Final Environmental Impact Statement
Digital Multi-Purpose Range Complex
Fort Benning, Georgia

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SUMMARY FOR THE FINAL ENVIRONMENTAL IMPACT STATEMENT (FEIS) FOR THE FORT BENNING DIGITAL MULTI-PURPOSE RANGE COMPLEX (DMPRC)

I. Summary of the Purpose and Need, Proposed Action, and Alternatives

A. Purpose and Need

Fort Benning proposes to construct, operate, and maintain a Digital Multi-Purpose Range Complex (DMPRC), which would provide a state-of-the-art range facility, meeting the Installation's training needs for conducting advanced gunnery exercises in a realistic training environment. The DMPRC would provide training facilities for the Bradley Fighting Vehicle (BFV), the Abrams M1A1 Tank System (Tank), and currently developing future systems (such as the Stryker), providing the capability for both active and reserve components to train to required standards under realistic conditions. Fort Benning provides training facilities for several Forces Command (FORSCOM) units and is home to the following units that conduct training on the Installation: the 4th Ranger Training Brigade, 29th Infantry Regiment; 11th Infantry Regiment; Henry Caro Noncommissioned Officer Academy; Infantry Training Brigade; Basic Combat Training Brigade; and Physical Fitness School. In addition, Fort Benning hosts a number of tenant units that conduct much of their training at the Installation, including the 3rd Brigade/3rd Infantry Division (Mechanized), the 75th Ranger Regiment, the 36th Engineer Group, and the Western Hemisphere Institute for Security Cooperation. The missions of these various units are diverse and consist of varying combinations of mobile mechanized (tracked/wheeled military vehicle) and infantry task forces with organic armor, mechanized infantry, field artillery, and combat engineer assets utilizing both mounted (movement by tracked vehicle) and dismounted (movement by foot) elements for offensive and defensive engagements.

BFV crews and Tank crews must train and qualify at different skill levels (gunnery tables) that are designed to develop and test the proficiency of individual, crew, and platoon (up to four vehicles) techniques. The training in each gunnery table is intended to imitate as closely as possible the typical battlefield tasks under realistic conditions. Army Field Manuals set forth the gunnery training standards by these gunnery tables, starting with non-firing exercises at Table I and progressing to advanced qualification exercises in Table XII. Existing facilities at Fort Benning do not currently meet training standards for BFV and Tank training for "full" Table XII of gunnery qualification. Specifically, the existing range targetry is antiquated and replacement parts must therefore be fabricated on site or "cannibalized" from other systems when repairs/replacements are needed; the natural terrain features of Hastings Range impedes the "line of sight" for Tanks and/or BFVs attempting to lock onto targets and therefore hampers training effectiveness and efficiency; the nearness to the Installation boundary restricts training due to noise; and the lack of digital components on the existing range delays the After Action Review (AAR) or analysis of the training exercise.

B. Description of the Proposed Action and Alternatives:

Proposed Action: Fort Benning proposes to construct, operate, and maintain a DMPRC that incorporates the latest technology and provides realistic advanced gunnery training. The optimal standard DMPRC design, per Training Circular 25-8, would provide such a facility and would consists of the construction of a 2,500-by-8,000 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 of the two action alternatives. The range is made up of three lanes approximately 250 meters wide each and would use an ordnance impact area. Rounds are non-explosive training rounds. Most of the

rounds would be stopped either by berms, terrain, or trees, but some may be diverted from their course and into the ricochet area. The optimal standard DMPRC contains up to 140 stationary armor targets, 45 hostile fire simulators, 39 infantry moving targets, four obstacle breach sites, two defense trenches, 12 two-man foxholes, and 39 defilade positions. A calibration point (area used for sighting weapons) would also be needed at the DMPRC or elsewhere. The stationary targets are implanted into the ground; the moving targets use a rail system similar in appearance to the rails utilized by modern trains. If this optimal standard design were placed on either of the two action alternatives (Alternatives II and III), there would be as many as 22 water crossings (average dimensions: 350 feet long by 29 feet wide each) in varying locations utilized by Tanks/BFVs during training. Trenches and/or berms would be placed in front of the targetry to protect the equipment. Tank trails and/or maintenance access roads would be placed to facilitate rapid maintenance and repairs of range targetry and facilities.

Support facilities associated with the DMPRC would be located on an adjacent area and typically consist of a Control Building, an AAR building, latrines, bivouac pads, two general instruction buildings, an operations and storage building, a central maintenance building (for target maintenance only), an ammunition breakdown building with ammo dock, a bleacher enclosure, a covered mess (dining area), vehicle holding and maintenance areas, a well-house and water distribution/collection/treatment system, and a secondary power and data distribution system. In addition, a helipad would be needed for emergency evacuation purposes. The DMPRC would include a Surface Danger Zone (SDZ) that is inaccessible during operation of the range and is a factor for range siting and design. The SDZ is a temporary safety boundary that surrounds the firing range and impact area portions of a range and provides a buffer area to protect personnel from the non-dud producing rounds that may be ricocheted during operation of the range (see FEIS Figure 3 and Section 3.2.13.2 for additional detail). The area comprising the SDZ would be closed to all unauthorized personnel during each training exercise on the range.

During the alternative development and review process, efforts were made to avoid potential environmental impacts due to tree/vegetation removal; therefore, additional measures were added into the proposed action. The portions of the range complex marked for construction of support facilities, roads, trails, targets, and berms would be cleared of vegetation and debris. For Line of Sight (LOS) areas that require vegetation removal so that Soldiers can see the targets from the firing points, only selective tree removal would occur in wetland areas and adjoining stream buffers (approximately 25 feet on each side of the stream). Shorter-growing species and stumps in wetlands would not be removed, allowing as much vegetative cover as possible to remain. Tree removal would occur in accordance with the Timber Harvest Plan for the DMPRC and in two phases, removing the marketable (saleable) timber first and then removing the non-marketable vegetation (smaller trees and shrubs) and logging slash (limbs/debris remaining after timber harvest). Prior to any tree removal activities at the site, the boundaries of work would be established and marked. Options to deal with the debris resulting from the tree removal include: using slash for on-site brush barrier berms; chipping debris and moving off range for use as fuel/firewood; hauling off site to a non-Federal landfill; grinding debris in place; or piling debris in trenches and burning (in compliance with applicable Federal and/or state regulations).

Other actions connected to the construction, operation, and maintenance of the proposed DMPRC include: a contractor staging area for the construction of the DMPRC; acquisition of borrow or “fill” materials (if needed) for use during construction of the DMPRC and future maintenance; haul routes for construction related materials if required; and utility service (including connections to existing electric power and communication lines). A batch plant (concrete mixing site) may also be utilized during construction.

Because the advanced Tank and BFV gunnery training would be conducted at the new DMPRC, the proposed action also includes adjustment of training on existing ranges. If built, the basic and intermediate Tank and BFV training would move to Carmouche Range. Hastings Range would be dedicated to the training of vehicular mounted weapons systems and dismounted training scenarios utilizing BFVs and developing future technologies, such as the Stryker; training on Tanks would cease at Hastings Range under normal circumstances; however, future range upgrades and projects may include renovations that would result in future Tank training at Hastings Range. Ruth Range would continue to serve as a "feeder range" for 0.50 Caliber and MK19 weapons. Routine range maintenance of range targetry and roads would be in accordance with established procedures.

Alternatives II and III would implement the Proposed Action description with reduced range footprints, but in the locations indicated. Deviations from the Proposed Action description for those two alternatives are noted below. The No Action Alternative, Alternative I, is also described.

Alternative I: "No Action / Status-Quo": This alternative does not support digitized training, since Hastings Range can only support modified advanced gunnery training due to deficiencies in the facilities; therefore, it does not meet the purpose and need of the proposed action. Alternative I is presented to provide a comparison with the action alternatives, as required for compliance with the National Environmental Policy Act (NEPA). Under this alternative, a DMPRC would not be constructed at Fort Benning; however, units would continue to conduct gunnery tables on existing ranges. Basic and intermediate Tank and BFV tables would be fired on Carmouche Range and all advanced tables would be fired on Hastings Range. These exercises may be conducted in either day or night phases. After completion of the basic and intermediate gunnery exercise, the units and all needed equipment (to include Tanks and/or BFVs) may occasionally opt to transport from Fort Benning to existing ranges at Fort Stewart to conduct the remainder of advanced gunnery training.

Support facilities for Hastings Range are located on an adjacent complex and consist of a Control Building, latrines, bivouac pads, general instruction buildings, an operations and storage building, a central maintenance building (for target maintenance only), an ammunition breakdown building with ammo dock, a bleacher enclosure, a covered mess, vehicle holding and maintenance areas, a well-house, and a secondary power and data distribution system. In addition to the range area and the support facility complex, Hastings Range has an SDZ that is inaccessible during operation of the range.

Alternative II: "Compartment K21" (Alternate Site): Under this alternative, an approximately 1,800 acre DMPRC would be constructed on Fort Benning in the K21 area, allowing troops to conduct all Tank and BFV Tables and related gunnery training. Basic and intermediate Tank and BFV tables would be shot at the existing Carmouche and Cactus ranges, with advanced tables conducted on the newly constructed DMPRC. Hastings Range would be dedicated to the training of vehicular mounted weapons systems and dismounted training scenarios utilizing BFVs and developing future technologies such as the Stryker; training on Tanks would not continue to occur on Hastings Range under normal circumstances; however, future range upgrades and projects may include renovations that would result in future Tank training at Hastings Range. The location for this alternative is less than 0.25 miles northeast of Buena Vista Road and less than 0.25 miles west of Cactus Road and would utilize an existing dudded impact area, K15. This alterative utilizes a range footprint dimension similar to that of Alternative III, although a specific design has not been developed for this alternative. If this alternative were chosen, avoidance of environmentally sensitive areas, such as wetlands, protected species habitat, and cultural resources sites, would be considered as part of the design

process. Efforts would also be made to avoid siting the range targets and equipment in areas with environmental concerns and the design may be modified to reduce the standard number of water crossings, similar to Alternative III. The dimensions of the range and target firing area could vary from approximately 1,800-2,000 acres; the location of the support facilities and specific target and firing positions are not currently identified. Also a standard SDZ is currently being used because a more specific SDZ cannot be generated without knowing specific target and firing positions. If this alternative is selected as the Preferred Alternative during the NEPA process, a design would be developed and additional NEPA evaluations of the specific design would be undertaken. The use of a footprint that is comparable in size to the Alternative III footprint is reasonable and gives a sound basis for comparing potential environmental impacts and mitigation of Alternative II with Alternative III.

Alternative III: "Compartment D13" (Preferred Alternative): Under this alternative, the DMPRC would be constructed on Fort Benning in the D13 area, using the parameters and processes as described in the Proposed Action and Alternative II. This alternative also consists of a modification to the standard optimal design, due to operational and environmental constraints at the site of the preferred alternative and the site design and analysis process. It would consist of the construction of an approximately 1,800-acre DMPRC containing a firing range made up of three lanes approximately 250 meters wide each and utilization of an existing dudded impact area, K15. As of the 30 March 2004 design, this alternative contains fewer targets than listed under the Proposed Action. The DMPRC would contain 35 stationary infantry targets, 11 evasive moving armor targets, 55 stationary armor targets, two defense trenches with two-man foxholes, and 19 defilade positions (Tank and BFV hiding places). 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 BFVs will use four low-water crossings (150-350 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. These lanes (and their associated water crossings) would also be used by maintenance vehicles for routine range repair and maintenance. Tree removal under this alternative would consist of approximately 1,500 acres, with up to 300 acres of trees remaining within the DMPRC. Trenches and/or berms will be placed in front of the targetry for protective measures and Tank trails and/or access roads will be selectively placed to facilitate rapid maintenance and repairs, as needed. One helipad will also be constructed, for use as an emergency evacuation site. The approximate dimensions of the range and target firing area are 4,500 meters long by 1,500 meters wide, not including support facilities, which are discussed below.

The support facilities would be located to the southwest of the DMPRC complex and just off of Hourglass Road. Support facilities would be located on approximately 20-acres and consist of an AAR building, two latrines (with separate 70-by-150-foot tile fields), eight bivouac pads, two general instruction buildings, an operations and storage building, a central maintenance building (for target maintenance only), an ammunition breakdown building with ammo dock, a bleacher enclosure, a covered mess, vehicle holding and maintenance areas, a well-house, and a secondary power and data distribution system. A calibration firing point was in the September 2003 design and was connected to the DMPRC; however, to reduce environmental impacts and due to operational restraints, it was deleted from the 30 March 2004 design. The control tower was also deleted from the 30 March 2004 design, since it is not needed without the calibration point. The contractor staging areas, which will be used by the construction contractor for office, equipment, and material storage space, will be located adjacent to the footprint of the range in the D1 and D14 training compartments, as of the 30

March 2004 design. Each staging area will be enclosed by a fence and not accessible to anyone other than construction and Installation personnel. In addition to the range area and the support facility complex, the DMPRC would include a SDZ that is inaccessible during operation of the range. The SDZ area would be closed to all unauthorized personnel during training exercises on the DMPRC.

Alternatives Considered but Not Evaluated in Detail:

Initial internal planning for the DMPRC began in 1997 with an analysis of all potential locations for a DMPRC on Fort Benning. Fort Benning then scrutinized the several feasible sites against initial concerns or criteria, allowing Fort Benning to determine which ones were viable and most reasonable alternative locations on which to build the range complex. The five screening criteria for range siting were: earth-moving requirements, noise levels, cultural resources sites, the Federally Endangered red-cockaded woodpecker (*Picoides borealis*) (RCW), and conflicts with other training missions or ranges on the Installation. During this initial location screening, use of an existing ordnance impact area was preferred. This screening process identified six possible alternatives including "No Action". For more information about these six alternatives refer to the Final Environmental Impact Statement (FEIS) Section 2.3.2 and Figure 7. As a result of further internal environmental evaluation, three action alternatives (sites 1, 2, and 5) were eliminated from further review due to probable excessive environmental impacts and the failure to meet the purpose and need for the project. Two of the action alternatives (sites 3 and 4) did meet the purpose and need for the project, had the lowest impact scores on the decision matrix, and were selected for further review and analysis. These two alternatives are presented and discussed in the FEIS for the DMPRC as Alternatives II (Site 4) and III (Site 3). The potential use of existing ranges at Fort Stewart, GA, was also considered, but was eliminated from further detailed review after preliminary analysis deemed it unfeasible and unable to meet the purpose and need for the project.

II. Results of the FEIS

A. Summary of Major Issues, Potential Impacts and Proposed Mitigation

During the scoping process and preparation of the FEIS, several major issues for study were identified, including soil erosion control and sedimentation concerns, wetland and streambank impacts, potential impacts and mitigation for Federally or state listed species (the RCW and gopher tortoise in particular), removal of vegetation, noise and safety related to range operations, and others. These issues were all considered in the FEIS as indicated below. Mitigation for each alternative is also discussed below and listed in Table S-1.

Alternative I, "No Action/Status Quo," would have minimal adverse effects on the natural and human environment at Fort Benning. Although temporary minor adverse effects to soils, water quality, and Unique Ecological Areas (UEAs) do occur at Hastings Range, the Alternative I location, these effects are mitigated through compliance with existing Federal and state laws and regulations and through the implementation of Installation policies, guidelines, and, where applicable, best management practices (BMPs). Minor adverse impacts to wetlands, streambanks, Federally protected species, state-protected species, migratory birds, and air quality also occur, but are minimized through these same processes. Moderate adverse effects to land use resulting from noise are ongoing at this location, due to its use as an active Tank and BFV gunnery range. Significant adverse effects to noise also occur at this area; while no "physical" mitigation (such as monitors or barriers) is currently in place for this adverse effect, the Public Affairs Office (PAO) routinely submits notices to Fort Benning personnel, residents, and the public for larger-than-normal training events where noise levels are predicted to be more obtrusive than the existing levels. Noise complaints are also managed by the PAO. There would

be no adverse effect on socioeconomics, cultural resources, utilities, public health and safety, hazardous materials, or transportation under this alternative. Cumulatively, this alternative would not result in any incremental adverse effects on most of the natural and cultural resources; however, significant cumulative effects as a result of noise are predicted. This alternative does not meet the purpose and need for advanced gunnery training.

Alternative II, "Compartment K21 (Alternate Site)," would have minor adverse effects to water quality, state protected species, migratory birds, land use, noise, air quality, and hazardous materials and wastes. Effects to water quality would be mitigated through implementation of mitigative measures required through the associated National Pollutant Discharge Elimination System (NPDES) Permit and by implementation of the Spill Pollution Control and Countermeasures (SPCC). Any effects on state protected species would be mitigated through relocation of the gopher tortoises prior to initiating any earth-moving activities; and effects to air quality would be mitigated through adherence to the Georgia Air Regulations and any construction and operation permits for the DMPRC. Moderate adverse effects are predicted for soils and UEAs in the area. Effects to soils would be mitigated through implementation of an Erosion Soil Pollution Control Plan (ESPCP). Effects to UEAs would also be minimized through implementation of established Installation policies and guidelines. Significant adverse effects would occur under this alternative for vegetation, wetlands and streambanks, and Federally protected species. Significant effects on vegetation would also occur as a result of earth-moving activities and tree clearance for the DMPRC and its associated support facilities; however these effects would be reduced by complying with the ESPCP and its associated Best Management Practices (BMPs) and through adherence to protocols established in the Timber Harvest Plan for the DMPRC. Mitigation for wetlands would be through compliance with the 404 Clean Water Act Permit and the ESPCP for the DMPRC and through either restoration of wetlands on Post or through the purchase of off-Post credits. Mitigation for streambanks would be through the use of BMPs for soil erosion and the restoration of streambanks outside of the construction area. Mitigation for Federally protected species would occur through adherence to guidance obtained through consultation with the United States Fish and Wildlife Service (USFWS); as of this time, protective berms will be placed in locations suitable to protect/prevent impacts to RCW cluster trees, additional RCW management staff will be hired, and recruitment clusters will be established, with the understanding that additional mitigation may also be required. Temporary minor positive effects are predicted for socioeconomics and minor positive effects are predicted for utilities, primarily due to the fact that, respectively, the construction of the DMPRC would provide additional job sources, and bring utilities access to previously unconnected portions of the Installation. There would be no adverse effect on cultural resources, public health, and safety or transportation under this alternative. Cumulatively, this alternative would result in no incremental adverse effects on water quality and public health and safety; minor incremental adverse effects on soils and vegetation, wetlands and streambanks, and Federally and state protected species, and significant incremental adverse effects on UEAs and noise. This alternative would result in more potential adverse effects than Alternative III. This alternative meets the purpose and need for this action.

Alternative III: "Compartment D13 (Preferred Alternative)" would have a minor adverse effect to water quality, UEAs, state protected species, migratory birds, land use, air quality, noise, and hazardous materials and wastes; effects would be mitigated as described under Alternative II. Moderate adverse effects are predicted for soils and wetlands; effects for soils would be mitigated as described under Alternative II. Effects for wetlands would be mitigated through use of low impact forestry management practices, selective cutting within wetland areas, and mitigation of direct impacts required under the Section 404 permit process. Significant

adverse effects would occur to vegetation and streambanks, Federally protected species; effects would be mitigated as described under Alternative II. Fort Benning is proposing to mitigate wetlands and streambanks impacts by restoration in another area on the Installation; further coordination and permitting actions are required prior to finalizing this wetlands and stream restoration plan. Specific mitigation for this alternative is also detailed in the DMPRC Mitigation and Monitoring Plan (FEIS Appendix J). Temporary minor positive effects are predicted for socioeconomics and minor positive effects are predicted for utilities. There would be no effect on cultural resources, public health and safety, or transportation under this alternative. Cumulatively, this alternative would result in no incremental effects on water quality and public health and safety; minor cumulative adverse effects are predicted for soils and vegetation, wetlands and streambanks, UEAs, and Federally and state protected species; and significant incremental adverse effects on noise. This alternative would result in less adverse potential effects than Alternative II and more adverse potential effects than Alternative I. This alternative meets the purpose and need for this action.

B. Unresolved Issues and/or Potential Major Controversies

During the initial internal Army and public scoping processes, no issues of Army-wide concern were identified; however a few major issues of community concern were identified, including noise impacts in adjacent communities, and safety of range operations. The current noise impacts are primarily based upon a Zone III noise level, which is normally incompatible with land uses involving sensitive receptors, crossing into Marion County rural residences and communities. Noise modeling was conducted and results presented in this FEIS, indicating that operation of a DMPRC at either Alternative II or Alternative III would move Zone III within the Installation boundary and generally cause less noise annoyance to communities near the north and eastern boundary. Cumulative analysis of noise impacts does show that the proposed project to upgrade Hastings Range to a Digital Multipurpose Training Complex (DMPTR) would again cause some Zone III noise to extend across the northeastern boundary, though the Zone III noise contour would cover less area off-post than the current (Alternative I) noise situation. Informing the public regarding the need for soldiers to train as they fight, and the related noise from range operations, should alleviate some community concerns about noise impacts of current operations and the proposed DMPRC Also before the upgrades to Hastings Range could occur, additional noise studies and environmental evaluation of impacts and mitigation is required.

Another concern identified during public review involved the safety of range operations, and especially the orientation of the ordnance firing as related to distance from the Installation boundary. Fort Benning has initially identified a maximum SDZ, which is a temporary exclusion area to ensure no unauthorized personnel enter the area during range usage. The SDZ includes an ordnance dispersion area, ricochet area and a extra safety buffer zone. The range-specific SDZs were utilized for Alternative I and Alternative III in this DEIS; however the standard SDZ was used for Alterative II because a range design with target and firing point locations is required to generate a range-specific SDZ fan. The Alternative III SDZ currently stretches from the D13 training compartment toward the eastern Installation boundary. Fort Benning is conducting additional studies to include terrain and other factors to ensure that Alternative III operations are safe and within all required SDZ parameters. The SDZ may be reduced if natural backstops for ordnance exist in the terrain, or if targets are moved to shorten the distance fired ordnance will travel. This FEIS used the latest information regarding SDZs available, which is probably a worst-case scenario based upon the current design for Alternative III, so this was considered adequate information at this stage.

No issues are deemed to be unresolved for this FEIS. Other environmental planning processes for the proposed DMPRC are ongoing to comply with requirements for wetlands permitting, consultation with USFWS for potential effects to Federally-protected species, coordination with the Georgia State Historic Preservation Office and Tribes regarding impacts to cultural resources, and other processes. These processes are currently underway and no unresolveable issues have emerged as of this time. This FEIS is based upon the best available data and information at the time of preparation. No substantial gaps in available information that would prevent the assessments required in this FEIS have been identified.

III. Required Federal, State or Local Permits, Licenses, and Other Authorizations; Statement of Compliance

The FEIS identifies many requirements for permits in Section 4.0, Environmental Consequences. In general, Alternative I requires few if any permitting or other authorizations because no construction and only continued operations and routine maintenance would occur. Alternatives II and III, on the other hand, would require several permits and related plan approvals to address potential impacts to wetlands and stream banks, soil erosion and sediment control, plans to prevent spills and contamination, a biological opinion for Federally listed species, and possibly a cultural resources Memorandum of Agreement (MOA). Fort Benning and the Army will work closely with the DMPRC contractors to ensure all permits and other authorizations are in place before any timber harvest or construction activities for the action alternatives.

This FEIS is prepared as one step in the compliance process for the NEPA. The action alternatives would require compliance with additional environmental laws and regulations. Fort Benning has initiated coordination and/or formal consultation with several of the regulators that oversee the Army's compliance with environmental requirements related to one of the action alternatives; in fact, the informal assistance of those regulators has aided in efforts to prepare for compliance with those requirements during planning sessions and initial document reviews. Fort Benning and the Army will comply with all applicable Federal, state and local environmental requirements for the proposed action as implemented by one of the action alternatives. Mitigation measures will be required as part of compliance with several environmental requirements, and Fort Benning will monitor the mitigation to help ensure compliance.

Table S-1: Summary of Potential Effects and Proposed Mitigation

Media of Concern	Alt I	Proposed Mitigation	Alt II	Proposed Mitigation	Alt III	Proposed Mitigation
Soils & Vegetation	Temporary minor adverse effect to soils; no effect to vegetation	None proposed.	Moderate adverse effects to soils; significant adverse effects to vegetation	Construction: Adherence to Timber Harvest Plan and ESPCP and monitoring. Operations & Maintenance: Monitoring and implementation of NPDES and SPCC requirements.	Moderate adverse effects to soils; Significant adverse effects to vegetation	Construction: Adherence to Timber Harvest Plan and ESPCP and monitoring. Operation and Maintenance: Monitoring and implementation of NPDES and SPCC requirements.
Water Quality	Temporary minor adverse effect	None proposed.	Minor adverse effects	Construction: Adherence to NPDES and SPCC. Operation and Maintenance: Monitoring and implementation of NPDES and SPCC requirements.	Minor adverse effect	Construction: Adherence to NPDES and SPCC. Operation and Maintenance: Monitoring and implementation of NPDES and SPCC requirements.
Wetlands & Streambanks	Minor adverse effect to both wetlands and streambanks	None proposed.	Significant adverse effects to both	Construction: Attempt to reduce potential impacts during design. Restoration of wetlands and streambanks outside the project area, utilization of erosion control, forestry, and other applicable BMPs. Operation and Maintenance: Monitoring and appropriate follow-up action by Range Division.	Moderate adverse effects to wetlands and significant adverse effects to streambanks	Construction: Avoidance during design resulted in reducing potential effects. Restoration of wetlands and streambanks outside the project area, utilization of erosion control, forestry, and other applicable BMPs. Operation and Maintenance: Monitoring and appropriate follow-up action by Range Division.

UEAs	Temporary minor adverse effect	None proposed.	Moderate adverse effects	Construction: Attempt to reduce potential impacts during design and implementation of NPDES and SPCC requirements. Operation and Maintenance: Monitoring and appropriate follow-up action by Range Division and adherence to existing Installation management practices for SPCC.	Minor adverse effect	Construction: Avoidance during design resulted in reducing potential effects; adherence to existing Installation management practices for NPDES and SPCC. Operation and Maintenance: Monitoring and appropriate follow-up action by Range Division and adherence to existing Installation management practices for SPCC.
Federally Protected Species - RCW	Minor adverse effect	None proposed.	Significant adverse effects	Construction: Attempt to reduce potential impacts during design; Consultation with USFWS; Establish and manage new clusters in A20 ordnance impact area. Operation and Maintenance: Staffing two additional personnel for five-year terms to monitor the RCWs and their habitat; and monitoring and appropriate follow-up action by Range Division.	Significant adverse effects	Construction: Avoidance by design resulted in reducing potential effects. Establish and manage new clusters in A20 ordnance impact area; protective berms on range, if feasible; and 2 new staff members for RCW management. Operation and Maintenance: Staffing two additional personnel for five-year terms to monitor the RCWs and their habitat; and monitoring and appropriate follow-up action by Range Division.
State Protected Species	Minor adverse effect	None proposed.	Minor adverse effects	Construction: Gopher tortoise relocation. Operation & Maintenance: Adherence to existing Installation management practices for Gopher tortoise.	Minor adverse effect	Construction: Gopher tortoise relocation. Operation & Maintenance: Adherence to existing Installation management practices for Gopher tortoise.
Migratory Birds	Minor adverse effect	None proposed.	Minor adverse effects	None proposed.	Minor adverse effect	None proposed.
Socioeconomics	No effect	None proposed.	Temporary	None proposed.	Temporary	None proposed.

			minor positive effects		minor positive effects	
Land Use	Moderate adverse effect	None proposed.	Minor adverse effects	Construction: None proposed. Operation & Maintenance: Adherence to existing Installation policies.	Minor adverse effect	Construction: None proposed. Operation & Maintenance: Adherence to existing Installation policies.
Cultural Resources	No effect	None proposed.	No effect	Construction: Avoidance of cultural resources sites during design, consultation and MOA with SHPO and Tribes, as needed, and placement of protective berms. Operation & Maintenance: No additional mitigation proposed.	No effect	Construction: Avoidance of cultural resources sites during design, consultation and MOA with SHPO and Tribes, as needed, and placement of protective berms. Operation & Maintenance: No additional mitigation proposed.
Utilities	No effect	None proposed.	Minor positive effects	None proposed.	Minor positive effects	None proposed.
Noise	Significant adverse effect	None proposed.	Minor adverse effects	None proposed.	Minor adverse effect	None proposed.
Air Quality	Minor adverse effect	None proposed.	Minor adverse effects	Construction: Avoid use of chlorine gas. Operation & Maintenance: No additional mitigation proposed.	Minor adverse effect	Construction: During design, avoided use of chlorine gas. Operation & Maintenance: No additional mitigation proposed.
Public Health & Safety	No effect	None proposed.	No effect	Construction: UXO survey; and berms or backstops for lasers. Operation & Maintenance: No additional mitigation proposed.	No effect	Construction: UXO survey; and berms or backstops for lasers. Operation & Maintenance: No additional mitigation proposed.
Hazardous Materials & Wastes	No effect	None proposed.	Minor adverse effects	Construction and Operation & Maintenance: Adherence to existing Installation SPCC requirements.	Minor adverse effect	Construction and Operation & Maintenance: Adherence to existing Installation SPCC requirements.
Transportation	No effect	None proposed.	No effect	None proposed.	No effect	None proposed.

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1.0 Purpose and Need

1.1 Introduction

Fort Benning is the Home of the Infantry and the U. S. Army Infantry Center and School (USAIC/USAIS) and has three basic missions: (1) to provide the nation with the world's best infantry soldiers and trained units; (2) to provide the nation with a power projection platform capable of deploying soldiers and units anywhere in the world on short notice and; (3) to provide the nation with the Army's premier Installation and home for soldiers and their families, civilian employees, and military retirees. Fort Benning also has three basic training missions: (1) to conduct Basic Training for new Infantry and non-branch specific recruits, conduct Infantry, Airborne, and Ranger training for officers and enlisted personnel, and operate a non-branch specific Officer Candidate School; (2) to study the doctrine, rationale, equipment, and future of infantry combat; and (3) to provide a home station and deployment facility for Forces Command (FORSCOM) and Special Operations Command (SOCOM) units.

Fort Benning proposes to construct, operate, and maintain a Digital Multi-Purpose Range Complex (DMPRC), which would provide a state-of-the-art range facility, meeting the Installation's training needs for conducting effective gunnery exercises in a realistic training environment. The DMPRC would provide training facilities for the Bradley Fighting Vehicle (BFV), the Abrams M1A1 Tank System (Tank), and currently developing future systems (such as the Stryker), providing the capability for both active and reserve components to train to required standards under realistic conditions. Changes in training on other existing ranges (Cactus, Carmouche, and Hastings) to incorporate the new DMPRC into the training regime is also proposed.

Fort Benning provides training facilities for several FORSCOM units. Currently, Fort Benning is home to the following units that conduct training on the Installation: the 4th Ranger Training Brigade, 29th Infantry Regiment; 11th Infantry Regiment; Henry Caro Noncommissioned Officer Academy; Infantry Training Brigade; Basic Combat Training Brigade; and Physical Fitness School. In addition, Fort Benning hosts a number of tenant units that conduct much of their training at the Installation, including the 3rd Brigade/3rd Infantry Division (Mechanized), the 75th Ranger Regiment, the 36th Engineer Group, and the Western Hemisphere Institute for Security Cooperation (WHINSEC). The missions of these various units are diverse and consist of varying combinations of mobile mechanized (tracked/wheeled military vehicle) and infantry task forces with organic armor, mechanized infantry, field artillery, and combat engineer assets utilizing both mounted (riding on vehicles) and dismounted (movement by foot) elements for offensive and defensive engagements.

Of these units, the 3rd Brigade/3rd Infantry Division is the primary user of existing Fort Benning ranges for the purpose of mechanized training with the Tank and the BFV. The mission of the 3rd Brigade/3rd Infantry Division (Mechanized) "Sledgehammer" is to alert, upload, and deploy by air, sea, and land anywhere in the world to conduct mobile, combined arms offensive and defensive operations in support of United States policies and objectives. The 3rd Brigade is a highly trained and mobile mechanized infantry task force with armor, mechanized infantry, field artillery, and combat support/service support assets. A tenant unit on Fort Benning, it reports to the 3rd Infantry Division at Fort Stewart, GA. The 3rd Brigade mechanized forces must be capable of deployment worldwide to support a wide range of operations. It must also be able to deploy Brigade components within 18-72 hours of notification. The 3rd Brigade utilizes a large

number of mechanized infantry, armor, artillery, and combat engineer vehicles; therefore, the soldiers must spend a large amount of their time maintaining this equipment and training to efficiency standards on it. To maintain this level of deployment readiness and training efficiency, the 3rd Brigade, in addition to other tenant, visiting, and reserve units on Fort Benning, must train in a realistic (battlefield) environment.

To support the newly evolving Army Transformation process, the Army is procuring intermediate armored vehicles, such as the "Stryker." These wheeled combat/carrier vehicles will be utilized in the field by the Stryker Brigade Combat Teams (SBCTs). The first of the SBCTs were available for deployment in 2003. In addition, the Army plans to continue upgrading its current forces, or "heavy" armed forces, that utilize the M1A1 Tanks and BFVs, because most of these forces will continue in operation for at least 20 more years. The ranges at Fort Benning must be able to accommodate these existing and developing systems. An additional Army initiative is Modularity, which is discussed in more detail in Section 5.0.

Tank and BFV gunnery exercises are currently conducted twice a year (per unit, on average) on existing Fort Benning ranges and are designed to train crewmembers progressively. BFV crews and Tank crews must train and qualify at different skill levels (gunnery tables) that are designed to develop and test the proficiency of individual, crew, and platoon (up to four vehicles) techniques. The training in each gunnery table is intended to imitate as closely as possible the typical battlefield tasks under realistic conditions.

Above: Tank with Mounted Crew.

Above: Bradley Fighting Vehicle.

Above: Crew dismounting from Bradley Fighting Vehicle.

Army Field Manuals (FM) set forth the gunnery training standards by these gunnery tables, starting with non-firing exercises at Table I and progressing to advanced qualification exercises in Table XII. The Tables can be summarized as follows:

BFV Tables:

I-IV: Trains crews to identify stationary and moving targets, assume firing positions, and integration of mounted and dismounted crewmembers

V-VIII: Live-fire crew training and qualifications

IX-X: Advanced gunnery training and qualifications in performing security missions and weapons firing

XI-XII: Platoon level (up to four BFVs) vehicle and dismounted infantry integration during tactical scenarios at advanced gunnery levels

Tank Tables:

I-IV: Basic gunnery skills and training course for individuals and crew

V-VIII: Crew gunnery firing practice and qualifications with stationary and moving targets

(No Tank Tables IX or X)

XI-XII: Platoon level (up to four Tanks) advanced course integrating weapons fire and maneuver.

Qualification tables must be fired successfully and in sequence before advancing to the next higher level of gunnery (FM 17-12-1-2; FM 23-1) (see Appendix A for further description).

Fort Benning currently has existing ranges that support Tank and BFV Tables I through a modified Table XII (Figure 6). Basic Tank and BFV tables (Tank Tables I-VI and BFV Tables I-IV) and Intermediate Tank and BFV tables (Tank Tables VII-VIII and BFV Tables V-VIII) are fired on Cactus Range and Carmouche Range and all advanced tables (Tank Tables XI-XII and BFV Tables IX-XII) are fired on Hastings Range. Ruth Range serves as a "feeder range" for 0.50 Caliber and MK19 weapons, which are utilized in various Tank and BFV Tables and which serve to further hone the skills of the crew members in combining standard hand-held weaponry with Tank and BFV skills and tactics. These exercises may be conducted in either day or night phases to train and test the Tank/BFV crew in rapid engagement and destruction of targets during daylight, at night, and during periods of reduced visibility. Both day and night firing are required to provide the soldiers with real world/real time training under realistic conditions (personal communication, Weekley, 2004). Day firing should precede night firing; however, this is not a requirement (FM 17-12-1-2; FM 23-1).

Existing facilities at Fort Benning do not currently meet training standards for BFV and Tank training for "full" Table XII of advanced gunnery qualification. Specifically, the existing range targetry is antiquated and replacement parts must therefore be fabricated on site or "cannibalized" from other systems when repairs/replacements are needed; the natural terrain features of Hastings Range impedes the "line of sight" for Tanks and/or BFVs attempting to lock onto targets and therefore hampers training effectiveness and efficiency; the nearness to the Installation boundary results in noise concerns; and the lack of digital components on the existing range delays the After Action Review (AAR) or analysis of the training exercise. Even if the current Hastings Range targets were upgraded, modern gunnery requirements would still not be met, for the reasons discussed above (personal communication, Weekley, 2002; personal communication, Caldwell, 2001). This situation limits the Installation's ability to support the Force Projection Platform Mission for Mobilization; restricts the USAIS mission of training Bradley Master Gunners Course and Officer and Non-Commissioned Officer (NCO) Battle Focused Training for those being assigned to Bradley M2A3 units; and limits the ability to properly train Battalion and Brigade Level Pre-Command Course requirements. Further support

for this assessment is provided in the "Operational Requirements Document for the Digitized Multi-Purpose Range Complex (DMPRC) Cards # 2512, Army Training Modernization (ATM) Directorate, U.S. Army Training Support Center (USATSC), 27 September 1999," which states that existing ranges (to include those on Fort Benning) have the following specific weaknesses.

- Current ranges and target systems are no longer large enough or modern enough to create the conditions necessary to allow the crew/unit to fully maximize the capabilities of the combat systems. Present ranges are too narrow and do not provide the depth required to stress most systems; and
- After Action Reviews (AAR) systems do not capture the information generated by the evolving technological systems. Current systems do not provide the fidelity necessary to enhance the training opportunity. Information systems data is not collected, downrange viewing is not available, and through sight video feeds are not provided for in the current AAR systems. The DMPRC will allow us the opportunity to build the AAR requirements into the range complex, not add them after construction.

Recently, an updated study of Fort Benning's range capacities and needs was completed via the Range and Training Land Program (RTLP). The resultant document, the RTLP Development Plan (RDP) verifies Fort Benning's continuing need for a DMPRC for advanced gunnery training with digital components (RDP, 2003). For more information or review of the RDP, contact Range Division, Directorate of Operations and Training (DOT), Fort Benning.

