those firing points historically in the area. For this project the concern related to the SDZ will mainly be impacts to RCWs and area wide access.

- Loss of potential cavity trees
- Impacts to Other Training Areas - During operation of the DMPRC a segment of Buena Vista Road, all of Resaca Road, and a portion of Underwood Road will be temporarily blocked. These roads and others within the DMPRC SDZ would be available for use when training is not in process on the DMPRC and any time there is need for emergency access (i.e. wildfires) (personal communication, F. Weekley, 2004). Attending to wildfires will be hindered (i.e. potential mortality to RCW cavity trees and potential cavity trees) as well as standard RCW monitoring and management activities
- Disturbance may limit potential for occupation and reoccupation of otherwise suitable inactive clusters; however, birds have been known to reoccupy disturbed territories.
- Loss of RCW foraging habitat from live fire sheering trees and killing trees adjacent to the range clearing
- Although highly improbable, RCW mortality due to firing may occur. Over the last 10 years Fort Benning has no recorded incidences of RCW mortality of this type.

In the Biological Assessment to the USFWS, Fort Benning identified the need for incidental take of RCWs when active clusters and/or trees fall below minimum standards for habitat. Incidental take is defined as take of a Federally listed species that results from, but is not the purpose of, carrying out an otherwise lawful activity conducted by a Federal agency or applicant [50 CFR §402.02]. Incidental take may occur in at least three and up to seven active RCW clusters due to habitat loss and fragmentation from timber clearing, range construction, and maintenance, live fire through foraging habitat from range operations (before minimization efforts), live fire through nesting habitat from range operations (before minimization efforts), and wildfires from military training. *USFWS issued a Biological Opinion (BO) on July 23, 2004, that approves of all the proposed minimization in the BA, authorizes incidental take of up to seven active RCW clusters, and provides for reasonable and prudent measures. The BO also states that changes in the line of sight or other project changes that may effect RCWs or their habitat must be properly coordination with the USFWS within certain timeframes. The requirements of the BO are incorporated into this Mitigation and Monitoring Plan by reference and will not be restated here. However, those who oversee or conduct DMPRC planning, construction or operations should incorporate the minimization and monitoring requirements specified in the BO into their actions, including contractors and Contracting Officers responsible for any timber removal or erosion control BMPs, the Environmental Monitor, and others involved in ensuring that the terms of the BO are implemented.*

Mitigation

During evaluation of the optimal standard design, efforts were made to avoid potential RCW impacts due to tree/vegetation removal; however, vegetation removal cannot be avoided on the portions of the range complex needed for construction of support facilities, roads, trails,

targets, and berms. Tree removal for construction purposes will be kept to a minimum and will be addressed in the Section 404 Wetlands Permit and Timber Harvest Plan as part of the Environmental Impact Statement for the project. Prior to any tree removal activities at the site, the boundaries of work would be established and marked. Various aspects of the range were modified from the original design to avoid additional RCW impacts. For instance a calibration point was designed to project from the southeastern part of the range complex and jutting northeast, which would have caused potential impacts to cluster D13-02 because of habitat loss due to the related tank trail and maintenance road construction, plus the fragmentation of a considerable amount of RCW habitat. This calibration point was removed as of the March 2004 design due to environmental and cost concerns. Another example is that the support facility locations were revised to reduce the potential impacts to RCWs and the habitat.

Some basic minimization strategies have been devised by Fort Benning in consultation with the USFWS, and the applicable requirements and policies are detailed and explained in the BA.

Potential minimization strategies listed in the BA include:

- Work closely with project design team and construction contractor to moderate size and location of proposed clearings for infrastructure development (e.g. contractor staging areas)
- Cut timber in the RCW clusters outside of the RCW breeding season, which is April-July
- Intensively monitor appropriate clusters and respond to early warning signs that could lead to negative impacts
- Optional: Accelerate population growth and/or management strategies to include intrapopulation translocations for unoccupied recruitment sites that are otherwise suitable for RCWs

