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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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

Jonathan Neufeldt
Wildlife Biologist
Conservation Branch
US Army Infantry Center
Fort Benning, Georgia

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)

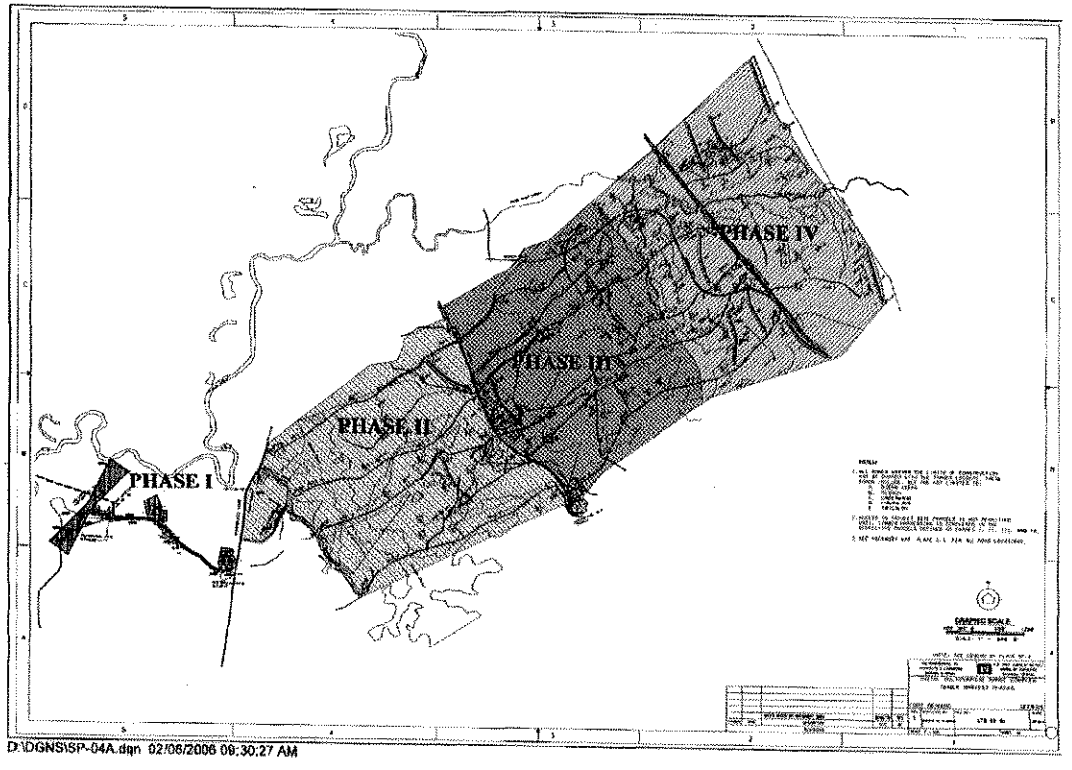
This table includes only the groups/individuals that could potentially have flown across the DMPRC when dispersing from one cluster to the next.

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

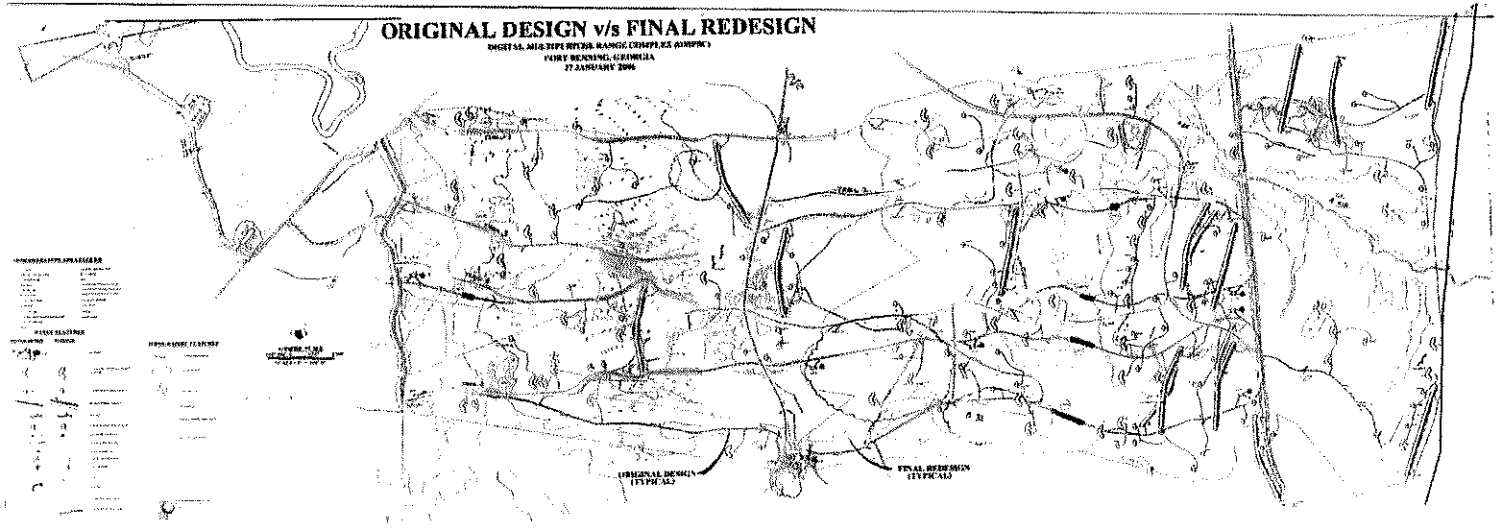
This figure shows the path of six potential dispersals across the DMPRC. The individuals that could have dispersed across the DMPRC are listed in bold lettering in Table 6.