1.2 Scope and Limitations of This Document

The National Environmental Policy Act of 1969, as amended (42 U.S.C. 4321 et seq.)(NEPA) is a broad environmental law requiring all Federal agencies to disclose and consider the environmental implications of their proposed actions. NEPA applies to all Federal agencies (to include the U.S. Army and, specifically, Fort Benning) and most of the activities they manage, regulate, or fund that may affect the environment. NEPA provides an inter-disciplinary framework for Federal agencies to prevent environmental damage and contains action-forcing procedures to ensure that Federal agency decision-makers take environmental factors into account. Two Federal agencies have responsibility for administering, overseeing and reviewing the implementation of NEPA by other agencies: the President's Council on Environmental Quality (CEQ) and the United States Environmental Protection Agency (USEPA). The CEQ has adopted regulations and other guidance to provide detailed procedures Federal agencies must follow to implement NEPA. In addition, specific guidance on the Army's responsibility for environmental stewardship and for implementing NEPA is outlined in Army Regulation (AR) 200-2 (32 Code of Federal Regulations, Part 651; 67 Federal Register 15289 et seq.).

Fort Benning is preparing this FEIS to identify and evaluate the potential environmental effects of the proposed DMPRC on the natural and human environment. This document consists of an objective appraisal of the potential effects, both adverse and positive, of the proposed action and its alternatives on the natural and human environment, as well as an appraisal of the potential cumulative effects of said actions in a specifically defined region of influence. It also contains discussions of mitigation, permit requirements, and findings and conclusions in accordance with NEPA guidelines. This FEIS contains the following:

- Section 1.0 includes a background on the proposed action and presents the purpose of and need for the proposed action;
- Section 2.0 provides a description of the proposed action and its alternatives;

- Section 3.0 presents the baseline conditions (existing environment) for Fort Benning;
- Section 4.0 is an analysis of the potential direct and indirect environmental consequences of each alternative discussed in the FEIS, in addition to proposed mitigation actions;
- Section 5.0 is an analysis of the potential cumulative environmental consequences of under each alternative discussed in the FEIS; and
- Other sections of the FEIS include regulatory coordination and appendices addressing selected topics, including responses to comments on the DEIS.

1.3 Public and Stakeholder Participation

Public and stakeholder involvement is a key element in the Federal decision-making process and is preferably incorporated as early as possible. "Stakeholder" is used to identify those entities that have a relationship to Fort Benning environmental resources or regulatory or governmental duties (Fort Benning, 2002). Stakeholders include Federally-recognized Indian Tribes affiliated with the Fort Benning area (Tribes); Federal, state and local governmental agencies with regulatory authority over Fort Benning (e.g. United States Fish and Wildlife Service, and Georgia Environmental Protection Division); special interest groups with a charter involving environmental or military matters, and others. Public information activities will be undertaken to inform the community of the proposed project, its alternatives, and the potential predicted impacts to the natural and human environment, to include any potential cumulative effects and required mitigation and monitoring. AR 200-2 requires that a public participation plan be drafted and implemented as part of the NEPA process. Fort Benning drafted a DMPRC Public and Stakeholder Involvement Plan (hereafter, the "PIP") on 30 May 2002 that delineated how to best encourage public and stakeholder input and participation in the NEPA and other planning processes associated with the proposed DMPRC at Fort Benning. The PIP has been updated throughout the NEPA process, with the most current version available in Appendix B.

In October 2002, the first of a series of newsletters (Appendix C) was mailed to the agencies, organizations, and individuals on the Distribution List (Appendix D) for the proposed Fort Benning DMPRC. It focused on introducing the proposed action, the NEPA process, and the role of the public/stakeholder in that process. The second newsletter in this series was mailed in January 2003 and focused specifically on the NEPA process, a discussion of alternatives for the proposed action, and potential environmental issues of concern. The third newsletter in this series was mailed in October 2003 and focused on the potential impacts and mitigation for Protected Species and Wetlands/Water Quality. The fourth newsletter in this series was mailed in February 2004 and focused on Noise and Public Health & Safety. These newsletters promote the ongoing public involvement process for the project and resulted in several phone calls to Installation personnel. The newsletters were also posted on the Fort Benning website and may be viewed at www.benning.army.mil/EMD/Legal&PublicNotices.htm. An additional newsletter discussing plans for DMPRC Mitigation and Monitoring of the proposed project is tentatively planned for the summer of 2004. All future newsletters, notices of meetings, and other public and stakeholder participation opportunities will also be posted on the website indicated above. Comments or questions may also be submitted to Fort Benning via this website.

1.3.1 Notice of Intent (NOI) to Prepare an EIS

In accordance with CEQ Regulation 1508.22 and AR 200-2, an NOI advising the public of the intent of the Army to prepare an EIS for the DMPRC was published in February 2003 in the Federal Register and in the following local newspapers (Appendix F): The Columbus Ledger-Enquirer (Columbus), The Tri-County Journal (Buena Vista), and The Savannah Morning News (Fort Stewart). The NOI described the proposed action, the purpose of the EIS documentation, and the evaluation of alternatives; in addition, the NOI also invited participation by either submitting comments or attending public scoping meetings. Due to the occasional use of existing ranges on Fort Stewart in "Alternative I, No Action/Status Quo," of the DEIS and the initial consideration of another alternative involving Fort Stewart, the organizations/agencies/individuals in Fort Stewart and its surrounding communities also received copies of the NOI and other public documents, such as the aforementioned newsletters. No comments were received from the Fort Stewart area. In addition to notices published in the Federal Register and the local newspapers, copies of the NOI were sent to a list of agencies and individuals on the Distribution List for the proposed DMPRC, representing Federal, state and local agencies, elected officials, and interested parties such as environmental groups, media outlets, and local landowners (Appendix C).

On 18 February 2003, a public scoping meeting for the proposed DMPRC was held in Columbus, GA, at the Elizabeth Bradley Turner Center, Columbus State University (CSU). The meeting lasted from 6-8 p.m. and consisted of an open house format with displays, a terrain model, and subject matter experts to answer questions from the public. A public scoping meeting was also held at the Marion County Courthouse in Buena Vista on 20 February 2003, utilizing an open house format and displays.

1.3.2 Delegation of Authority for NEPA Approval

AR 200-2 contains a provision allowing Installations to request that approval authority for an EIS be delegated down from the Headquarters, Department of the Army (HQDA) level to the Major Command (MACOM) level. The proponent of the action, through the appropriate chain of command and with the concurrence of the environmental offices, forwards to HQDA the request to propose, prepare, and finalize the EIS through the Record of Decision (ROD) stage (32 CFR 651.6, AR 200-2, 2002). On 6 June 2002 Fort Benning formally requested that HQDA delegate authority for the EIS for the DMPRC to Training and Doctrine Command (TRADOC), which serves as the MACOM for the Installation. On 11 December 2002, HQDA approved this delegation request and dual authority for the EIS process for the proposed Fort Benning DMPRC was delegated down to TRADOC and the South East Regional Office (SERO), which serves as the regional office of the Installation Management Agency (IMA) for Fort Benning. Therefore, the approval authorities for this NEPA process are SERO and TRADOC, and Fort Benning has worked with SERO and TRADOC to keep HQDA informed and engaged as appropriate.

1.3.3 Notice of Availability (NOA) of the DEIS

In accordance with CEQ Regulation 1508.22 and 32 CFR 651 (AR 200-2), an NOA advising the public of the availability for review of the DEIS for the DMPRC was published on 13 February 2004 in the Federal Register, on the Fort Benning web page, and in the following

local newspapers (Appendix K): *The Columbus Ledger-Enquirer* (Columbus), *The Tri-County Journal* (Buena Vista), and *The Bayonet* (Fort Benning). The NOA also invited participation in the two by either submitting comments or attending public meetings held on 2 and 4 March 2004 in Columbus and Buena Vista, GA, as described above. In addition to notices published in the Federal Register and the local newspapers, copies of the NOA were sent to a list of agencies and individuals on the Distribution List for the proposed DMPRC, representing Federal, state and local agencies, elected officials, and interested parties such as environmental groups, media outlets, and local landowners (Appendix C). Due to the prior lack of comments from the Fort Stewart community and surrounding areas, the NOA was not published in its local newspapers; however, the NOA was mailed to the of agencies and individuals on the Distribution List for the proposed DMPRC who are located in or represent the Fort Stewart area.

The entire DEIS was posted on the DMPRC website indicated above. All government agencies on the Distribution List received the full DEIS and all individuals on the list received a summary of the DEIS, along with a transmittal letter indicating that they could request the entire DEIS, if desired. Additional meetings were also held on 2 and 4 March 2004 at CSU and Marion County Middle School, respectively, for review of and comment on the DEIS during the public review period (13 February through 29 March 2004). An open house format was again used and displays illustrated the differences in potential impacts between the three alternatives. Comments obtained at all of these meetings were collected and may be viewed in Appendix E. In addition, numerous comments were also mailed to Fort Benning; these are included in Appendix D, as are documentation of all comments received by phone. No comments were received via the website. All comments received as of 6 April 2004 have been considered in the development of this FEIS.

1.3.4 NOA for the FEIS

An NOA will announce the availability of the FEIS to the public and stakeholders for no less than 30 days. The NOA for the FEIS will be published in the Federal Register, the local newspapers, and on the DMPRC website, as indicated above. Copies of either a summary or a full FEIS will be mailed to those persons/agencies on the Distribution List. Any comments received during the FEIS public review period will be considered during revision of the FEIS and during the decision process.

1.3.5 NOA for the Record of Decision (ROD)

After the FEIS review period, all relevant information, including any further comments, will be forwarded to SERO and TRADOC for consideration and use in the decision-making process. Per the Delegation of Authority (see section 1.3.2 above), SERO and TRADOC will document a decision on the proposed DMPRC in a ROD and announce the decision in an NOA for the ROD, which will be published and distributed as described for the NOA for the DEIS and FEIS. The ROD will be made available for public and stakeholder review for a period of no less than 45 days. The ROD will specify which alternative or other action will be pursued, what mitigation will be required, and how to obtain information regarding the mitigation status via the monitoring program in Appendix J, DMPRC Environmental Mitigation and Monitoring Plan.

2.0 DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

2.1 Location of the Proposed Action

Fort Benning is located south of the City of Columbus, Georgia (Figure 1, Area Map). The Installation is approximately 100 miles south-southwest of Atlanta, Georgia, and can be accessed by the major highway routes of U.S. Interstate 185, U.S. Highway 27, Georgia Highways 26 and 520, and Alabama Highway 165, in addition to several smaller county and Installation-maintained roads. This area of Georgia and Alabama is located just south of the Fall Line, which extends from central Alabama to southern New York and is a transitional area between the lower Piedmont and upper Coastal Plain Physiographic Provinces. The Fall Line is characterized by a number of rapids and falls in streams and rivers as they flow from the sloping Piedmont region into the flatter Coastal Plain.

The Installation occupies approximately 184,000 acres of land, of which approximately 172,400 acres are located in Georgia and 11,600 acres are located in Alabama. The Installation is divided into compartments, each with a letter and number designation. The Installation covers approximately 80 percent of the land in Chattahoochee County, Georgia, as well as small portions of Muscogee County and Marion County, Georgia, and Russell County, Alabama. The Chattahoochee River, which serves as the border between portions of Georgia and Alabama, traverses the southwestern tip of the Installation. The locations of the two action alternatives for the proposed DMPRC are in the northeastern portion of the Installation in order to utilize an existing ordnance impact area and to facilitate the use of other nearby training facilities. The city of Buena Vista lies to the east of the eastern boundary of Fort Benning and is approximately 14 miles from the location of Alternative I, eleven miles from the location of Alternative II, and 16 miles from the location of Alternative III (Figure 2). More information concerning the locations for each action alternative is provided in the alternatives description in Section 2.3.

2.2 Description of the Proposed Action

Fort Benning proposes to construct, operate, and maintain a DMPRC that incorporates the latest technology and provides realistic advanced gunnery training. The optimal standard DMPRC design (Figure 3), per Training Circular 25-8, would provide such a facility and would consists of the construction of a 2,500 –by 8,000 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 of the two action alternatives. The range is made up of three lanes approximately 250 meters wide each and would use an "ordnance impact area." Rounds are non-explosive and will result in less ground disturbance than explosive rounds. Berms, terrain, or trees would stop most of the rounds, but some may ricochet, "skip," or skid along the surface and insert themselves into the soil along their impact route (personal communication, Caldwell, 2002). The optimal standard DMPRC contains up to 140 stationary armor target emplacements, 45 hostile fire simulator emplacements, 39 infantry moving target emplacements, four obstacle breach sites, two defense trenches, 12 two-man foxholes, and 39 defilade positions (hiding places behind berms or earthen works**).** It is best to have a calibration point (area used for sighting weapons) at the DMPRC, but it can be located elsewhere. The stationary targets are implanted into the ground; the moving targets use a rail system similar in appearance to the rails utilized by modern trains. If this optimal standard

design were placed on either of the two action alternatives (Alternatives II and III), there would be as many as 22 water crossings (average dimensions: 350 feet long by 29 feet wide each) on tank trails utilized by Tanks/BFVs during training. These tank trails may also be used by other vehicles for routine repair and maintenance purposes, in addition to the use of dedicated maintenance roads. Trenches and/or berms would be placed in front of the targetry for instrumentation-protective measures; tank trails and/or access roads would be selectively placed to facilitate rapid maintenance and repairs, as needed.

Support facilities associated with the DMPRC would be located on an adjacent area and typically consist of a Control Building, an After Action Review (AAR) building, latrines, bivouac pads, two general instruction buildings, an operation and storage building, a central maintenance building (for target maintenance only), an ammunition breakdown building with ammo dock, a bleacher enclosure, a covered mess (dining area), vehicle holding and maintenance areas, a well-house and water distribution/collection/treatment system, and a secondary power and data distribution system. In addition, a helipad would be needed for emergency evacuation purposes. The DMPRC would include a Surface Danger Zone (SDZ) that is inaccessible during operation of the range and is a factor for range siting and design. The SDZ is a temporary boundary that surrounds the firing range and impact area portions of a range and provides a buffer area to protect personnel from the non-dud producing rounds that may ricochet during operation of the range (see Figure 4 and Section 3.2.13.2 for additional detail). The area comprising the SDZ would be closed to all unauthorized personnel during each training exercise on the range.

During evaluation of the optimal standard design, efforts were made to avoid potential environmental 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 clearing for construction purposes, such as target emplacement and trail/access road development, may require stump removal and grubbing in wetland areas; however, this activity will be kept to a minimum and will be addressed in the Section 404 Wetlands Permit Application and Timber Harvest Plan for this action. All trees that impede the Line of Sight (LOS) will be removed; however, where possible, only selective tree clearing would occur in wetland areas and adjoining stream buffers (approximately 25 feet on each side of the stream). In addition, these removed trees would be cut to four-to-eight inch stump height, with no grubbing, disking, or stump/root removal occurring, allowing as much vegetative cover as possible to remain. Tree clearing would occur in accordance with the Timber Harvest Plan for the DMPRC (Appendix I) and in two phases, removing the marketable (saleable) timber first and then removing the non-marketable vegetation (smaller trees and shrubs) and logging slash (limbs/debris remaining after timber harvest). Prior to any tree clearing activities at the site, the boundaries of work would be established and marked. Debris resulting from the tree clearing would be dealt with in one or more of the following ways:

- Slash used for on-site brush barrier berms.
- Chipping of debris and moving off range for use as fuel.
- Chipping of debris for use as mulch.
- Haul off site to a non-Fort Benning landfill.
- Grind Debris in Place. Stumps would be ground to the surface of the ground (but not removed), with resulting mulch remaining on site.

- Pile debris in trenches and burn using an air curtain destructor (ACD) unit and comply with other applicable Federal and/or state requirements, to include Georgia Rules for Air Quality Control 391-3-1-.02 (2)(5).

Other actions connected to the construction, operation, and maintenance of the proposed DMPRC include the following: use of a staging area for the storage of contractor equipment and materials during the construction of the DMPRC and its associated support facilities; acquisition of borrow or "fill" materials (if needed) for use during construction of the DMPRC and future maintenance of its associated access roads and training lanes; use of a haul route for borrow or "fill" materials (if needed) from the (approximate) point of origin to the site of the proposed DMPRC; use of a haul route for concrete during construction of the support facilities and Tank trail turn-around points for the proposed DMPRC; and the establishment of electric power and communication lines to the site. A batch plant (concrete mixing site) may also be set up as part of this proposed action. If utilized, this must comply with all applicable Federal and state requirements.

Flint Energies would meet the energy requirements for the proposed DMPRC through the establishment of new electric lines and pad-mounted transformers. The power lines would be pole mounted leading up to the DMPRC and would be buried on the range itself, extending from existing points of service to the range and its support facilities. Communications service would be established from the nearest point of service and would consist of buried fiber optic cable and would incorporate the appropriate fire reporting/emergency communications system. All solid waste accumulated during the construction/operation of the DMPRC would be disposed of in an off-Post landfill. Per Installation policy, all recyclable materials accumulated as a result of either the construction or operation of the DMPRC would be taken to the Installation Material Recovery Facility (MRF) for appropriate recycling action.

Because the advanced Tank and BFV gunnery training would be conducted at the new DMPRC, the proposed action also includes adjustment of training on existing ranges. If built, the basic and intermediate Tank and BFV tables would continue to be fired on Cactus Range and Carmouche Range. Hastings Range would be dedicated to the training of vehicular mounted weapons systems and dismounted training scenarios utilizing BFVs and developing future technologies, such as the Stryker; training on Tanks would not continue to occur on Hastings Range under normal circumstances. Ruth Range would continue to serve as a "feeder range" for 0.50 Caliber and MK19 weapons (see Figure 6 for range locations). Routine range maintenance of range targetry and roads would be in accordance with established procedures.

2.3 Scoping of Issues and Development of Alternatives

Internal Army scoping for potential environmental issues began in the late 1990s (see Section 2.3.2). On 22 May 2002, a design "charrette" meeting was held at Fort Benning, utilizing the expertise of the Fort Benning personnel, Architect/Engineering (AE) firm, and the United States Army Corps of Engineers-Savannah District (USACE) to place the standard design, which is now outdated and substantially smaller than the optimal standard design, on the site of the preferred alternative. In addition, experts on range construction, maintenance, targetry, and operation from FORSCOM, Simulation Training and Instrumentation Command (STRICOM), the Huntsville Corps of Engineers, the U.S. Fish and Wildlife Service, and the Albany, GA, Corps of Engineers (COE) Regulatory Branch provided input, resulting in modifications to the standard design due to environmental concerns, terrain issues, and

operational constraints on the site. The resulting design (15% level) was incorporated into the Preliminary Draft of the EIS. Fort Benning environmental personnel participated in the design review, analysis, and comment process several times, resulting in a 35% design in May 2003, a 60% design in July 2003, a 95% design in September 2003, which was used as the basis for the analysis in the DEIS, and the current design in March 2004, which was used as the basis for the analysis in this FEIS. The Army will consider further modifications to the design from stakeholder and public participation until at least the conclusion of the EIS process with a Record of Decision (ROD). Further NEPA evaluation will be done on all design changes that occur after the ROD.

Also since the summer of 2001, the Fort Benning Interdisciplinary Environmental Planning Team (ID Team), which consists mainly of personnel from Fort Benning, but also includes personnel from the USACE, regulatory agencies, and others, conducted in-progress review (IPR) meetings to facilitate the development of the proposed action and its alternatives and to provide input into the progressing design for the DMPRC preferred alternative. Subject-specific meetings were also conducted, focusing on the NEPA, protected species, wetlands/water quality, cultural resources, noise, and other environmental planning issues for the proposed action and its alternatives. Input from the ID Team and comments from stakeholders and the public were utilized for the development of the environmental documentation and design for the proposed DMPRC.

2.3.1 Alternatives Considered

2.3.1.1 Alternative I: "No Action / Status-Quo" (Figure 2)

Under this alternative, a DMPRC would not be constructed at Fort Benning; however, units would continue to conduct gunnery tables on existing ranges. Basic and intermediate Tank and BFV tables would be fired on Carmouche Range and all advanced tables would be fired on Hastings Range. Ruth Range would continue to serve as a "feeder range" for qualification on 0.50 Caliber and MK19 weapons. These exercises may be conducted in either day or night phases. After completion of the basic and intermediate gunnery exercise, the units and all needed equipment (to include Tanks and/or BFVs) may opt to transport from Fort Benning to existing ranges at Fort Stewart to conduct the remainder of advanced gunnery training, rather than training to a modified Table XII level on Hastings Range, although this rarely occurs.

Support facilities for Hastings Range are located on an adjacent complex and consist of a Control Building, latrines, BIVOUAC pads, general instruction buildings, an operation and storage building, a central maintenance building (for target maintenance only), an ammunition breakdown building with ammo dock, a bleacher enclosure, a covered mess (dining area), vehicle holding and maintenance areas, a well-house, and a secondary power and data distribution system. In addition to the range area and the support facility complex, Hastings Range has an SDZ that is inaccessible during operation of the range.

This alternative does not support digitized training, since Hastings Range can only support modified advanced gunnery training due to deficiencies in the facilities; therefore, it does not meet the purpose and needs of the proposed action. Alternative I is presented to provide a comparison with the action alternatives, however, as required by NEPA.

2.3.1.2 Alternative II: "Compartment K21" (Alternate Site) (Figure 2)

Under this alternative, the DMPRC would be constructed, operated, and maintained as described in the proposed action on Fort Benning in the K21 area, allowing troops to conduct all Tank and BFV Tables and related gunnery training. Changes to training on Carmouche, Cactus, and Hastings ranges would be as discussed in the proposed action. This arrangement, in summary, would allow for Carmouche, Cactus, and Hastings ranges to act as "feeder" ranges for the proposed DMPRC, which is capable of shooting all Tank and BFV tables, if needed.

The location for this alternative is less than 0.25 miles northeast of Buena Vista Road and less than 0.25 miles west of Cactus Road and would utilize the existing ordnance impact area, K15. This alternative would consist of a modification to the standard optimal design, due to operational and environmental constraints at the site of this alternative, and would require a design analysis to position the various components of the range, such as targets, tank trails, and access roads. Avoidance of environmentally sensitive areas, such as wetlands, protected species habitat, and cultural resources sites, would also be considered as part of the design process. If this alternative were chosen, efforts would be made to avoid siting the range targets and equipment in areas with environmental concerns. Also, the design for this alternative may be modified to minimize the number of water crossings, similar to Alternative III.

This alternative utilizes a range footprint dimension similar to that of Alternative III, although a specific design has not been developed for this alternative. The dimensions of the range and target firing area could vary from approximately 1,800-2,000 acres and the support facilities locations and specific target and firing positions are not currently identified. Also a standard SDZ is currently being used because a more specific SDZ cannot be generated without knowing specific target and firing positions. If this alternative is selected as the Preferred Alternative during the NEPA process, a design would be developed and additional NEPA evaluations and studies (such as the tree clearing viewshed model and a leave trees map, as described in Alternative III) of the specific design would be undertaken. The use of a footprint that is comparable in size to the Alternative III footprint is reasonable and gives a sound means to compare potential environmental impacts and mitigation of Alternative II with Alternative III. The DMPRC would be approximately 4,500 meters long by 1,500 meters wide and would contain a firing range made up of three lanes approximately 250 meters wide and would utilize the existing ordnance impact area or dudded area (compartment K15). The DMPRC will contain up to 35 stationary infantry targets (SIT), eleven evasive moving armor targets (MAT), 55 stationary armor targets (SAT), two defense trenches with two-man foxholes, and 19 defilade positions (Tank and BFV hiding places). Associated actions, such as the contractor staging area, borrow or "fill" materials acquisition, and batch plant establishment (if needed), would also be consistent with those described in Section 2.2. Utilities would be provided and solid waste disposed of as discussed in Section 2.2. Maintenance would also be conducted as discussed in Section 2.2.

2.3.1.3 Alternative III: "Compartment D13" (Preferred Alternative) (Figure 2)

Under this alternative, the DMPRC would be constructed, operated, and maintained on Fort Benning in the D13 area, using the same processes for timber harvest, slash removal, and construction as discussed in Section 2.2, allowing troops to conduct all Tank and BFV Tables

and related gunnery training. Changes to training on Carmouche, Cactus, and Hastings ranges would be as discussed in the proposed action.

The preferred alternative consists of a modification to the standard optimal design, due to operational and environmental constraints at the site of this alternative and the site design and analysis process, as described in Section 1.2. It would consist of the construction of an approximately 1,800-acre DMPRC containing a firing range made up of three lanes approximately 250 meters wide and utilization of the existing "ordnance impact area," (compartment K15). The approximate dimensions of the range and target firing area, as of the 30 March 2004 design, are 4,500 meters long by 1,500 meters wide, not including support facilities, which are discussed later. The DMPRC will contain approximately 35stationary infantry targets (SIT), 11 evasive moving armor targets (MAT), 55 stationary armor targets (SAT), two defense trenches with two-man foxholes, and 19 defilade positions (Tank and BFV hiding places). During design, considerable effort was made to avoid siting the range targets and equipment in areas with environmental concerns, such as wetlands, RCW clusters, and cultural resource sites. Therefore, 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; therefore, Tanks and BFVs will use four low-water crossings (150-350 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. These lanes (and their associated water crossings) would also be used by maintenance vehicles for routine range repair and maintenance. Tree clearing under this alternative would consist of approximately 1,500 acres, with up to 300 acres of trees remaining within the DMPRC. This approximation of remaining vegetation is based on a tree clearing viewshed model developed by the Fort Benning Range Division and is used for the assessment of potential impacts for Alternative III in the Environmental Consequences Section (3.0) of this document. A viewshed map indicates where trees and vegetation will be removed to establish line of sight (LOS) (Figure 46). The "leave tree" area, as determined by Fort Benning Range Division, is shown on Figure 18 of this document. The viewshed map is in preliminary form at this time and has the following limitations: it is based on the September 2003 design and not the March 2004 design; it does not account for changes in terrain (e.g. hills and ridges are not shown); it does not account for the height of existing vegetation; and it does not show all possible firing options, only those required to meet minimum training. This viewshed map also does not indicate the clearing for construction and grading.

Support facilities would be located to the southwest of the DMPRC on approximately 30-acres and consist of a control building, an after action review (AAR) building, two latrines (with separate 70-by-150-foot tile fields), eight BIVOUAC pads, two general instruction buildings, an operation and storage building, a central maintenance building (for target maintenance only), an ammunition breakdown building with ammo dock, a bleacher enclosure, a covered mess, vehicle holding and maintenance areas, a well-house, and a secondary power and data distribution system. The calibration firing point was in the September 2003 design and was located adjacent to the DMPRC; however, to reduce environmental impacts and due to operational restraints, it was deleted from the 30 March 2004 design. The control tower was also deleted from the 30 March 2004 design, since it is not needed without the calibration point. In addition to the range area and the support facility complex, the DMPRC would include a Surface Danger Zone (SDZ) that is inaccessible during operation of the range. Flint Energies would provide power lines to

the proposed DMPRC as described in the proposed action, except that sections of the line would be underground leading up to the range complex, due to safety concerns related to adjacent drop zones, while other sections of the line would be pole-mounted (Figure 5). The contractor staging areas, which will be used by the construction contractor for office, equipment, and material storage space, will be located adjacent to the footprint of the range in the D1 and D14 training compartments, as of the 30 March 2004 design. Each staging area will be enclosed by a fence and not accessible to anyone other than construction and Installation personnel. Buena Vista Road, currently only used on Post and not as an off-Post throughway, is in the footprint of this alternative, as well as in the SDZ.

2.3.2 Alternative Sites Considered But Eliminated From Further Review (Figure 7)

Initial internal planning for the DMPRC began in 1997 with an analysis of all potential locations for an MPRC on Fort Benning; digitization was not available as part of the design until later on in the planning process. Fort Benning then scrutinized the several feasible sites against initial concerns or criteria, allowing Fort Benning to determine which were the most viable and reasonable alternative locations on which to build the MPRC. A matrix system summarized the five screening criteria: earth-moving requirements, noise levels, cultural resources sites, the Federally endangered Red-cockaded woodpecker (*Picoides borealis*) (RCW), and potential impacts that each alternative would have on other training missions throughout the Installation. During this initial location screening, use of an existing ordnance impact area was preferred rather than establishing a new ordnance impact area. The results of this screening matrix totaled six possible alternatives including "No Action" (Site 6) (Table 1). The matrix indicated that two of the initial sites (Sites 3 and 4) for the MPRC were feasible to pursue with further environmental analysis. The matrix criteria were weighted and an initial impact assessment was used to assign the values indicated on the matrix.

		Alternatives					
Criteria	**Wt***	**I**	**II**	**III**	**IV**	**V**	**VI**
Earthmoving Requirements	3	2** 6***	2 6	3 9	3 9	4 12	0 0
Red-cockaded Woodpecker	4	3 12	5 20	2 8	4 16	3 12	0 0
Archeological Sites	3	4 12	4 12	3 9	3 9	4 12	0 0
Noise Levels	5	5 25	5 25	2 10	3 15	5 25	0 0
Impact on Training	2	3 6	5 10	5 10	4 8	3 6	0 0
Totals		61	73	46	57	67	0

* Wt = Weighted continuum from 1, being less important, to 5, being more important

** Rating

*** Weighted product

Rating Legend
5= Major Impact
4= Major/Medium Impact
3= Medium Impact
2= Medium/Minor Impact
1= Minor Impact
0= No Impact

For the rating, lowest is best

In April 2000, Fort Benning prepared a partial Draft Environmental Assessment (DEA) to analyze the potential effects of constructing an MPRC on Fort Benning. This DEA, utilizing the standard MPRC design and the abovementioned decision matrix, analyzed six alternatives, including the "No Action/Status Quo." After an internal review of the DEA by Fort Benning personnel, a decision was made to prepare an EIS for a more thorough analysis of the project; therefore, the DEA was never formalized or sent out for public review. As a result of this DEA, three action alternatives (sites 1, 2, and 5) were eliminated from further review, due to probable excessive environmental impacts and the failure to meet the purpose and need for the project. Also as a result of the DEA, two of the action alternatives (sites 3 and 4) did meet the purpose and need for the project, had the lowest impact scores on the decision matrix, and were selected for further review and analysis. These two alternatives are presented and discussed in the FEIS for the DMPRC as Alternatives II (Site 4) and III (Site 3). The potential use of existing ranges at Fort Stewart, GA, for advanced gunnery training, rather than building a DMPRC on Fort Benning, was also introduced during this time, but was eliminated from further detailed review after preliminary analysis deemed it unfeasible and unable to meet the purpose and need for the project. The eliminated alternatives are briefly discussed below.

2.3.2.1 Site 1: "Compartment O9"

The area for this proposed alternative is located approximately 3 miles south of Georgia Highway 80 and is bisected by Moore Road. Site 1 was determined to have medium/minor-level adverse impacts due to earthmoving requirements to establish an adequate line-of-sight for targets in the range and target-firing area; medium-level adverse impacts on eight active and two inactive RCW clusters (an aggregation of cavity trees that is used by a family group of RCWs to roost and nest in) in the SDZ and two active RCW clusters downrange (near the far northern edge of the range and target-firing area); major/medium adverse impacts on four eligible/potentially eligible cultural resources sites in the range and target-firing area, 30 eligible/potentially eligible cultural resources sites in the SDZ, and unknown impacts to 6,989 acres of land not (at that time) surveyed for cultural resources sites in the SDZ; major-level adverse impacts as a result of noise levels increasing in this area and traveling off the Installation; and medium-level adverse impacts on training, because placement of the proposed DMPRC in this location would restrict downrange activities on the existing Ruth Range and create potential scheduling conflicts between Ruth Range and the proposed DMPRC. In addition, this alternative would result in the SDZ for the proposed DMPRC expanding off and beyond the Installation's northwestern boundary and into the City of Columbus. For these reasons, this alternative was eliminated from further consideration in subsequent analyses.

2.3.2.2 Site 2: "Compartment O14"

The range area for this alternative is located less than 0.25 miles north of Buena Vista Road and is bisected by Sunset Trail. The range area is oriented from south/southwest to north/northeast. Site 2 was determined to have medium/minor-level adverse impacts due to earthmoving requirements to establish an adequate line-of-sight for targets in the range and target-firing area; major-level adverse impacts on four active RCW clusters within the range and target-firing area, 25 active, two inactive, and two recently (at that time) installed RCW clusters within the SDZ, and six active and three planned RCW clusters downrange; major/medium-level

adverse impacts to four eligible/potentially eligible cultural resources sites in the range and target-firing area, 23 eligible/potentially eligible cultural resources sites in the SDZ, and unknown impacts to 7,478 acres of land not (at that time) surveyed for cultural resources sites in the SDZ; major-level adverse impacts on noise increasing in this area and traveling off the Installation; and major-level adverse impacts on training because placement of the proposed DMPRC in this location would restrict downrange activities on the existing Ware and Ruth ranges and create potential scheduling conflicts between Ruth and Ware ranges and the proposed DMPRC. In addition, this alternative would result in the SDZ for the proposed DMPRC expanding off and beyond the Installation's north boundary and into the City of Columbus. For these reasons, this alternative was eliminated from further consideration in subsequent analyses.

2.3.2.3 Site 5: "Compartment K11 (Hastings Range)"

The range area for this alternative is located approximately 1 mile northwest of Highway 355 and 0.5 miles north of Turpentine Road and would consist of constructing the DMPRC on the site of the existing Hastings Range. The range area is oriented from east/northeast to west/southwest. Site 5 was determined to have major/medium-level adverse impacts due to earthmoving requirements to establish an adequate line-of-sight for targets in the range and target-firing area; medium-level adverse impacts on nine active and two inactive RCW clusters within the SDZ and two active and one inactive RCW cluster downrange; major/medium-level adverse impacts on 39 eligible/potentially eligible cultural resources sites in the SDZ and unknown impacts to 7,674 acres of land not (at that time) surveyed for cultural resources sites in the SDZ, major-level adverse impacts on noise increasing in this area and traveling off the Installation; and medium-level adverse impacts on training because placement of the proposed DMPRC in this location would restrict downrange activities on the existing Ware Range and create potential scheduling conflicts between Ware Range and the proposed DMPRC. In addition, this alternative would result in the SDZ for the proposed DMPRC expanding off and beyond the Installation's eastern boundary and into the residential and rural communities within adjacent Chattahoochee and Marion counties. For these reasons, this alternative was eliminated from further consideration in subsequent analyses.

2.3.3 Alternative Studied Further but Eliminated from Detailed Review: "Transport to Fort Stewart"

Under this alternative, a DMPRC would not be constructed at Fort Benning. Units would continue basic and intermediate Tank and BFV training only on the existing ranges at Fort Benning and then transport to existing ranges at Fort Stewart to conduct all advanced gunnery training. Internal scoping at Fort Benning resulted in the inclusion of this as a potential alternative during initial development of a PDEIS in late 2000 through 2003. Fort Benning personnel traveled to Fort Stewart to acquire data on the Fort Stewart existing environment and ranges and to add agencies/organizations/interested individuals from that area to the mailing list for the proposed DMPRC project. Information acquired during this site visit was incorporated into an early internal draft of the DEIS and is on file at the offices of the Environmental Management Division, Fort Benning. Fort Benning invited the community in and surrounding Fort Stewart to participate in the early public scoping phase via the first DMPRC newsletter, notices for the first public scoping meeting, and copies of the NOI. No comments from Fort

Stewart were received as a result of those efforts; however, some of the comments from Marion County residents indicated transport to Fort Stewart as their preferred alternative (Appendix G).

Ongoing analysis of this alternative determined it to be non-viable and it was eliminated from further in-depth evaluation in the DEIS and this FEIS. Specifically, the cost to transport all required troops and equipment (to include Tanks and/or BFVs) would be prohibitive, according to U.S. Army range experts. While troop and equipment transport provide some mobility training, relying on an off-site range for these routine exercises would reduce the soldier's training time and not allow enough time for the required on-range advanced gunnery training. Although sufficient range space exists on Fort Stewart to accommodate advanced gunnery training, the time to get on the queue for this training is approximately two years, which is an unrealistic lead time for scheduling training (personal communication, Weekley, 2003).

3.0 AFFECTED ENVIRONMENT

This section describes the existing natural and human environment on Fort Benning that may be impacted by the alternatives. Studies performed at the site of the three alternatives are detailed below. Fort Benning proposes to construct, operate, and maintain a DMPRC and its associated support facilities, such as buildings and utilities trenching. Several studies have already been conducted at the proposed locations of the two action alternatives in order to provide a comprehensive baseline environment for the analysis of alternatives and assessment of impacts for the proposed DMPRC on Fort Benning and to enable informed decisions regarding potential mitigation and monitoring options. Much of this effort has been focused on the site of the preferred alternative (Alternative III); however, existing, up-to-date surveys have been used to evaluate the site of the other build alternative (Alternative II) and the No Action/Status Quo Alternative (Alternative I). If, during this ongoing NEPA process, the Alternative III footprint is modified or if Alternative II or another alternative to the proposed action is selected, then additional surveys will be conducted. Unless otherwise indicated, Fort Benning personnel conducted all of the studies/surveys. A summary of these studies and their status are as follows:

- Wetlands Assessment - A wetlands delineation was conducted on the majority of the site of the preferred alternative (Alternative III) in April 2000, using the standard DMPRC design as a guideline for the parameters of the project area. This study resulted in the delineation of 149.14 acres of jurisdictional wetlands. The delineation report was forwarded to the Albany Field Office of the USACE Regulatory Branch, who verified the delineation. In May 2002, a design charrette was held on Fort Benning, resulting in a 15% design for the proposed DMPRC and an expansion of the project footprint. In October 2002, an additional delineation was conducted of the additional acreage not covered in the original study. The 2002 survey report, which included the acreage from the prior report, resulted in the mapping of a total of 324.6 acres of jurisdictional wetlands at Alternative III, although the total number of jurisdictional wetlands was eventually reduced to 315.2 as a result of the Savannah District COE Regulatory Branch's decision to remove several acres of isolated and therefore not jurisdictional, wetlands from the total. The Savannah District COE Regulatory Branch verified the amended delineation on 25 April 2003 (Appendix G). Additional details concerning wetlands issues may be reviewed in Section 3.1.4 of the FEIS. Wetlands in the no action/status quo (Alternative I) and the other build alternative (Alternative II) have been identified utilizing the National Wetlands Inventory (NWI) database.
- Biological Assessment (BA) – Fort Benning has submitted a BA for the site of the preferred alternative (Alternative III) to the U.S. Fish and Wildlife Service (USFWS) for formal consultation and development of their Biological Opinion (BO).
- Endangered Species Surveys – Surveys for the Federally-protected Red-cockaded woodpecker (RCW) were conducted during the Spring of 2001 at the site of the alternatives; these surveys will be updated, as needed, and used as the basis for continued analysis in this document and the abovementioned BA. Additional surveys for RCW will be conducted during the Spring and Summer of 2004, prior to either timber harvest or construction. Surveys for Relict trillium were conducted in March and April of 2004 on suitable habitat at the site of the preferred alternative; none were found. .