As compensatory *minimization*, Fort Benning proposes reclaiming 7 active RCW clusters in the A20 ordnance impact area. Further consultation with USFWS is required to concur with this proposal. Access to the previously inaccessible active clusters (i.e., those clusters that are on the borders of the A20 ordnance impact area that are not currently counted as part of Fort Benning's population and towards the Installation's recovery goal for the RCW) would be required. The Range Division and the EMD have agreed upon an A20 access plan and Fort Benning has sent verification to USFWS. Fort Benning must also conduct UXO clearance of portions of the A20 ordnance impact area. These are RCW clusters previously not under management due to UXO and range activities. Mitigation should also include augmenting the seven clusters in the A20 area with cavity inserts or drilled cavities if signs of cluster abandonment begins, which would be detected via monitoring. Internal (Fort Benning) translocation efforts for the seven clusters in the A20 area may also be conducted if cluster demographics indicate decline or abandonment. These actions may also be needed for the clusters in the vicinity of the range footprint.

Access to the RCW clusters and habitat remaining in the Alternative III area would also be required. The Range Division and the EMD created an access agreement to establish specific management opportunities/days and procedures. Protecting lands off the Installation that could sustain RCWs is an option that was considered; however, it was deemed infeasible due to the lack of existing lands proximate to the Installation that would provide the needed quality habitat; also timing and funding limitations entered into the decision.

Because current manpower is not sufficient to accomplish the additional management and monitoring required by the RCW minimization proposal, additional mandatory mitigation includes staffing at least two (2) new positions for RCW monitoring/management (with at least 7-year terms), to include management of the newly-available clusters in the A20 ordnance impact area and monitoring the clusters within the construction area and, when completed, the area surrounding the newly constructed DMPRC during its routine operations and maintenance. Two or more staff members dedicated to concentrated management and monitoring for the RCW clusters in A20 and the clusters surrounding the Alternative III footprint, as well as contributing to management and to monitoring at the population level, could be instrumental in ensuring that Fort Benning continues to move towards its recovery goal for the RCW. The optional mitigation of obtaining supplemental funding to accelerate and support projects associated with population growth strategies, including funding for longleaf pine under-planting and restoration, forest plan modeling, landscape scale fertilization plan, would also be important for achieving this goal.

Indications are that rounds would land in the DMPRC target and firing area or the K12 impact area; however, if range design or targetry changes, then any rounds found landing outside the DMPRC footprint or K12 area would include the construction of protective berms, if needed and considered effective, near selected targets to prevent rounds from impacting clusters within the remaining forested areas behind those targets. Other *minimization* measures include supplementing adversely impacted active RCW clusters with cavity inserts or drilled cavities and the translocation of birds if detrimental trends are observed. Training compartments within the SDZ should be burned at a minimum every three years to reduce potential for RCW and RCW cavity tree loss due to training related wildfires. Optional mitigation for consideration is the initiation of research on the potential effects of range operations on the area of influence on RCWs and their habitat. For example, research on the impacts related to RCW clusters and habitat in the SDZ would be beneficial.

f. State-Protected Species

Construction of the DMPRC and its associated support facilities at the Alternative III site may potentially impact approximately 249 Gopher Tortoise burrows due to the use of heavy equipment and the construction of new structures (targetry, roads, and buildings). Auburn University (AU) has surveyed a large portion of the preferred alternative and has visited all of the known burrow locations within the area. In addition, 1,176 acres of Gopher Tortoise habitat will be lost due to ground disturbances, timber harvest, target installations, and road construction, resulting in potential minor adverse effects to State protected species. Species that are dependent on gopher tortoise burrows for refuge will also be potentially adversely affected due to the loss of burrows. Gopher Tortoise populations may also become isolated from each other due to the construction of impassable structures, thereby fragmenting the ecosystem, reducing the quality and quantity of the appropriate habitat, and resulting in damage or mortality. Incidental loss of Gopher Tortoises and other state protected species may also continue to take place as these animals attempt to re-colonize the newly constructed training area.