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

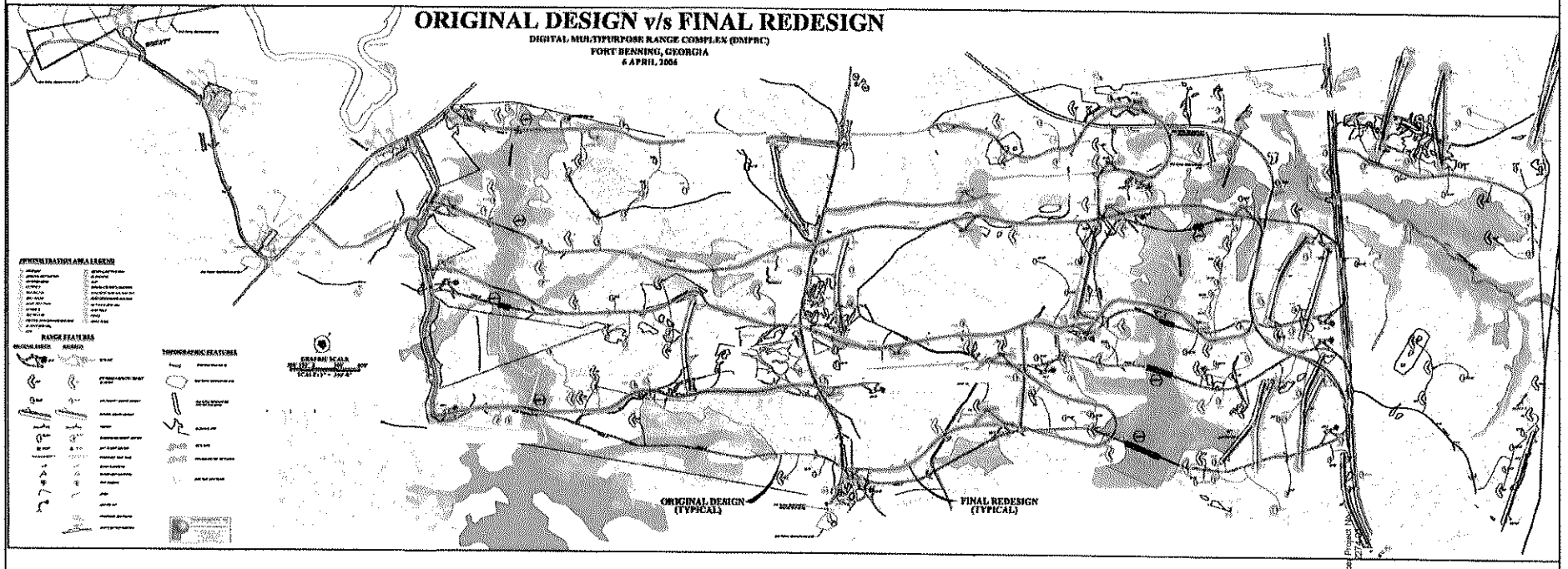
Slide 27: List of work to be conducted after startup of DMPRC live fire training.



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