- Cultural Resources Surveys - Intensive cultural resources surveys (Phase I and/or II) have been conducted for the areas comprising Alternatives II and III. A Phase I survey has been completed for the area comprising Hastings Range, or Alternative I. The Cultural Resources Program Manager has currently used the best information available in evaluating the potential environmental consequences of this Alternative, which consists of the "No Action/Status Quo." Several sites potentially eligible for the National Register of Historic Places (NRHP) were identified in the area comprising Alternative III (preferred); therefore, Phase II surveys were conducted to further evaluate the status of most of these potentially eligible sites. As a result of the Phase II survey, three sites of Euro-American heritage and three sites of Indian heritage were determined eligible or potentially eligible for the NRHP. During the past two years, Fort Benning has informally coordinated this project with the Tribes during several consultation meetings. Formal consultation with both the SHPO and the Tribes has been requested regarding the potential impacts to and protection of these sites (Appendix G).
- Noise – The Fort Benning Range Division submitted information to USACHPPM detailing current and future rounds fired on Fort Benning; this information was used to generate noise contour maps and was used in the analysis of potential noise impacts for each of the DMPRC alternatives. Fort Benning is currently awaiting receipt of the Environmental Noise Management Plan from United States Army Center for Health Promotion and Preventive Medicine (USACHPPM).

3.1 Natural Environment

3.1.1 Topography

Most of Fort Benning is located south of the Fall Line; however, there is a small area of the Piedmont Province located in the northeastern part of the Installation. The Fall Line is defined by the overlap of Coastal Plain strata on top of Piedmont rocks. This is also the area where the Piedmont basement rocks are exposed in streams flowing to the Atlantic Ocean and the Gulf of Mexico. The location of Fort Benning in relation to the Fall Line makes the Installation unique. The result is the overlapping diversity of Piedmont and Coastal Plain habitats and the associated occurrence of diverse plant and animal communities. The effect is not limited to terrestrial (land-based) communities, but also is reflected in the physical features and aquatic (water-based) communities of the streams that pass through or arise within the Installation. The predominately rolling terrain is highest in the east (which includes the location of the proposed action and its alternatives), rising approximately 740 feet above sea level, and lowest in the southwest along the Chattahoochee River, about 190 feet above sea level. Along the Fall Line Sand hills, the crystalline rocks of the Piedmont lie beneath the marine or fluvial sediments. The crystalline and sedimentary deposits may be exposed in relatively close proximity. For this reason Fort Benning contains a varied topography. Upland slopes range from steep to gently sloping and comprise most of the land on the Installation. The remaining area consists of relatively flat uplands or terraces adjacent to or near the Chattahoochee River.

3.1.1.1 Surface Geology

The sedimentary sequences (soil layers) of the Coastal Plain that overlie the crystalline basement rocks at Fort Benning consist of materials deposited during the Cretaceous, Tertiary, and Quaternary Periods. The Cretaceous Period sediments form the uplands and consist of the five following geologic formations. Descriptions are taken from Reinhardt and others (1994).

- Kr - Ripley Formation (Upper Cretaceous): Fine to very fine, calcareous quartz sand, massive burrowed to bioturbated, greenish-gray, weathers to dusky yellow, contains abundant muscovite, glauconite, and locally abundant carbonaceous debris; local clean quartz sand lenses. Ledge-forming, carbonate-cemented sand beds and calcareous concretions are common in upper part of unit. Thickness ranges from 133 to 250 feet. The Ripley Formation is found only along the southeastern boundary of Fort Benning. This area is also where the highest elevations on the installation are found.
- Kc - Cusseta Sand (Upper Cretaceous): Medium to coarse quartz sand, pale yellow to light olive gray, thinly bedded to laminated clay, medium olive-gray to brownish-black, and micaceous fine sand, light olive-gray. Formation thickness ranges from 150 to 233 feet.
- Kb - Blufftown Formation (Upper Cretaceous): Fine sand to sandy clay, calcareous, glauconitic, and micaceous, light brownish-gray to olive-gray, interfingers with medium to coarse sand, quartzose, pale yellow. Locally abundant carbonaceous debris, shell beds, and calcareous concretions. Formation thickness ranges from 200 to 433 feet.
- Ke - Eutaw Formation (Upper Cretaceous): Fine to very coarse sand, very pale orange to yellow, and clay, brownish -gray. Thickness of the unit ranges from 100 to 280 feet.
- Kt - Tuscaloosa Formation (Upper Cretaceous): Fine to very coarse sand, pale yellowish-green to pale orange, crossbedded, quartzose and containing abundant potassium feldspar, interbedded with massive sandy clay, pale olive to reddish-brown, locally mottled. Gravelly and poorly bedded deposits at base difficult to distinguish from residuum on underlying crystalline rocks. Thickness ranges from 165 to 500 feet.

3.1.1.2 Soils (Figure 8)

The soil surveys completed at this time by the U. S. Department of Agriculture (USDA) Natural Resource Conservation Service (NRCS) for Fort Benning on the Georgia side are for Chattahoochee and Marion Counties and Muscogee County. The soil survey for Russell County, Alabama, has recently been updated and a text version of the survey, including a description of the soils, is available through the following USDA website: http://soils.usda.gov/soil_survey/surveys/al_russell/al_russell.pdf.

There are two basic soil provinces on Fort Benning: the Georgia Sand Hills and the Southern Coastal Plains. The Georgia Sand Hills are a narrow belt of deep sandy soils with rolling to hilly topography. These soils are primarily derived from marine sands, loams, and clays that were deposited over acid crystalline and metamorphic rocks. South of the Sand Hills are the Southern Coastal Plain soils, which are divided into nearly level to rolling valleys and gently sloping to steep uplands. Southern Coastal Plain soils in this area have a loamy or sandy surface layer and loamy or clayey subsoil (Cooperative Extension Service 1993).

Soils in the Russell County portion of Fort Benning range from sandy to clayey and from somewhat excessively drained to very poorly drained. The topography in this area is varied,

ranging from highly dissected upland areas that have high relief to broad, nearly level stream terraces and flood plains along the Chattahoochee River and other major streams. Soils in the Blackland Prairie area, located in the west-central part of the county, are dominantly clayey and range from acid to alkaline in reaction. The topography in this area is generally smooth to gently rolling with low relief (USDA, 2002).

3.1.1.3 Generalized Surface Soil Textures

Soil texture information is provided in the sections below. The existing ordnance impact areas of A20 and K15 and the areas around the firing ranges along Dixie Road are not mapped in the modern method of soil surveying as these areas have restricted access. As a result, data from a 1928 USDA soil survey was manually digitized to fill in the gaps.

3.1.1.4 Highly Erodible Soils

Based on the available soil survey data, most of Fort Benning's soils are identified as highly erodible. The degree of erodibility is determined by factors such as drainage, permeability, texture, structure, and percent slope. The existing ordnance impact areas of A20 and K15 and the areas around the firing ranges on Dixie Road were not mapped because of safety/access restrictions. The locations of the three alternatives are all within areas containing highly erodible soils (personal communication, Hollon, 2003).

3.1.1.5 Physiographic Soil Units

Piedmont - Although Fort Benning lies entirely to the south of the Piedmont ecological unit, small inclusions of Piedmont geology, soils, and vegetation occur in the northeastern portions of the Installation. The Piedmont is characterized by ultisols (Thermic Udic Kanhapludults and Rhodudults), which have weathered in place from micaceous, clayey, sandy saprolite. Upland Piedmont soil series in the vicinity of Fort Benning include the Cecil sandy clay loam, Pacolet clay loam, and Wedowee sandy loam. Upland Piedmont soils in this region are typically highly eroded and often only subsoil remains. Piedmont soils mapped on Fort Benning are mostly alluvial soils associated with streams, which flow onto the Installation from the Piedmont. Prominent among these are the Toccoa and Chewacla series, mapped on Holocene alluvium in the northeastern portion of the Installation.

Sand Hills - The Sand Hills subsection covers approximately the northeastern two thirds of Fort Benning, and consists largely of light-textured soils on a dissected upper Coastal Plain landscape. Sand Hills soils are also found in the southeastern portion of the Installation. The Sand Hills are part of the Lower Coastal Plains and Flatwoods section of McNab and Avers (1994), as are the Lower Clay Hills (below). Upland soils in the Sand Hills are loamy sands and sands, and on Fort Benning are found on the Tuscaloosa, Eutaw, and Cusseta geologies. Prominent upland soil series are the Ailey loamy coarse sand, Troup loamy fine sand, and Vaucluse sandy loam on the hilltops and Troup, Vaucluse, and Pelion loamy sand on side slopes. All of these soils have sandy surface horizons and loamy subsoils and are highly permeable, droughty, and low in organic matter. The locations of the three alternatives are all within the Sand Hills subsection (personal communication, Hollon, 2003).

Upper Loam Hills - The Upper Loam Hills are a subsection of the Middle Coastal Plains of McNab and Avers. They cover most of the southwestern third of Fort Benning. Soils in this subsection are Thermic Udic Hapludults and are heavier textured and more mesic than soils of the Sand Hills (McNab and Avers, 1994). They also generally have higher water holding capacity and higher organic matter content. Predominant series include Cowarts loamy sand and Nankin sandy clay loam. On Fort Benning, the Upper Loam Hills occur on the Blufftown geological formation.

Lower Clay Hills - Fort Benning lies to the north and east of the Lower Clay Hills subsection. This subsection is characterized by Thermic Udic Paleudults, Hapludults, and Kandiudults formed in Tertiary and Quaternary marine deposits on the Coastal Plain.

3.1.2 Vegetation

Fort Benning is included within the Longleaf Pine Ecosystem, which once covered over 90 million acres of the southeastern United States. Within this region the upland areas were historically dominated by longleaf pine (*Pinus palustris*) with a mixture of other pine species within the stands. Oaks and other less fire tolerant species dominated the drains and areas, which were not subject to natural wildfires. As a result of changes in agricultural and forestry practices and of land ownership through the past 150 years, however, the original vegetative cover has been modified to a predominantly coniferous/deciduous mixture. Vegetated acreage on Fort Benning consists of approximately 16,000 acres of lawn and grassed areas, approximately 4,000 acres of open land and old fields (shrubs and herbaceous plants), and approximately 163,000 acres of woodland (includes the ordnance impact areas and excludes the approximately 1,000 acres of water bodies). Loblolly (*Pinus taeda*) and Longleaf Pine (*Pinus palustris*) are the principal conifers on the reservation and comprise approximately 54,000 acres of the woodlands. The remaining 109,000 acres of woodland are comprised of approximately 55,000 acres of mixed pine and hardwoods and 54,000 acres of hardwood forest (personal communication, Thornton and Larimore, 2002, 2003).

There are more than 1,275 species of plants on Fort Benning. These include trees such as the Longleaf Pine and White Oak (*Quercus alba*), shrubs such as Waxmyrtle (*Myrica cerifera*), vines such as Muscadine Grape (*Vitis rotundifolia*) and Poison Ivy (*Rhus radicans*), and herbaceous groundcover such as grasses and legumes. Trees and other plants are also important for many other reasons, including shade, erosion control, wildlife habitat, timber products, medicinal products, and realistic training scenarios. Various controls are in place to protect plant life, but some use is authorized. For example, underbrush and grass may be cut and used for camouflage during training exercises, but no vegetation may be disturbed inside RCW clusters. Cutting of trees and live limbs in training areas cannot occur without prior approval of Directorate of Public Works (Conservation Branch) through the FB Form 144-R (Record of Environmental Consideration) process. Harvest of firewood is allowed by permit from the Corps of Engineers; in addition, USAIC Regulation 210-4 (Range and Terrain Regulation) and USAIC Regulation 210-5 (Garrison Regulation) address these issues in more detail.

There are currently 14 United States National Vegetation Classification Alliances (USNVCA) within the area of the three alternatives (Tables 2-4, below). The current acreage for the vegetation types and forest stand types are presented in the following tables for the three alternatives.

Table 2. Vegetation within Alternative I Area.

Alternative I (No Action/Status Quo)	
United States National Vegetation Classification Alliances	**Acres**
Nyssa biflora - Acer rubrum - (Liriodendron tulipifera) saturated forest	1
Unvegetated range lands	254
Pinus palustris / Quercus spp. Woodland	7
Pinus palustris planted forest	1
Pinus taeda woodland	1
Quercus laevis woodland	101
Total Acres	**365**

Table 3. Vegetation within Alternative II Area.

Alternative II (Compartment K21)	
United States National Vegetation Classification Alliances	**Acres**
Liquidambar styraciflua – (Liriodendron tulipifera, Acer rubrum) temporarily flooded forest	25
Liquidambar styraciflua forest	35
Unvegetated range lands	79
Nyssa (aquatica, biflora, ogeche) floodplain seasonally flooded forest	129
Nyssa biflora – Acer rubrum – (Liriodendron tulipifera) saturated forest	119
Pinus palustris / Quercus spp. Woodland	452
Pinus taeda – Liquidambar styraciflua – Acer rubrum saturated forest	6
Pinus palustris planted forest	20
Pinus taeda forest	20
Pinus taeda woodland	472
Quercus alba – Quercus (falcata, stellata) forest	84
Quercus falcate forest	96
Quercus laevis woodland	84
Quercus nigra forest	20
Total Acres	**1641**

Table 4. Vegetation within Alternative III Area.

Alternative III (Compartment D13 – Preferred)	
Fort Benning's Forest Stand Classification	**Acres**
Bottomland Hardwood-Yellow Pine	389
Loblolly Pine	415
Longleaf Pine	163
Unvegetated range lands	60
Mixed Pine	213
Mixed Pine – Longleaf	10
Sweetbay-Swamp Tupelo-Red Maple	170
Upland Hardwood-Yellow Pine	223
Yellow Pine-Cove Hardwood	4
Yellow Pine-Upland Hardwood	162
Total Acres	**1809**

3.1.3 Water Quality

3.1.3.1 Ground Water

The state of Georgia possesses some of the largest and purest groundwater aquifers in the world. Fort Benning is in the Coastal Plain hydrogeologic province of Georgia and Alabama, whose principal ground water source is the Cretaceous aquifer system. The recharge area for these aquifers is the Sand Hills area (Georgia DNR, 1986). The Georgia Geologic Survey identifies the Cretaceous aquifers in the Fort Benning area as the A-3 through A-6 aquifers. The confining strata above and below the aquifers are designated C-3, C-4, and C-5. Aquifer A-6 is part of the upper Tuscaloosa and the overlying Lower Eutaw formations. This aquifer typically has the capacity to yield approximately 50 gallons of water per minute (gpm) near the Fall Line, but yields increase to approximately 700 gpm near the southern Installation boundary. Aquifer A-6 water is usually of uniformly good quality.

Aquifer A-5 is part of the basal sedimentary sequence of the Blufftown Formation. The A-5 water is more acidic than that of A-6. Some sedimentary lenses of the A-5 aquifer contain gypsum crystals, which result in a high sulfate content. Aquifer A-4 is in the upper sedimentary sequence of the Blufftown Formation and it has increasing amounts of dissolved solids, sodium, and bicarbonate concentrations. Both the A-5 and A-4 aquifers have low yields and are usually combined with other aquifers to produce adequate supplies. The A-3 aquifer correlates with the Cusseta Sand Formation. Yields from this aquifer range from 1-10 gpm in the area around the Installation. This aquifer is not considered an individual source aquifer (Georgia DNR, 1986).

There are seven water supply (drinking water) wells on Fort Benning proper; however, it is not proposed to use any of those wells for the water needs of the proposed DMPRC, which would be met via the sinking of a new well dedicated for sole use by the new range and its associated support facilities.

3.1.3.2 Surface Water (Figure 9)

The Chattahoochee River dominates the surface water regime at Fort Benning (Figure 8). The Chattahoochee River, along with the Flint River to the east, is a major component of the Apalachicola River drainage basin of eastern Alabama, western Georgia, and the Florida panhandle. The principal tributary on the Installation to the Chattahoochee is Upatoi Creek, which has several lesser tributaries flowing into it. Smaller streams proximate to the northeastern portion of the Installation are Sally Branch Creek to the east and Bonham Creek to the west (personal communication, Swiderek, 2002).

Most streams found within the Installation boundary drain into the Chattahoochee River. A very small area in the southeast corner of the Installation drains into the Flint River Basin to the east. These two rivers join to the south and flow into the Gulf of Mexico. The largest body of water associated with the northeastern portion of the Installation is the Chattahoochee River, a major perennial stream that flows broadly over extensive lowlands in a southerly direction, separating the Georgia and Alabama portions of Fort Benning. Numerous oxbows, abandoned meander channels, isolated ponds, and wetland areas are found along the Chattahoochee River. Another significant surface water body is Upatoi Creek, which serves as the source of surface water withdrawal for drinking water, residential, commercial, and other uses on Fort Benning (INRMP, 2001). It is a major perennial stream and serves as the main drainage basin for the other streams and tributaries on Fort Benning, eventually emptying into the Chattahoochee River.

Surface water systems at the site of the two proposed action alternatives include Pine Knot Creek, Sally Branch, and Bonham Creek. At the site of the preferred alternative, Alternative III, Bonham Creek flows from southeast to northwest. Within this area, two small, unnamed tributaries also flow into the creek. Several large, south-facing, sloped seepage areas are located on the northeastern side of the creek and are at a higher elevation than the creek. This situation causes water from these seepage areas to flow into the creek. Sally Branch flows from southeast to northwest. Two small, unnamed tributaries flow into Sally Branch from the western side. Several south-facing, sloped seepage areas are located on the northeastern side of the stream and are at a higher elevation than the stream, causing water to flow into the stream. Pine Knot Creek flows from east to west. The elevations of these seepage areas are approximately 325 feet to 350 feet above sea level.

Fort Benning is conducting ecosystems research under the Defense Department's Strategic Environmental Research and Development Program (SERDP). This SERDP Ecosystem Management Project (SEMP) has more than 20 researchers from 12 universities and four government laboratories taking the post's environmental pulse from some 800 monitoring sites. Fort Benning and SEMP researchers will work together to help ensure that ecological monitoring is useful for pre-construction and post-construction monitoring. For example, the monitoring required for an Erosion, Sedimentation, and Pollution Control Plan (ESPCP) may incorporate existing SEMP monitoring. Fort Benning will seek adjustments to the SEMP research plan to help ensure some monitoring occurs on, and downstream from, the DMPRC site.

3.1.3.3 Impaired Streams and Total Maximum Daily Loads on Fort Benning (Figure 10)

A Total Maximum Daily Load (TMDL) is defined as the amount of a particular pollutant that a water body (stream or water segment, lake or estuary) can receive and still meet its beneficial use designation and state water quality standards for that pollutant. TMDLs are developed for all water bodies identified as not meeting water quality standards and for which there are no ongoing actions to resolve the impairment.

3.1.3.3.1 Total Maximum Daily Loads for Sediment

The State of Georgia has identified 31 stream segments in the Chattahoochee River Basin as "water quality limited" [i.e., Clean Water Act, Section 303(d) listed] or impaired due to sedimentation. The Biota Impacted designation is given when studies show a modification of the biological community. The following six impaired stream segments are located within the Installation boundaries (see Figure 10 and Table 5):

Table 5. Impaired Streams (TMDLs) on Fort Benning (GADNR, 2002a).

Water Body Name	Location	Portion of the Water Body on Fort Benning	Media of Concern	Annual Average Load (tons/year)
Little Hitchitee Creek	Southern boundary of installation	Less than 100 meters (± 50 m)	Sediment	555
Little Juniper Creek	Northeast boundary of installation	5 Kilometers	Sediment	1,486
Little Pine Knot Creek	South of K-15 Ordnance impact area	6.5 Kilometers	Sediment	272
Pine Knot Creek	East of K-15 Ordnance impact area to eastern boundary	20 Kilometers	Sediment	6,945
Tiger Creek	Sand Hill cantonment area	6 Kilometers	Sediment	625
Chattahoochee River	Upatoi Creek to Railroad at Omaha	16 Kilometers	Fecal Coliform	NA (as long as NPDES limits not exceeded)

Data collected during the development of the TMDL suggests that impaired streams may be due to sediment resulting from past land use practices. Farmland use, specifically row crops, appears to have been a major source of sediment. The established TMDL determines the allowable sediment load and is based on the hypothesis that an impaired watershed having annual sediment loading rates similar to other streams that are not impaired will remain stable. It is believed that if sediment loads are maintained at an allowable level (i.e., no more than the 2002 annual average sediment load), streams will repair themselves over time. (GA DNR, June

2002b). No set "allowable" level has been established for the stream segments on Fort Benning; instead, the Installation is utilizing management practices, as defined in the GA DNR guidance for TMDLs (GA DNR, 2002a, 2002b), which include the following:

- Implementation of an ESPCP for land disturbing activities to meet the requirements of the National Pollutant Discharge Elimination System (NPDES) permit program
- Implementation of Georgia Forestry Commission (GFC) Best Management Practices for forestry
- Adoption of Natural Resources Conservation Service (NRCS) Conservation Practices
- Adherence to the Mined Land Use Plan prepared as part of the Surface Mining Permit Application (not applicable to the DMPRC proposal)
- Adoption of proper unpaved road maintenance practices
- Mitigation and prevention of stream bank erosion due to increased stream flow velocities caused by urban runoff

3.1.3.3.2 Total Maximum Daily Loads for Fecal Coliform

The State of Georgia has identified 79 stream segments located in the Chattahoochee River Basin as water quality limited due to fecal coliform. A stream is placed on the partial support list if more than 10% of the samples exceed the fecal coliform criteria, and is placed on the not support list if more than 25% of the samples exceed the standard. Currently, the Chattahoochee River segment located between the Upatoi Creek and the railroad at Omaha, GA, is the only stream segment on Fort Benning identified as not meeting the fecal coliform standard.

Part of the TMDL development process is to identify potential source categories. Sources are broadly classified as either point or non-point sources. A point source is defined as a discernable, confined, and discrete conveyance from which pollutants are or may be discharged to surface waters. Non-point sources are diffuse, and generally, but not always, involve accumulation of fecal coliform bacteria on land surfaces that wash off as a result of storm events. (GA DNR June 2002b). Fort Benning has two permitted point sources (wastewater treatment plants) that discharge to the Chattahoochee River, as well as a general storm water permit. Combined point and non-point source fecal coliform releases originating from sources located upstream from the Installation are also contributors for fecal coliform in the Fort Benning section of the Chattahoochee River; however, none of these releases have occurred near the site of the three alternatives. The waste load allocation (WLA) is established by the GA DNR and is used to determine the "maximum allowable" levels of fecal coliform that may be discharged into the stream or river. As long as Fort Benning maintains its discharges below the WLA, it is not required to reduce its discharge into the Chattahoochee River and is in compliance with the TDML program (GA DNR, 2002b).

Management practices recommended by GA DNR, and followed by Fort Benning, to reduce and/or maintain point and non-point fecal coliform source loads include; compliance with NPDES permit limits and requirements, adoption of Natural Resource Conservation Service Conservation Practices, and application of Best Management Practices (BMPs) appropriate to agricultural or urban land uses.

3.1.3.4 Storm Water

Storm water discharge in the Main Post districts of Fort Benning, GA, drains directly into the Chattahoochee River through a storm drain system. Other stormwater on the Installation drains via culverts, ditches, swales, and natural seepage and overland flow. Stormwater from the satellite cantonment areas of Harmony Church, Kelley Hill and Sand Hill, as well as the training compartments, drain directly or indirectly into nearby surface water bodies.

3.1.4 Wetlands (Figure 11)

Fort Benning has an overlay map of the wetland areas on Post that was generated from data obtained from National Wetland Inventory (NWI) maps (also available at DPW for review) and USDA Natural Resources Conservation Service county soil surveys that show soil types that are hydric. Color infrared aerial photographs, and the terrain analysis for Fort Benning also provide information on hydric soils. The vegetation and hydrology criteria, required for jurisdictional wetland delineation, do exist in the northeastern portion of the Installation (Figure 11) and specifically at the two action sites for the proposed DMPRC (Alternatives II and III); no wetlands are known to exist at the site of Alternative I, Hastings Range. The decision to fully delineate only the Alternative III site was determined during planning meetings for the proposed DMPRC because of limited resources, when it was designated as the preferred alternative. Analysis of wetlands impacts to the Alternative II site were completed utilizing information obtained from the NWI. If Alternative II were chosen, a complete wetlands delineation would be conducted.

The footprint of Alternative II is situated directly over Little Pine Knot Creek and its tributaries. This site contains approximately 15,071 linear meters of tributaries and approximately 230 acres of associated wetlands. Most of the wetland area contains Bibb sandy loam soil (a hydric soil) as shown in the Soil Survey of Chattahoochee and Marion Counties. Little Pine Knot Creek is located near the center of the project area and is listed as an “impaired stream” for sedimentation (see Section 3.1.3.3, TMDLs).

Fort Benning initially delineated the wetlands on the site encompassing Alternative III between 25 October 1999 and 9 February 2000, to provide an evaluation and delineation of potential Federally protected jurisdictional areas. On 6 October 2002, an additional delineation was initiated, due to the expansion of the proposed DMPRC footprint resulting from the development of the 15% design. This supplemental delineation included both the original study area plus an additional 100 meters on all sides beyond the boundaries of the original study to fully encompass the new, expanded footprint for the proposed DMPRC.

The primary purpose of the site studies was to determine the occurrence of Federally-regulated jurisdictional areas (including wetlands, streams, and drainages), as defined by the 1987 version of the Corps of Engineers Wetlands Delineation Manual. The study consisted of a field survey in which the jurisdictional area boundaries are physically marked to classify the site in terms of its status, based on the Federal Manual. The marked boundaries were mapped with a Global Positioning System (GPS) and overlaid onto an existing topographic map, producing a map of the jurisdictional areas.

The 2002 survey, which included the acreage from the 2000 survey, originally resulted in the mapping of a total of 324.6 acres of jurisdictional wetlands at the site of the Preferred Alternative (III), consisting of wetlands along Bonham Creek, Sally Branch, and Pine Knot

Creek. After review by the Albany, GA, Corps of Engineers Regulatory Branch (COE), some of the isolated wetlands at the site were deducted from the total acreage because they were not considered jurisdictional wetlands, resulting in a revised wetland acreage total of 315.2 acres at the site of the Preferred Alternative (III).

The Federal Water Pollution Control Pollution Act Amendments of 1972, Section 401, requires that anyone or agency applying for a Federal license/permit for an activity that may result in a discharge into navigable waters to obtain a certification from the state in which the discharge will originate or, if appropriate, from the agency regulating such discharges, such as the USACE. Water quality standards have been deemed an effective tool for states to protect the overall health of their wetland resources. The Section 401 Water Quality Certification allows for better consideration of state-specific water concerns. The certification allows state regulators to consider the extent of the impacts and regulators must be assured no further degradation of the environment will occur. The 1976 "Memorandum of Agreement for Coordination of Joint Application for a Department of the Army, Corps of Engineers, Dredge and Fill Permit, State of Georgia Marshland Protection Permit, Water Quality Certification" allows for the publication of a joint public notice for a permit to conduct an activity in navigable waters of the U.S. This certification, and joint public notice, would be required for Alternatives II and III only, since no wetlands exist at the site of Alternative I.

3.1.5 Unique Ecological Areas (Figure 12)

In accordance with Department of Defense Instruction 4715.3, Fort Benning, in conjunction with conservation partners, identified several areas that either have unique or rare ecological characteristics or that represent the best example on Fort Benning of a particular habitat or plant community type. These areas were chosen based on characteristics of their soil type, topography, slope, aspect, elevation, hydrology, flora, fauna, and other biotic and abiotic features. Many areas apparently contain remnant native plant communities that have experienced minimal disturbance relative to other similar communities. As a result, at least a few areas, or portions thereof, may require little or no active management to maintain their condition. Such areas can serve as reference sites for the biodiversity and ecological processes associated with natural communities. Additionally, each area seems to have experienced only minimal impacts in the past and is now experiencing only relatively minimal impacts, if any, from military training activities. To preserve the ecological integrity of these areas, Fort Benning will use their designation as Unique Ecological Areas (UEAs) (Figure 12) to ensure now and into the future that land-use planning and training activities account for their presence and their preservation requirements.

Designation as a UEA shifts management emphasis from a single species to a community focus, a key element in the ecosystem management approach. The UEA designation is a proactive management tool, rather than a set of legal restrictions. Designation as an UEA does not mean that there is any required change in land use, restriction from cutting trees, or other similar restrictions; however, since UEAs represent some of the rarest or highest quality areas on Fort Benning they receive priority for management activities and monitoring efforts, as identified in the Fort Benning INRMP. In some cases, such as in hardwood bottomlands, no "active" management is required. These areas are monitored, however, for unauthorized disturbances and surveys are conducted to determine threatened and endangered species presence. Some UEAs receive active management in the form of timber harvest. Although no permit is required to cut

trees in this area based on their status as a UEA, special consideration is given to these areas in the Installation's training compartment timber harvest plan. For example, the cut-to-length timber harvest method is usually used in these areas as it has the least adverse impacts on the soil, remaining trees, and appearance of the area because it leaves no skid trails or logging decks. It is considered an ecosystem friendly method of cutting. UEAs also receive priority for soil erosion projects, invasive species control, longleaf pine reforestation, road closures, and strict adherence to Best Management Practices. Further development of the UEAs concept will include a determination of the conservation significance of these areas, better-defined boundaries and buffers, and a specific management plan for each UEA.

In total, including designated buffer zones for the Piedmont Interface area, they encompass almost 21,400 acres and 15 separate sites. At present most boundaries and acreages are approximate representations and will be refined as the areas are further studied. Each UEA was identified initially by Fort Benning staff or by USFWS, The Nature Conservancy, or Georgia Natural Heritage staff who evaluated their condition in the field and made a preliminary determination that each area deserved consideration as an area of conservation significance. Those UEAs proximate to the site of the three alternatives are listed below.

- **Piedmont Interface -** This area is located within the northeastern part of the Installation. Although this area occurs within the Fall Line transition between the Piedmont and the Coastal Plain Physiographic Regions, some of its geologic and vegetative features are not characteristic of the Fall Line Sandhills. The area contains seven streams that flow out of the Piedmont, generally from north to south, and that are characterized by extensive floodplains with high-quality hardwood stands. The area also contains the largest granite rock outcrop on Fort Benning in training compartment O7, which extends for a quarter mile along a bluff above the old Randall Creek channel. Characteristic flora of the area consists of: Shumard oak (*Quercus shumardii*), White oak (*Q. alba*), Cherrybark oak (*Q. pagoda*), Swamp chestnut oak (*Q. michauxii*), ash (*Fraxinus spp*.), Loblolly pine (*Pinus taeda*), sweetgum (*Liquidambar styraciflua*), sycamore (*Platanus occidentalis*), hickory (*Carya spp.)*, elm (*Ulmus spp.)*, maple (*Acer spp*.), and Flowering dogwood (*Cornus florida*). This area is characteristic of the Stream Floodplain Ecological Group. Relict trillium (*Trillium reliquum*), a Federally endangered plant, occurs in at least seven separate populations in this area. Cox Creek contains the most diverse mussel fauna on Fort Benning and harbors three state-protected (Special Concern-Alabama) species: *Elliptio complanata*, *Villosa lienosa*, and *Villosa vibex*. Additional state-protected (Georgia) species in the area include: Sandhills bean (*Phaseolus polystachios sinuatus*), Smith's sunflower (*Helianthus smithii*), Incised agrimony (cut-leaf harvest lice) (*Agrimonia incisa*), Flyr's nemesis (*Brickellia cordifolia*), Needle palm (*Rhapidophyllum hystrix*), and Wide-leaved bunchflower (*Melanthium latifolium*).
- **Hastings Relict Sandhills Community -** This area is located within the northeast part of the Installation. Loblolly pines are scattered throughout some areas, but Longleaf pine (Pinus palustris) dominates the overstory vegetation. Mixed upland oaks (turkey, bluejack, and sand post oaks) (*Quercus laevis, Q. incana, and Q. margarettiae*, respectively) and Common persimmon (*Diospyros virginiana*) are co-dominants in the overstory and dominate the midstory. Common herbaceous species include: common Yellow false foxglove (beardgrass) (*Aureolaria pectinata*), Prickly pear cactus (*Opuntia compressa*), Goat's rue (*Tephrosia virginiana*), legumes, Pineland silkgrass (*Heterotheca graminifolia*, and other perennials. Some portions of the area have only grasses, herbs,

and small shrubs due to removal of longleaf pine and subsequent disturbance by tracked vehicles (for example, M1A1 Main Battle Tank) and frequent fire. This area is characteristic of the Longleaf Pine Sandhills Ecological Group. The deep sands of this area contain the densest population of Gopher tortoises (*Gopherus polyphemus*) (State Threatened – Georgia) on the Installation. The Dusky gopher frog (*Rana capito sevosa*) (Special Concern - Georgia) is found only in this area on Fort Benning. Other species found here include: the Eastern diamondback rattlesnake (*Crotalus adamanteus*) (Special Concern-Alabama), Southern hognose snake (*Heterodon simus*), Florida pine snake (*Pituophis melanoleucus mugitus*) (Special Concern-Georgia, State Protected-Alabama), Southeastern pocket gopher (*Geomys pinetis*) (State Protected-Alabama), Bachman's sparrow (*Aimophila aestivalis*) (Rare-Georgia, Special Concern-Alabama), Common ground dove (*Columbina passerina*) (State Protected-Alabama), RCW (*Picoides borealis*) (Endangered-Federal), and Incised agrimony (Special Concern-Georgia and Alabama). The deep sands that are characteristic of the soils in this area are subject to erosion. The dominant soils are Lakeland sand and Troup loamy sand. Isolated clay pockets occasionally lie close to the surface. These clay pockets support ephemeral ponds, such as those used by the Dusky gopher frog.

- **Lakeland Sandhills –** This area is located within the central portion of the Installation and contains some of the deepest sand on Fort Benning. It is a good example of a longleaf pine – scrub oak savannah. Typical flora includes longleaf and loblolly pine and Turkey oak. The area is characteristic of the Longleaf Pine Sandhills Ecological Group. Species present include Gopher tortoise (*Gopherus polyphemus*)(State Protected - Georgia), RCW (Federal – Endangered), Southeastern American kestrel (*Falco sparverius paulus*) (Special Concern-Georgia), and the largest known concentrations of Pickering's morning glory (*Stylisima pickeringii*) (Georgia - State Threatened) and woody goldenrod (*Chrsomya pauciflosculosa)* (Georgia – State Threatened) on the Installation.
- **Pine Knot Creek Blackwaters -** This area is located within the east-central portion of the Installation. This area represents the best example of a Coastal Plain stream on the installation. It encompasses Pine Knot Creek and Little 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. Characteristic flora of the area consists of: sweetgum, American holly (*Ilex opaca*), Swamp blackgum (*Nyssa biflora*), Turkey oak, Red maple (*Acer rubrum*), and Yellow hawthorn (*Crataegus flava*). Species present include the Southern brook lamprey (*Ichthyomyzon gagei*), Broadstripe shiner (*Pteronotropis euryzonus*) (Rare-Georgia) and Bog Sneezeweed (*Helenium brevifolium*) (Special Concern-Georgia and Alabama). This area is characteristic of the Small Stream Swamps Ecological Group.
- **Slopes of Northern Affinities -** This area occurs near the east-central boundary of the Installation. The area shows a remarkable contrast between dry upland areas and north or east facing slopes. The dry upland areas are typical of Coastal Plain Sandhill communities and include Longleaf pine, Turkey oak, and Gopher tortoises. The north or east facing slopes contain American beech (*Fagus grandifolia*) and some plants of northern affinity representative of the Georgia Piedmont and mountains, including: Mountain laurel (*Kalmia latifolia*), Indian cucumber root (*Medeola virginiana*), Wide-leaved bunchflower (*Melanthium latifolium*) (Special Concern-Georgia and Alabama),

Galax (*Galax aphylla*), and Crane-fly orchid (*Tipularia discolor*). The slopes are characteristic of the Mesic Hardwood Forests Ecological Group.

- **Upatoi Creek Flatwoods -** This area is located within the northeast corner of the Installation. The area has high quality forested wetlands along Upatoi Creek, as well as open wetlands. This area is characteristic of the Stream Floodplain Ecological Group. Species present include the Lax water-milfoil, White nymph, and Spotless marsh St. John's-wort (*Triadenum tubulosum*) (Special Concern-Georgia).
- **Longleaf Pine Sandhills -** This area is located within the northeastern part of the installation and is the best example of a pure longleaf pine stand in the sandhills. This area belongs in the Longleaf Pine Sandhills Ecological Group. Species present include Gopher tortoise, Bachman's sparrow, RCW, and Incised agrimony. This area is managed as a reference site. As a result, the only management allowed is prescribed burning.

3.1.6 Wildlife

Fort Benning is inhabited by approximately 345 species of wildlife (personal communication, Swiderek, 2002). These include 152 species of birds, 47 species of mammals, 47 species of reptiles, 24 species of amphibians, 67 species of fish, and 8 species of mussels (shellfish) (INRMP, 2001). Wildlife has many values including outdoor recreation, aesthetics, environmental monitoring, ensuring proper function of the ecosystem, providing sources of domestic stock, and many more.

State and/or Federal laws protect most species of wildlife, to various degrees. Harvest of game species, such as White-tailed deer (*Odocoileus virginianus*), Wild turkey (*Meleagris gallopavo*), Bobwhite quail (*Colinus virginianus*), rabbits (*Sylvilagus sp*), catfish (*Ictalurus sp.*), and Largemouth bass (*Micropterus salmoides*), is regulated by Installation personnel, Georgia Department of Natural Resources, Alabama Department of Conservation and Natural Resources, and the US Fish and Wildlife Service. Federal and state laws regarding hunting and fishing are addressed in USAIC Regulation 200-3 (Hunting and Fishing Regulation). Specific requirements for protection of some species of wildlife on Fort Benning (such as the RCW and Gopher Tortoise) are contained in USAIC Regulation 210-4 (Range and Terrain Regulation) and in Fort Benning's Endangered Species Management Plans. Other recreational opportunities, such as bird-watching and hiking, also occur on the Installation and are discussed in more detail in Section 3.2.2, "Surrounding and Existing Land Use."