Mitigation

Adherence to existing Installation management practices, as described in the INRMP, would help to minimize the potential adverse effects; however, some additional mitigation would

be required. Auburn University conducted a research project with oversight of EMD personnel that involved removing the gopher tortoises from the DMPRC footprint. In May 2004, a contract survey was completed to assist Auburn University's relocation efforts and an independent research project. Eighty tortoises were captured, tested for respiratory disease, placed in isolation pens, and were relocated to holding pens. The tortoises were relocated to holding pens constructed in training compartments F3 and D6 and released to their new locations. Started burrows, 3 feet long, were dug by hand in the new location. After the construction phase, gopher tortoises may re-inhabit the DMPRC and persist during operation and maintenance phase. Many other ranges on Fort Benning coexist with gopher tortoises; therefore, the only operation and maintenance mitigation proposed is coordination with EMD prior to any activities that could disturb gopher tortoises or their burrows.

g. Land Use

While the category of land use will remain training, which has in the past included tank and BFV maneuvering and training, the use would involve establishment of a long-term training asset with the DMPRC. This would restrict use by recreation and other non-compatible uses at least during training events, and no mitigation is proposed because training is an important mission of Fort Benning.

For encroachment monitoring, the Chief of EMD or the Environmental Monitor should routinely verify that community projects near the installation boundary have been properly coordinated with Fort Benning per the Georgia legal requirement. Coordination with the Real Estate Branch of the Engineering Division of *Directorate of Public Works (DPW)* will be required for this verification. Also, Fort Benning and the community are planning to participate in a Joint Land Use Study (JLUS), which could identify further measures to address encroachment concerns in the future, however initiation of JLUS is not considered mitigation for the DMPRC action.

The sustainable design criteria include measures to incorporate into the design that would mitigate some environmental concerns, such as efficient land use and construction of facilities in an environmentally friendly manner. Sustainable design may also be used to help develop a sustainable range land use, although the COE would oversee the implementation of the sustainable design efforts, which are mostly focused on facility rather than range design.

The Sustainable Project Rating Tool (SPiRiT) v. 1.4.1 was used to evaluate the proposed DMPRC design of September 2003. This evaluation was conducted to assess the sustainable elements that would be incorporated into the project.

There are seven categories of evaluation under SPiRiT:

- Sustainable Sites
- Water Efficiency
- Energy and Atmosphere
- Materials and Resources
- Indoor Environmental Quality
- Facility Delivery Process
- Mission

This Sustainable Design Evaluation (SDE) found that the proposed project would receive 35 SPiRiT points if the construction contractor implements the SPiRiT criteria. That would make the proposed DMPRC support facilities eligible for a Silver SPiRiT rating, exceeding the

Army goal of Bronze SPiRiT level of sustainable design. This level of sustainable design represents a positive long-term environmental product and would represent a positive precedent for future construction at Fort Benning and, perhaps, in the Columbus area. See the FEIS Appendix regarding the DMPRC SDE for a summary of the SPiRiT evaluation based on the current design. *The DMPRC design should include sustainable design in the construction specifications.* The final SPiRiT rating cannot be quantified until after construction has been completed and various components described below have been verified, *however progress checks will be made periodically.* The Construction Contracting Officer(s) and the COE will provide all monitoring and assessments of the sustainable design efforts that relate to environmental concerns to the Environmental Monitor or appropriate Fort Benning personnel.

h. Cultural Resources

Two sites within the footprint of the preferred alternative were declared eligible for the National Register of Historic Places (NRHP); these sites are considered Euro-American sites. Three cultural resources sites, though not directly affected by construction, are within the approach zone for the proposed helipad for the DMPRC. These sites near the helipad have pre-historic Native American Indian components that are potentially eligible for the NRHP.

Mitigation

The proposed mitigation measures will eliminate adverse effects to the historic properties, thereby resulting in a determination of no adverse effects to cultural resources sites for Alternative III. The proposed mitigation measures for historically eligible or potentially eligible cultural resources within the preferred alternative consist of avoiding direct effects to the resources. During the design process, the helipad was relocated to avoid construction impacts on one site with American Indian cultural components that are potentially eligible for the NRHP. Additionally, impacts to the potentially eligible sites outside the footprint were avoided by realignment of shots to ensure rounds will not land outside of the footprint or the K-15 dudded impact area. Careful target placement in combination with construction of berms to backstop both the rounds fired and the laser range finders will guarantee no impact to these sites outside of the range and target firing area.

The required mitigation measures for the historically eligible and potentially eligible sites consist of avoiding direct effects to the resources by prohibiting ground disturbing activities at the site and using cut-to-length method of timber harvest in the boundaries of the eligible and potentially eligible sites. Because 2 eligible sites are within the range and the target firing area and may be impacted by operations of the range, berms are required. Any and all artifacts found on the DMPRC area remain the property of the Army at Fort Benning and, if found, should be turned over to the Environmental Monitor and delivered to Fort Benning's Cultural Resource Manager (CRM) for placement in Fort Benning's curation facility. Construction specifications and site plans identify areas off limits to ground disturbance and placement of berm or earthen screen. The construction contractor's Environmental Protection Plan should include an Integrated Cultural Resources Management Plan (ICRMP). That plan would be reviewed and approved by the Chief of EMD or designee and the CRM before construction begins and should incorporate relevant Standard Operating Procedures from the Installation ICRMP.

Monitoring

The cultural resources will be demarcated prior to timber harvest to indicate the sensitive nature of the area and the requirement for specialized timber harvest procedures. Before construction, the demarcations will be reviewed and the construction contractor will be made aware of the susceptible nature of the area and any marking mechanisms damaged by timber operations should be repaired to keep construction activities only in designated areas. Any demarcations will be generic rather than identify the locations as cultural resource, to protect against damage while also preventing information release that could facilitate looting. At least monthly when not in the construction phase, and weekly during the construction phase, the Environmental Monitor will inspect the construction process to ensure procedures to protect specified cultural resources are being followed and report any discrepancies to the Chief of EMD. Operation and maintenance activities may result in additional potential effects to the cultural resources. To avoid this, Range Control must maintain the berms in a manner to ensure continued protection of the sites. Annual surveillance of sites outside of the footprint should be initiated by the CRM to ensure that actual impacts do not vary significantly from those anticipated.

If unknown cultural resources sites are discovered during the construction, or the operation and maintenance phase at the DMPRC site, the finding entity must notify the CRM immediately for further action. The CRM will make an eligibility determination after consulting with consulting parties, and eligible sites will require either (1) avoidance of impacts to the site's integrity through purposeful design of the DMPRC through movement of targets or construction of berms; (2) excavation to acquire the scientific and historic information inherent within its archeological and historical context; or (3) other mitigation as determined through consultation.

i. Noise

Fort Benning is preparing the Installation Environmental Noise Management Plan (IENMP) with the *US Army Center for Health Promotion and Preventive Medicine* (USACHPPM) assistance. When available, the IENMP will be available for public review. Also Fort Benning has installed four noise monitors and is beginning to monitor noise near the Installation eastern and northeastern boundaries. The Installation and community are planning to participate in a Joint Land Use Study (JLUS) that would provide some funds to assist local communities in their land use planning to help ensure compatible land uses are located near military training and weapons firing areas. Also see Land Use above for information about encroachment.

Mitigation

No new mitigation is planned because implementation of Alternative III would reduce noise off-Post when compared to current conditions. The preferred alternative location was proposed in part to reduce noise impacts. Whenever possible, the Public Affairs Office provides advance public notification through the local news media of any training operations that could cause undesirable noise impacts off-Post.

Monitoring

The noise monitors will record excessive noise impacts due to range operations nearby, including the new DMPRC. No increase in noise impacts are expected due to the DMPRC; however, the EMD and Range Division will monitor the noise readings as needed to determine if the DMPRC is contributing to off-Post noise concerns that were unexpected in the FEIS analysis. If additional noise impacts are found, mitigation will be considered in the IENMP or through the JLUS.

j. Air Quality

Efforts were made to avoid unnecessary air polluting activities during development of this project. Current EMD recommendations advise that burning of slash is not a preferred activity and should be avoided if possible. There are also Installation prohibitions on burning during ozone season.

Mitigation

Adherence to existing requirements to minimize effects to air quality includes spraying disturbed soils with water to control fugitive dust and/or Particulate Matter (PM) emissions. During construction of the DMPRC, disturbed soils would be sprayed with water when necessary to control fugitive dust and/or PM emissions. This mitigation measure would also be effective for unpaved roads in the area. Opacity of fugitive dust cannot exceed 20% during the construction phases, so the construction contractor will periodically make readings of the opacity to document compliance, and provide those to the Environmental Monitor. When feasible, tank trails and access roads should have either a graveled or paved surface, to further reduce fugitive dust and PM emissions. Covering truck beds carrying materials with the potential to become airborne dust will also help reduce adverse effects on air quality.