3.1.7 Federally Protected Species (Figure 13)

Five Federally listed, threatened, and endangered species occur on Fort Benning. These include the Red-cockaded woodpecker (E), Wood stork (E), Bald eagle (T), American alligator (T [S/A], in which S/A = due to similar appearance), and Relict trillium (E). The RCW and the relict trillium, described below, are the only Federally protected species known to occur in the vicinity of the three alternatives.

3.1.7.1 Red-Cockaded Woodpecker

The RCW (*Picoides borealis*) was placed on the Federal list of endangered species in 1970. The reasons for its protected status included species rarity, documented declines in local populations and reductions in available nesting habitat. Although populations have become more fragmented and isolated, the RCW is rather widely distributed. The species is still found in all Southern and Southeastern Coastal States from eastern Texas into southern Virginia, and small interior populations are found in southeastern Oklahoma and southern Arkansas, and until recently, southeastern Kentucky. The largest populations are in the Coastal Plain forests of the Carolinas, Florida, Georgia, Alabama, Mississippi, Louisiana, eastern Texas, and in the Sandhills forests of the Carolinas (USFWS Biological Opinion, 1999).

RCWs have a social structure that involves a breeding pair and helpers that assist with cavity excavation and maintenance, egg incubation, feeding young, and defending the group's territory. Nesting generally occurs from April through June with some re-nesting attempts observed as late as August. Groups of RCWs nest in an aggregation of cavity trees called a cluster that is surrounded by contiguous foraging habitat. Discrete cluster sites are typically located where mature pine trees are more than 60 years old. Foraging habitat however, is more variable with timber taking on increasing value as the stands age past 30 years. Both nesting and foraging habitat can be characterized as open stands of pine with a scarce to moderate midstory. As the midstory becomes dense or reaches the height of cavities, cluster abandonment and decreased foraging value results.

Fort Benning has one of the largest RCW populations in the southeastern United States. The RCWs are well dispersed over the entire Installation, except that no active clusters are located on the Alabama portion of the Installation. In September 1994, The United States Fish and Wildlife Service (USFWS) issued a (Jeopardy) Biological Opinion (JBO) against the Installation that determined the ongoing military training and related activities at Fort Benning jeopardized the continued existence of the Installation's RCW population. Since that time, intense efforts were implemented to enlarge the endangered species staff at Fort Benning and to greatly enhance management activities needed to remove the jeopardy status as outlined in the Reasonable and Prudent Alternatives section of the USFWS' 1994 Biological Opinion. On September 27, 2002, the USFWS approved Fort Benning's Endangered Species Management Plan (ESMP) for the RCW and issued a Biological Opinion (BO) that included specific management activities. This relieved Fort Benning of the 1994 JBO and allowed the implementation of the "1996 Management Guidelines for the RCW on Army Installations." Fort Benning is also one of 13 primary core locations selected by the USFWS to manage for a RCW recovery population (451 clusters for Fort Benning). Presently, Fort Benning has a total of 311 manageable RCW clusters (251 active and 60 inactive, as of 2003) (Figure 12). There is an additional estimate of 43 active and 1 inactive clusters in ordnance impact areas A20 and K15.

As of August 2003, there are three active, three inactive, and one (planned) recruitment RCW cluster and 387.11 acres of suitable habitat in the vicinity (1/2 mile radius from range) of Alternative I, Hastings Range; nine active, three inactive, and seven recruitment RCW clusters and 1,946.75 acres of suitable habitat in the vicinity of Alternative II (Compartment K21); and seven active, three inactive, and five planned recruitment RCW clusters and 1,033 acres of suitable habitat in the vicinity of Alternative III (Compartment D13) (personal communication, Doresky, 2003). A recruitment cluster is created by the Installation personnel through the use of artificial inserts to attract RCWs into the area, with the hopes of establishing an active cluster.

RCW surveys are updated annually and a supplemental survey would be required prior to any construction activities at either of the two action alternatives, Alternatives II and III.

3.1.7.2 Wood Stork (E)

Wood storks are seen mainly on the Alabama portion of the Installation during late summer. Usually one to 20 birds is seen each year. They use shallow water ponds or Chattahoochee backwater areas depending on available food supplies and appropriate water levels. Management strategy for the Wood stork on Fort Benning is also detailed in an ESMP and consists of maintaining the current transient population and protecting the habitat in which they temporarily live and feed.

3.1.7.3 Bald Eagle (T)

Two Bald eagle nests (used by one pair of eagles) are located on the southern edge of the Installation near the Chattahoochee River. The eagles have produced successfully at least one fledgling since the first nest was discovered in 1992; therefore, the training compartment where their nest is located is closed during their nesting season. Management strategy on Fort Benning for the bald eagle is detailed in an ESMP and consists of maintaining the integrity of their habitat and feeding sources in order to eventually increase the number of nesting pairs from one to two.

3.1.7.4 American Alligator (T [S/A])

Fort Benning is located on the extreme northern limit of the American alligator's range. Large adults up to 13 feet have been observed. Habitat available to the alligator is limited and consists of fishponds and beaver ponds on the Georgia portion of the Installation and the backwaters of the Chattahoochee River in Alabama. Fort Benning also has an ESMP for the American alligator; basic management for this species consists of maintaining a stable population and maintaining the habitat in which it lives and feeds.

3.1.7.5 Relict Trillium (E)

Seven known populations of relict trillium are located in the northeastern-most areas of the Installation. These areas range up to several acres in size and in some cases contain several thousand individuals. These areas are critical to the recovery of the Relict trillium population. Current management activities for this species consist of surveys, monitoring efforts, and protection of sensitive areas. Management strategies on Fort Benning for this species are defined in an ESMP and consist of placing signs prohibiting digging adjacent to known populations, conducting additional surveys for unknown populations, and maintaining the habitat in which they live. A survey of suitable Relict trillium habitat in the area of Alternative III was conducted in March 2004 suitable habitat areas in the area of Alternative III; none were found (Figure 13 and Appendix G, response letter to USFWS).

3.1.8 State Protected Species (Figure 14)

There are 96 species (four amphibians, eight birds, seven fishes, four mammals, four mussels, nine reptiles, and 60 plants) of "conservation concern" (as defined per Department of Defense Instruction 4715.3) found on Fort Benning. A species is categorized as of "conservation concern" if it is listed by either the U.S. Fish and Wildlife Service and/or by a State as threatened (T) or endangered (E) or is otherwise identified as a candidate species, species of special concern, rare species, unusual species, or a watch-list species. Army Installations must be sensitive to those species listed as endangered or threatened under State law, but not Federally listed (AR 200-3). State listed species are not protected under the Endangered Species Act (ESA); however, whenever feasible, Installations cooperate with State authorities in efforts to conserve these species. Analysis in this document will be for state threatened and endangered species, per Army policy.

3.1.8.1 Gopher Tortoise

The Gopher tortoise (Georgia - Threatened) occurs in the sandy soil habitats found only in the northern two thirds and southeastern tip of the Installation. A dry land turtle, the gopher tortoise (tortoise) has a high, domed shell with shell lengths of up to 15 inches. They have stubby, elephant-like hind feet and flattened front feet with large toenails for digging. They favor dry, sandy ridges with open stands of longleaf pine, turkey oak and other scrub oaks. They also frequent open areas around road shoulders, food plots, and rights-of-way, which have well drained sandy soil. The tortoises dig long sloping burrows up to 30 feet long and extending up to 9 feet below the surface. These dens are used as shelter by tortoises, as well as by a variety of other sandhill residents, including the Eastern diamondback rattlesnake and the Dusky gopher frog. They feed on grasses and other plant material near the ground. Feeding trails are often visible leading from the den's sandy apron to foraging areas. Eggs are laid in or near the den apron in May, June, and July and hatch in about 80-100 days. Young tortoises are about the size of silver dollars and are very vulnerable to predation by crows, raccoons, opossums, foxes, skunks, and other animals. Over 8,200 tortoise burrows have been documented to date on Fort Benning.

The tortoise is a critical component of the longleaf pine-scrub oak community. Species management on Fort Benning consists of burrow and habitat protection. In areas with high vehicular traffic, "Sensitive Area" signs are posted around known active and inactive tortoise burrows, totaling 150 acres, and the burrows are also marked. These sites are located primarily in mechanized training areas. Digging activities and vehicles are required to stay 50 feet away from the burrows to protect the integrity of the burrow area (personal communication, Thornton, 2003). Based on the 1996 survey by USFWS, there are 249 known active/inactive tortoise burrows and 1,176 acres of Gopher Tortoise habitat in the area of the preferred alternative (Alternative III); 76 known active/inactive tortoise burrows and 225 acres of tortoise habitat in the area of the other action alternative (Alternative II); and 519 known active/inactive tortoise burrows and 986 acres of tortoise habitat in the vicinity of Hastings Range (Alternative I) (personal communication, Thornton, 2003). Additional surveys will be conducted to accurately assess the number of active/inactive tortoise burrows and habitat at the Alternative II site if it were chosen.

Auburn University is currently conducting a study on Gopher tortoise relocation stress at Fort Benning. So far, the study has resulted in the relocation of 14 gopher tortoises from the D-14 area to the F-3 area, where they will be monitored to see if there is a correlation between habitat quality and relocation stressors, such as immune system and reproductive functionality. The two-year study will also include the relocation of additional Gopher tortoises during the summer of 2004. Auburn University (AU) has surveyed a large portion of the preferred alternative (Alternative III) and has visited all of the known burrow locations within the area. They are now estimating that there are at this time only 20 to 30 tortoises still inside the construction/tree removal area. Prior to construction, further surveys will be conducted.

3.1.8.2 Indian Olive

Indian Olive (Georgia -Threatened) is found primarily in dry, open, upland forests of mixed hardwood and pine. The species is rare throughout its range and has sustained significant habitat loss due to the clearing of forestland. Many of the remaining populations are of only a single sex (the species is dioecious), are able to reproduce only asexually (that is, via root sprouts), and are therefore especially vulnerable to fragmentation of their habitat. Management for this species on Fort Benning is focused on forestry operation. All known plants on Post are flagged prior to any timber harvests to prevent the plants from being disturbed by the use of heavy equipment. There are no known populations of Indian olive at the location of the three alternatives (personal communication, Thornton, 2003).

3.1.8.3 Pickering's Morning Glory

Pickering's morning glory (Georgia listed - State Threatened) is a perennial, creeping vine. The stems sprawl over the ground from a central crown, with each primary stem one-two meters or more in length and capable of branching extensively, forming an intertwined network of trailing stems. The leaves are held upright, with the base narrowly tapering to a short (two millimeter) leafstalk. The flowers may be either axiliary, solitary, or in clusters with as many as five flowers atop a three-seven centimeters long stalk. The flowers are white, with five fused petals forming a funnel-like shape. The flowering period is from late May to mid-August, with the best search time during flowering, since plants deteriorate rapidly toward the end of summer. The species is found in coarse, white sands on sandhills near the Fall Line. These are scrub habitats with scant litter accumulation, sparse ground cover, and little canopy cover, the latter consisting mostly of scattered scrubby oaks and pines. The species is in decline due to habitat destruction. Fort Benning's management strategy for this species is to control encroachment of woody vegetation through prescribed burning and timber thinning, which should be beneficial to this light-loving plant. Even though there are no populations known to exist in the Alternative III range and target firing area, there is one population northwest of it, which is located within a proposed construction contractor staging area. There are no known populations near the location of the other two alternatives (personal communication, Thornton, 2003).

3.1.9 Migratory birds

Except for some resident game birds, such as Wild Turkey and Bobwhite Quail, most of the birds on Fort Benning are protected under the Migratory Bird Treaty Act (MBTA). This Act

implements various treaties and conventions between the US and Canada, Japan, Mexico, and former Soviet Union for the protection of migratory birds. Fort Benning manages and conserves migratory bird species through its INRMP and considers effects to migratory birds in any proposed action via the NEPA process.

There are approximately 150 species of birds protected under the MBTA present on the Installation either seasonally or year round. Fort Benning is currently cooperating with Federal, state, and private organizations in gathering information on many migratory bird species in this region. Fort Benning personnel are dedicated to making sound ecological management decisions while at the same time providing for the needs of the military to accomplish its mission. The action alternatives would alter the habitat in the area of construction; however, the area of the preferred alternative only represents about 0.9% of the available habitat for migratory birds on the Installation. This alteration is expected to be detrimental to those species that prefer a wooded habitat, but it may also benefit migratory species, which prefer a grassland setting. The typical breeding season for these species is spring through summer. Three common migratory birds on the Installation are discussed in more detail, below, as examples.

The Bachman's sparrow (*Aimophila aestivalis*) is a small (6 inches) bird with a brown back (with gray and black streaks), a white unstreaked underbelly, and a pale bill. It lives in the open pinewoods indicative of the northern portion of the Installation (Harper and Row, 1981). During the USFWS Terrestrial Survey 275 male Bachman's sparrows were identified by calls in training areas throughout the Installation. Of these identifications only 6 were located within the area of the preferred alternative. Habitat quality for this species is good and abundant on Fort Benning due mainly to the widespread use of prescribed fire, which promotes the open pine forests in which this species thrives. There are populations known to exist near the location of the three alternatives (personal communication, Thornton, 2003).

The Migrant loggerhead shrike (*Lanius ludovicianus*) is a small to medium-sized (8-10 inches) bird with a dark gray back, a whitish underbelly, a black facemask, and a black bill. It lives in open country with scattered trees, indicative of the northern portion of the Installation (Harper and Row, 1981). There is an abundance of suitable habitat for this species throughout many parts of the Installation There are populations known to exist near the location of the three alternatives (personal communication, Thornton, 2003).

The Southeastern American kestrel (*Falco sparverius*) is a medium-sized (9-12 inches) bird with a reddish back and wings, multicolored head with dark markings, and a buff colored underbelly. It lives in open countryside, which is indicative of the northern portion of the Installation (Harper and Row, 1981). This species is also known to occur and breed on the Installation. It has been observed in a variety of habitats such as open fields, clear-cut areas, loblolly/longleaf stands, open sandhills, and brushy fields. The two action alternatives may benefit the Southeastern American kestrel by opening up the forested areas and converting them to open habitat in which the bird can more easily find its primary prey species (small birds, large insects, and mice). There are populations known to exist near the location of the three alternatives (personal communication, Thornton, 2003).

3.1.10 Feral Swine

Feral swine (*Sus scrofa*) are self-perpetuating populations of swine that are able to survive off the land (free-ranging) without the assistance of humans. These feral swine probably originated from animals illegally released on or adjacent to Fort Benning for hunting purposes

and/or had escaped from local pig farms. Feral swine are widespread across the Installation and are considered a pest species for many reasons. A primary concern is the extensive damage due to their feeding habits and their characteristic "rooting" behavior. They can uproot and damage cables, wiring, targetry, bivouac sites, and other military assets. From an environmental perspective they destabilize the soil, which results in soil erosion and sedimentation in streams. Feral swine can jeopardize the establishment of ground cover, which can result in environmental degradation. Due to soil loss and direct impacts from "rooting," military structures could be damaged and the training could be disrupted. Current management for this species on the Installation focuses on controlling the population by having liberal hunting regulations such as no bag limit and expanded season lengths. In addition, trapping is conducted at specific locations to minimize damage to military assets and sensitive plants.

3.2 Human Environment

3.2.1 Socioeconomics (Figure 32)

The Columbus, Georgia, Metropolitan Statistical Area (MSA), which consists of Muscogee, Harris, and Chattahoochee Counties, Georgia and Russell County, Alabama, encompasses approximately 4,125 square miles. The majority of the social and economic effects of Fort Benning are felt in the Columbus MSA, but some impacts are experienced in the secondary area of influence, which consists of following counties: Barbour, Lee, Macon, Marion, Stewart, Talbot, and Webster, Georgia. This secondary study area encompasses 13,369 square miles. Certain pertinent data are presented below for the Columbus MSA, with broader data presented for the entire eleven-county area.

In 1980, the Columbus MSA had a population of 254,660. This figure increased to 260,860 by 1990 and to 274,624 by 2000, representing increases of 2.43 percent and 7.83 percent respectively from 1980 (U.S. Census Data, 2001). The majority of these people reside in Columbus, Georgia (Muscogee County), the second largest city in the state. The major urban center in the Alabama portion of the study area is Phenix City (Russell County), located across the Chattahoochee River from Columbus, Georgia. The secondary study area had a 1980 population of 402,598. The population for this area was 418,382 in 1990 and 464,143 in 2000, indicating increases of 3.92 percent and 15.2 percent respectively from 1980 (U.S. Census Data, 2001). In 2000, the largest single ethnical group in the Columbus MSA was Caucasian, accounting for 51.7 percent of the population. African Americans accounted for 44.7 percent of the population, and represent the predominant ethnic group in three counties (Macon, Alabama; and Stewart and Talbot, Georgia). Hispanic Americans accounted for 2.96 percent of the population and Asian Americans represented 0.65 of the population (U.S. Census Data, 2001). A majority of the population of the Columbus MSA resides in urban areas; seven of the eleven counties have a majority of their population living in rural settings.

Housing is predominantly concentrated in the Columbus MSA, which has an inventory of 101,457 units (U.S. Census Data, 2001). Of the occupied units (92,695), almost 40 percent are rentals. Although Columbus has a large inventory of rental housing units, generally in good condition, rents have been increasing at a fairly rapid pace, resulting in a lack of affordable rental housing for lower ranking enlisted personnel. The majority of military personnel are housed on base, although some 3,500 reside off-post in privately owned housing. Of the roughly 19,320 personnel housed on base, roughly 18,900 are housed in enlisted barracks. Approximately 3,600

enlisted personnel and 500 officers are housed in on-post family housing, and 108 officers and 26 enlisted personnel are housed on-post in unaccompanied personnel quarters. No military housing units are located in or proximate to the northeastern portion of the Installation (proximate to the location of the proposed action and its alternatives).

The Columbus MSA supplies most of the employment opportunities in the study area. More than 14,000 workers commute to Columbus, and approximately 7,000 commute to Fort Benning daily. The MSA serves as a regional trade, service, retail, wholesale, medical and cultural center, serving not only the city, but also the surrounding rural area. From 1970 to 1991, total employment in the secondary study area increased 23.42 percent, rising from 169,772 employees in 1970 to 209,535 in 1991. This increase has been particularly strong since 1980. Employment increases have been particularly strong in the retail trade; finance, insurance and real estate; and services industries. The major sources of employment are the Federal, state, and local governments, service industries, manufacturing, and retail trade. The unemployment rate of the study area has fluctuated from a low of 4.2 percent in 1970, to 7.9 percent in 1980, 6.7 percent in 1990, and 7.3 percent in 2000.

In 2000, Fort Benning employed approximately 7,152 civilian personnel. This figure represents a 16.4 percent decrease from the 1990 work force of 8,330 personnel. Fort Benning civilian employees provide a vast array of professional, technical, administrative, craftsmen, skilled labor jobs in support of the various missions. Currently, 58 percent of Fort Benning employees are paid from appropriations (General Schedule and Wage Grade); the remaining 42 percent are either contracted or paid from non-appropriated funds. A significant number of construction workers are also employed daily by construction contractors. In 2000, approximately 101 million dollars were spent on various construction contracts on Fort Benning. In 2000, the impact of Fort Benning employment (to include military pay) on the MSA economy was estimated at approximately 1.7 billion dollars (2001 Fort Benning Command Data Summary). Bureau of Economic Analysis (BEA) employment projections for the 11-county area indicate very little growth is expected from 1990 to 2035 (only 12.33 percent over that 45 year period). The major increases in employment are expected to occur in the services; finance, insurance and real estate; and retail trade industries. Some growth may also be experienced in the transportation and public utilities industry as well as the construction industry. Overall, manufacturing employment is expected to decline, mainly because of changes in the textile industry, although increases in employment in the durable good sector, specifically in the primary metals industry, are expected.

The major sources of tax revenue for counties in the northern portion of the Installation are school/property and sales taxes. Property tax assessments in the Columbus MSA range from $3.60 to $16.80 per $1,000 in value of property. Georgia and Alabama levy four-percent sales and use tax on the purchase of all goods and services (except for groceries in Georgia). In addition to these taxes, individual cities and counties within the northern portion of the Installation levy a sales tax of one to three percent. Other sources of revenue include the annual proceeds from the sale of forest products (i.e. timber operation) on Fort Benning, which are used for reimbursement of Installation and Corps of Engineer costs associated with the integrated management, production, and sale of forest products. Net proceeds (if any) are distributed as follows: 60% to the Forest Product Reserve Account and 40% to the state or states where the Installation is located. States then disburse funds to the counties based on percent of total acreage of the Installation.

The Installation is primarily served by four school systems: Muscogee County School System, Chattahoochee County School District, Phenix City-Russell County School Systems, and

Fort Benning Dependent's Schools. Approximately 7,015 military dependents attend school, 3,815 of which attend school in one of the three off-post districts. The Muscogee County School System is the largest of the three off-post systems, operating 52 schools and serving more than 29,000 students. With approximately 4,500 students and 300 teachers, the Phenix City Educational System is the second largest of the three main school systems and consists of six elementary schools, a middle school, junior high, and high school. Chattahoochee County educates roughly 424 students in its elementary school. Although Chattahoochee County has no high school, an agreement with Muscogee County allows high school students to be educated at one of the Muscogee County high schools. In addition to public education, there are 18 private and parochial schools in the Columbus MSA. Dependents of military personnel that reside within the Fort Benning Installation are educated at Fort Benning Dependents Schools located on post. There are seven schools within the system, with an enrollment of 3,200 students in grades pre-school to eight. High school students residing on post attend Muscogee County high schools. Higher education is available through several universities in the area, including Auburn University, Mercer University, Columbus State University, Troy State University, Georgia Southwestern, Tuskegee University, Chattahoochee Valley Community College, LaGrange College and Andrews Junior College. Troy State University and Georgia State University offer on-post courses at Fort Benning for military personnel. Vocational and technical training is offered at the Phenix City Vocational School and the Columbus Technical College, where associate degrees of applied technology may be obtained. No schools are located on or proximate to the northern portion of the Installation (proximate to the location of the proposed action and its alternatives).

3.2.2 Surrounding and Existing Land Use

3.2.2.1 Land Management

Fort Benning is the site of training, administrative, and residential activities, as well as associated land management activities. Harris County, north of Columbus and Fort Benning, is sparsely populated but is growing rapidly as a suburb of Columbus. Marion and Talbot Counties to the east of Fort Benning are predominantly agricultural and undeveloped vacant land with low density residential, commercial and public/institutional land use in a few small communities. Chattahoochee County to the south of Fort Benning is predominantly agricultural and undeveloped vacant land used for farming, forestry, and military training on the lands within Fort Benning. Cusseta, the County seat, is a small rural community with scattered residential, commercial and public facilities.

Fort Benning is divided into numerous training compartments (Figure 15), ranges, impact zones, drop zones, exclusion areas, cantonment areas, and recreation areas. The cantonment and family housing areas of Fort Benning occupy about 8 percent of the Installation. There is also a 1,095-acre recreation area located along Uchee Creek on the western bank of the Chattahoochee River (Gulf Engineers and Consultants, undated). Main Post, adjacent to South Columbus, is the largest and most developed of the cantonment areas, containing the Post Headquarters, the Infantry School and the barracks complex known as the Cuartels. Main Post includes Lawson Army Airfield (LAAF), Martin Army Community Hospital, the Post Exchange, the Commissary and various family housing areas. Sand Hill, 4 miles northeast of Main Post, contains barracks, dining facilities, classrooms and other facilities for training. Kelley Hill, 3 miles east of Main

Post, contains barracks and support facilities. Harmony Church lies 5 miles southeast of Main Post and south of U.S. Highway 27 and contains semi-permanent barracks and support structures. An active program for demolition of some of these structures is underway for land reclamation (forestry) and other uses, such as Major Construction, Army (MCA) and other projects (DPW, 2002). Fort Benning has or will conduct NEPA analyses of these actions. The majority of military personnel are housed on base, although a substantial number reside off-post in privately owned housing.

Training occurs on about 104,000 acres of the Installation. Activities include the movement of personnel through wooded and open areas on foot, movement of wheeled vehicles on dirt and gravel roads, and the establishment of bivouac sites. Activities conducted by the mechanized infantry and Tank units at Fort Benning are limited by the amount of suitable terrain to support movement of heavy vehicles. These activities include tactical movements (which involve driving tracked vehicles on Tank trails throughout the Installation), cross-country training (which involves driving tracked vehicles within maneuver areas), deployment training including airborne training involving deployment by helicopter into drop zones, and fording streams with heavy vehicles. Engineer units conduct activities to train and maintain readiness in support of the infantry and mechanized units, as necessary. Major support activities include construction and demolition of obstacles, assisting in river crossing operation, and supporting day-to-day operation and maintenance of the Installation.

Armor, artillery, and mortar firing occur from three established firing areas on the Installation. These are the Alpha Range Complex, Malone Range Complex and Oscar-Kilo Range Complex. Fire is directed toward controlled ordnance impact areas (K15, A20, etc.) covering approximately 16,000 acres. Other weapons fired at the ranges include miscellaneous rifles, pistols, anti-armor, and automatic weapons, as well as special training devices that electronically simulate the firing of weapons systems at targets (Gulf Engineers and Consultants, undated). Other activities related to military training include training in the operation and maintenance of vehicles, academic military training, and physical training. Various supporting units, such as transport units and signal units, also participate in training activities.

Across the Installation, there are existing heavy maneuver training areas for armored and mechanized vehicles and light maneuver training areas for dismounted training. The area of the three alternatives is currently used for heavy maneuver training.

3.2.2.2 Recreation

There are ample recreational opportunities for residents and visitors of the Fort Benning and Columbus, Georgia, and the Phenix City, Alabama, areas. Most recreation and leisure programs on Fort Benning are managed and administered by the Directorate of Communities Activities (DCA) under the Morale, Welfare and Recreation (MWR) Program. The operation and maintenance of those facilities and areas are the responsibility of the DCA and the DPW. Another activity on the Installation is recreational hunting. It is permitted Installation-wide except in restricted areas and designated training areas. Hunting on Fort Benning is regulated and coordinated with the schedule of field training exercise in the training compartments.

3.2.2.3 Range Sustainment

The DOD manages more than 25 millions acres of land. A DOD objective is to preserve natural resources and diversity, while providing the opportunity to achieve the military missions and to improve the health of our personnel by enhancing their work and living environment. Currently, military lands are coming under increasing pressures that have caused the continual loss of sustainability in natural systems and increased operational costs. In order to maintain these natural systems, DOD policies have been crafted to conserve military lands. Urban growth, otherwise known as sprawl or encroachment, has a direct impact on the DOD mission. Encroachment is a threat to sustaining the range management and mission capability of military installations. A recent amendment to the Official Code of Georgia (OCGA) at Code Section 36-66-6 states that the community leaders must notify the Installation regarding zoning proposals and/or land use changes within 3,000 feet of a military Installation (Senate Bill 261, signed into law by Governor Sonny Perdue, 4 June 2003). Georgia law requires responsible parties to notify the Installation Commander when proposed developments are in close proximity to the Fort Benning boundary.

DOD Directive 3200.15 states that, "It is DoD Policy that ranges and OPAREAs (operating areas) shall be managed and operated to support their long-term viability and utility to meet the National defense mission. All functional elements of installation, range, and OPAREA management shall be integrated fully to support the DoD testing and training missions" (DoD, 10 January 03). In order to implement this policy, the Directive points out the procedure for planning and management of the DOD range and OPAREA sustainment program. Under the DOD range and OPAREA sustainment program, Installations are required to identify current and future operational requirements necessary to meet test and training needs. In addition, Installations must identify encroachment concerns, environmental considerations, financial obligations, and safety factors necessary to influence current and future operational requirements. DOD Directive 3200.15 requires that when developing a new range, the Army must ensure that plans consider all aspects of a range's lifecycle including development, use, and closure. Upon range closure, the UXO clearance and any hazardous contamination would be removed or remediated. DOD is in the process of developing the Range Rule (personnel communication Veenstra, 2004) to further specify the process for closing a range and making it suitable for future use.

DOD policy further mandates that responsive range management plans should be developed and implemented to incorporate all other relevant planning documents or portions thereof. Range management plans should address requirements, including the issues identified above, using a functionally integrated decision-making process that includes Installation, range, and OPAREA managers, users, and environmental, legal, public affairs, safety, medical, and other support staffs. In addition, sound Geographic Information System (GIS) based range inventory and scientific data should be developed and utilized as the basis for decision-making to institute multi-tiered coordination and outreach programs that promote the sustainment of ranges and OPAREAs. Coordination and outreach programs should promote the resolution of encroachment issues, and should promote the understanding of the readiness, safety, environmental, and economic considerations surrounding the use and management of ranges and OPAREAs. Range programs should also ensure the consideration of stakeholder interests in DOD range-related decisions. Finally, range programs should improve communications and enter into cooperative agreements and partnerships with other Federal Agencies, and State, tribal,

and local governments, and with nongovernmental organizations with expertise or interest in DOD ranges and OPAREAs to further sustainment objectives. At the time of the writing of this FEIS, the Army policy to incorporate range sustainment is still pending. This FEIS furthers these goals by involving public stakeholders, mitigating impacts to natural resources in the range design, and coordinating with other Federal and state agencies.

The Range and Training Land Program (RTLP) Development Plan (RDP) for Fort Benning was developed in accordance with AR 210-21 and the associated revised RTLP Generic Methodology (GM) dated September 1998. The RDP provided a review of the available assets (e.g. ranges and related facilities), identified the users, and established their training needs based on Army training and resource doctrine. It established current requirements and utilization levels for available training assets, providing a near and long term project plan for training, public works, and environmental planners. The projects identified in the RDP consider the impacts on Fort Benning's mission, economic feasibility, environmental stewardship, and potential productivity enhancements (RDP, 2003). One of the recommended courses of action under the RDP is to construct a DMPRC at Fort Benning. Specifically, the RDP states, "Benning has a documented requirement to support tank, Bradley, and combined arms collective live fire training exercises and Infantry POI courses." This equates to a 115-day throughput requirement on an Army standard MPRC range. The DMPRC is a required range in accordance with TC 25-8.

In addition, the RDP recommends that Fort Benning "Modify an Existing MPTR to an Army Standard Digitized MPTR (FCC 17865). Fort Benning has a documented requirement to support tank and BFV training exercises and infantry Program of Instruction (POI) courses. This equates to a 373-day throughput requirement on an Army standard MPTR range. This throughput calculation is based on range scheduling of the three MPTR ranges on Fort Benning (which, together, have a total of 1,095 training days available to meet this throughput requirement); spreading this throughput requirement across the three ranges allows time for maintenance and environmental access, such as wildlife habitat management and improvement activities. Fort Benning has one automated and two non-automated MPTRs. Constructing a new MPTR will allow tank, Bradley, and recon units to train to standard. Fort Benning's RDP identifies current and future requirements for ranges, and incorporates a number of interdisciplinary topics. The RDP also generally takes into account some encroachment issues and environmental concerns.

Sustainable Design and Development (SDD) is an integrated approach to planning, designing, building, operating and maintaining Army facilities in a collaborative and holistic manner among all stakeholders. The President and the Army have mandated SDD through Executive Order 13123 (Greening the Government Through Efficient Energy Management), Executive Order 13101 (Greening the Government Through Waste Prevention, Recycling, and Federal Acquisition), Executive Order 12852 (President's Council on Sustainable Development), Executive Order 13148 (Greening the Government Through Leadership in Environmental Management), and an Army Memorandum dated 18 March 2003, because it will improve morale and productivity; save on energy and maintenance costs; produce resource efficiency and minimize raw material consumption; maximize resource use; move towards the use of renewable energy; create a healthy work environment; create facilities with long-term value; and, where possible, restore the natural environment.

According to the U.S. Army Environmental Center, a sustainable Installation optimizes military training while providing for the wellbeing of soldiers and families. It has a mutually

beneficial relationship with the local community and is life-cycle cost effective to operate. In addition, it systematically decreases dependence on fossil fuels, mining, and non-biodegradable and toxic compounds. It also does not use up resources faster than nature can regenerate them. Finally, a sustainable Installation operates within its "fair share" of the earth's resources. The Sustainable Project Rating Tool (SPiRiT) is used to incorporate into the design those items required to meet sustainable design goals.

For range projects such as the DMPRC, Army policy requires that projects currently under design should meet a minimum Bronze level of sustainable design (Appendix L). According to an Army Memorandum dated 18 March 2003, all future military construction involving buildings must meet a minimum Silver SPiRiT rating.

3.2.3 Transportation

3.2.3.1 Ground transportation

The Fort Benning area is served by several Federal, state, and county roads located in both Georgia and Alabama. There are nine major roads serving the Fort Benning area, some with multiple designations by Federal, state, or county systems (Figure 1). Because of its juxtaposition to the Columbus and Phenix City areas, primary access to Fort Benning is predominantly from the north. In terms of average daily traffic the four most utilized access roads are Benning Boulevard, Lindsay Creek Parkway (I-185), South Lumpkin Road, and Victory Drive (U.S. 280). The main gate to Fort Benning is located at the intersection of Benning Boulevard and South Lumpkin Road approximately 2.25 miles within the Installation boundary. The interior road net consists of hundreds of miles of improved and unimproved roads and trails. Roads at the location of the three alternatives include Resaca Road, Tricolor Road, Underwood Road, and Buena Vista Road, among other trails and unimproved roads.

In support of a force protection increase measure, General Eric K. Shinseki, United States Army Chief of Staff issued a Department of the Army (DA) directive dated March 1, 2001. This directive mandated permanent vehicle controlled access to all U.S. Army Installations in the world. In a follow up message, Headquarters Training and Doctrine Command (TRADOC) instructed all subordinate commands – to include Fort Benning – to incrementally implement vehicle access control to their Installations starting September 1, 2001. In support of this directive, temporary access control points (ACPs) were installed that restricted unauthorized access to Fort Benning. These ACPs consist of temporary sprung structures that house either military police or civilian law enforcement personnel who check the identification of everyone seeking entry into Fort Benning via the road network (Fort Benning, 2003). There are currently seven ACPs, one each at the following locations: Benning Boulevard, Lindsay Creek Parkway (I-185), South Lumpkin Road, Custer Road, Sand Hill, First Division Road, and Eddy Bridge. Fort Benning will replace these temporary ACPs with permanent structures within the next year to better facilitate the checking of vehicles. Other methods (such as drum/wedge, traffic arm barricades and bollards) to restrict unauthorized access to the Installation have also been emplaced on other paved roads, dirt roads, and trails that formerly provided access across or into the Installation (Fort Benning, 2003). Fort Benning will also emplace a physical security perimeter barrier (fencing, guard rail, or use of existing natural terrain barriers) within the next year to further restrict access by unauthorized vehicular movement into three of the Installation's main cantonment areas and Sand Hill training area. The fencing would impede unauthorized

vehicle access to the Installation and would satisfy the DA Directive for force protection and vehicle control access (Fort Benning, 2003). The main east-west corridor for on-Post traffic within the area of the three alternatives is Buena Vista Road. This road has been blocked and is no longer a thoroughfare off Post. Buena Vista Road currently crosses the area of Alternative III.

3.2.3.2 Mass transit

The only form of commercial mass transit in the Fort Benning/Columbus/Phenix City area is bus service. There are two commercial bus lines: Greyhound Bus Lines and the Columbus Transportation System, Metropolitan Transit (METRA). METRA provides bus shuttle service between Fort Benning and Columbus. Three government operated shuttle bus routes are provided within the Installation, serving Main Post, Sand Hill, Kelley Hill, and Harmony Church. No commercial mass transit routes approach or are proximate to the northern portion of the Installation. Soldiers are routinely transported for training in this area by military mass transit vehicles.

3.2.3.3 Railroad system

Two railroads serve Fort Benning and the Columbus/Phenix City metropolitan area. Each railroad provides only freight service to the Fort Benning/Columbus/Phenix City area. The Installation also has its own rail service, provided by the Rail Loading Facility at Sand Hill. This site is not used for any type of recreational or mass transit purposes, but for the purpose of transporting military equipment (to include vehicles) between Fort Benning and other Installations. No railroad systems are located in or proximate to the area of the three alternatives.

3.2.3.4 Air transportation

Airline service is provided to the Columbus/Phenix City area by four commercial airlines operating out of the Columbus Metropolitan Airport, which is located approximately 12 miles north of Fort Benning with direct access via I-185. Lawson Army Airfield conducts air services at Fort Benning. The airfield supports missions of Fort Benning and area reserve components, using both Army and Air Force aircraft. Almost all aircraft can be accommodated at LAAF, up to and including the C-5A transport. Mission requirements include operation of both airplanes and helicopters. No airports are located in or proximate to the northern portion of the Installation; however, helicopter landing zones for training or emergency transport are located at various points throughout the Installation.

3.2.3.5 Water transportation

The Chattahoochee River is navigable for barge and small craft traffic in the Fort Benning/Columbus area. The river channel is approximately 100 feet wide with a minimum depth of approximately nine feet from Columbus to its terminus at Lake Seminole. Access to the Gulf of Mexico from Lake Seminole is via the Apalachicola River, which empties to the Gulf at Apalachicola, Florida. The Chattahoochee, Flint, and Apalachicola Rivers have been improved by the Corps of Engineers with construction of the Jim Woodruff Lock and Dam, Columbia

Lock and Dam, Walter F. George Lock and Dam, and flood control and power facilities in the upper reaches of the Chattahoochee River. Transportation of materials to Fort Benning via water is not considered to be of prime importance. In addition, no transportation of materials occurs on the streams located in or proximate to the northern portion of the Installation.