Prior to the initiation or construction on the site, a construction permit will have to be obtained from the GA EPD Air Protection Division, which will stipulate mitigation measures and/or BMPs that are needed for the project depending on the initiation of certain activities. For instance, certain requirements are inserted for concrete batch sites that may not otherwise be needed. The construction contractor must follow the requirements that apply to burning of slash vegetation, if that option is chosen. Open burning of vegetative material for the purpose of land clearing using an air curtain destructor may be possible provided the following conditions are met (from GA EPD, 2005):

- Authorization for such open burning is received from the fire department having jurisdiction over the open burning location prior to initiation of any open burning at such location
- The location of the air curtain destructor is at least 300 feet from any occupied structure or public road. Air curtain destructors used solely for utility line clearing or road clearing may be located at a lesser distance upon approval by the GA EPD Air Protection Division
- No more than one air curtain destructor is operated within a ten (10) acre area at one time or there must be at least 1000 feet between any two air curtain destructors
- Only wood waste consisting of trees, logs, large brush and stumps which are relatively free of soil are burned in the air curtain destructor
- The air curtain destructor is constructed, installed and operated in a manner consistent with good air pollution control practice for minimizing emissions of fly ash and smoke

- The cleaning out of the air curtain destructor pit is performed in a manner to prevent fugitive dust
- The air curtain destructor cannot be fired before 10:00 a.m. and the fire must be completely extinguished, using water or by covering with dirt, at least one hour before sunset

(c) Except for a reasonable period to get a fire started, no smoke the opacity of which is equal to or greater than 40 percent shall be emitted from any source of open burning listed in subsections (a) and (b) above, except as follows. Prescribed burning, slash burning, agricultural burning and acquired structure burning are not subject to the 40 percent opacity standard in this paragraph.

Monitoring

Opacity of fugitive dust cannot exceed 20% during the construction phases, so the construction contractor will periodically make readings of the opacity to document compliance, and provide those to the Environmental Monitor. The Contracting Officer(s) will ensure the contractors are in compliance with the air quality requirements by inspections on a periodic basis. The Environmental Monitor will also monitor all aspects of the DMPRC project that could impact air quality, such as the execution of road watering and the covering of truck beds. If any deficiency arises, or for guidance on other aspects of air quality, both the Contracting Officer and the Environmental Monitor will consultant with the Air Quality Program Manager. Operations which cause emissions to be released into the atmosphere which may result in air pollution may be required to install, maintain, and use emission monitoring devices, to sample such specific emissions; to make periodic reports on the nature and amounts of emissions and provide such other information; and to maintain such records as the EPD may prescribe so as to determine whether emissions from such operations are in compliance with the provisions of the Act or any rules and regulations promulgated there under. Records of information requested shall be submitted on forms in a format acceptable to and in the permit. The information obtained shall be retained for a period and shall be reported at time intervals to be specified in the permit. Records shall be kept current and be available for inspection (Georgia EPD, 2004).

k. Utilities

Fort Benning proposed routes for electric utilities that would minimize or avoid disturbance of sensitive environmental resources, but still must meet safety concerns, such as burying the electric line underground in areas where parachuters practice landings or other training operations. Fort Benning has considered using innovative methods to reduce utility infrastructure requirements to comply with Army Bronze sustainable design goals. No other mitigation is required to reduce utility infrastructure requirements to comply with Army sustainable design goals. The construction contractor would submit a SPiRiT Compliance Plan to the Contracting Officer that addresses how energy efficiency and/or renewable energy are used in construction of DMPRC support buildings.

Optional mitigation under consideration includes innovative energy efficiency solutions that provide the greatest potential for achieving the highest sustainable design values. Each 2.5% reduction in design energy usage provides one SPiRiT point (up to 20 points maximum). The

Installation would also consider use of on-site renewable energy and/or purchase of off-site green power (FEIS Appendix L).

l. Hazardous Materials

Efforts were made during the design process to avoid the use of hazardous materials if substitute materials were available. For instance, the use of concrete rather than creosote treated wood for use in berm construction was considered but discarded due to cost and maintenance concerns. No contractors or non-Federal entities will be authorized to store, use or dispose of hazardous wastes on Fort Benning.

Support facilities where hazardous materials would be stored or used must be designed to meet Spill Prevention, Control and Countermeasure (SPCC) Plan requirements to prevent or to minimize soil contamination. The SPCC will include the procedures, instructions, and reports to be used in the event of an unforeseen spill of a regulated substance. Monitoring of Petroleum-Oil-Lubricants (POL) areas is described under Water Quality Monitoring. Additional information that should be included is detailed in the project specifications.

5. Enforcement

The proponent or lead agency, the Army and Fort Benning, is ultimately responsible for implementing all mitigation requirements, but other entities carrying out the mitigation also have responsibilities. Contracting Officers are responsible for monitoring contractor compliance with all mitigation requirements for timber harvest, construction, etc. He/she would inform Chief of EMD and ELS, OSJA of any noncompliance with mitigation commitments. The Contracting Officers would use all contractual mechanisms to ensure that the contractors conduct mitigation and monitoring as required. During operation and maintenance phases of the proposed DMPRC, any noncompliance with mitigation requirements would be coordinated with Chief of EMD and coordinated with the Chief of Range Division for resolution. Actions to resolve noncompliance will be taken in a timely manner and may include: supplemental NEPA analysis; adjustment to range operations; notice to SERO and/or regulators; investigation; administrative or disciplinary actions if military or civil service personnel are involved; civil or criminal actions; and other actions as appropriate to the situation.

Most state and Federal regulators have several potential courses of action if violations of environmental laws or regulations are found: issue a notice of violation, impose fines, or seek criminal prosecution. Violations may include failure to maintain proper records and failure to implement BMPs, etc.

6. Environmental Monitoring Report

Fort Benning will prepare an environmental monitoring report in accordance with 32 CFR 651.15(l) to help determine the accuracy of impact assessment and make any necessary adjustments in the mitigation measures and/or military operations as practicable. The Installation may integrate this DMPRC environmental monitoring report with any EMS monitoring report if feasible and useful. Otherwise, EMD would prepare a separate monitoring report at least annually for as long as mitigation is required. This environmental monitoring

report will be provided to Range Division and will also be available upon request to the public and stakeholders to provide status.

References

Dial Cordy and Associates Inc. 2004a. Wetland and Stream Impact Assessment Report for the Digital Multi-Purpose Range Complex, Fort Benning, Georgia. Prepared for Savannah District Army Corps of Engineers, Savannah Georgia.

Dial Cordy and Associates Inc. 2004b. Wetland Mitigation Siting Analysis for the Digital Multi-Purpose Range Complex, Fort Benning, Georgia. Prepared for Savannah District Army Corps of Engineers, Savannah Georgia.

Dial Cordy and Associates Inc. 2004c. *Clear Creek* Mitigation Plan , Fort Benning, Georgia. Prepared for Savannah District Army Corps of Engineers, Savannah Georgia, *June 2004*.

Fifield, Jerald S. 2001. Designing For Effective Sediment and Erosion Control on Construction Sites, Forester Communications, Santa Barbara, CA.

www.air.dnr.state.ga.us/sspp/otherforms.html Georgia Department of Natural Resources Environmental Protection Division, Air Protection Branch, February 2004.

PolyEngineering, Inc., 60% Submittal, Specifications, Digital Multipurpose Range Complex, Fort Benning Georgia, July 2003.

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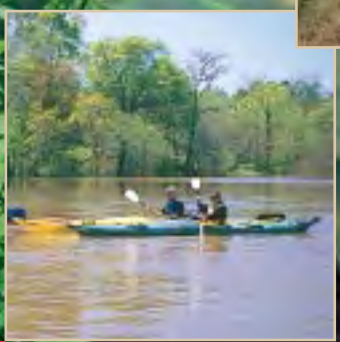
APPENDIX D

GEORGIA'S BEST MANAGEMENT PRACTICES FOR FORESTRY MANUAL

NOTE: THIS APPENDIX CONTAINS EXCERPTS FROM GEORGIA'S BMPS FOR FORESTRY MANUAL THAT ARE RELEVANT TO THIS SUPPLEMENTAL EA (AND ARE HIGHLIGHTED BELOW).