3.2.4 Other Public Services

The Columbus Consolidated Government employs approximately 2,200 people, based on data compiled in April 1997, and is the governing body that runs Columbus. A mayor, a 10 member elected council and an appointed city manager, runs the government. Like Columbus, a mayor, a city council, and a city manager also run Phenix City. A police department serves the city of Columbus. The Columbus Fire Department consists of full-time firemen at eleven fully equipped stations. Phenix City has a police force and a three-station fire department. In Chattahoochee County, volunteer firemen supply fire protection, while sheriff /police provide law enforcement protection for the county. There are ample medical and dental facilities serving the area and they are concentrated in the Columbus area. In addition to 911 emergency assistance services, the area also has emergency medical services available at five emergency medical locations. Fort Benning provides MEDEVAC helicopter service and additional medical services to the community when needed. Lawson Army Airfield plays an important role in the operation and maintenance of the aircraft participating in the support of the surrounding communities. Fort Benning personnel also provide emergency response service on Post, including reports of fires, utilizing existing roadways.

3.2.5 Environmental Justice

Executive Order (EO) 12898, Federal Actions to Address Environmental Justice in Minority populations and Low-Income populations, was issued on 11 February 1994. The EO requires Federal agencies to consider disproportionately high and adverse environmental effects on minority and low-income populations. A Presidential Memorandum that accompanied the EO specified that minority and low-income populations be given access to information and opportunities to provide input to decision-making on Federal actions. There are segments of the population within the Columbus MSA which are classified as “minority” or “low income” populations and which would be entitled protection under EO 12898. None of these potential “minority” or “low income” populations is located in or proximate to the northern portion of the Installation for the three alternatives and therefore will not be elaborated on in any more detail in this document.

3.2.6 Aesthetics

The people who live and work at Fort Benning enjoy an environment of high visual quality and Fort Benning personnel strive to promote an outstanding planned community and environment. To compliment this, the living and recreational facilities for the troops, cadre, staff, and their families must be equally outstanding. Development in the cantonment areas has occurred in a series of major building programs that have left distinct zones scattered throughout the Installation. There are three basic types of built-up areas on Main Post: those that were planned and have maintained their identities, those that were planned and have not maintained

their identities, and those that were not planned and have little or no image identity (Fort Benning, 1999).

The Main Post Historic District, of which historic Benning Boulevard is a part, has a single unified image. The prevalent building materials are stucco, brick, ashlar cut stone detailing, and terracotta tile roofing. The buildings, streets, and open spaces layout is typical of the style of city planning known as the "City Beautiful Movement." The prevalent architectural style of the major buildings is Spanish Colonial Revival. The Benning Boulevard view-shed (or visual area) is primarily forested, with a landscaped aesthetic appeal. The Stone Gate area (the area running east from Benning Boulevard to Torch Hill Road) view-shed is a recently cleared area running east-west along the Installation boundary. Fort Benning completed a Historic District Tree Management Plan in 1995 to aid the management of the landscape associated with the numerous Installation historic structures. Without a carefully managed landscaping plan, the various historic districts located within the Installation would lose part of their characteristics. The remaining potential historic districts, combining more than five hundred buildings and/or structures, are: the Lawson Army Airfield Historic District, the Parachute Jump Tower Historic District, the Army Ground Forces Board #3 Historic District, and the Ammunition Storage Area Historic District.

The remainder of Fort Benning, excluding the cantonment areas, is forested and hosts a variety of activities, ranging from military training to recreational activities, including fishing and hunting. Lands adjacent to Fort Benning consist of both urban and rural components, with the cities of Columbus, GA, and Phenix City, AL, to the west and northwest and the city of Buena Vista to the east; in addition, other smaller communities can be found to the north, northeast, and southeast of the Installation boundary. The primary use of lands bordering these communities, based on 2000 census data, is agricultural in nature.

3.2.7 Cultural Resources

3.2.7.1 Site/area history

Note: Information in section 3.2 (unless otherwise indicated) is taken directly from Fort Benning's Draft Integrated Cultural Resources Management Plan (Draft ICRMP), 2001.

Humans have lived on what is now Fort Benning for thousands of years. The earliest settlers were Paleo-Indians who arrived between 10,000 and 9,500 years ago after the end of the last Ice Age. Around AD 1200 a large Chiefdom with populous villages and vast agricultural fields stretched along the Chattahoochee River Valley and for three centuries controlled the region. Called the Mississippian Culture, this era of settlement and agricultural development would last through the mid-1550s and would result in several large sites along the Chattahoochee River and its associated streams. A later culture, called "Creeks" by the subsequent European setters, would be responsible for building Kasita Town, one of the largest and most prominent of these sites, located on a gentle curving bluff above the Chattahoochee River and on the land occupied by present-day Lawson Army Airfield on Fort Benning. In 1775, noted naturalist and explorer William Bartram visited Kasita Town and made a record of its high level of sophistication and the cultural achievements of its inhabitants, who called themselves the Muskogee.

Settlement by individuals of European and African descent began in the late 1790s and resulted in a substantial loss of land and life to the indigenous population of American Indian

inhabitants. By 1840, the majority of the American Indian inhabitants had been forcibly removed to Oklahoma via the 1836 “Creek Trail of Tears.” During this time, large plantations were being established south of Columbus, GA, inside the large meanders east and west of the Chattahoochee River. For about eighty years, the land was intensively farmed. In 1918, the land was purchased for the establishment of a temporary 50-acre tent encampment, named Camp Benning in honor of General Benning, a Confederate army hero from the area. The U.S. War Department selected Camp Benning to serve as the new home for the U.S. Army Infantry School of Arms (later to become the USAIS) upon the closing of that facility at Fort Sill, Oklahoma. In the fall of 1918, the School's commandant, Colonel Henry Eames, selected a new site nine miles south of Columbus, on a plateau above the Chattahoochee River, for the establishment of Camp Benning.

In June of 1919, the Army purchased a nearby plantation from its owner, Arthur Bussey, and established headquarters in the family residence, which was known as Riverside. Today, the house is the Installation Commander's residence. On January 9, 1922, Congress authorized the retention of Camp Benning as a permanent military post, by War Department General Order Number 1, and it was redesignated as Fort Benning. Construction of family housing, soldiers' quarters, a hospital, athletic fields, and mess facilities occurred during the 1920s. The former hospital (now the National Infantry Museum) and family quarters on Wold, Sigerfoos, and Austin Loop date from this era, as do the eastern-most cuartel and Doughboy Stadium. By 1930, aviation activities had begun at Fort Benning and the Works Project Administration programs, spawned during the Great Depression, provided the impetus for construction of the first runways and hangars at Lawson Army Airfield, the first airstrip at Fort Benning. Construction during this period was not restricted to aviation facilities, however, and included a new building for the USAIS in 1935, the Post Chapel in 1935 and the Officers Club in 1934.

The birth of the airborne infantry concept resulted in the performance of infantry parachute test jumps over Lawson Airfield, leading to the establishment of the Parachute School in 1942. With increased demand by the war effort for combat officers, Fort Benning met the challenge with the organization and establishment of the Officer Candidate School (OCS), which operated from 1941 to 1946. When the Korean Conflict escalated, the OCS was re-opened to train junior officers. In 1967, under demands of the Vietnam Conflict, the non-commissioned OCS was established to provide squad and fire team leaders. Also during the 1940s, wooden mobilization facilities were constructed at two new areas known as Sand Hill and Harmony Church. A major reorganization occurred following in 1949, when all of the units and activities of Fort Benning were consolidated under one command, forming the USAIC. The 1950s at Fort Benning were characterized by activities reaffirming its permanent status. Several new units were established, including the Ranger Training Command and the U.S. Army Infantry Human Research Unit, designed to study human response to training procedures and techniques. Another new area, Kelley Hill, was added to the reservation and served as a self-sustaining entity, housing an entire infantry brigade. Housing facilities, a school, bachelor officer quarters (BOQ), and Martin Army Hospital was built during this decade to improve the quality of life at Fort Benning.

The escalation of the Vietnam Conflict during the 1960s shifted the emphasis of instruction at the USAIS toward combined-arms training. The cessation of U.S. military involvement in Vietnam was followed by the re-direction of American military organization toward an all-volunteer army. At Fort Benning, the Modern Volunteer Army Program was initiated and in 1973, the 197th Infantry Brigade at Kelley Hill became the Army's first all-volunteer unit and the first combined-arms team under the Strategic Army Forces concept. Since that time, development of

the Fort Benning area and the construction of new facilities to accommodate training and housing have continued. Today, Fort Benning continues to serve as the airborne infantry school and trains many soldiers for today's Army needs. Notable persons who have trained or served at Fort Benning include Generals George S. Patton, Omar Bradley, Dwight David Eisenhower and Colin Powell. These and every soldier who has trained and served their Nation is a tribute to the legacy of Fort Benning.

3.2.7.2 Management of Cultural Resources on Fort Benning

Army Regulation (AR) 200-4 and Department of Defense Instruction (DoDI) 4715.3 require Integrated Cultural Resources Management Plans (ICRMPs). Cultural resources include buildings, structures, sites, districts, and landscapes that are eligible for or included on the National Register of Historic Places (NRHP). They also include sites identified by American Indians as sacred and American Indian burials, funerary objects, sacred objects, and objects of cultural patrimony as defined under the Native American Graves Protection and Repatriation Act of 1990.

Management of the cultural resources on Fort Benning is an ongoing effort and is accomplished via the Installation's Draft Integrated Cultural Resources Management Plan (Draft ICRMP). The Draft ICRMP provides guidance for implementation of the Army's cultural resources management policy, as prescribed in AR 200-4, Cultural Resources Management, and is in the format of both an internal Army management plan (integrating the entirety of the cultural resources program with ongoing mission activities over a 5-year planning period) and a cultural resources sites component (an extractable portion of the plan that provides for the management and treatment of cultural resources sites and requires external review and approval). Standard Operating Procedures (SOPs) are also included as appendices to the document. The Draft ICRMP allows for ready identification of potential conflicts between the Installation's mission and its cultural resources management program, in addition to identifying the legal compliance actions necessary to maintain the availability of properties and acreage required for combat readiness. The Draft ICRMP should provide Fort Benning with a guide to assess what the Installation should be doing to ensure compliance with historic preservation laws and regulations and with the tools to measure progress towards achieving the objectives outlined in the management section of the Draft ICRMP.

A Historic Building Survey was completed in 1987, and Historic Resource Survey Update was completed in 1997; both documents are available for review at the Environmental Management Division. Archeological sites with components perhaps 10,000 years old, through recent 20th century components have been discovered. For management purposes, all structures that are 50 years or older and all archaeological sites on Fort Benning are treated as eligible for listing on the NRHP until determined otherwise through established processes. In addition, Fort Benning completed a Historic District Tree Management Plan in 1995 (as updated in 2003) to aid management of the landscape associated with the numerous Installation historic structures. Without a carefully managed landscaping plan, the various historic districts located within the Installation would lose part of their characteristics. Five potential historic districts, combining several hundred buildings, were identified at Fort Benning. They are: the Main Post Historic District, the Lawson Army Airfield Historic District, the Parachute Jump Tower Historic District, the Army Ground Forces Board #3 Historic District, and the Ammunition Storage Area Historic District. All known historic cemeteries on Fort Benning property have been inventoried;

all cemeteries discovered were marked and are currently maintained by the Installation. Previously unknown historic cemeteries have recently been discovered on Fort Benning as well and are managed through the cultural resources and real property programs.

Fort Benning has stewardship responsibilities for all of its cultural resources. Therefore, the three Alternative locations were surveyed as part of the cultural resource management program to discover and identity of all cultural resources on Post. Each survey produced recommendations as to whether the cultural resources discovered were not eligible, potentially eligible, or eligible for the National Register of Historic Places (NRHP). There are no buildings located on or proximate to the northern portion of the Installation that are considered eligible for listing with the NRHP; in addition, the site currently has no areas eligible for status as potential historic districts. There are, however, numerous known cultural resources sites and/or structures with cultural significance in this portion of the Installation, based on previously conducted surveys ("Phase I and/or Phase II").

Within training compartment K12, which includes Alternative I (Hastings Range), 18 separate cultural resources sites were discovered. Six of the resources were considered potentially eligible for the NRHP; the remaining 12 sites were considered ineligible due to their lack of integrity caused by previous ground disturbing activities. The lands encompassing Alternative II (K21) have also been surveyed, resulting in a finding of 65 cultural resources sites. Twenty of these cultural resources sites are potentially eligible for the Register and are currently in "Protected" status; the remaining 45 sites were considered ineligible.

The lands encompassing Alternative III have also been surveyed, resulting in a finding of 29 cultural resources site. Six of these cultural resources are located within the construction area of Alternative III. Each resource within the construction area was evaluated or soon will be evaluated for eligibility to the NRHP through historic background research and test excavations. The late 19^{th} and early 20^{th} century mill site (9Ce1735) and a 19^{th} –20^{th} century homestead (9Ce433) were the only resources found within the footprint of construction of the DMPRC range and target firing area to possess qualities sufficient to recommend its eligibility to the NRHP. A 19^{th} – 20^{th} century homestead (9Ce1918) is undergoing evaluation at this time. Three cultural resources sites (9Ce1928, 9Ce1930 and 9Ce1932), though not directly affected by construction, are within the current approach/glide slope for the proposed helipad for the DMPRC. All three sites have prehistoric Indian components that are potentially eligible for the NRHP and are scheduled for evaluation for their eligibility to the NRHP. These sites contained material from the Transitional (or Terminal) Archaic or Gulf Formational Period dating to about 4,500 to 3,000 years ago, the Middle Woodland (Swift Creek) Period of approximately 2,300 to 1,700 years ago, and perhaps other periods.

3.2.8 Utilities

3.2.8.1 Drinking Water

Upatoi Creek has a mean annual flow of 451 cubic feet per second (cfs) and is the major supplier of water for Fort Benning. The water from the Upatoi Creek is treated at the Installation treatment plant and distributed throughout Main Post, Kelley Hill, Sand Hill, Harmony Church, and the housing areas via a network of lines ranging in size from three to 20 inches in diameter. There are seven public water supply (drinking water) wells on Fort Benning proper (personal communication, Wilkins, 2001). Water supply for all other areas of the Installation (such as the

northern portion of the Installation and several ranges) is transported to the training compartments/sites by water buffaloes (600-gallon tanks on transport trailers). Water supply for the proposed DMPRC and its support facilities would be established via the sinking of a new water supply well (40 gallons per minute capacity); the water from this well would then be treated on site (using a slurry-based system), stored in a pneumatic storage tank, and distributed through water mains and lines to the various buildings (Design for Fort Benning DMPRC, 30 March 2004). The use of water wells is a common practice on the Installation's outlying ranges, where no connection to water and wastewater systems is possible (Wilkins, 2003).

3.2.8.2 Waste Water

There are two wastewater treatment plants (WWTP) that serve the entire Installation with a combined capacity of 16 mgd. Approximately 95,000 gallons per month of anaerobically digested sewage sludge is land applied at 10 locations on the Installation. The sanitary sewage collection system consists of approximately 126 miles of six to 24-inch vitrified clay, cast iron, and concrete lines. Twenty-four lift stations are required to move sewage flows across the rolling terrain of Fort Benning. Fort Benning's water and wastewater systems are currently in the process of privatization. Fort Benning will retain ownership of the underlying lands; however, the ownership, operation, and maintenance of the buildings, systems, and associated water and wastewater facilities will become the responsibility of a non-Federal entity. There are no lift stations or wastewater collection systems on or proximate to the site of the three alternatives. Instead, the support facilities for the proposed DMPRC will include two latrines, which will utilize a septic system (Design for Fort Benning DMPRC, 30 March 2004). The use of latrines with septic systems is a common practice on the Installation's outlying ranges, where no connection to water and wastewater systems is possible (personal communication, Wilkins, 2003).

3.2.8.3 Energy systems

Georgia Power supplies electrical power via two 115-kilovolt (KV) feeders into its substation on Marne Road. Voltage is transformed, metered, and fed to the adjacent Flint EMC-owned substation. Transmission lines leave this substation to supply power to the cantonments, family housing, and other developed areas of the Installation. Electricity is also provided to training facilities (such as the northern portion of the Installation) located outside the cantonment areas in the range and training area of the Installation. There is no power generation system for the entire Installation, but emergency power generators are in place at critical locations, such as the airfield, control tower, hospital, communications center, stockade, water treatment plant, transmitter sites, radio beacon sites, and steam plants. The United Cities Gas Company supplies natural gas to Fort Benning. Mission and loads at the Installation determine the volume of natural gas supplied. Natural gas supplies the majority of non-mobile fuel requirements at the Installation. Fuel oil is used as a backup fuel at Martin Army Community Hospital. No power or gas lines are at the location of the two action alternatives; however, Hastings Range is supplied by these utility services.

3.2.8.4 Communications System

The official on-post telephone system is operated and maintained by contract. Flint Energies provides the unofficial service to family and bachelor housing and other unofficial users. Trunks to facilitate toll-free calling between the two separate systems interconnect the Army-owned and Southern Bell systems. There are no such systems on or proximate to the northern portion of the Installation.

The Fort Benning Fire Department operates a fire reporting communications system. The cable, however, is carried with the telephone cable distribution system. An E-911 (enhanced) public emergency reporting system is in place for the Fort Benning/Columbus area. This system allows emergency responders to immediately locate the place of origin of any emergency called in to the control center. There are no such systems on or proximate to the northern portion of the Installation. Another major communications system at Fort Benning is the cable television system, which is operated by a private company. The contractor has the responsibility for operation and maintenance of the system under terms of a license. The Public Affairs Office (PAO) operates a separate educational television system in Infantry Hall. It operates under the call letters WFBG. The system is owned and operated by the Installation in support of military training. There are no such systems on or proximate to the northern portion of the Installation.

3.2.9 Noise

Noise is the term used to identify disagreeable, unwanted sound that interferes with normal activities or diminishes the quality of the environment. Military and non-military activity on and around Fort Benning produce both intermittent, pulse sounds--such as tank and artillery fire, and also continuous sounds, such as the sound of vehicles moving along state highways and roadways or aircraft moving across the sky. Loud sounds are produced in Fort Benning's training areas and ranges by the activities of the soldiers training with their vehicles and equipment.

Sound intensity results from the energy used to produce it. It can be measured or predicted based on knowledge of its source, such as the characteristics of an airplane's engine or of a vehicle motor. The human ear's ability to hear covers an enormous range of sound. In order to make sound intensity measurement more meaningful and understandable, the unit of measurement known as the decibel (dB) is used. The decibel scale begins at the approximate level of the smallest amount of sound detectable by the human ear.

Table 6: Decibel Levels for Common Sounds

Source: U.S. Army Armor Center & Fort Knox, 2002	
Sound	**Decibel (dB) Level**
Air raid siren	130
Jet takeoff	120
Amplified rock music	110
Chain saw	100

Lawnmower	90
Heavy traffic	80
Vacuum cleaner	75
Normal conversation	60
Moderate rainfall	50
Library	40
Soft whisper	30

The Army uses computer models to predict and measure environmental noise, and employs the Environmental Protection Agency's recommended Day-Night Sound Level (DNL) framework to analyze noise and as a land–use planning tool. The DNL system describes the average daily sound energy over the period of a year. This averaging means that moments of quiet are compared together with moments of loud sounds. The system also "penalizes" sounds, which may be more annoying because they occur at night (approximately 10 PM to 7 AM) by assigning them a higher sound value of ten (10) decibels.

The Army uses two methods to "weight" the sounds that people actually hear and experience. The first method, called the "A-weighted Day-Night Average Noise Level" (ADNL) closely resembles the frequency responses of the human ear, and is used to analyze such sounds as traffic, airplanes, and the sounds made by rifles and machine guns. The second method, the "C-weighted Day-Night Average Noise Level" (CDNL), is more suited to predict and analyze the impacts of the lower frequency parts of sound, which form a large part of such impulse noises as heavy artillery fire and detonation of explosives. These low frequency components of sound waves can cause windows to rattle and buildings to shake.

The reactions of people who live on or near the Installation to hearing these sounds can be affected by a number of variables. These include closeness to the sounds, strength of the sounds, time of the day or the day of the week of the sounds, and the expectation of hearing them, among other factors. Other factors include the following:

- Intensity
- Duration
- Repetition
- Abruptness of onset or stoppage
- Background noise levels
- Interference with activities
- Previous community experience with the noise or other noise
- Time of day
- Fear of personal danger from the noise source
- Extent that people believe the noise can be controlled

The nearest urban areas adjacent to Fort Benning are Columbus, GA, located to the Installation's west and north, and Phenix City, AL, located to the west of Columbus and across the Chattahoochee River. Noise sources in these areas are typical of urban areas and include highway vehicular traffic, emergency vehicle sirens, aircraft, construction activities, railroads, and commercial and industrial activities. Buena Vista, GA, is located to the east of Fort Benning

and has typical noise sources for a small town. Rural areas also lie to the east, southwest, and south of Fort Benning and consist of various farms, timberlands, and isolated residences. Noise sources in these areas are relatively minor and are the result of vehicular and agricultural sources. In addition to these ambient noises, Fort Benning generates noises from rotary and fixed-wing tactical aircraft, small arms firing, mortar, tank gun and artillery firing and impacts, heavy-tracked vehicles and specialized combat vehicles, and various pyrotechnic devices.

Fort Benning's Environmental Noise Management Plan (ENMP) is being prepared to describe and assess the Installation's existing noise environment. Noise contour lines surrounding and emanating from large caliber weapons are produced on a map to illustrate noise impacts on Fort Benning and the surrounding communities. The contours identify different noise zones that vary according to noise intensity or level: Zone I areas where the noise level is compatible with noise sensitive receptors (e.g. residential communities, schools, churches, etc.), Zone II areas where the noise level is normally incompatible with those receptors, and Zone III areas where the noise level is incompatible with noise sensitive receptors. The three zones are defined by the ADNL sound intensity (dBA) and the CDNL intensity (dBC), and are as follows:

Zone I	"Compatible"	< 65dBA or < 62 dBC
Zone II	"Normally Incompatible"	65 to 75 dBA or 62 to 70 dBC
Zone III	"Incompatible"	> 75 dBA or > 70 dBC

Sensitive noise receptors at and near the Installation include hospitals and other medical/health facilities, schools, Army family housing areas and civilian residential areas. Residential homes and farms are the primary receptors in the area affected by existing military operation near the proposed DMPRC. Noise monitors were installed near the north and northeastern Installation boundaries in the fall of 2003. Noise monitoring data will be used to verify noise levels when citizens file a noise complaint. The noise data will be available to Installation commanders to be used to more effectively schedule, locate, and adjust military training exercises to help reduce noise impacts.

The ENMP will provide long-range land use planning strategies to protect the Installation from noise incompatibility problems resulting from existing and potential encroachment. Upon completion, the ENMP will be available for local planning committees. The ENMP also addresses the management of noise complaints and mitigation of noise and vibrations. During gunnery training or artillery firing, residents of the communities surrounding the Fort Benning training area occasionally complain. Complaints are primarily originated from communities located northwest to northeast of the Installation. Some residents also complain about noise from low-flying aircraft. Management of noise complaints is the responsibility of EMD. The PAO provides interface between the concerned parties, the noise generators and the Installation Command. Whenever possible, PAO provides advance public notification of training exercises or activities that may cause off-Post noise impacts through the local news media. While several noise-related complaints have been received at Fort Benning, as indicated below, no damage claims related to range or blast operations have been filed within the last 3 years according to the Claims Department, Office of the Staff Judge Advocate. The enclosed noise complaints filed with the Public Affairs Office (PAO) over the last three years indicate relatively few complaints based on blasts rather than over flights, and that only a few specific events fired at night cause

several complaints. The noise complaint information for the indicated calendar years can be summarized as follows:

2000: 9 total noise related incidents recorded by PAO.
1 information request
2 media coverage in late May (1 newspaper/1 TV)
1 over flight complaint
5 blast related complaints; 2 in October and 3 in late May

2001: 14 total noise related incidents recorded by PAO.
1 information request
13 blast noise complaints during Hammer Focus from 16 January-1 February from residents of Box Springs, Upatoi, Midland, Columbus, and Talbotton County (3 complaints on 16 Jan, 8 on 17 Jan, 1 on 18 Jan and 1 on 1 Feb).

2002: 3 total noise complaints, all from the same person in Midland regarding over flights in July

2003: 15 total noise related incidents recorded by PAO.
7 over flight complaints
8 blast related complaints from residents of Midland, Box Springs, Cataula, Buena Vista, Opelika, Newman, and Columbus.

The U.S. Army Center for Health Promotion and Preventive Medicine (CHPPM) used the BNOISE2 (U.S. Army 2000) noise simulation program to analyze heavy weapons noise sources and develop noise contours for the heavy weapons. Fort Benning Directorate of Training (DOT) provided to CHPPM the operational data from previous years and projected weapons usage for future years to create the noise contours. Unlike topographic contours on a map, noise contours are not intended to be precise representations of noise zones. Geographic features, forest canopy, weather conditions, and the receiver's perception of the source, etc., can influence the impact of noise. Noise contours cannot be so precise as to define one side of a noise contour line as clearly compatible and the other as incompatible. However, the use of noise contour maps has proven to be a reliable planning tool in noise-affected areas throughout the United States.

Impulse noise from existing Tank, BFV, and artillery fire causes significant adverse noise off-Post; however, other noise sources are not significant because their noise levels do not even generate an off-Post Zone II noise contour. These sources, aircraft (helicopters and fixed-wing aircraft for jump training), small arms fire, and vehicular traffic, can still be annoying even if they do not contribute to a normally incompatible noise zone.

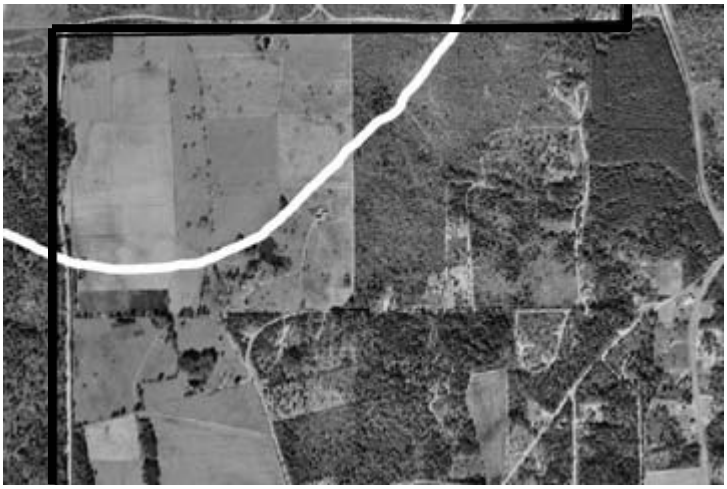
Noise from Lawson Army Airfield (LAAF) occurs primarily on the western portion of the Installation. LAAF operations do not directly affect the locations for the DMPRC alternatives and is not analyzed further. After departing LAAF or other airfields and helipads, helicopters and fixed-wing aircraft operate in the locations for the DMPRC alternatives as discussed below.

Fixed-wing aircraft are used for jump training. The number of flights associated with jump training is too few to generate noise contours using the NOISEMAP computer program. Because helicopter traffic coming into Fryar Field (in Alabama) is routed over the Installation,

the impact to civilian residents is minimal though individual aircraft operation may be annoying to residents at times. Helicopter and fixed wing aircraft fly on the established routes and within restricted military airspace as low as "nap of the earth" (tree level). On average, there are 3 flights during the day and one at night, not enough to generate a Zone II (Draft ICUZ, 1997). Small arms weapons, which are everything with a caliber less than 20 mm, are currently fired throughout the Installation, but are a sufficient distance from the community to be compatible with off-Post land use.

Noise from aircraft and small arms fire do not generate a Zone II noise contour and the proposed DMPRC does not include any changes to existing levels of operation for these noise sources; therefore they will not be analyzed further in this document. There are two areas of Fort Benning where currently noise zones II and III extend beyond the boundary. The first is west of the Malone Range Complex (located to the south and west of the K15 impact area in Training Compartment M6), where Zone II goes beyond the Installation boundary; however, Figure 36 indicates that this off-Post Zone II area is not near the DMPRC alternative areas. The second area where Zone II extends beyond the Installation boundary is located east and northeast of Fort Benning; in addition, Zone III extends beyond the boundary by Hastings Range, covering approximately 716 off-Post acres. Currently, only one land parcel lies within the Zone III contour that extends off the northeastern portion of the Installation (see aerial photograph, below). In addition, Zone II noise contours in this area cover approximately 3,638 off-Post acres. The off-Post land use in this second area is agricultural with scattered residences.

There may be current impacts from noise on wildlife and protected species; however, studies regarding noise impacts on the RCW indicate little effect. The Federally endangered RCW is found within Zone III noise contours at Fort Benning. The Army Construction Engineering Research Laboratory completed a rigorous three-year experiment to evaluate the RCW's reaction to a range of military noise events (USACERL, 1999). The study found that the RCW adjusts to the noise and that military noise exposure does not produce any mortality or statistically detectable changes in reproductive success.



(Portion of Zone III contour extending outside of Northeastern Installation boundary; white line indicates Zone III contour line; dark black line indicates Installation boundary.)

Fort Benning has voluntarily imposed the following operational restrictions for range firing to reduce the existing range noise impacts on the community:

- Firing of weapons .50 caliber or greater restricted between midnight and 6:00 AM
- Exceptions approved in advance by a Brigade or Regiment Commander
- The Fort Benning Public Affairs Officer will be notified of any firing during restricted hours and, in turn, distributes that information through the local news media to the public.

Fort Benning maintains a noise complaint system to address individual concerns. Civilian noise complaints may be reported to Fort Benning by calling the Fort Benning 24-hour Staff Duty Officer. Investigation and further action would follow if warranted (personal communication, Veenstra, 2003).

3.2.10 Air Quality

3.2.10.1 Climate

Fort Benning is located approximately 170 miles north of the Gulf of Mexico and 225 miles west of the Atlantic Ocean, with a climate classified as humid continental. The seasons are well defined, with hot, humid summers and mild winters. The annual mean temperature is slightly over 65 degrees Fahrenheit. The coldest month is usually January and the warmest usually July. Winter temperatures are affected by frequent alternation between continental influence (with cold winds sweeping down from Canada over the Great Plains and the Midwest region through Georgia) and maritime influence (with southerly winds bringing tropical Gulf air over the area).

Summer months' temperatures are primarily affected by maritime influence and seldom vary. Prevailing winds are from the northwest and average 7 miles per hour. Atmospheric stagnation average 12 days per year. The sudden rise of Pine Mountain and associated ridges reaching over 1000 feet in elevation 21 miles north of Fort Benning is a trigger mechanism for convectively unstable maritime tropical air flowing from the south, causing it to release its energy in thunderstorms. The Chattahoochee River plays a major role in the formation of ground fog. Ground fog would form on the average 40% of the days of each year (this does not include ground formation associated with precipitation or low ceilings). The frequency of ground fog occurrence is at a maximum from late spring to early fall, primarily during the period May through October.

3.2.10.2 Emissions

According to the 2000 Air Emission Inventory (AEI) Fort Benning is a major source of criteria pollutant emissions. The major source determination is due to the Installation's potential to emit 100 tons per year (tpy) of any one criteria pollutant, (carbon monoxide, lead, ozone, nitrogen dioxide, sulfur dioxide, and particulate matter 10 and 2.5 microns in size, or PM 10 and PM 2.5, respectively) total, from all stationary sources. Heating units and stationary internal combustion engines provide the greatest potential for emitting criteria pollutants; however, prescribed burning is the largest source of actual criteria pollutant emissions.

The "major source" designation triggers the provisions of 40 CFR 52.21, Prevention of Significant Deterioration (PSD). The PSD provisions require Fort Benning to assess all new emission units to determine if their operation constitutes a major modification as defined in "Georgia Rules for Air Quality Control." If a new unit fits the definition of a major

modification, then a construction and operating permit is required for the unit. The major source designation also subjects Fort Benning to the Clean Air Act Part 70 Operating Permit Regulations, usually referred to as "Title V."

In 2000, Governor Roy Barnes submitted a letter to the US EPA Region 4 stating that Muscogee County was no longer in attainment for ground level ozone; however, the EPA did not take action on that recommendation. Georgia sent a subsequent letter in 2003 recommending other areas for non-attainment status with regards to ozone, but, due to improvements in the Fort Benning and Muscogee County air quality levels, Georgia did not recommend the Fort Benning-Muscogee County area for non-attainment designation. EPA responded in 2003 and did not include the Fort Benning-Muscogee County area in the list of those designated for ozone non-attainment. Future exceedences of the ozone air quality standards in the Fort Benning-Muscogee County area could result in a designation of non-attainment.

Fort Benning is currently in attainment for the six criteria pollutants listed above in Muscogee and Chattahoochee counties, but the section of Fort Benning contained within Russell County, AL, has been recommended for designation as non-attainment for PM 2.5. If the Fort Benning area were designated as non-attainment, then Army actions would undergo a general conformity determination. Re-evaluations of attainment status, recommendations, and calculations to compare to air quality standards in Russell County for PM 2.5 are currently underway by the Alabama Department of Environmental Management (ADEM). Specifically, ADEM is utilizing their Smoke Management Program (SMP) and discounting the PM 2.5 amounts generated by prescribed burning and other burning for land management. In January 2004, Fort Benning submitted a letter to ADEM requesting an exemption to the Fort Benning section of Russell County for the non-attainment status; however, ADEM did not exclude Fort Benning. The exemption was not granted. Fort Benning is working with GA DNR to establish a Smoke Management Program (SMP), per EPA guidelines, "US EPA Interim Air Quality Policy on Wildland and Prescribed Fires," (23 April 1998), because much of the PM 2.5 in the area seems to come from wildfires and fires utilized for land management purposes. If the SMP is certified by the state then according to the Policy, PM 2.5 emissions from prescribed burns should not count towards non-attainment. A state-certified SMP may avoid a future PM 2.5 non-attainment designation in the Fort Benning area. In 2002, Fort Benning EMD and Staff Judge Advocate personnel met with the GA EPD Air Protection Branch to challenge the 40% opacity limit for all outdoor burning, which includes prescribed burning. In spring 2003, this rule was changed to exempt Fort Benning's prescribed burning program as a source of emissions.

The Muscogee County area also hosts two PM 2.5 monitors. Recent monitoring shows that the Muscogee County area is in attainment for PM 2.5. Georgia Institute of Technology staff conducted extensive research on the size and amounts of particulate matter generated from prescribed burning; results are pending. The AEI of stationary air emissions sources is conducted annually. The AEI also reviews and updates Fort Benning's current Title V Permit. The Title V Permit application was submitted for review in 1996, as per the request of GA EPD Air Permitting Section and issued by the state on 16 July 2003. The permit will be renewed five years from the issue date.

Sources of potential air emissions at the northeastern portion of the Installation include particulate matter (PM) from dust, CO and PM from prescribed burning activities, and nitrous oxides from the combustion of fuels. These operations should not constitute a significant source of air emissions under the Georgia Rules for Air Quality Control, Chapter 391-3-1 (personal communication, Gustafson, 2003; Georgia DNR, 1998). A letter from Harold Reheis, Director,

GA DNR, to the Southeastern Regional Environmental Office (SREO), dated 21 April 2003, states the "use of vehicles and equipment in military training and military exercises, on ranges and unpaved road and trails, is not subject to Rule (n)." The letter further states "...Rule (n) is not applicable to most vehicle and equipment travel at a military base, since the travel is not a part of a process and there is no manufactured product."

At this time Georgia EPD does not regulate mobile sources on Fort Benning; however, new regulations proposed by the U.S. EPA concerning particulate matter and nitrous oxides may result in changes to this situation in the future. Therefore, air issues may need to be addressed again before the completion and use of the proposed DMPRC. Any emission units to be built or installed as a result of the action alternatives must also be covered by a pre-construction permit and/or an operating air permit. In addition, any storage of chlorine (including amounts less than 2,500 pounds) is subject to Section 112(r) of the CAA and requires the preparation and implementation of a Level III Risk Management Program (RMP), in coordination with the Installation Air Quality Program Manager. A Level III RMP includes determining worse case and alternative case release analysis, performing a Process Safety Hazard Analysis, establishing operating procedures and an emergency response program, conducting monthly safety briefings and yearly compliance audits, and coordinating with local emergency personnel.

Fugitive Dust is particulate emissions released from sources that do not have a pinpoint exit such as a stack or vent. Examples are an uncovered truck bed, or train car, or emissions caused by vehicles traveling over an unpaved road. The letter referenced above from Harold Reheis, GA EPD, April 2003, gives relief during military training and exercises, but not for other activities such as construction. Fugitive Dust is of a concern during the construction phase of the project. The Georgia Rule for Air Quality (391-3-1.02(2)(n) suggests several ways to mitigate for fugitive dust for activities not related to military training. Fort Benning's Title V Permit contains sections on Particulate Emissions and Visible Emissions. The Title V section Particulate Emissions states the exact wording as the GA Rules for Air Quality 391-3-1.02(2)**(e)** Particulate Emissions for Manufacturing Processes except for the section title.

GA Rules for Air Quality 391-3-1.02(2)(n) Fugitive Dust

1. All persons responsible for any operation, process, handling, transportation, or storage facility, which may result in fugitive dust, shall take all reasonable precautions to prevent such dust from becoming airborne. Some reasonable precautions which could be taken to prevent dust from becoming airborne, include, but are not limited to the following:

(i) Use, where possible, of water or chemicals for control of dust in the demolition of existing buildings or structures, construction operation, the grading of roads or the clearing of land;

(ii) Application of asphalt, water, or suitable chemicals on dirt roads, materials, stockpiles, and other surfaces which give rise to airborne dusts;

(iii) Installation and use of hoods, fans, and fabric filters to enclose and vent the handling of dusty material. Adequate containment methods can be employed during sandblasting or other similar operation;

(iv) Covering at all times when in motion, open bodied trucks, transporting materials likely to give rise to airborne dusts;

(v) The prompt removal of earth or other material from paved streets onto which earth or other material has been deposited.

2. The percent opacity from any fugitive dust source listed in paragraph 2(n)(1) above shall not equal or exceed 20 percent.

3.2.11 Solid Waste

3.2.11.1 Landfills

Fort Benning generates uncompacted solid waste at an estimated rate of 1,200-1,500 tons per month. The Installation does not have a permitted sanitary landfill in operation. Currently, all Fort Benning sanitary waste is transported to a state permitted facility located off-post. There are three approved inert landfills on the Installation; however, only one is currently in operation. These landfills are designed to accept only inert materials such as fallen limbs and trees, concrete (free of lead base paint), and cured asphalt. There are no landfills on or proximate to the three alternatives.