FOR FURTHER INFORMATION REFER TO THIS WEBSITE: www.gfc.state.ga.us/ForestManagement/documents/GeorgiaForestryBMPManual.pdf

Georgia's Best Management Practices



For Forestry

4.3.2 Practices to Avoid For Skid Trail Stream Crossings

- Stream crossings whenever possible.
- Use of fords.
- Blocking stream flow.
- Blocking the migration of aquatic organisms.
- Using *sloughs* as *skid trails*.
- Random crossings with mechanized equipment.
- Leaving logs or stems in stream crossing.

4.4 RUTTING

During harvesting, some soil disturbance and rutting is inevitable, due to the mechanized nature of most harvesting systems. Excessive or inappropriate rutting can impact water quality when it causes *sediment* or silt-laden runoff to enter a stream or when it interrupts or changes the natural flow of water to the stream. Rutting that results in the discharge of *sediment* to a stream may violate Federal and State water-quality laws.

4.4.1 BMPs to Minimize Rutting

- Use low ground pressure equipment, logging mats, or other techniques on saturated soils where practical.
- Minimize the grade of *skid trails*.
- Follow the BMPs for *skid trails* listed in Section 4.2.

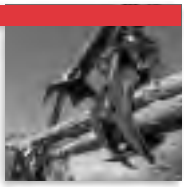
Example of soil degredation and water channelization from excessive rutting.

4.4.2 Practices to Avoid For Rutting

- Facilitating the potential movement of *sediment* to a stream or water body.
- Breaking down the integrity of a stream bank.

4.5 EQUIPMENT WASHING AND SERVICING

Improper equipment washing and servicing can introduce hazardous or toxic materials to the harvest site, which can affect water quality.



4.5.1 BMPs for Washing and Servicing Equipment

- Wash and service equipment away from any area that may create a water quality hazard, especially within SMZs and along *ephemeral areas*.
- Dispose of oils, lubrications, their containers and other wastes according to local, State and Federal regulations.
- Remove all used tires, batteries, oil cans, and trash from logging operations before leaving the site.
- Clean up and/or contain fuel and oil spills immediately. Report any chemical spills of twenty-five gallons or more of fuel and oil to soils, and spills of fuels or oils into waterways which produce visible sheens to the GA EPD Emergency Response Program (1-800-241-4113).

4.5.2 Practices to Avoid When Washing and Servicing Equipment

- Washing or servicing equipment where it could affect water quality.

4.6 PROTECTING STREAMSIDE MANAGEMENT ZONES (SMZs) DURING HARVESTING

4.6.1 BMPs for Harvesting Streamside Management Zones

In addition to the BMPs listed in Section 2.1:

- Use techniques that minimize soil disturbance, such as backing trees out with machine, using low ground pressure equipment, using equipment with booms or cable winch.
- Maintain the integrity of stream banks.
- Minimize the exposure of mineral soil by spreading logging slash and using it to drive over.

A well-protected SMZ.

4.6.2 Practices to Avoid When Harvesting Within SMZs

In addition to the avoidance guidelines listed in Section 2.1:

- Using trees or de-limbing gates in the SMZ.
- Leaving tops in stream *channels*.
- Rutting.

4.7 PROTECTING WETLANDS DURING TIMBER HARVESTING

4.7.1 BMPs for Harvesting Forested Wetlands

In addition to the BMPs listed in Section 2.2.11, pg 13:

- Plan the timber harvest for the dry season of the year when possible.
- Use site-specific equipment and methods to minimize water quality impacts, including high-flotation, low-pressure harvesting equipment, shovel logging, or cable yarding.
- Concentrate *skid trails* and use logging slash, mats or other techniques to minimize soil compaction and rutting.
- Use practices conducive to rapid *regeneration*.
- Follow Federally mandated stream and wetland crossings (See Section 3.3.1, pg 19).

APPENDIX E

DMPRC WATERSHED ANALYSIS

DMPRC Watershed Analysis
Robert J. Anderson, Army Environmental Command
7 February 2008

Vegetation interacts strongly with soil on watersheds to produce a rainfall runoff regime. Forested vegetation catches some precipitation in its canopy and the leaf fall below it, thereby reducing the rainfall impact energy. The ground cover also increases water infiltration. Rainfall on forested land results in less surface runoff than from herbaceous vegetation (NRCS, 1963).

The presence of ground cover also slows the velocity of water running over watershed uplands before it reaches streams (Chow, 1964). Removal of forest vegetation and reductions in ground cover increase storm runoff volume and the runoff rates across uplands and in stream channels. These direct effects are moderate in intensity and moderate in extent.

Although herbaceous vegetation allows a large proportion of runoff, it is effective in controlling surface erosion because it protects soil from raindrop impact and its roots are highly effective at holding soil in place mechanically. Vegetation clearing produced little change in total suspended sediment (TSS). Base flow TSS concentrations on Bonham Creek were less than 10mg/l greater after tree cutting. Sally Branch and Bonham Creek Tributaries also produced little (0-5) mg/l) base flow TSS increases (SERDP, 2007).

After construction started during phase two, stream TSS concentrations at base flow increased noticeably. TSS concentrations were up to 35 mg/l greater on Bonham Creek. Bonham Creek Tributaries produced up to 85 mg/liter higher TSS concentrations. Sally Branch TSS concentrations never exceeded 10 mg/l differences between sample sites above and below the DMPRC. The differences in TSS concentrations are greatest in areas that were disturbed (Fort Benning, 2007).

In April 2007, after the start of stabilization efforts, base flow TSS concentrations moderated. TSS levels in Bonham Creek Tributaries are less than 35mg/l over pre-disturbance levels. Increases in TSS in Bonham Creek were about 10 mg/l and Sally Branch base flow TSS increases were less than 10 mg/l over base flow conditions.

Bonham Creek increases in storm related TSS concentrations remained stable from February 2005 through June 2005, and ranged from about 50mg/l at storm peak to about 200 mg/l. Storm runoff and sediment concentrations increased after construction grading started in the November 2005 sample. The post construction runoff events have higher flow peaks that include effects of hydrology changes. Bonham Creek TSS concentrations from November 2005 and later range from 1000 mg/l to 8000 mg/l. is this good or bad- is there some

sort of baseline, or number regulated by an agency that would say these numbers exceed a threshold, or are below a threshold, etc??

Storm related sediment concentrations on Bonham Creek Tributaries show large increases after construction. Peak TSS concentrations from Jan 2004 through June 2005 are approximately 200 mg/l. From August 2005 through June 2006, peak TSS concentrations vary from 2000 to 8000 mg/l. In April 2007, after considerable mitigation measures were applied, the peak TSS concentrations equaled 1500mg/l (SERDP, 2007),

The 2007 sample, while not conclusive by itself, infers that the soil disturbance and TSS storm concentrations are moderating (decreasing?), but remain high. Field observations indicate that moving armor targets M3 and M4 produce sediment that reaches Pine Knott Creek during storm flows. Very localized sediment deposits result, but most move down the stream and through the watershed.

In addition to the sediment generated by upslope sheet erosion, DMPRC stream channels also showed erosion associated with construction activities. Studies that measured multiple cross-sections on three streams (Mullholland, 2007) showed that streams did not accumulate sediments and in fact down cut and eroded laterally. However, the Bonham Tributaries did accumulate sediment where roads and construction contributed very large sediment amounts. The hydrologic alteration of the watershed with flashy flows, high velocity and increased runoff volumes combined to directly affect the stream environment negatively. Channel widening tends to recover slowly.

APPENDIX F

TIMBER HARVEST AT DMPRC
MEMO FROM U.S. ARMY CORPS OF ENGINEERS

CESAS-RD-C (ALBANY) 3 December 2007

MEMORANDUM FOR: D. Craig Taylor Director of Public Works, IMSE-BEN-PWE-C, Ft Benning

SUBJECT: Timber Harvest at the Digital Multi-Purpose Range Complex (DMPRC)

1. I refer to the memorandum dated 20 November 2007, concerning the cutting of trees in the wetland areas to facilitate views required for stationary cameras on the majority of the DMPRC, Fort Benning, Georgia

2. I have reviewed the information which was submitted and determined that the cutting of trees in the wetlands located in the DMPRC would not require Department of the Army authorization pursuant to Section 404 of the Clean Water as long as the stumps are not removed and low impact methods of harvest are used.

3. Should you have any questions concerning this matter, you may call me at (229) 430-8566.

Thomas C. Fischer
Senior Project Manager
Albany Field Office

To: Env. Div