3.2.11.2 Solid Waste Management Units (SWMU)

Past resource and waste management practices at Department of Defense (DoD) facilities have resulted in the presence of toxic and hazardous waste contamination at some installations, including Fort Benning. In response, DoD has undertaken environmental restoration activities under its Installation Restoration Program (IRP) to manage these sites, known as Solid Waste Management Units (SWMU) (Fort Benning, 2003). Fort Benning's IRP activities fall under compliance with the Resource Conservation Recovery Act (RCRA). This federal law, enacted in 1976, ensures the proper management of hazardous waste at active sites or facilities. The IRP also conforms to the requirements of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). U.S. Environmental Protection Agency (EPA) guidelines are followed in conducting investigation and cleanup work in the program. Disturbance of a SWMU is prohibited unless prior coordination with GA DNR determines otherwise.

Fort Benning identified 44 Defense Environmental Restoration Account (DERA) SWMU sites and 87 Operation and Maintenance Account (OMA) SWMU sites, including landfills, paint facilities, pesticide contamination, other industrial areas, a fire training area, a chemical agent burial site, and petroleum-oil-lubricant (POL) contaminated areas. Twenty-five of the 44 DERA SWMU sites were found to require no further action, either because contamination no longer exists or because the levels of contamination pose no risk to human health or the environment. The remaining 19 DERA SWMU sites are considered active and are subject to current or future investigation, removal action, cleanup, or long-term monitoring. Forty-two (42) of the OMA SWMU sites have been determined to need no further action, as well, with 45 currently managed as active and subject to further investigation (personal communication, Morpeth, 2003). Military ordnance firing on and landing within a range is not considered a solid waste when it is involved in training, emergency response, or on-range ordnance clearing (personal communication, Veenstra, 2003). No SWMU sites are located at or in close proximity to the site of the three alternatives.

3.2.11.3 Recycling

Recycling reduces disposal cost, conserves natural resources and minimizes environmental problems associated with land disposal. Fort Benning's policy on recycling is governed by the April 3, 1996 Policy Memorandum #96-13, entitled "Qualified Recycling Program." Under this policy, Army personnel and contractors are required to actively participate in the recycling program, and all of the proceeds from the program are retained by the Installation. Recyclable materials that may be collected include paper, cardboard, metal cans, glass containers, scrap lumber, used motor oil and plastics; however the list of materials that Fort Benning accepts varies according to market conditions and other factors. Recyclable materials are turned-in to the Installation Defense Reutilization Marketing Office (DRMO) and the Materials Recovery Facility (MRF) for processing.

3.2.12 Hazardous and Toxic Materials/Waste

Fort Benning's Hazardous and Toxic Materials/Waste Management program has three major functions: (1) storage, handling, and disposal; (2) waste minimization; and (3) remediation. A detailed discussion of these programs is presented in the Installation Hazardous Waste Remedial Actions Program (HAZWRAP). Fort Benning operates under Hazardous Waste Facility Permit [Resource Conservation and Recovery Act (RCRA) Part B] No. HW-021 (S)-2 and Facility I.D. No. GA3210020084. These documents are available for review at the offices of the EMD.

3.2.12.1 Asbestos Management

Routinely, all Fort Benning facilities scheduled for maintenance, remodeling and demolition are inspected for presence of Asbestos-Containing Materials (ACM), when required by law or as a precautionary measure when ACM is removed through outside contracts by licensed specialized firms. Removed ACM is properly transported off post and disposed in licensed facilities in accordance with Installation policies and guidelines. There are no structures or buildings that are believed to contain ACM on or proximate to the northeastern portion of the Installation, the location of the three alternatives (personal communication, Clarke, 2003). Therefore, this will not be analyzed further in this document.

3.2.12.2 Lead Based Paint Management

The likelihood for buildings built prior to 1978 to contain lead-based paint (LBP) is high. Painted surfaces can be tested to determine if LBP is present. If testing has not been performed, surfaces painted before 1978 should be assumed to contain lead-based paint. There are two primary methods for testing paint for lead: X-ray fluorescence detector (XRF) and laboratory analysis of paint chips. A third method, using chemical kits for spot testing, has not been widely accepted as a reliable means of detecting low levels of lead in paint. The most dependable way to test for a lead-paint dust hazard is wipe tests followed by laboratory analysis. There are no structures or buildings believed to contain LBP on or proximate to the northeastern portion of the Installation; in addition, no use of LBP is included as a part of the construction or operation of the proposed DMPRC. Therefore, this will not be analyzed further in this document.

3.2.12.3 Radiation

Radon is an invisible, odorless, radioactive gas produced by the decay of uranium in rock and soil. Radon decays into radioactive particles capable of causing damage to lung tissues and increasing the risk of lung cancer when inhaled. A radon gas survey including 650 Fort Benning priority buildings has been conducted. This survey resulted in an observed measurement of 0.04 pCi/L, which is well below the EPA action level of 4 pCi/L. Only one site was recommended for re-survey; however, because of logistical impracticality this site was not resurveyed. The following is the Army Policy for Radon as outlined in AR 200-1, Radon Policy 9-2 e, "Measure radon in newly constructed Army facilities," (i): Use USACE design criteria for radon reduction in new construction. Radon information provided by Region IV, EPA, and statistics maintained by the GA DNR suggest that there are no regional concerns and that there is little potential for radon occurrence in the area of the proposed action and its alternatives; therefore, this will not analyzed further in this document.

3.2.12.4 Poly-Chlorinated-Biphenyl (PCB)

Poly-Chlorinated Biphenyls (PCBs) are highly stable compounds with a low flammability, high heat capacity, and low electrical conductivity; therefore, they were extensively used as a component of many materials, most notably as heat insulating materials (such as hydraulic fluid in vehicles) and as dielectric fluids in electrical transformers. The harmful effects of PCBs were not readily apparent, but are now known to cause skin irritation and even cancer (Fort Benning, 1998). In 1976, Section 6 of the Toxic Substances Control Act (TSCA) identified the need to regulate PCBs to minimize the adverse effects of these components on human health and the environment; this minimization was enacted through the reduction or complete phase-out, by law, of the use of PCBs in insulatory materials, dielectric fluids, and other products (40 CFR Parts 750 and 761).

On Fort Benning, a PCB Inventory Report was conducted in 1998 and indicated that of the 2,157 transformers surveyed on the Installation, 1,166 were assumed to be "PCB Transformers" (500 or greater parts-per-million PCBs) (personal communication, Clarke, 2003). Also in 1998, a PCB Management Plan was prepared for Fort Benning and provided details regarding the implementation of TSCA and its regulatory requirements. Topics covered include transportation, storage, sampling, and disposal of PCBs. The operation, maintenance, and repair of the electrical distribution system and, therefore, most of the PCB-containing electrical equipment on Fort Benning, GA, is currently under the control of Flint Electric; with the exception of the electrical systems at Lawson Army Airfield, which is under the management of Interior Electric. PCB-containing materials are not purchased and utilized at Fort Benning in any of these systems or as part of insulatory materials for construction/maintenance/renovation projects on the Installation (personal communication, Clarke, 2003). There are no PCB-containing tranformers at either of the action alternatives. The proposed DMPRC will not utilize PCB-containing materials; therefore, this will not be analyzed further in this document.

3.2.13 Public Health and Safety

3.2.13.1 Unexploded Ordnance

Infantry training at Fort Benning has been conducted since the beginning of the Installation in 1918. Infantry training has required, and continues to require, the use of "blank" as well as "live" ammunition. The type of ammunition used for training purposes is very diverse. It virtually encompasses every weapon system from small caliber individual weapons to air delivered 500 lb. bombs, with the exception perhaps of some long-range artillery guns or missiles and air defense systems. Blank ammunition and various pyrotechnic simulators are used throughout the entire training area. Live-fire training is conducted in designated ranges and training areas, with projectiles directed towards designated ordnance impact areas.

The main "dudded" ordnance impact areas on Post are compartments A20 and K15 with 9,300 and 5,500 acres respectively (Figure 5). Smaller isolated "dudded" ordnance impact areas are found in the periphery of the main ordnance impact areas and within the Malone Range Complex. The Fort Benning military, civilian personnel, and the community are routinely advised and reminded not to handle any suspected unexploded ordnance (UXO), and to report suspicious ordnance to the Explosive Ordnance Detachment (EOD) and to the Director of Public Safety via 911 call. UXO warning articles are periodically published in the Fort Benning Bulletin, as well as in the Post newspaper, "The Bayonet."

On 3-6 March 2003, a meandering surface survey of the site of the preferred alternative (Alternative III) for the DMPRC was conducted to get an idea of what, if any, UXO was present, what needed to be removed, and to determine if any further UXO survey was required. Although no UXO was discovered, it may be present deep below the current surface of the soil or in areas that were not physically searched (personal communication, Allan, 2003). The Fort Benning Range Division plans to conduct an additional survey and any required UXO removal action will occur prior to any ground disturbance related to the timber harvest/slash removal or construction activities.

3.2.13.2 Surface Danger Zone (SDZ)

The surface danger zone (SDZ) is an "invisible" line that surrounds the firing range and ordnance impact area portions of a range and provides a buffer area to protect personnel from the non-dud producing rounds that may be ricocheted during operation of the range. For each training scenario on a range, the SDZ is computed to take into account the firing positions and ordnance used, so the SDZ exclusion zone will vary. For this document, for the purposes of analysis, the cumulative/maximum SDZ possible for the proposed DMPRC will be utilized (personal communication, Kearns, 2003). The SDZ is an "exclusion" or safety zone for personnel on or in the vicinity of the range (Figure 3). Its function is to provide a buffer zone that contains projectiles, fragments, debris, and components resulting from the firing of weapon systems; these items have an approximately one in a million chance of landing outside of the SDZ (personal communication, Weekley, 2003). SDZs are updated on the basis of data derived from research and development, testing, and or actual firing experience and differ depending on the type of activity occurring on the range (small arms training versus tank gunnery) and the type of ammunition being fired on the range (AR 385-63, 2003). The area comprising the SDZ is

closed to all personnel not directly utilizing the range complex during currently ongoing exercises.

The main areas of concern in the SDZ are the dispersion area, impact area, ricochet area, stationary target and moving target area, Area A, and Area B, (AR 385-63, 2003) (Figure 4). The dispersion area consists of the distribution of rounds fired by one weapon or group of weapons under identical or nearly identical circumstances. It represents a "pattern" of fire and helps predict where rounds fired by a certain weapon or weapon system will land. The range impact area is the primary "danger" area for the range and encompasses the area of impact for all targets within the range. The ricochet area consists of the zone between the impact area and Area A (defined below) and accounts for ammunition that ricochets off targets, berms, hills, or other obtrusive elements and lands outside of the line of fire. The stationary and moving target area is the location where the targets are placed and rounds are expected to land. Area A is the secondary "danger" area and parallels the left and right sides of the impact area; it is designed to contain fragments from rounds exploding or ricocheting on the far right and far left sides of the impact area. Area B is also a secondary "danger" area and is located down-range (far edge) of the impact area; it is designed to contain fragments from rounds exploding or ricocheting on the far edge of the impact area.

3.2.13.3 Protection of Children

Executive Order (EO) 13045, Protection of Children from Environmental Health risks and safety risks, was issued on April 21, 1997. A growing body of scientific knowledge demonstrates that children may suffer disproportionately from environmental health risks and safety risks. These risks arise because children's neurological, immunological, digestive, and other bodily systems are still developing; children eat more food, drink more fluids, and breath more air in proportion to their body weight than adults; children's size and weight may diminish their protection from standard safety features; and children's behavior patterns may make them more susceptible to accidents because they are less able to protect themselves (Clinton, 1997).

The EO requires that the Army and other Federal agencies make it a high priority to identify and assess environmental risks that can disproportionately affect children. The EO defines environmental health and safety risks as risks to health or to safety that are attributable to products or substances that children are likely to come in contact with or ingest (such as the air they breathe, the food they eat, the water they drink or use for recreation, the soil on which they live and play, and the products which they use or to which they are exposed). This type of danger for children would not be involved in the proposed DMPRC; therefore, this will not be analyzed further in this document.

3.2.13.4 Safety During Range Construction and/or Maintenance

The timber harvest/slash removal and range construction, as well as range maintenance, may involve heavy machinery and involve some safety risks to personnel working and/or monitoring these activities. As with all work on Fort Benning, Occupational Safety and Health Administration (OSHA) requirements and other applicable worker safety regulations must be followed. Appropriate measures to limit unauthorized persons from accessing the range area during construction, timber harvest/slash removal, and maintenance are required.

4.0 ENVIRONMENTAL CONSEQUENCES

This section presents an analysis of the potential environmental consequences of each alternative on potentially affected media, such as soils and water. The analysis is separated into effects resulting from construction of the DMPRC and effects resulting from operation, training and maintenance at the DMPRC action alternatives, as well as an analysis of the No Action/Status Quo. Mitigation for potential significant adverse effects, when applicable, is also discussed. Mitigation measures, per AR 200-2, may include avoidance of effect; minimization of effect; repair, rehabilitation, or restoration of effect; reduction of effect; and/or compensation for effect. There is also an analysis of any impacts resulting from changes to training on other ranges, to incorporate a DMPRC. Fort Benning has drafted a DMPRC Mitigation and Monitoring Plan for the Preferred Alternative (III), which is presented in Appendix J, and summarizes all required mitigation for this alternative. Preliminary analysis of the three alternatives resulted in a finding of no potential effect, either adverse/positive or direct/indirect, on Environmental Justice, Asbestos, Lead Based Paint, Radiation, Polychlorinated biphenyls, and Protection of Children; therefore, these media will not be analyzed in this section.

4.1 Soils and Vegetation

The threshold level of significance for soils is any ground disturbance or other activities that would violate applicable Federal or state laws and regulations, such as the Georgia Erosion and Sedimentation Control Act (ESCA), and the potential for Notices of Violation (NOV) for the failure to receive applicable state permits, such as a NPDES construction permit under the ESCA, prior to initiating a proposed action. The threshold level of significance for vegetation is loss of vegetation at a level that would substantially reduce the occurrence of a plant species or degrade the habitat of a dependent animal species at a population level on the Installation. Vegetation discussed below refers both to under-story or ground cover, such as grasses, and over-story cover, such as mature pines and hardwoods. Alternative I will have virtually no change to soils and vegetation; however, under Alternatives II or III, the change in training on Carmouche, Cactus, and Hastings ranges may have potential positive effects on soils and vegetation due to a reduction in intensity of training on those ranges.

4.1.1 Alternative I: “No-Action / Status-Quo” (Figure 16)

As a result of this alternative, no new construction would occur at Hastings Range; however, training exercises utilizing troops and mechanized vehicles would continue to occur. There is a minimal potential for adverse effects to soils and vegetation due to mechanized vehicle movements and activities in the troop camp, or bivouac sites, (such as accidental overland water flow from portable showers) and on roads leading into and on Hastings Range; however, Tanks and BFV travel is restricted to existing roads and trails leading to the range and to existing lanes on the range. These vehicles have the potential to leak or spill petroleum-oil-lubricant materials (POLs) onto the soils, resulting in potential soil contamination concerns, but the vehicles are required to have drips pans underneath when parked to minimize POL spills. Military units are also required to utilize secondary containment for the storage of hazardous materials/wastes and during refueling operations. These and other requirements of the SPCC will be followed. Also, routine maintenance of the vehicles helps to identify and repair any

conditions that might cause POL leaks. A spill response protocol has been established Post-wide and personnel on the range should have adequate spill response supplies on hand. Maintenance activities on Hastings Range would also continue, resulting in the same level of ground disturbance due to the repair of access roads and/or targetry and the same potential for POL spills from the maintenance vehicles themselves. This alternative would result in no adverse impacts to vegetation from ongoing operation, training, and maintenance. Continued adherence to Federal and state laws and regulations and established Installation policies and guidelines, such as erosion control best management practices (BMPs) and spill control measures, should repair or minimize any adverse impacts to soils and vegetation as a result of this alternative, resulting in temporary minor adverse potential effects only. All practices and BMPs for erosion and sedimentation control will be designed and implemented in accordance to the Manual for Erosion and Sediment Control on Georgia. No additional mitigation is proposed for this alternative.

4.1.2 Alternative II: "Compartment K21 (Alternate Site)" (Figure 17)

Construction of the DMPRC and its associated support facilities at the K21 site would result in the displacement of approximately 1.5 million cubic yards of soil as a part of earth-moving and cut-and-fill operation for both the construction of the range itself (to include grubbing for roads and trails) and the trenching for the underground utility lines to support it. Construction would also include the clearing of up to approximately 1,800 acres of trees, brush and shrubs (i.e., tree clearing), although trees would only be thinned in most wetland areas. Construction may result in the migration of airborne or waterborne soil particles and POLs onto adjacent lands and streams, which contribute to sedimentation of off-site areas and interfere with pollination of adjacent vegetation. In addition, the loss of the existing native vegetation during the construction, operation, and maintenance of the new DMPRC would result in a change in both species composition and abundance in this alternative area; plant and animal species that typically thrive in the forested area, for example, would diminish and species that thrive in more open areas would flourish. If this alternative were chosen, efforts would be made during the design process to reduce the number of targets and the maneuver lane area, which would result in fewer water crossings and less earth moving and vegetative removal. In addition, efforts would be made to leave as many trees and other vegetation as possible, especially in wetland and stream areas, while still achieving line of sight requirements for the range. Fort Benning would also consider minor adjustments to the footprint of the range, if possible, but not so that other ranges and operations are adversely impacted.

Adherence to the Erosion, Sedimentation and Pollution Control Plan (ESPCP), NPDES permit, and Section 404 Permit is required and will include measures to minimize impacts to soils and vegetation. The DMPRC construction requires the preparation, certification and submission of an ESPCP as part of the NPDES Permit. Some of the components of the ESPCP include a project description, soil information, changes to existing contours, existing drainage patterns, best management practices and locations, detailed drawings, and a timeline or construction schedule. As part of the ESPCP under the NPDES construction permit, Spill Prevention, Control and Countermeasure (SPCC) Plan measures are required during construction activities to prevent and/or minimize spill/release from hazardous materials into ground surfaces. During construction, the NPDES permit would require daily, weekly, and monthly inspections and reports, as well as the monitoring of turbidity (sediments) in adjacent surface water bodies.

There should not be an increase of more than 25 nephelometric turbidity units between water samples taken upstream of the project area those taken downstream. This would help minimize the adverse effects of this alternative; however, the potential for moderate adverse effects to soils and significant adverse effects to vegetation would still remain.

More specifically, the Best Management Practices (BMPs) specified in the ESPCP would 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 greater 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. There are no native grasses that are suitable for cool season planting; however, a non-invasive species would be used, if feasible. 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.

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. The contractor must continuously maintain all erosion and sediment control measures during the construction phase of the project. The contractor will maintain permanent control structures for one year following acceptance of the project. All practices and BMPs for erosion and sedimentation control will be design and implemented in accordance to the Manual for Erosion and Sediment Control in Georgia. Submission of an ESPCP is required by GA Environmental Protection Division to secure the NPDES permit.

Construction of facilities where the use and storage of hazardous materials will exist, would be designed to meet SPCC requirements under AR 200-1, as well as state and federal requirements as applicable. These facilities include, but not limited to maintenance facilities, loading/unloading operations areas, hazardous material and POL storage areas (above/underground facilities) and generators. Design requirements of these facilities would included: secondary containment and/or diversion structures; and contingency plans to mitigate spill/releases to include: spill supplies and equipment. These measurements will prevent and/or minimize soil contamination form any possible discharge of pollutants into the environment.

Training at the newly constructed DMPRC would also result in a potential effect to soils and vegetation as described in Alternative I. Maintenance of targets, roads, trails, and vehicles would also occur, resulting in additional potential ground disturbance and POL spills. In addition, travel to and from the new DMPRC will result in vehicles disturbing the soil on the side of either paved or unpaved roads leading into the range, resulting in potential fugitive dust emissions (discussed in more detail in Section 4.12, Air Quality). Requirements covered in Section 4.12 will also meet the NPDES requirements for dust control. Permanent and temporary stabilization of disturbed areas would also help control dust from exposed soil surfaces. Implementation of applicable Federal and state laws and regulations and already-established

Installation policies and guidelines, such as erosion control BMPs and spill control measures, should repair or minimize potential effects to soils and vegetation as a result of this alternative. SPCC requirements during training operations will be implemented as described in Alternative I. Overall, this alternative would result in potential moderate adverse effects to soils and potential significant adverse effects to vegetation.

Mitigation after construction for potential soil erosion would require monitoring by Range Division, at least quarterly. Monitoring reports will be submitted to the Chief of the Range Division and the EMD, and appropriate action will be taken.

4.1.3 Alternative III: "Compartment D13 (Preferred Alternative)" (Figure 18)

Construction of the DMPRC and its associated support facilities at the D13 location would result in the displacement of approximately 800,000 cubic yards of soil and the clearing of up to 1,500 acres of trees, brush and shrubs (i.e., tree clearing). Potential impacts from construction to soils and vegetation were reduced by mitigation through the design process. The Alternative III design utilizes fewer targets, has less maneuver lane area, has fewer water crossings, and took earthmoving and vegetation removal into consideration when placing targets, lanes, and crossings. Approximately 300 acres of trees and other vegetation may remain on site, resulting in less erosion control concerns and associated mitigation measures (Figure 46). Consideration was given to burying felled trees and other associated debris on the DMPRC construction area, but this was deemed infeasible due to engineering constraints. Leaving the stumps and their associated root systems intact across the entire tree clearing area would help stabilize soils and prevent soil erosion; however, this was deemed infeasible in the construction areas. The options for tree removal to achieve LOS for the range are as listed in Section 2.2 (on-site berms, chipping for fuel, grinding for site use, and burn debris on site); these options would have similar potential effects, except that on-site berms and grinding for site use may replace/enhance soil erosion control measures more than the other options. Chipping for fuel or burning debris on site would not provide additional soil erosion control material and would have potential minor negative impacts to air quality.

There are no wetlands impacts when cutting trees for LOS if a low-impact method of tree removal is utilized to minimize soil disturbance and when stumps and roots can be left in place, according to the US Army Corps of Engineers Regulatory office, Savannah District. In construction areas, however, the trees will need to be cut and the stumps grubbed. This is an impact to wetlands and does require mitigation. As described in Alternatives II, adherence to the draft ESPCP (dated March 2004), NPDES permit, and Section 404 Permit is required and will include measures to minimize impacts to soils and vegetation. The draft ESPCP will includes 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 will be used on slopes greater 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. There are no native grasses that are suitable for cool season planting. A fertilizer and seed chart is included in the draft ESPCP. Typical drawings of constructed erosion control practices are included in the draft ESPCP also. 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 must continuously maintain all erosion and sediment control measures during the construction phase of the project. The construction contractor will maintain permanent control structures for one year following acceptance of the project. Submission of a satisfactory draft ESPCP is required by GA Environmental Protection Division to secure the NPDES permit. During construction, the NPDES permit would requires monitoring of turbidity (sediments) in adjacent surface water bodies; there should not be an increase of more than 25 nephelometric turbidity units between water samples taken upstream of the project area those taken downstream. Construction of facilities where the use and storage of hazardous materials will exist, would be designed to meet SPCC requirements under AR 200-1, as well as state and federal requirements as applicable as described in Alternative. These measurements will prevent and/or minimize soil contamination form any possible discharge of pollutants into the environment. Monitoring of these requirements are detailed in the DMPRC Mitigation and Monitoring Plan (Appendix J).

Plant and animal species that typically thrive in the forested area, for example, would diminish and species that thrive in more open areas would flourish. The contractor will implement NPDES and SPCC requirements as described in Alternative II. Mitigation measures would help minimize the adverse effects of this alternative; however, the potential for moderate adverse effects to soils and significant adverse effects to vegetation would still remain.

Training at the newly constructed DMPRC would result in potential effects to soils and vegetation as described in Alternatives I and II. Maintenance of targets, roads, trails, and vehicles would also occur, resulting in more potential ground disturbance and POL spills. In addition, vehicular travel to and from the new DMPRC and range usage will result in the disturbance to soil on the side of either paved or unpaved roads, resulting in potential fugitive dust emissions (discussed in more detail in Section 4.12, Air Quality). The loss of the existing native vegetation during the construction, operation, and maintenance of the new DMPRC would result in a change in both species composition and abundance in this alternative area. SPCC requirements during training operations will be implemented as described in Alternative I. Overall, this alternative would result in potential significant adverse effects to vegetation and potential moderate adverse effects to soils.

Mitigation after construction for potential soil erosion would require monitoring by Range Division, at least quarterly. Monitoring reports will be submitted to the Chief of the Range Division and the EMD, and appropriate action will be taken.

4.2 Water Quality

Waterways that could be impacted from this proposal include: Pine Knot Creek, Bonham Creek, Upatoi Creek, and Sally Branch Creek (and tributaries or unnamed streams leading to them). The threshold level of significance for water quality is the violation of applicable Federal or state laws and regulations, such as the Clean Water Act and the Georgia Water Quality Control Act, and the potential for NOV for the failure to receive applicable Federal and state permits, such as a NPDES permit (required for all projects one acre or more in size), prior to initiating a proposed action. This also includes not following management practices for "impaired streams," as defined under Georgia's 303(d) List, for Total Maximum Daily Loads

(TMDLs). Little Pine Knot Creek and Pine Knot Creek are two stream segments in the area that are known to be impaired due to sedimentation.

4.2.1 Alternative I: "No-Action / Status-Quo" (Figure 19)

As a result of this alternative, no new construction would occur at Hastings Range; however, training exercises utilizing troops and mechanized vehicles would continue to occur, resulting in potential temporary minor adverse effect on water quality due to sedimentation of adjacent streams and/or POLs migrating to off-site streams. Routine maintenance of the range could have similar effects, but to a lesser degree. Military units are also required to utilize secondary containment for storage of hazardous materials/waste and refueling operations. Military units are also encouraged to locate all refueling operations and storage of hazardous materials/waste away from waterways. Potential spills/releases from training exercises may include: discharge and/or improperly disposal of oil or hazardous substances into or upon waterways from storage, handling and/or transportation of hazardous materials/waste; vehicle/equipment/generators leaks; fuel loading/unloading/refueling operations; field mess facilities/equipment/operations, and/or ammunitions /explosives. These maintenance activities will involve already disturbed areas that have been rehabilitated to their original condition. All practices and BMPs for erosion control will be design and implemented in accordance to the Manual for Erosion and Sediment Control in Georgia. As this alternative involves ongoing training, no new permits are required. Continued compliance with applicable Federal, state, and local laws and regulations should minimize the transport of sediment and/or contaminants off site and prevent adverse effects. No additional mitigation is proposed for this alternative.

4.2.2 Alternative II: "Compartment K21 (Alternate Site)" (Figure 19)

Construction of the DMPRC and its associated support facilities at the K21 site could create potential temporary minor adverse effect on water quality, primarily due to potential sedimentation of adjacent streams from tree clearing, grading, and construction activities. Some of the support facilities for the DMPRC, such as the latrines and their associated septic systems and drainage (tile) fields, may also result in the indirect deposition of contaminants (biota) into the groundwater and possibly even the adjacent streams if the latrines are not operating properly. With respect to impaired streams (TMDLs), this alternative may result in increased management practices to prevent additional stream impairment from sedimentation and fecal coliform. Compliance with the current TMDL for Little Pine Knot Creek and Pine Knot Creek will require adherence to all management practices, as described in Section 3.1.3.3, "TMDL," except for those specified for mining operations. Compliance with Georgia Forestry BMPs, such as those identified in the DMPRC Timber Harvest Plan (Appendix I), would also be required (personal communication, Veenstra, 2003) (GA EPD, January 1999). If this alternative were chosen, attempts would be made to minimize impacts to water flow and quality by using low water crossings rather than standard road crossings, such as culverts, where feasible.

Adherence to applicable Federal and state laws and regulations and Installation policies and guidelines is required and 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 General Permit for Storm Water Discharges under the ESCA. A Notice of Intent (NOI) for construction-related stormwater discharge will be submitted to the

GA Environmental Protection Division (EPD) to meet these requirements. 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. Erosion control BMPs, as discussed in Section 4.1, would be utilized to minimize the deposition of sediments into adjacent surface waters at the site of disturbance.

Construction of facilities where the use and storage of hazardous materials will exist, would be designed to meet SPCC requirements under AR 200-1, as well as state and federal requirements as applicable. These facilities include, but not limited to maintenance facilities, loading/unloading operations areas, hazardous material and POL storage areas (above/underground facilities) and generators. Design requirements for these facilities would include secondary containment and/or diversionary structures. Contingency plans to mitigate spill/releases would include: spill supplies and equipment. These measures will prevent and/or minimize water contamination form any possible discharge of pollutants into the environment and navigable waters.

Training at the newly constructed DMPRC could result in potential minor adverse effects to water, due to ground disturbance by mechanized and maintenance vehicles along paved and unpaved roads leading to the new range and from trails and maintenance roads on the new range. The standard design of the complex indicates that up to 22 stream crossings (350 feet long by 29 feet wide each) will be needed to move vehicles in and around the complex. Little Pine Knot Creek is the only impaired stream identified as having one or more potential crossings. Adverse impacts to stream habitats and water quality caused by training would be reduced by adherence to regulatory requirements, the implementation of erosion control BMPs, and the implementation of spill control measures. Overall, potential minor adverse effects may result from this alternative. Mitigation after construction for potential effects to water quality would require monitoring, as stated in Section 4.1.2.

4.2.3 Alternative III: "Compartment D13 (Preferred Alternative)" (Figure 19)

Construction of the DMPRC and its associated support facilities at the D13 site would be similar in nature and scope to those predicted under Alternative II; however, fewer stream crossings and acres of soil disturbance would mean that this alternative would likely result in less potential impacts than Alternative II, resulting overall in potential temporary minor adverse effects to water quality. With respect to impaired streams (TMDLs), this alternative may also result in increased management practices; however, no impacts to impaired streams are predicted. Compliance with Georgia Forestry BMPs, such as those identified in the DMPRC Timber Harvest Plan, is also required (personal communication, Veenstra, 2003) (GA EPD, January 1999).

Adherence to applicable Federal and state laws and regulations and Installation policies and guidelines is required and 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 ESCA. A Notice of Intent (NOI) for construction-related stormwater discharge will be submitted to the GA Environmental Protection Division (EPD) to meet these requirements. 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. Erosion control BMPs, as discussed in Section 4.1, would be utilized to minimize the deposition of sediments

into adjacent surface waters at the site of disturbance. Erosion control blankets on stream bank slopes or stone underlined with geotextile fabric can be used to reduce stream bank erosion. Silt fencing, brush barriers, stabilization of channels above the streams and the establishment of permanent grasses will be used to minimize the sedimentation in the streams. During the design process, Fort Benning decided to use low water crossings rather than standard road crossings, such as culverts, to minimize impacts to water flow and quality. During the layout and design of the tank trails, wetlands were avoided as much as possible. Construction of the low water crossings will require diversion of streams; therefore, the stream diversion BMPs will be followed during this process (which includes side slopes no steeper than 2:1, drainage area not to exceed one square mile, etc.). The low water crossings will be constructed of concrete to minimize soil disturbance in the stream. Details of the maintenance and water quality monitoring required will be detailed in the ESPCP, NPDES Permit, and DMPRC Mitigation and Monitoring Plan (Appendix J). Construction of facilities for the use and storage of hazardous materials will exist would be designed to meet SPCC requirements under AR 200-1, as well as state and federal requirements as applicable as described in Alternative II. These measurements will prevent and/or minimize water contamination form any possible discharge of pollutants into the environment and navigable waters.

Under this alternative, the latrines are positioned in relatively close proximity to Upatoi Creek, the source of drinking water for the Installation and a major tributary to the Chattahoochee River. Other locations for the latrines were considered, however, the current location was deemed to be the best due to the need for them to be near the classroom and training areas. The wastewater treatment system for these latrines may require a NPDES permit, which should identify operation and discharge practices and limitations. The drinking water intakes on Upatoi Creek are downstream from the project area. Due to the distance of the latrines and the drinking water intakes and the stringent drinking water treatment requirements and process, there is only a minimal potential for contamination of this water source if the latrine facilities are not operating properly.

Training at the newly constructed DMPRC could result in similar impacts as described under Alternative II, but fewer potential minor adverse effects to water. This is because the Alternative III site has fewer streams and wetlands and therefore fewer stream crossings and fewer acres of soil disturbance from mechanized and maintenance vehicles. Through adherence to regulatory requirements and the implementation of erosion control BMPs, stream habitats and water quality should improve over time.

Overall, potential minor adverse effects may result from this alternative. Mitigation after construction for potential effects to water quality would require quarterly monitoring, as described in Section 4.1.3.

4.3 Wetlands and Streambanks

The threshold level of significance for wetlands is a change from one wetland type or function to another. The threshold level for significance to streambanks is any action requiring a Stream buffer variance under the GA ESCA.

4.3.1 Alternative I: "No-Action / Status-Quo" (Figures 19 and 20)

As a result of this alternative, no new construction would occur at Hastings Range. There are no known wetlands in the area of, adjacent to, or immediately surrounding Hastings Range. Tributaries leading away from the area of, adjacent to, and immediately surrounding Hastings Range, however, could be transporting small amounts of sediment (from training, range maintenance, and vehicular traffic, both mechanized and other) from the range and roads leading into the range to nearby streams and wetlands through surface water runoff following rain or the accidental release of water from portable shower units, thereby incrementally increasing the sedimentation of these tributaries and, potentially, the wetlands and drainage basins they drain into. Military units will locate refueling operations and storage of hazardous materials/waste away from waterways. Over time, this could indirectly result in potential minor adverse effects to wetlands and streambanks surrounding Hastings Range.

If these potential minor impacts would result in a soil erosion problem, then the area would be stabilized through the use of erosion control measures. All practices and BMPs for erosion control will be design and implemented in accordance to the Manual for Erosion and Sediment Control in Georgia. No additional mitigation is proposed.

4.3.2 Alternative II: "Compartment K21 (Alternate Site)" (Figures 19 and 21)

Construction of the DMPRC and its associated support facilities at the K21 site may result in impacts to approximately 230 acres of wetlands due to construction activities, resulting in potential moderate adverse effects to approximately 20-30 acres of wetlands without further mitigation. These activities would include removing tree stumps and grubbing in some wetlands and filling some wetland areas to construct low water crossings and other structures. Areas not requiring tree stump removal for construction, such as clearing for LOS only, would not be grubbed and the trees would be cut to ground level only, with the stump and roots remaining. Adherence to applicable Federal, state, and local laws and regulations is required. This would include obtaining and following a Section 404 Permit due to potential disturbance to wetlands and possibly obtaining a Stream buffer variance for tree removal and construction within the 25-foot buffer zone along streams. If Alternative II were chosen, mitigation for impacts to wetlands and streambanks by avoidance would be incorporated into the design process by reducing stream crossings and placing trails, roads, and targets, where possible, out of wetland areas. Construction at the location of this alternative would also require a Section 401 certification since there is a potential for impacts to wetlands and the potential for discharge into navigable waters of the U.S.

Streambank buffer zones will be marked along Little Pine Knot Creek and its tributaries to protect water quality, similar to as described under Alternative III, below. Trees and other vegetation in the buffer zone provide shade that moderate water temperatures, provide woody debris necessary for aquatic ecosystem health, and provide natural filtration of sediment and other pollutants. All trees that impede the Line of Sight (LOS) will be removed. To reduce potential sources of sedimentation, logging decks and defined skid trails will be located outside the buffer zones; brush barriers will be constructed along the edge of the wetlands to reduce the chances of sediment getting into the streams. Some areas within the buffer zone will be cleared for construction of low water crossings; however, erosion control measures will be put in place to minimize sedimentation in the streams.

Some aquatic wildlife species such as fish, salamanders, frogs, and turtles may be directly impacted during construction, as streams are temporarily diverted during emplacement of culverts for maintenance roads and construction of low-water stream crossings. Tree removal along streambanks may have an indirect impact to aquatic species due to increase in temperature from the loss of tree canopy. There would also be a potential loss of feeding and nesting areas for migrating waterfowl and wading birds, in addition to a reduction in spawning, feeding and nursery habitat for fish and other aquatic species and a temporary fragmentation of their habitat during construction of low water crossings. Construction and LOS selective clearing will result in the removal of most of the trees and vegetation in the wetland. The construction removal would result in a change in wetland type. This would result in potential significant adverse effects to wetlands and potential significant adverse effects to streambanks.

Mitigation, in the form of wetland restoration and streambank restoration measures, is proposed. Thirteen sites were initially identified for mitigation on the Installation; six of those sites (Clear Creek, Midwest Rd, Kirk's Pond, Stephens Pond, Suitor Hill, and First Division Road) have been selected for further consideration based on their ability to meet the selection criteria and because they will yield the greatest number of wetland and streambank credits. Site selection criteria included restoration value and feasibility, land use compatibility, cost effectiveness, size, and quantifiable gains. Coordination with the Fort Benning Directorate of Training will occur prior to the selection of any of these sites for mitigation purposes, to avoid conflicts with mission activities. A description of the sites and a map showing their locations are in the March 2004 report entitled "Wetland Mitigation Siting Analysis for the Digital Multi-Purpose Range Complex." Mitigation site development normally involves restoring or enhancing the wetland hydrology by excavating sediment from a degraded wetland area, providing appropriate hydrology, and planting native trees and shrubs. Streambank mitigation can include mechanically sloping the stream bank and stabilizing the bank with trees and shrubs. Long term monitoring is normally required to ensure restoration is successful.

Due to the need to begin tree clearing and range construction in the summer or fall of 2004, if possible, Fort Benning proposes to initiate the wetlands and any streambank restoration during that same timeframe. If mitigation by restoration were not reasonable, Fort Benning would pursue the purchase of wetlands and/or streambank credits in the area, if available. To mitigate for the temporary stream diversions utilized to construct low water crossings, the construction contractor must provide a detailed diversion plan at least 60 days in advance of the proposed diversion start date. The contracting officer must ensure coordination and approval of this diversion plan with the EMD and the COE Regulatory Branch prior to any action. Erosion control BMPs and SPCC requirements would also be implemented during construction, as described in Section 4.1.2.

Operation and maintenance of the newly constructed DMPRC may indirectly affect wetlands; for example, there is a possibility for sedimentation/contamination of streams at crossings over time. Recreational areas and opportunities for hunters and fisherman may also decrease in the immediate area of the DMPRC or may be altered by operation of the proposed DMPRC to make them less desirable by fish and waterfowl. Through stormwater runoff or other means, the streambanks may be impacted by POLs or other materials if proper spill prevention and response is not followed. Another potential adverse impact is the potential loss of storage areas for floodwaters and the positive filtering action by wetlands (removal of environmental pollutants such as chemicals, pesticides and heavy metals from water moving through the system), resulting in these contaminants moving on into adjacent streams rather than staying

primarily within the wetlands areas. Currently, there is no indication of such contaminants or the migration of contaminants either in this alternative area or at other ranges on Post. For operation and maintenance, this alternative would result in potential minor adverse effects to wetlands and streambanks without further mitigation.

In addition to wetlands and streambank restoration/enhancement, mitigation may consist of using the Strategic Environmental Research and Development Program (SERDP) Environmental Monitoring Program (SEMP) streambank monitoring practices and tools. In addition, SPCC requirements would be implemented during training exercises to avoid/minimize impacts to wetlands and streambanks. Overall, this alternative would result in potential moderate adverse effects to wetlands and potential significant adverse effects to streambanks.

4.3.3 Alternative III: "Compartment D13 (Preferred Alternative)" (Figures 19 and 22)

Construction of the DMPRC and its associated support facilities at the D13 site would result in impacts to approximately 16 of the 315 acres of jurisdictional wetlands and streambanks due to tree clearing and construction activities at this site, resulting in potential moderate adverse effects to wetlands and potential significant adverse effects to streambanks without further mitigation. Impacts would be slightly less than those predicted under Alternative II, but would be the result of the same type of construction activities as described under Alternative II. The construction activities would include removing tree stumps and grubbing in some wetlands and filling some wetland areas to construct low water crossings and other structures. Areas not requiring tree stump removal for construction, such as clearing for LOS only, would not be grubbed and selected trees would be cut to ground level only, with the stump and roots remaining. All trees that impede the LOS will be removed. Low impact methods of tree clearing would be utilized in these areas and would be in accordance with the Timber Harvest Plan (Appendix I), and the GA Forestry BMPs for Water Quality and Timber Harvesting.

Some aquatic wildlife species such as fish, salamanders, frogs, and turtles may be directly impacted during construction, as streams are temporarily diverted during emplacement of culverts for maintenance roads and construction of low-water stream crossings. Tree removal along streambanks may have an indirect impact to aquatic species due to increase in temperature from the loss of tree canopy. There would also be a potential loss of feeding and nesting areas for migrating waterfowl and wading birds, in addition to a reduction in spawning, feeding and nursery habitat for fish and other aquatic species and a temporary fragmentation of their habitat during construction of low water crossings.

Mitigation for impacts to wetlands and streambanks by avoidance was incorporated into the design process by reducing stream crossings and placing trails, roads, and targets, where possible, out of wetland areas. Wetland mitigation and stream bank mitigation measures would be implemented as a part of the mitigation for the proposed DMPRC and would be in accordance with the Section 404 permit and Section 401 Certification for the project. SPCC and erosion control BMPs would also be implemented to avoid impacts to desirable habitat during construction. In addition, SPCC requirements would be implemented during training exercises to avoid/minimize impacts to desirable habitat. 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. A stream buffer variance will be obtained before trees are removed. To reduce potential sources of sedimentation, logging decks and defined skid trails would be located outside the buffer zones.

Erosion control measures would be utilized along the edge of the wetlands, which would be outside the buffer zones to reduce the chances of sediment getting into the streams. Areas within the buffer zone would be cleared for construction of low water crossings; however, erosion control measures would be put in place to minimize sedimentation in the streams. Additional details may be found in the DMPRC Mitigation and Monitoring Plan (Appendix J). Construction and LOS selective clearing will result in the removal of most of the trees and vegetation in the wetland and along the streambanks. The range construction would not result in a change in wetland type for most of the 315 acres of wetlands at this alternative site; however, approximately 16 acres of wetlands would be impacted. Overall, this alternative would result in potential moderate adverse effects to wetlands and potential significant adverse effects to streambanks, as long as low-impact methods of tree removal are utilized.

As described under Alternative II, restoration of wetlands and streambanks at another location on Post is proposed to further reduce impacts. 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; however, if there are not enough wetland and/or streambank restoration sites/credits available on Post, then additional mitigation may be via purchase of off-Post credits, if available in the appropriate watershed. Operation and maintenance on the newly constructed DMPRC at this alternative would also be similar to those described under Alternative II, as would the proposed mitigation measures, although to a lesser degree. In addition to wetlands and streambank restoration/enhancement, optional mitigation may consist of using the Strategic Environmental Research and Development Program (SERDP) Environmental Monitoring Program (SEMP) streambank monitoring practices and tools.

4.4 Unique Ecological Areas

The threshold level of significance for a Unique Ecological Area (UEA) is the removal or destruction of vegetation or other actions (such as sedimentation) sufficient to make the UEA no longer functional as an ecosystem unit.

4.4.1 Alternative I: "No-Action / Status-Quo" (Figure 23)

As a result of this alternative, no new construction would occur at Hastings Range. The Hastings Relict Sandhills Community UEA is located immediately outside Hastings Range (location of Alternative I). No adverse effects are predicted to the vegetation, but some animals, such as gopher tortoises and Eastern diamondback rattlesnakes, may be inadvertently harmed or killed due to mechanized training or range maintenance, resulting in potential temporary minor adverse effects to the UEA. Adherence to existing Installation UEA management practices, as identified in the Fort Benning INRMP, should mitigate any potential temporary minor adverse effects and no additional mitigation is proposed.

4.4.2 Alternative II: "Compartment K21 (Alternate Site)" (Figure 24)

Construction of the DMPRC and its associated support facilities at the K21 site would potentially impact the Little Pine Knot Creek portion of the Pine Knot Creek Blackwaters UEA, which consists of two coastal plain streams: Pine Knot Creek and Little Pine Knot Creek. As a

result of the construction, the range and target firing area would run parallel to a section of Little Pine Knot Creek. Most or almost all of the 230 acres of the UEA over-story trees growing within the footprint of the Range would be removed. Also, some species may be inadvertently killed due to logging activities and mechanized and repair/maintenance vehicle traffic through the UEA via low water crossings. Erosion occurring from traffic in the streams within the UEA in adjacent upland areas may increase sedimentation in the UEA, lower water quality, and adversely effect habitat quality. Trees that are felled and left in place to establish LOS may become an obstruction and impede water flow in certain areas of the UEA. Due to the loss of the canopy of 230 acres, water temperature and evaporation rates will increase in Pine Knot Creek. Both of these effects will have an impact on the hydrologic cycle and degrade and reduce populations of some species, resulting overall in potential moderate adverse effects to approximately 15% of this UEA.

Mitigation for this UEA would consist of adhering to requirements in the NPDES permit, Section 404 permit, and ESPCP for this project. The implementation of SPCC requirements will prevent/minimize/reduce the potential of contamination in UEA, and will meet pollution prevention measurements under the NPDES Permit and the ESPCP. All harvested trees should be felled so the stem is parallel with the run of the stream and therefore reducing the obstruction effect. Installation management polices for UEAs should be utilized to the fullest extent possible to reduce the amount of erosion that will occur (Fort Benning, 2001). All upland areas, especially, should be stabilized with erosion control "blankets," vegetation, and/or mulch. Operation and maintenance may result in additional potential effects to the UEA due to soil erosion; this would be mitigated as discussed under Section 4.3.3, "Wetlands." Overall, this alternative would result in potential moderate adverse effects to UEAs.

4.4.3 Alternative III: "Compartment D13 (Preferred Alternative)" (Figure 25)

Construction of the DMPRC and its associated support facilities at the D13 site would result in potential adverse impacts to the Pineknot Creek Blackwaters UEA, which consists of two coastal plain streams: Pine Knot Creek and Little Pine Knot Creek. As a result of the construction at this site, the range and target firing area would encompass 109 acres of the Pine Knot Creek portion of the UEA. Some of the UEA overstory trees that are in the footprint of the range will be selectively cut; however, there will not be any roads through the UEA. As in Alternative II, some species may be injured or killed by logging operation. Erosion from adjacent upland target sites and access trails may increase sedimentation in the UEA, lower the water quality, and adversely impact habitat. Trees that are felled and left in place may become an obstruction and impede water flow in portions of the UEA. Both of these effects will have an impact on the hydrology of the area and may degrade habitat, increase water temperature, and change and/or reduce aquatic populations.

Only several small target locations of the UEA are proposed for fill, resulting in fewer impacts to UEAs; therefore, less extensive mitigation would be required in comparison to Alternative II, and would consist of adhering to requirements in the NPDES permit, Section 404 Permit Application, and ESPCP for this project. Trees in the stream buffers, which make up a large part of the UEA, and must be removed for LOS will be removed by low impact methods. If the ground will not support equipment the tree will be left in place and should be felled so the stem is parallel with the run of the stream and therefore reducing the obstruction effect. Installation management polices for UEAs should be utilized to the fullest extent possible to

reduce the amount of erosion that will occur (Fort Benning, 2001). All upland areas, especially, should be stabilized with erosion control "blankets," vegetation, and/or mulch. This would result overall in potential minor adverse effects to approximately seven percent of the entire areas of the UEA, but would not impede function of the UEA as an ecosystem. Operation and maintenance may result in additional potential effects to the UEA due to soil erosion; this would be mitigated as discussed under Section 4.3.3, "Wetlands." The implementation of SPCC requirements will prevent/minimize/reduce the potential of contamination in UEA, and will meet pollution prevention measurements under the NPDES Permit and the ESPCP. Overall, this alternative, which contains 7% of the Pine Knot Creek UEA, would result in potential minor adverse effects to UEAs.

4.5 Protected Species

4.5.1 Federally Protected Species

The threshold level of significance for Federally protected species occurs if an alternative disrupts normal behavioral patterns or disturbs habitat at a level that substantially impedes the Installation's ability to either avoid jeopardy or conserve and recover the species.

4.5.1.1 Alternative I: "No Action/Status Quo" (Figure 26)

As a result of this alternative, no new construction would occur at Hastings Range; however, there is a potential for the inadvertent mortality of individual and groups of RCWs and the degradation or loss of RCW habitat due to continuation of military training; for example, wildfires from spent or misfired ammunition landing on dry vegetation. There are currently three active, three inactive, and one RCW recruitment cluster and 387 acres of suitable habitat in the vicinity (within approximately half a mile) of Alternative I, Hastings Range.

Adherence to the Installation's existing Endangered Species Management Plan (ESMP) for the RCW would minimize potential effects, including suppressing wildfires that may adversely impact RCW cavity trees and habitat, replacing active cavities with artificial cavity inserts (if tree mortality results in the loss of a cavity tree, for example), shifting clusters to suitable locations if/when adverse effects in the area occur, and routine application of prescribed burns to maintain habitat. Overall, the possible loss of habitat in these clusters may lead to potential minor adverse effects on RCWs. No additional mitigation is proposed.

4.5.1.2 Alternative II: "Compartment K21 (Alternate Site)" (Figure 27)

Construction of the DMPRC and its associated support facilities at the K21 site would potentially impact approximately 1,800 acres (of which 921 acres are suitable RCW habitat), consisting of pines and mixed pine-hardwoods. Loss of habitat would be the result of tree clearance/timber harvest activities for the range and target firing area and support facilities. Tree removal is not planned for the entirety of the SDZ; however, tree removal may occur within the boundaries of the ricochet area on an as-needed basis and for purposes of safety and maintenance (for example, to prevent damaged trees falling on personnel and equipment). There would be a potential loss of four RCW clusters within the range and target area (clusters K21-01, K21-04/Inactive and K21-02, K22-01/Active) due to construction activities and the potential

displacement of four recruitment sites planned for the nearby area; all four planned recruitment sites are less than 0.13 miles from the area of this proposed alternative. In addition, approximately 146 acres of habitat would be removed from cluster K22-01 and an indeterminate amount of habitat loss in cluster K21-04 (presently inactive) due to range clearing and support facilities construction. Adherence to the RCW ESMP, the 2003 Recovery Plan for the RCW, and the Fort Benning INRMP during construction is required. During range design, attempts would be made to reduce effects to RCWs and their habitat by the strategic placement of targets, roads, and support facilities. This alternative would result in potential moderate adverse effects to RCWs, without formal consultation with USFWS and implementation of requirements in the Biological Opinion for the DMPRC; however, Fort Benning would initiate formal consultation with USFWS to minimize potential adverse impacts to RCW, if this alternative were chosen.

Once constructed, operation and maintenance on the new DMPRC could also result in potential adverse effects to RCW. Depending on final target locations, clusters near the range footprint could be adversely impacted. During the detailed design process, firing points, targets, etc., would be located to minimize impacts to RCW clusters near the footprint of the DMPRC, if possible. Strategic placement of berms would be attempted to reduce rounds from impacting RCW clusters and/or habitat and may further reduce potential effects. In addition, there is the possibility of cluster abandonment in various RCW clusters in and around the range due to various types of disturbance (firing ordnance and increased noise, etc.). Fort Benning would also need to apply for incidental take of RCW clusters and/or trees in the Biological Assessment (see DMRPC Mitigation and Monitoring Plan, Appendix J, for additional information). Overall, this alternative could result in potential significant adverse effects. 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.

Fort Benning would propose reclaiming RCW clusters and habitat in the A20 ordnance impact area to minimize the potential adverse effects from construction, operation, and maintenance. 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 Fort Benning's recovery goal for the RCW) would be required. The number of clusters and/or amount of RCW habitat that would need to be reclaimed in the A20 ordnance impact area would be defined by USFWS, but is unknown at this time. Clearance of UXO from portions of the A20 ordnance impact area would also be required. Access to the RCW clusters and habitat remaining in the Alternative II area would also be required. This mitigation option would also require that agreements be created between Range Division and EMD personnel to ensure that management opportunities/days are established. 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.

Additional mitigation for the potential construction, operation, and maintenance impacts on RCW would include staffing at least two (2) new positions for RCW monitoring/management (with at least 5-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 newly constructed DMPRC during its routine operation and maintenance. The additional staff members dedicated to concentrated management and monitoring for these RCW clusters in A20 and the clusters surrounding the Alternative II footprint, as well as contributing

to management and monitoring at the population level, would be instrumental in ensuring that Fort Benning continues to move towards its recovery goal for the RCW. Obtaining supplemental funding to accelerate and support projects associated with population growth strategies, including funding for longleaf pine underplanting and restoration, forest plan modeling, landscape scale fertilization plan, etc., could also be important for achieving the Fort Benning RCW Recovery Goal, but is proposed as optional mitigation at this time.

4.5.1.3 Alternative III: "Compartment D13 (Preferred Alternative)" (Figure 28)

Construction of the DMPRC and its associated support facilities at the D13 site would potentially impact approximately 1,500 acres (of which 714 are suitable RCW habitat), as described under Alternative II, above. Within this site, four active RCW clusters will lose valuable habitat: cluster D14-04 will lose 84 acres; cluster D3-02 will lose 55 acres; cluster D13-02 will lose 20 acres; and cluster J6-01 will lose approximately eight acres. In addition, the abandonment of these clusters due to construction activities is possible, as described under Alternative II, above.

Adherence to the RCW ESMP, the 2003 Recovery Plan for the RCW, and the Fort Benning INRMP during construction would be required. The 30 March 2004 design currently places the construction contractor staging area tentatively in compartments D1 and D14; however, these placements are too general at this time to determine if any potentially adverse impacts to RCW habitat would occur as a result of this placement. Prior to the site approval of the contractor staging area, an Installation license (for permission to utilize the site) will be required, in addition to a review of the license by the EMD. Any environmental concerns would be addressed at that time and could include relocating the contractor staging area to another location that is free of environmental concerns, such as RCW habitat. During range design, attempts were made to reduce effects to RCWs and their habitat by the strategic placement of targets, roads, and support facilities. Also, the helipad access road was rerouted away from cluster J6-02. The calibration point and the road leading to it were deleted from the design due to costs, environmental considerations, and operational concerns; therefore, effects to cluster D3-02 were reduced. This alternative would result in potential significant adverse effects to RCWs from construction, without formal consultation with USFWS and implementation of requirements in the Biological Opinion (BO) for the DMPRC. Although Fort Benning has informally consulted with USFWS on the DMPRC during the past couple years, formal consultation was initiated via a Biological Assessment (BA) to minimize potential adverse impacts to RCW for this preferred alternative (see 11 March 2004 letter initiating consultation, Appendix G). USFWS responded by letter (dated 23 March 2004) confirming the start of formal consultation and requesting additional information (Appendix G). On 9 April 2004, an addendum to the BA was also submitted to the USFWS to provide them with the draft Access Plan for the RCW clusters within the area of Alternative III (Appendix G; note: letter without enclosures). Fort Benning will implement all reasonable mitigation provided in the resulting BO.

Once constructed, operation and maintenance on the proposed DMPRC could also result in potential adverse effects to RCW, although to a more minor degree. Strategic placement of berms will be attempted to reduce rounds from impacting RCW clusters and/or habitat may further reduce potential effects. In addition, there is the possibility of cluster abandonment in various RCW clusters in and around the range due to various types of disturbance (firing

ordnance, damage to foraging habitat, and increased noise, etc.). Fort Benning has identified the potential for take (or loss) of three active clusters and four planned recruitment sites. Refer to the DMPRC Mitigation and Monitoring Plan (Appendix J) for additional details. Overall, this alternative could result in potential significant adverse effects.

Fort Benning proposes reclaiming RCW clusters and habitat in the A20 ordnance impact area to further minimize the potential adverse effects, if feasible. 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 Fort Benning's recovery goal for the RCW) would be required. The number of clusters that Fort Benning proposes to reclaim in the A20 ordnance impact area is currently estimated at seven clusters, in addition to the appropriate habitat on which to manage them. Further consultation with USFWS is required to concur with this proposal. Clearance of UXO from portions of the A20 ordnance impact area would be required. Access to the RCW clusters and habitat remaining in the Alternative III area would also be required. This mitigation option would also require that agreements be created between Range Division and EMD personnel to ensure that management opportunities/days are established. 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.

Additional mitigation for the potential construction, operation, and maintenance impacts on RCW would include staffing approximately two (2) new positions for RCW monitoring/management (with at least 5-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 operation and maintenance. Obtaining supplemental funding to accelerate and support projects associated with population growth strategies, including funding for longleaf pine underplanting and restoration, forest plan modeling, landscape scale fertilization plan, etc., would also be important for achieving the Fort Benning RCW Recovery Goal, but is proposed as optional mitigation at this time.

Gaining access to seven active, known RCW clusters in the A20 ordnance impact area would be the primary means of mitigating the adverse effects of this alternative. 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.

Clusters most likely to be adversely impacted by training are D3-02, K22-03, and K12-01, respectively. Clusters that may also receive secondary impacts from training are D14-04, D3-01, D13-02, and K1-01. Further mitigation for operation and maintenance on the proposed DMPRC will include the construction of a protective berm, if feasible, near selected targets to prevent rounds from impacting clusters D3-02 and K22-03. The location of the targetry itself is also important to avoid adverse effects on RCWs, RCW cavity trees, and RCW foraging habitat and has been coordinated between Fort Benning and design personnel at all stages of the proposed DMPRC project. Other optional mitigative measures include supplementing adversely impacted active RCW clusters with cavity inserts or drilled cavities and the translocation of birds if detrimental trends are observed. Buena Vista Road will not be demolished and would be

available for emergency vehicle access during non-training hours. In addition, training would be temporarily halted to accommodate emergency vehicle access. Another mitigation option for consideration is the initiation of research on the potential effects and area of effects on RCW and their habitat due to range operation. For example, research on the impacts related to RCW clusters and habitat in the SDZ would be beneficial.

4.5.2 State-Protected Species

The threshold level of significance for state protected species is an impact that would either jeopardize the future existence of a state listed species on Fort Benning or lead to the Federal listing of that species.

4.5.2.1 Alternative I: "No Action/Status Quo" (Figure 29)

No new construction is proposed as a result of this alternative; however, there is an ongoing potential for inadvertent mortality of gopher tortoises, the only state protected reptile species in the vicinity of this alternative, due to mechanized maneuvers and training within the area of and surrounding Hastings Range, resulting in potential minor adverse effects on state protected species. No effect to other state protected species is predicted. Adherence to existing management practices would be required. No additional mitigation is proposed.

4.5.2.2 Alternative II: "Compartment K21 (Alternate Site)" (Figure 30)

Construction of the DMPRC and its associated support facilities at the K21 site would potentially impact approximately 115 gopher tortoise burrows in the construction and timber harvest/slash removal areas due to the use of heavy equipment and the construction of new structures (targetry, roads, and buildings), resulting in minor adverse effects. In addition, 1,107 acres of gopher tortoise habitat will be lost due to ground disturbances, target installations, and road construction. Commensal 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.

Adherence to existing Installation management practices would help to minimize the potential adverse effects from construction; however, some additional mitigation would be required. Additional mitigation would include relocation of potentially affected Gopher Tortoises within the range and target firing area to another location on Fort Benning prior to tree clearing or construction. The relocation process can be broken into five steps. The first step is to survey the construction area and establish where and how many tortoise burrows (containing tortoises) will need to be removed. Once the number of tortoises proposed for removal has been estimated (about 40% of the burrows are occupied) a relocation site or sites must be selected. Relocation sites will be selected based on habit quality and the presence or absence of resident gopher tortoises. The preferred relocation sites will be those with suitable habitat and no resident gopher tortoises. Relocation of the tortoises must occur during mid-April to mid-May; this is the time of year when the tortoises are inactive and can be most readily captured and relocated (personal communication, Thornton, 2003). Tortoises that are excavated will then need to have

blood samples taken and checked for the presence of respiratory disease. Tortoises will need to be held in a suitable containment pen until the results of the blood tests are received (usually about one week). If the results of the tests are negative, the tortoises can then be released into the relocation site. Tortoises that test positive for respiratory disease will not be relocated into areas with tortoises that tested negative for the disease. Tortoises that are released will need to be provided with a start-burrow (dug by hand approximately 3 feet long) or an abandoned burrow to prevent the tortoise from being exposed to predation and the elements until they can excavate a new burrow. Protecting lands off the Installation that could sustain Gopher tortoises 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.

Once constructed, operation and maintenance on the new DMPRC would further restrict species management due to restricted access to the area for surveys and other management issues. In addition, the continual use of mechanized vehicles within the range and target firing area will alter the vegetative ground cover, favoring those species that thrive in disturbed areas and potentially altering the habitat for both the Gopher Tortoise and its commensal species. 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. Gopher tortoises exist and even thrive, however, on many of the other ranges and maneuver corridors on Fort Benning, so the habitat change may be minimal outside of the construction areas, in the long term. Overall, this alternative could result in potential minor adverse effects.

4.5.2.3 Alternative III: "Compartment D13 (Preferred Alternative)" (Figure 31)

Construction of the DMPRC and its associated support facilities at the D13 site would result in similar effects as described under Alternative II, although to a greater degree. Construction 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). 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. Potential effects due to training would also be similar to those described under Alternative II. Mitigation for this potential minor adverse effect would be as described under Alternative II, but would include the following.

Auburn University (AU) has surveyed a large portion of the preferred alternative and has visited all of the known burrow locations within the area. They are now estimating that there are at this time only 20 to 30 tortoises still inside the construction/tree removal area. These tortoises will be removed during the summer of 2004 by AU. Any tortoises that cannot be removed will be removed by a contractor. Once removed, the tortoises will be relocated to holding pens that have been constructed in training compartments F3 and D6. Tortoises will be placed into the pens based on the respiratory disease status and the habitat quality from which they were removed. At the completion of the AU study, the pens will be removed and the tortoises will be allowed to disperse into the surrounding habitat if that habitat is considered suitable for release. For those tortoises that are not in a good quality habitat, a new relocation site will be selected. In addition to the survey conducted by AU, a complete survey of the area is now underway by a contractor to look for any burrows that might have been missed by AU. Once the survey is completed all burrow locations will be verified and any burrows not already discovered will be checked for to see if they are active burrows.

4.6 Migratory Birds (no figures)

The threshold for significance for migratory birds is a substantial adverse effect on a species population.

4.6.1 Alternative I: "No Action/Status Quo"

This alternative would not include any potential impacts due to construction; however, potential minor adverse effects would be on-going due to the possible unintentional take from range operation or maintenance. No mitigation is proposed.

4.6.2 Alternative II: "Compartment K21 (Alternate Site)"

Construction of the proposed DMPRC under this alternative may result in unintentional take, especially during the removal of timber and other vegetation. The Alternative II area only represents about 0.9% of the available habitat for migratory birds on the Installation. Due to the small relative size of the Alternative II area compared to the size of the Installation, it is believed that there will be no major impacts to migratory bird populations on the Installation. There will however be some changes to the species composition within the Alternative II area. Timing of the construction activities that may cause an unintentional take may be adjusted in an attempt to minimize any potential adverse effect to migratory birds, if feasible. No other mitigation is proposed for construction activities.

Operation and maintenance of the range may also result in potential minor adverse effects as discussed in Alternative I. No mitigation is proposed.

4.6.3. Alternative III: "Compartment D13 (Preferred Alternative)"

Construction of the proposed DMPRC under this alternative may result in unintentional take, especially during the removal of timber and other vegetation. The Alternative III area only represents about 0.9% of the available habitat for all migratory birds on the Installation. For example, it is estimated that only 0.6% of the potential habitat for Bachman's sparrow on the Installation is within the Alternative III area. Due to the small relative size of the Alternative III area compared to the size of the Installation, it is believed that there will be no major impacts to migratory bird populations on the Installation. There will however be some changes to the species composition within the Alternative III area. Timing of the construction activities that may cause an unintentional take may be adjusted in an attempt to minimize any potential minor adverse effect to migratory birds, if feasible. No other mitigation is proposed for construction activities.

Operation and maintenance of the range may also result in potential minor adverse effects as discussed above, although on a larger scale than Alternative I due to the larger range footprint. No additional mitigation is proposed.

4.7 Socioeconomics

The threshold level of significance for socioeconomics consists of a combination of several factors, to include unusual population growth or reduction, unusual increase/decrease in housing demands, substantial increase/decrease in demands on public services, and the potential to substantially increase/decrease employment opportunities.

4.7.1 Alternative I: "No Action/Status Quo" (Figure 32)

There would no effect, either adverse or positive, on socioeconomics as a result of this alternative, due to the site's ongoing use as an existing mechanized training range and no change in the operation and maintenance of the site. Therefore, no mitigation is proposed.

4.7.2 Alternative II: "Compartment K21 (Alternate Site)" (Figure 32)

As a result of this alternative, the construction of the new DMPRC could temporarily increase job opportunities for individuals living and/or working in the Columbus-Phenix City MSA, resulting in potential temporary minor positive effects on socioeconomics. The construction contract may be awarded to a company located outside of the Columbus-Phenix City MSA; however, there is still the potential for utilization of the local workforce for the actual work on site. Utilization of the local workforce should not increase demands on housing or public services and should not result in an increased population base. Therefore, no mitigation is proposed.

4.7.3 Alternative III: "Compartment D13 (Preferred Alternative)" (Figure 32)

As a result of this alternative, the construction of the new DMPRC could temporarily increase job opportunities for individuals living and/or working in the Columbus-Phenix City MSA, resulting in potential temporary minor positive effects on socioeconomics. The construction contract may be awarded to a company located outside of the Columbus-Phenix City MSA; however, there is still the potential for utilization of the local workforce for the actual work on site. Utilization of the local workforce should not increase demands on housing or public services and should not result in an increased population base. Therefore, no mitigation is proposed.

4.8 Land Use (no figures)

This Land Use category consists of evaluation of impacts to incompatible land uses, recreation, range sustainment/encroachment, and sustainable design. The threshold level of significance for land use is altering the existing use category of the land in such a manner as to cause incompatibility with adjacent land uses. The threshold level of significance relating to range sustainment is encroachment sufficient to interfere with the Installation mission so that mission-essential training is degraded or the failure to meet the required sustainable design (SPiRiT) rating for the buildings.

4.8.1 Alternative I: "No Action/Status Quo"

There would be no new construction on the Installation; however, any future construction near the Installation's northeastern boundary may encroach on military training at this area. The requirement to notify the Installation of such future construction will allow an identification and cooperative resolution of any incompatible land uses. Operations at Hastings Range are not currently impeded by encroachment; however, as discussed in the Noise Section (4.11), Zone III (incompatible) noise contours do show an adverse affect on rural residential areas off the Installation. Sustainable design does not apply to this alternative, because there is no new construction proposed. Overall, there is a potential moderate adverse effect on land use as a result of this alternative.

No mitigation is proposed. Additional actions for the potential adverse effects from encroachment could be determined via the initiation of a Joint Land Use Study (JLUS), as discussed further in the Noise Section (4.11).

4.8.2 Alternative II: "Compartment K21 (Alternate Site)"

This alternative site would continue to be used for military training and heavy maneuvers, but would now include the DMPRC and its support facilities. The conversion from a mostly undeveloped, forested area to a DMPRC with its associated support facilities, tank trails, and access roads would have potential minor adverse effects to recreation, to include hunting, fishing, hiking, and bird-watching. Although the area near the eastern boundary of the Installation is currently used for agricultural and rural residential uses, few zoning and other developmental restrictions are in place that would impede future land use changes and encroach on the Alternative II area. The requirement to notify the Installation of such future construction will allow an identification and cooperative resolution of any incompatible land uses. As discussed in the Noise Section (4.11), there is less noise encroachment shown because the Zone III (incompatible) noise contours are contained within the Installation boundary and therefore less of an effect on rural residential areas off the Installation, compared to Alternative I. The design for the DMPRC support facilities would be required to comply with a Bronze level of sustainable design. Overall, there is a potential minor adverse effect on land use as a result of this alternative.

No mitigation is proposed. Additional actions for the potential adverse effects from encroachment could be determined via the initiation of a Joint Land Use Study (JLUS), as discussed further in the Noise Section (4.10).

4.8.3 Alternative III: "Compartment D13 (Preferred Alternative)"

The effects of Alternative III would be the same as described under Alternative II. The area for this alternative is further from the eastern boundary of the Installation than the Alternative II, so there would be less potential for encroachment due to incompatible land uses. The requirement to notify the Installation of any future construction would allow an identification and cooperative resolution of any potentially incompatible land uses, although the possibility for encroachment in this area is remote. As discussed in the Noise Section (4.11), Alternative III would result in the Zone III (incompatible) noise contours remaining entirely with the Installation boundary and resulting in less potential effect on rural residential areas off the

Installation, especially as compared to Alternative I. The current design for the DMPRC support facilities meets the Bronze level of sustainable design, and, if all requirements were incorporated, would help achieve a sustainable range. Overall, there is a potential minor adverse effect on land use as a result of this alternative.

No mitigation is proposed. Additional actions to reduce the potential adverse effects from encroachment could be via the initiation of a Joint Land Use Study (JLUS), as discussed further in the Noise Section (4.10).

4.9 Cultural Resources

The threshold level of significance for cultural resources is the violation of applicable Federal laws and regulations, such as the National Historic Preservation Act, the Archeological Resources Protection Act, and others.

4.9.1 Alternative I: "No Action/Status Quo" (Figure 33)

Under this alternative, no additional soil disturbance, other than those already resulting from operation and maintenance, would occur. No adverse effects have been reported as of this time from these ongoing actions, due to the use of established Installation policies and guidelines; therefore, no effect on cultural resources is anticipated. No mitigation is proposed.

4.9.2 Alternative II: "Compartment K21 (Alternate Site)" (Figure 34)

Construction of the DMPRC and its associated support facilities at the K21 site would potentially impact 20 of the 65 known eligible or potentially eligible cultural resources sites in the area of this alternative, resulting from ground disturbance due to tree and vegetation grubbing or stump removal and cut and fill activities during the construction process. Potential adverse effects resulting from training at the newly constructed DMPRC would differ from those described under Alternative I due to the likely firing of rounds into new areas outside the range. There is a potential for effect on known cultural resources through maneuver of heavy combat vehicles or impacts of large gun rounds, however those vehicles are limited to course roads and trails, which would limit the area of potential impacts. Although it is possible that rounds may land outside of the areas considered for effects to eligible sites, the chances are remote and not considered as a potential impact. Overall, this alternative could result in no adverse effects. Mitigation would be further developed in accordance with existing cultural resources requirements and processes.

Initially, an evaluation of all potentially eligible cultural resources sites would be required to confirm or reject their suitability for the National Register of Historic Places (NRHP). The cultural resources sites determined to be eligible would then require mitigation, such as (1) avoidance of impacts through redesign of the DMPRC via either movement of targets or battle positions or the construction of berms, if reasonable; (2) excavation of the site to acquire the scientific and historic information inherent within their archeological context; or (3) other mitigation, which will be determined through consultation with the SHPO and the Tribes. If this alternative were chosen, Fort Benning would initiate consultation with the SHPO and Tribes to determine any other mitigation and develop a Memorandum of Agreement (MOA), as needed.

4.9.3 Alternative III: "Compartment D13 (Preferred Alternative)" (Figure 35)

Construction of the DMPRC at the D13 site would have a potential adverse effect to six of the 29 known cultural resources sites, both eligible and potentially eligible. The unmitigated construction of the DMPRC would have adverse effects on three historic properties, 9Ce1735, 9Ce1918, and 9Ce433, through ground disturbance during construction. Three historic properties, 9Ce2028, 9Ce2030, and 9Ce2032 may be adversely affected by tree removal for the flight path associated with the Helicopter Pad construction. There are no potential indirect effects from the operation of the range to sites 9Ce1735 or 9Ce433 or any other historic property outside of the range and target firing area (range footprint). Designed into the construction of DMPRC Alternative III are earthen berms that will protect sites 9Ce1735 and 9Ce433 as well as any other site outside of the range footprint and/or the K15 dudded area, thus avoiding indirect effects. Site 9Ce1918 may be affected by operation of the range as no berm is planned for its protection. Eliminating shots from each of the firing points that might leave the range footprint or the K15 dudded area will further eliminate potential impacts to sites outside the area of construction. Range Operations have eliminated virtually all of those shots from training that might go outside of the range footprint or dudded area boundaries. If evaluation of site 9Ce1918 indicates that it is eligible for the Register and reanalysis of range shot paths indicate the site may be impacted by training rounds, impacts to site 9Ce1918 will be mitigated. The range shot paths (viewshed) and site evaluation should be available by the end of April 2004 and Fort Benning will coordinate and consult with the SHPO and Tribes to determine the appropriate mitigative measures. Sites further away from the firing points were excluded from consideration because they are unlikely to be impacted by training rounds fired during range operation or by maintenance activities.

The 30 March 2004 design currently places the construction contractor staging area tentatively in compartments D1 and D14; however, these placements are too general at this time to determine if any potentially adverse impacts to cultural resources would occur as a result of this placement. Prior to the site approval of the contractor staging area, an Installation license (for permission to utilize the site) will be required, in addition to a review of the license by the EMD. Any environmental concerns would be addressed at that time and could include relocating the contractor staging area to another location that is free of environmental concerns, such as cultural resources. Overall, this alternative could result in minor adverse potential effects without further mitigation.

Measures to avoid impacts to the eligible and potentially eligible sites consist of eliminating or minimizing ground disturbing activities at the site during construction of the DMPRC. This includes using cut-to-length method of timber harvest in the boundaries of the eligible and potentially eligible sites, where feasible. The effects of rounds landing on the sites will be avoided through the construction of two protective berms between the applicable targets and the sites. These berms must be maintained in a manner to ensure continued protection of the sites. Overall, the proposed mitigation measures will eliminate adverse effects to the historic property, thereby resulting in a determination of no adverse effects to cultural resources sites for Alternative III. Fort Benning has initiated informal consultation with the SHPO and the Tribes. Should unknown cultural resources sites be discovered during either the construction, operation or maintenance at this site, Fort Benning will make an eligibility determination with consulting parties, and eligible sites will require either (1) avoidance of impacts to the site's integrity

through purposeful design of the DMPRC via movement of targets/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 and documented in an MOA, as needed.

4.10 Utilities (no figures)

The threshold level of significance for utilities is the potential to overload a given utility system on the Installation, such as telephone, fiber optic, and electrical.

4.10.1 Alternative I: "No Action/Status Quo"

There would be no change in utilities (usage or placement, etc) as a result of this alternative since activities would continue per the status quo. Maintenance of these existing systems would be ongoing; however, any changes to the system would undergo separate NEPA review. No effect, either adverse or positive, is predicted as a result of this alternative. No mitigation is proposed.

4.10.2 Alternative II: "Compartment K21 (Alternate Site)"

Construction of the DMPRC and its associated support facilities at the K21 site would result in the need to install telephone, fiber optic, and possibly water and sewer service to this area, which is currently "undisturbed" in terms of utilities and does not have any currently existing or abandoned lines. The exact linear feet of utility lines to be emplaced are unknown at this time. Utility services would be established via the digging of one or more trenches from existing lines along the nearest road or other primary utilities location and the placement of the telephone, fiber optic, and electrical service lines in these trenches, which would then be covered with soil and become "buried" lines. A portion of the electric line may be above ground and on poles, especially to minimize impacts to wetlands or other sensitive areas that cannot be avoided; however, portions of the line may be buried to meet safety or operational criteria. Any utility work involving construction or excavation in, over, or under wetlands and streams will need authorization from the COE, under the CWA and other requirements, which would include any required mitigation. Water or wastewater lines will not be connected to existing lines as a result of this alternative, but instead use of a new well and septic drains fields would provide service to the site. Sustainable design measures would be implemented to minimize impacts to utility usage.

Any facilities constructed for the use and storage of hazardous materials would be designed to meet SPCC requirements under AR 200-1, as well as state and federal requirements as applicable. These facilities include, but are not limited to, wells, pumps, hazardous materials, and POL storage areas (above/underground facilities), transformers, and generators. Design requirements of these facilities would included: secondary containment and/or diversion structures; and contingency plans to mitigate spill/releases to include: spill supplies and equipment. These measurements will prevent and/or minimize contamination and/or possible discharge of pollutants into the environment. An Installation Spill Contingency Plan (ISCP) in conjunction with a Risk Management Plan (RMP) would have to be developed to address any use and storage of chlorine gas for potable water treatment on the new range complex. RMP

requirements discussed in more detail in Section 4.12, Air Quality. This will mitigate emergency response actions in the event of a leak/release to the environment, including public health.

During operation and maintenance, utility usage in the area would consist primarily as a result of usage of the digitized targetry and review of each Tank/BFV table in the After Action Review (AAR) building. Other utilities usage would occur as a result of lights, telecommunications, and other sources in the other buildings in the support facilities area. It cannot be determined at this time exactly how much utility usage will occur. Overall, this would result in potential minor positive effects on utilities, due to the improved accessibility of this remote portion of Fort Benning via telephone and other means. No mitigation is proposed.

4.10.3 Alternative III: "Compartment D13 (Preferred Alternative)"

Construction of the DMPRC and its associated support facilities at the D13 site would occur as described under Alternative II. A portion of the electric line would be above ground and on poles (see Section 2.3.1.3 and Figure 5). Any utility work involving construction or excavation in, over, or under wetlands and streams will need authorization from the COE, under the CWA and other requirements, which would include any required mitigation. Sustainable design measures would be implemented, as indicated in the design, to minimize impacts to utility usage. During operation and maintenance, utility service in the area would support usage of the digitized targetry and review of each Tank/BFV table in the After Action Review (AAR) building. Other utilities usage would occur as a result of lights, telecommunications, and other sources in the other buildings in the support facilities area. It cannot be determined at this time exactly how much utility usage will occur. SPCC and ISCP requirements will be the same as described in Alternative II. Overall, this would result in a potential minor positive effect on utilities, due to the improved accessibility of this remote portion of Fort Benning via telephone and other means. No mitigation is proposed.

4.11 Noise

The threshold level of significance for noise is the existence of any Zone III (incompatible) noise contours where sensitive noise receptors (residences, hospitals, libraries, and etc.) are located.

4.11.1 Alternative I: "No Action/Status Quo" (Figure 36)

Fort Benning has used the ranges in the northern and eastern areas of the Installation for decades. The same areas where Zone II and Zone III contours currently extend off the Installation would continue to extend off the Installation. Figure 36 shows the noise contours that would be expected from regular large caliber (25 mm and 120 mm) weapons training if the DMPRC were not constructed. One residence, located on an agricultural lot, is located within the Zone III noise contour and is exposed to significant adverse noise levels (effects). The Zone III (incompatible) noise would continue for that resident who lives adjacent to the northeast corner of Fort Benning, such as those living on the one previously identified land parcel lying within the Zone III contour (see Section 3.2.9 for aerial photograph). This alternative would avoid potential noise impacts from new construction activities. Overall, the Zone III noise contours overlap

military or agricultural/rural land uses; however, one residence, a sensitive noise receptor, would continue to be affected by this alternative, resulting in potential significant adverse noise effects.

The Installation has been selected by the Office of the Secretary of Defense/Office of Economic Adjustment to participate in a Joint Land Use Study (JLUS) that will provide guidelines for available DOD 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. The Valley Partnership Joint Development Authority plans to file the JLUS application in April 2004 on behalf of the community (Biff Hadden, personal communication, 2004). Fort Benning considered obtaining noise easements or the property of sensitive receptors, however, these were determined to be infeasible as part of mitigation for this project due to excessive costs and difficulty in obtaining approval for land acquisition. It is possible that JLUS funds may become available to further identify and implement mitigation for noise concerns.

4.11.2 Alternative II: "Compartment K21 (Alternate Site)" (Figure 37)

Construction activities would generate noise, both from vehicle operation to and from the Alternative II site and from the operation of construction equipment on site. Heavy trucks, backhoes, concrete mixers, cranes, scrapers, generators, and chainsaws are typical construction equipment and they generate noise levels from approximately 72 to 93 dBA (US EPA, 1972). Noise from construction and construction vehicle traffic would be a minor short-term adverse effect because the noise occurs during daytime hours and the noise is reduced through natural barriers (trees) and distance to private property. The construction noise would be slightly more annoying to off-Post residents because this alternative site is closer to the eastern boundary of the Installation.

Alternative II would move some of the heavy weapons training away from Hastings Range and the northeast boundary to a more interior Installation location. Figure 37 shows that the Zone III (incompatible) noise contour would move back inside the Installation boundary because Fort Benning would move most of the heavy weapons firing away from Hastings Range to the Alternative II site. That would reduce noise from existing significant levels (Zone III) to more moderate Zone II levels, resulting in potential minor adverse effects from this alternative. As shown in the noise contour map (Figure 37), the Zone III contour would shrink in the Hastings Range and Ruth Range areas of the north-northeast while it expands slightly towards, but does not exit, the east-central Installation boundary. Some residents near the east-central boundary may detect a moderate increase in noise levels resulting from heavy weapons firing, but only Zone II (normally incompatible) and Zone 1 (compatible) noise contours would affect that area. The residence currently affected by Zone III noise levels at the northeastern portion of the Installation boundary would no longer be affected, due to the movement of the training to a more interior location. The voluntary range firing restrictions, as discussed in Section 3.2.9, would apply to operations on the range, which should minimize noise impacts at night. Overall, this alternative would result in potential minor adverse noise effects.

No new mitigation is planned for this alternative because noise is reduced from current noise conditions.

4.11.3 Alternative III: "Compartment D13 (Preferred Alternative)" (Figure 38)

Noise from construction and construction vehicle traffic would be a minor short-term adverse effect because the noise occurs during daytime hours and the noise is reduced through natural barriers (trees) and the considerable distance to private property. The construction noise would be less irritating to off-Post residents because this alternative site is located further from the Installation's eastern boundary than Alternative II.

Alternative III would move the heavy weapons training further away from the northeast boundary than Alternative II. Figure 37 shows that the Zone III (incompatible) noise contour would move back inside the Installation boundary. That would reduce noise from Zone III levels to Zone II levels. As shown in the noise contour map, the Zone III contour would shrink in the Hastings Range and Ruth Range areas of the north-northeast while it expands slightly towards, but does not exit, the east-central Installation boundary. This change in noise contours would be caused by movement of heavy weapons firing away from the Installation boundary towards the proposed DMPRC southwest of Hastings Range. Some residents near the east-central boundary area may detect a slight decrease in noise levels resulting from heavy weapons firing – less than noise that would be generated under Alternative II. The residence currently affected by Zone III noise levels at the northeastern portion of the Installation boundary would no longer be affected, due to the movement of the training to a more interior location. The voluntary range firing restrictions, as discussed in Section 3.2.9, would apply to operations on the range, which should minimize noise impacts at night. Overall, this alternative would result in potential minor adverse noise effects.

This alternative location was proposed in part to reduce noise impacts. No new mitigation is planned for this alternative because noise is reduced from current noise conditions.

4.12 Air Quality (no figures)

The threshold level of significance for Air Quality is the violation of applicable Federal or state laws and regulations, such as the Clean Air Act, and the potential for Notices of Violation (NOV) for the failure to receive applicable state permits (such as those required for construction projects) prior to initiating a proposed action or the failure to follow permit requirements.

4.12.1 Alternative I: "No Action/Status Quo"

No new construction will occur as a result of this alternative; however, training at this site currently results in minor amounts of soil disturbance, due to the movement of mechanized vehicles and travel to and from Hastings Range, and the deposition of particulate matter (PM) on equipment and vehicles, somewhat increasing maintenance time and costs and also contributing to fugitive dust emissions. Training and range maintenance would not result in a violation due to the exemptions granted to Fort Benning by the GA EPD for fugitive dust. Overall, this alternative could result in potential minor adverse effects. No additional mitigation is proposed.

4.12.2 Alternative II: "Compartment K21 (Alternate Site)"

Construction of the DMPRC and its associated support facilities at the K21 site would have the potential to exceed the 20 % opacity rule for fugitive dust. Emissions could be heavy enough to migrate from the area of construction and obscure vision of drivers on any nearby roads and tank trails, potentially leading to accidents. If the construction begins after December 2005 and if the Consolidated MSA that includes Chattahoochee, Muscogee, and Russell counties is placed into non-attainment for PM 2.5, then a conformity study would have to be initiated prior to construction. In addition, construction/operating permits for emissions units, such as boilers or generators, must be obtained before construction on any part of the range begins; construction could be delayed until these permits are obtained. An alternate method of potable water treatment would have to be utilized, rather than chlorine gas; however, if design changes occur and any use of chlorine gas is required, an RMP would have to be developed.

Adherence to existing requirements to minimize effects to air quality include spraying disturbed soils with water during construction to control fugitive dust and/or PM emissions. This measure would also be effective for unpaved roads in the area. 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 of construction on the site, a construction permit will have to be obtained from the GA EPD Air Protection Division, which will stipulate other mitigation measures and/or BMPs, as needed for the project. There may be potential minor adverse effects to air quality as a result of construction for this alternative without further mitigation. Fort Benning considered and rejected the use of dust suppressant materials because the benefits did not seem to support the cost, the concern of contaminating adjacent resources such as water, and the lack of long-term viability/results of the suppressant.

Training on the newly constructed DMPRC would result in minor amounts of soil disturbance, due to the movement of mechanized vehicles and travel to, from, and on the DMPRC, and in the deposition of PM on equipment and vehicles; however, as in Alternative I, training is exempt from fugitive dust limits and there would be only potential minor adverse effects to air quality. Overall, this alternative would have potential minor adverse effects and no additional mitigation is proposed.

4.12.3 Alternative III: "Compartment D13 (Preferred Alternative)"

Construction of the DMPRC and its associated support facilities at the K21 site would have the potential to exceed the 20 % opacity rule for fugitive dust. Emissions could be heavy enough to migrate from the area of construction and obscure vision of drivers on any nearby roads and tank trails, potentially leading to accidents, but would be to a lesser degree than described under Alternative II, because Alternative II is located closer to the Installation boundary. If the construction begins after December 2005 and if the Consolidated MSA that includes Chattahoochee, Muscogee, and Russell counties is placed into non-attainment for PM 2.5, then a conformity study would have to be initiated before construction begins on the project. In addition construction/operating permits for emissions units, such as boilers or generators, must be obtained before construction on any part of the range begins; construction could be delayed until these permits are obtained. An alternate method of potable water treatment would have to be utilized, rather than chlorine gas; however, if design changes occur and any use of chlorine gas is required, an RMP would have to be developed. Fort Benning considered and rejected the

use of dust suppressant materials because the benefits did not seem to support the cost, the concern of contaminating adjacent resources such as water, and the lack of long-term viability/results of the suppressant.

Adherence to existing requirements to minimize effects to air quality include spraying disturbed soils with water to control fugitive dust and/or PM emissions. This measure would also be effective for unpaved roads in the area. 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 other mitigation measures and/or BMPs, as needed for the project. There may be potential minor adverse effects to air quality as a result of construction for this alternative without further mitigation.

Training on the newly constructed DMPRC would result in minor amounts of soil disturbance, due to the movement of mechanized vehicles and travel to, from, and on the DMPRC, and in the deposition of PM on equipment and vehicles; however, as in Alternative I, training is exempt from fugitive dust limits and there would be only potential minor adverse effects to air quality. Overall, this alternative would have a potential minor adverse effect and no additional mitigation is proposed.

4.13 Public Health and Safety (no figures)

The threshold level of significance for Public Health and Safety is exceeded when the Surface Danger Zone (SDZ) of a range extends off the Installation, when a violation of Occupational Safety and Health Administration Act (OSHA) standards occurs, or when access to the construction site is not adequately managed (unauthorized access).

4.13.1 Alternative I: "No Action/Status Quo"

No new construction is proposed as a result of this alternative (only routine maintenance would continue) and there would be no change to the existing SDZ at Hastings Range. Existing Installation and Department of the Army (DA) training guidelines and protocols regulate entry to and training activities within the SDZ. This is sufficient to prevent any adverse effects to public health and safety from range operation. Unexploded Ordnance (UXO) on Hastings Range is located primarily within the K15 ordnance impact area and warning signs are posted around its perimeter. Installation restrictions would prohibit any unauthorized entry into areas potentially containing UXO. Therefore, no potential adverse effects to public health and safety are predicted due to inadvertent exposure to UXO. Routine range maintenance would be ongoing; however, compliance with OSHA standards would minimize the potential for any safety and health concerns. Overall, this alternative would have no effect to public health and safety. No mitigation is proposed.

4.13.2 Alternative II: "Compartment K21 (Alternate Site)

During construction of the DMPRC, only authorized personnel would be allowed within the footprint for construction; in addition, all workers must adhere to safety standards established by both the Installation and the OSHA. The area is fairly remote, but does lie adjacent to the Installation's eastern boundary; therefore, construction procedures must be implemented that

would prohibit unauthorized access to the area. Because of the proximity of the Alternative II construction footprint to the K15 ordnance impact area, a survey for UXO and appropriate response action is required prior to construction. Non-explosive training rounds resulting from advanced gunnery operation on the new range complex would be located primarily within the dispersion and ricochet areas and would be contained entirely within the SDZ. Installation restrictions would prohibit any unauthorized entry into areas potentially containing UXO. The use of lasers in training would also require appropriate backstops and safeguards. Therefore, no potential adverse effects to public health and safety are predicted due to construction, operation or maintenance. No additional mitigation is proposed.

4.13.3 Alternative III: "Compartment D13 (Preferred Alternative)"

During construction of the DMPRC, only authorized personnel would be allowed within the footprint for construction; in addition, all workers must adhere to safety standards established by both the Installation and the OSHA. The area is farther within the Installation's boundary than either the Alternative I or II areas. Construction procedures must be implemented that would prohibit unauthorized access to the area. Because of the proximity of the Alternative III construction footprint to the K15 ordnance impact area, a survey for UXO and appropriate response action is required prior to construction. Non-explosive training rounds resulting from operation on the new range complex would be located primarily within the dispersion and ricochet areas and would be contained entirely within the SDZ. Installation restrictions would prohibit any unauthorized entry into areas potentially containing UXO. The use of lasers in training would also require appropriate backstops and safeguards. Therefore, no potential adverse effects to public health and safety are predicted due to construction, operation or maintenance. No additional mitigation is proposed.

4.14 Hazardous Materials and Waste

The threshold for determining significance of effects for hazardous materials and waste is the violation of applicable Federal, state and local requirements, or noncompliance with the Installation's hazardous waste (RCRA Part B) permit.

4.14.1 Alternative I: "No Action/Status Quo

Any hazardous materials and waste would have to be managed in accordance with existing regulations during operation and maintenance of the range. Few hazardous materials are utilized for range operation and maintenance; therefore few if any hazardous wastes are generated. Potential spills/releases from training exercises may include: discharge and/or improperly disposal of oil or hazardous substances into or upon land from storage, handling and/or transportation of hazardous materials/waste; vehicle/equipment/generators leaks; fuel loading/unloading/refueling operations; field mess facilities/equipment/operations, and/or ammunitions /explosives. This alternative would result in no effects to hazardous materials or waste, and mitigation is not proposed.

4.14.2 Alternative II: "Compartment K21 (Alternate Site)"

Construction of the proposed DMPRC would involve some hazardous materials, which would have to be managed, stored and disposed of, in accordance with applicable Federal, State and local requirements. Support facilities where hazardous materials will be stored or used must be designed to meet SPCC requirements under AR 200-1, as well as Federal and state requirements, as applicable. These support facilities include, but are not limited to, maintenance facilities, loading/unloading operation areas, hazardous material and POL storage areas, and generators. This will ensure that discharges from facilities will not impact ground surfaces by preventing or minimizing soil contamination.

Efforts would be made during the design process to avoid the use of hazardous materials if substitute materials are available. Disposal of any hazardous wastes generated by Fort Benning during construction, operation or maintenance of the range would use the existing procedures. Any contractor or other non-Federal entity that generates hazardous waste is required to dispose of that waste off-Post in a non-federal, permitted site; exceptions may be authorized and if granted would have to be appropriately documented. During the construction phase, the contractor must meet SPCC requirements which are also incorporated into the NPDES Permit and the ESPCP. The implementation of SPCC requirements will prevent/minimize/reduce the potential of release to the environment to include soil, water and air resources. This alternative would result in potential minor adverse effects due to the generation of hazardous wastes. No additional mitigation is proposed.

4.14.3 Alternative III: "Compartment D13 (Preferred Alternative)"

Construction of the proposed DMPRC would involve some hazardous materials, which would have to be managed, stored and disposed of, in accordance with applicable Federal, State and local requirements. As with Alternative II, support facilities where hazardous materials will be stored or used must be designed to meet SPCC requirements under AR 200-1, as well as Federal and state requirements, as applicable.

Efforts were made during the design process to avoid the use of hazardous materials if substitute materials are available. Specifically, the use of concrete rather than creosote treated wood for use in berm construction was considered but discarded due to cost and maintenance concerns. Disposal of any hazardous wastes generated by Fort Benning during construction, operation or maintenance of the range would use the existing procedures. Any contractor or other non-Federal entity that generates hazardous waste is required by law to dispose of that waste off-post in a non-federal, permitted site; exceptions may be authorized and if granted would have to be appropriately documented. During the construction phase, the contractor must meet SPCC requirements, which are also incorporated into the NPDES Permit and the ESPCP. The implementation of SPCC requirements will prevent/minimize/reduce the potential of release to the environment to include soil, water and air resources. This alternative would result in potential minor adverse impacts due to the generation of hazardous wastes. No additional mitigation is proposed.

4.15 Transportation

The threshold level of significance for transportation is impairment to emergency response efforts or impediment of traffic supporting the training and security mission.

4.15.1 Alternative I: "No Action/Status Quo."

This alternative would involve no change in transportation at the Installation; therefore, there is no effect predicted and no mitigation proposed.

4.15.2 Alternative II: "Compartment K21 (Alternate Site)"

This alternative would result in restricted access to Cactus Road during training at the new DMPRC because it falls within the SDZ. Additional maintenance roads would be developed during the design, if this alternative were chosen, as well as tank trails and access roads. New parking areas would be part of the design and would be adequate to support buses for transporting troops to the range. Emergency response would not be adversely affected because training can be temporarily halted to allow emergency vehicle access. In addition, there would be a helipad dedicated to emergency evacuation purposes. This alternative would not impact access control points or any other Installation security measures in any way. Overall, this alternative would result in no adverse effect on transportation and no mitigation is proposed.

4.15.3 Alternative III: Compartment D13 (Preferred Alternative)"

This alternative would result in restricted access to Buena Vista and Resaca roads, because the tank trails of the DMPRC would actually cross these roads and because they fall within the SDZ; however, these roads will not be demolished and would be available for emergency vehicle access during non-training hours. In addition, training would be temporarily halted, as described above, to accommodate emergency vehicle access. There would also be a dedicated emergency evacuation helipad, as described above. This alternative would not impact access control points or any other Installation security measures in any way. Overall, this alternative would result in no adverse effect on transportation and no mitigation is proposed.

4.16 Summary of Potential Direct and Indirect Environmental Consequences and Associated Mitigation

The tables below summarize the potential environmental effects of each alternative, along with a summary of proposed mitigation, as applicable.

Table Legend:

ℵ	No Effect		
θ	Minor adverse	⊕	Minor positive
θθ	Moderate adverse	⊕⊕	Moderate positive
θθθ	Significant adverse	⊕⊕⊕	Significant positive

(* beside a symbol indicates temporary effect, e.g., *θ is temporary minor adverse)

Table 7. Summary of Environmental Consequences and Mitigation – Alternative I

Affected Environment	Potential Effect/ Consequences	Proposed Mitigation Measures
Soils & Vegetation	*θ - Soils ℵ - Vegetation	Construction: None proposed. Operation & Maintenance: No additional mitigation proposed.
Water Quality	*θ	Construction: None proposed. Operation & Maintenance: No additional mitigation proposed.
Wetlands & Streambanks	θ - Wetlands θ - Streambanks	Construction: None proposed. Operation & Maintenance: No additional mitigation proposed.
UEAs	*θ	Construction: None proposed. Operation & Maintenance: No additional mitigation proposed.
Federally Protected Species – RCW	θ	Construction: None proposed. Operation & Maintenance: No additional mitigation is proposed.
State Protected Species	θ	Construction: None proposed. Operation & Maintenance: Adherence to existing Installation management practices for Gopher tortoise; no other state protected species present. No additional mitigation is proposed.
Migratory Birds	θ	Construction: None proposed. Operation & Maintenance: None proposed.
Socioeconomics	ℵ	None proposed.
Land Use	θθ	Construction: None proposed. Operation & Maintenance: Another action could be developing a JLUS, if/when funds are available.
Cultural Resources	ℵ	Construction: None proposed. Operation & Maintenance: No additional mitigation proposed.
Utilities	ℵ	None proposed.
Noise	θθθ	Construction: None proposed.

		Operation & Maintenance: No additional mitigation proposed. Another action could be developing a JLUS, if/when funds are available.
Air Quality	θ	Construction: None proposed. Operation & Maintenance: No additional mitigation proposed.
Public Health & Safety	ℵ	None proposed.
Hazardous Materials & Wastes	ℵ	None proposed.
Transportation	ℵ	None proposed.

Table 8. Summary of Environmental Consequences and Mitigation – Alternative II

Affected Environment	**Potential Effect/ Consequences**	**Proposed Mitigation Measures**
Soils & Vegetation	θθ - Soils θθθ - Vegetation	Construction: Additional mitigation would consist of monitoring and appropriate follow-up action by Range Division; adherence to existing Installation management practices for NPDES and SPCC. Operation and Maintenance: Additional mitigation would consist of monitoring, as described above, and implementation of NPDES and SPCC requirements.
Water Quality	θ	Construction: Adherence to existing Installation management practices for NPDES and SPCC. . Operation and Maintenance: Additional mitigation would consist of monitoring and appropriate follow-up action by Range Division and implementation of NPDES and SPCC requirements.
Wetlands & Streambanks	θθθ - Wetlands θθθ - Streambanks	Construction: Attempt to reduce potential impacts during design. Additional mitigation would consist of restoration of wetlands and streambanks outside the project area, utilization of erosion control BMPs, and submittal of a Diversion Plan to EMD when stream crossings are ready for emplacement. Operation and Maintenance: Additional mitigation would consist of monitoring and appropriate follow-up action by Range Division. Optional mitigation – utilization of SEMP streambanks monitoring practices and tools.

UEAs	θθ	Construction: Attempt to reduce potential impacts during design and implementation of NPDES and SPCC requirements. No additional mitigation proposed. Operation and Maintenance: Additional mitigation would consist of monitoring and appropriate follow-up action by Range Division and adherence to existing Installation management practices for SPCC.
Federally Protected Species – RCW	θθθ	Construction: Attempt to reduce potential impacts during design. Adherence to the Fort Benning RCW ESMP, the 2003 Recovery Plan for the RCW, and the Fort Benning INRMP; Consultation with USFWS; Additional mitigation would include management of new clusters in A20 ordnance impact area. Optional mitigation - research of impacts occurring at new range, when built. Operation and Maintenance: Additional mitigation would consist of staffing two additional personnel for five-year terms to monitor the RCWs and their habitat; and monitoring and appropriate follow-up action by Range Division.
State Protected Species	θ	Construction: Gopher tortoise relocation; no other species present. Operation & Maintenance: Adherence to existing Installation management practices for Gopher tortoise; no effect predicted for other species. No additional mitigation is proposed.
Migratory Birds	θ	Construction: None proposed. Operation & Maintenance: None proposed.
Socioeconomics	*⊕	None proposed.
Land Use	θ	Construction: None proposed. Operation & Maintenance: Adherence to existing Installation policies. Another action could be developing a JLUS, if/when funds become available.
Cultural Resources	ℵ	Construction: Avoidance of cultural resources sites during design, consultation and MOA with SHPO and Tribes, as needed, and placement of protective berms. Operation & Maintenance: No additional mitigation proposed.
Utilities	⊕	None proposed.
Noise	θ	Construction: None proposed.

		Operation & Maintenance: Another action could be developing a JLUS, if/when funds are available.
Air Quality	θ	Construction: Avoid use of chlorine gas. No additional mitigation proposed. Operation & Maintenance: No additional mitigation proposed.
Public Health & Safety	ℵ	Construction: UXO survey; and berms or backdrops for lasers. No additional mitigation proposed. Operation & Maintenance: No additional mitigation proposed.
Hazardous Materials & Wastes	θ	Construction and Operation & Maintenance: Adherence to existing Installation SPCC requirements. No additional mitigation proposed.
Transportation	ℵ	None proposed.

Table 9. Summary of Environmental Consequences – Alternative III

Affected Environment	Potential Effect/ Consequences	Proposed Mitigation Measures
Soils & Vegetation	θθ - Soils θθθ - Vegetation	Construction: Adherence to existing Installation management practices for NPDES and SPCC. . Operation and Maintenance: Additional mitigation would consist of monitoring and appropriate follow-up action by Range Division and implementation of NPDES and SPCC requirements.
Water Quality	θ	Construction: Adherence to existing Installation management practices for NPDES and SPCC . Operation and Maintenance: Additional mitigation would consist of monitoring and appropriate follow-up action by Range Division and implementation of NPDES and SPCC requirements.
Wetlands & Streambanks	θθ - Wetlands θθθ - Streambanks	Construction: Avoidance during design resulted in reducing potential effects. Additional mitigation would consist of restoration of wetlands and streambanks outside the project area, utilization of erosion control BMPs, and submittal of a Diversion Plan to EMD when stream crossings are ready for emplacement. Operation and Maintenance: Additional

		mitigation would consist of monitoring and appropriate follow-up action by Range Division Optional mitigation – utilization of SEMP streambanks monitoring practices and tools.
UEAs	θ	Construction: Avoidance during design resulted in reducing potential effects; adherence to existing Installation management practices for NPDES and SPCC. No additional mitigation proposed. Operation and Maintenance: Additional mitigation would consist of monitoring and appropriate follow-up action by Range Division and adherence to existing Installation management practices for SPCC.
Federally Protected Species - RCW	θθθ	Construction: Avoidance by design resulted in reducing potential effects. Additional mitigation would include management of new clusters in A20 ordnance impact area; protective berms on range, if feasible; and 2 new staff members for RCW management. Optional mitigation - research of impacts occurring at new range, when built. Operation and Maintenance: Additional mitigation would consist of monitoring and appropriate follow-up action by Range Division.
State Protected Species	θ	Construction: Gopher tortoise relocation would still be needed; no other species present. Operation & Maintenance: Adherence to existing Installation management practices for Gopher tortoise; no other species present. No additional mitigation proposed.
Migratory Birds	θ	Construction: None proposed. Operation & Maintenance: None proposed.
Socioeconomics	*⊕	None proposed.
Land Use	θ	Construction: None proposed. Operation & Maintenance: Placement of the DMPRC further within the Installation boundary would result in similar effects to Land Use as under Alternative II, but would result in less potential encroachment. Adherence to existing Installation polices is required. Another action could be developing a JLUS, if/when funds become available.
Cultural Resources	ℵ	Construction: Mitigation during design (to include avoidance and berm placement)

		resulted in the minimization of potential effect. Operation & Maintenance: No additional mitigation proposed.
Utilities	⊕	None proposed.
Noise	θ	Construction: None proposed. Operation & Maintenance: Another action could be developing a JLUS, if/when funds are available.
Air Quality	θ	Construction: No additional mitigation proposed. Operation & Maintenance: No additional mitigation proposed.
Public Health & Safety	⋋	Construction: UXO survey; and berms or backstops for lasers. No additional mitigation proposed. Operation & Maintenance: No additional mitigation proposed.
Hazardous Materials & Wastes	θ	Construction and Operation & Maintenance: Adherence to existing Installation SPCC requirements. No additional mitigation proposed.
Transportation	⋋	None proposed.

5.0 CUMULATIVE IMPACTS

The Council on Environmental Quality (CEQ) defines cumulative impacts as the "impact on the environment which results from the incremental impact of the action(s) when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions" (1508.7 CEQ, 1978). The actions proposed under the alternatives in this FEIS, when added to the projects in the Columbus-Phenix City area, have the possibility to result in either adverse or positive incremental impacts. These projects all occur within a well-defined and specific geographical (spatial) region of influence (ROI), which is defined in the following subsection; in addition, the projects are also limited on a temporal basis, since they all have the potential to be implemented within a 20-year period, as indicated by the planning documents obtained for the individual cities.

5.1 Region of Influence

The overall ROI for the purposes of this FEIS is shown in Figure 39 and consists of Chattahoochee, Marion, Muscogee, and Harris counties, GA, and Russell County, AL; this ROI includes the cities of Columbus and Buena Vista, GA, Phenix City, AL, and the Fort Benning Military Installation. Individual ROIs have also been established for some media; these ROIs may be larger or smaller in size than the overall ROI and are defined in subsequent sections.

5.2 Past and Present Actions Within the ROI

The cities of Columbus, GA, and Phenix City, AL, are the sites of numerous residential developments, commercial/retail facilities, industrial activities, and recreational opportunities. The ongoing projects with the potential to impact the ROIs are discussed below; each project is also identified on Figure 47 by its associated number. Two years ago, Columbus and Fort Benning completed a "Land Exchange," swapping two parcels of land, known as the North Tract and the South Tract, for which an EIS and ROD were prepared. Columbus is currently developing the North Tract (24) land conveyed to it, a 2,470-acre parcel located adjacent to the Fort Benning northwestern boundary line. Development of the North Tract will be primarily industrial, mixed with recreational land use. In exchange, Fort Benning received the South Tract land (32), a 2,536-acre parcel located at the southernmost end of the Installation, which is currently being utilized by the Installation for training and land management (reforestation and habitat restoration) purposes; future use of the South Tract may also include land-navigation training.

The installation of Anti-Terrorist/Force Protection Measures (10-16) is a currently occurring project on Fort Benning and consists of the construction of an enhanced physical security perimeter barrier around the Installation's four cantonment areas to include either fence, guard rail, or utilization of existing natural barriers, such as streams and steep ridges, and construct permanent access control points (ACPs) at the Installation's seven entry points. Drainage for perimeter roads and erosion control measures will be required, in addition to protective lighting at the seven ACPs. An EA and FNSI were prepared for this project and are available for review at the EMD. Approximate size of the overall project area is 20-25 acres.

In Columbus, safety improvements to the Highway Interchange at I-185/US 280 (to the north of Fort Benning) (28) are currently underway and consist of reconstructing the interchange

at I-185 and US 280. Safety improvements also include removing and replacing guardrails and possibly installing medians (29) along 10.5 miles of US 280. Approximate size of the overall project area is 5-10 acres.

5.3 Reasonably Foreseeable Future Actions Within the ROI (Figure 40) Fort Benning Community

There are several construction projects planned for implementation on Fort Benning proper during the same time frame as the projects analyzed in the alternatives in this FEIS. Some of the projects have been previously identified in the Installation's Master Plan and have been preliminarily assessed for environmental impacts via the REC process; however, each project is still pending final approval and subsequent compliance with NEPA, except as indicated below. The projects determined to have the potential to impact the ROIs are listed below; in addition, each project is identified on Figure 47 by its associated number. Fiscal Year (FY) refers to the period between 1 October and 30 September of each year and is the time period the Army uses for budget phases.

- (1) Barracks Replacement, Kelley Hill, Phase III (FY05) – Work would consist of the demolition of existing buildings (9043, 9046, 9047, 9053, 9054, 9055, 9057, 9058, and 9074), the construction of new facilities, and landscaping around the new facilities in the Kelley Hill area of Fort Benning. Approximate size of the overall project area is 10-15 acres.
- (not indicated on map) Army Transformation at Fort Benning (FY04) - The 3rd Infantry Division will undergo major reorganization to a future force (U.S. Army Transportation Roadmap, 2003, General Schoomaker). While implementation planning is in process and details are not yet known, it is expected that the Division's three Brigades would be divided into five smaller units. The timing of this transformation is not currently known. Updates on the Army Transformation effects on the 3rd Brigade will be provided when available and in future related documents. While no plans currently exist that would affect any of the other units at Fort Benning, the Installation must prepare for this contingency and comply separately with environmental planning requirements.
- (not indicated on map) Modularity Program (FY04 or 05) – Work will consist of the development of a Unit Action Complex on Fort Benning for the placement of modular buildings in support of additional personnel. The complex would include site development, construction, and utility connections and distribution. It is not known if this complex will be built at either Fort Benning or another Installation at this time; therefore, the tentative placement site of the Harmony Church cantonment area is not indicated on the map. However, preliminary analysis and siting is occurring in readiness for if/when Fort Benning is chosen to receive this construction and additional personnel. Approximate size of the overall project area is 30-35 acres.
- (2) FY03 Barracks Project (starting in FY04) – Work will consist of the construction of a new barracks complex along Dixie Road, Main Post, Fort Benning, GA. The new barracks would be located across from the existing Easley and McAndrews ranges. The project would also include the demolition of six existing buildings. Approximate size of the overall project area is 30-35 acres.
- (3) Barracks and Tactical Equipment Shop Projects (FY05-07) – Work would consist of the construction of additional barracks and tactical equipment shops across from existing

ranges (beyond Easley and McAndrews ranges) along Dixie Road. These projects are currently in the design phase only. Approximate size of the overall project area is 15-20 acres.

- (4) Receptee Barracks (FY07) – Work would consist of the construction of additional barracks, a dining facility, soldiers' community center, and physical training building with a running track at Sand Hill. The project would also include the demolition of the existing dining facility. Approximate size of the overall project area is 10-15 acres.
- (5) Privatization of the Water and Wastewater Treatment System (FY04) – The wastewater treatment system at Fort Benning, which consists of three facilities and a network of underground piping, will be privatized within the next one to two years. The contract for the system would include the day-to-day upkeep of the system and would require the contractor to abide by all Federal, state, and Installation policies and guidelines. The process will include either the "mothballing" or demolition to slab of the existing water and wastewater treatment facilities and the construction of a series of new underground utility transport lines, for the purpose of connecting the existing on-Post facilities to the new owner's off-Post facilities. During the construction of these connection lines (18-24 months), the new owner would utilize the on-Post facilities. Alternately, the new owners may continue operation at the existing facilities. Approximate size of the overall project area is 50-60 acres. An EA and FNSI were prepared for this action; in addition, a Supplemental EA is currently under preparation at the EMD.
- (6) Infantry Squad Battle Course (ISBC) (FY04) – Work would consist of the conversion of an existing Fort Benning range, Galloway Range, into an Infantry Squad Battle Course and would include the removal/replacement and upgrading of existing targetry, the construction of associated support facilities, the demolition of currently existing temporary buildings on site, and associated utility placement. Approximate size of the overall project area is 180-190 acres. Fort Benning is currently preparing an EA for this action.
- (7) Infantry Platoon Battle Course (IPBC) (FY06) – Work would consist of the construction of a new IPBC in the A12 portion of Fort Benning and would include tree clearing, grading, cut-and-fill, construction of the range and target firing area, and placement of targetry, in addition to the construction/emplacement of support facilities, access roads and trails, and associated utilities. Approximate size of the overall project area is 1,000 acres.
- (8) Ammunition Supply Point (ASP) Expansion (FY05) – Work would consist of the construction of two aboveground general storage facilities, 11 earth-mounded ammunition storage igloos with associated loading platforms, two small quantity ammunition huts, and ammunition surveillance building, and forklift storage/recharge facilities at the existing ASP on Fort Benning. Work would also include the demolition of 19 structures currently existing within the ASP compound. Approximate size of the overall project area is 10-15 acres.
- (9) Direct Support/General Support (DS/GS) Consolidated Maintenance Facility (FY07) – Work would consist of constructing an approximately 112,000 square foot equipment maintenance complex for DPW. Facility to be located in the southwest quadrant of US280/27 and First Division Road. Approximate size of the overall project area is 10-15 acres.

- (17, 18, 19) Rehabilitation of North/South Maneuver Corridors (FY undetermined; pending funding approval) – Work will consist of the rehabilitation of two existing maneuver corridors in the north and three existing maneuver corridors in the south for training utilization by the 3rd Brigade/3rd Infantry of Fort Benning. The areas are contained within the Oscar 1-15 training compartments in the north and the D2-16, L3, E3-4, and J6-7 training compartments in the south (see Figure 6 for relevant training compartments). These are existing maneuver areas that will have erosion control and soil stabilization measures conducted, in addition to selective thinning, in order to more fully support maneuvers by the mechanized vehicles. Approximate size of the overall project area is 5,000 acres.
- (20) Combined Club Facility (FY undetermined; pending funding approval) – Work would consist of the demolition of the existing Follow Me Golf Course Clubhouse, construction of a new clubhouse to contain the combined functions of the Golf Course Club and Officer's Club, and the redevelopment of the existing Follow Me Golf Course. Approximate size of the overall project area is 5-10 acres.
- (21) New Post Exchange (AAFES) (FY undetermined – pending final decision by AAFES) – Work would consist of constructing a new AAFES on the land across the street from the existing AAFES on Custer Road, Main Post, Fort Benning. The old AAFES would be abandoned and reutilized in another format; it is not scheduled for demolition at this time. Work would additionally consist of landscaping and parking lot construction. Approximate size of the overall project area is 10-15 acres.
- (22) National Infantry Museum (FY undetermined – project in planning phase only) – Work would consist of constructing a new infantry museum on the land lying between South Lumpkin and Fort Benning roads on the Installation's border with the City of Columbus. The existing museum, located on Baltzell Avenue, Main Post, Fort Benning, would be reutilized in another manner, but would not be demolished. Approximate size of the overall project area is 20-30 acres.
- (23) Digital Multi-Purpose Training Range (DMPTR, aka Hastings Range Upgrade) (FY06 - project in planning phase only) – work would consist of upgrading the existing Hastings Range to a DMPTR; would include removal/replacement and upgrading of existing targetry, expansion of the existing tank trails, the construction of associated support facilities, the demolition of currently existing temporary buildings on site, and associated utility placement. Approximate size of the overall project area is 100-150 acres.

A more thorough evaluation of the ASP Expansion, new AAFES Main Mall, NIM, IPBC, Rehabilitation of Maneuver Corridors, and DMPTR will be conducted via separate EAs or other appropriate NEPA for each project; the other listed projects are in the preliminary planning phases only, but will undergo NEPA in future documents. Other actions on Fort Benning, such as road and Tank trail maintenance, range and building maintenance, building renovations, unit motor pool maintenance, troop training, and routine airfield activities, would continue in an ongoing manner on an annual basis. These projects/actions are assessed for potential environmental impacts on a case-by-case basis via the NEPA process.

Columbus-Buena Vista-Phenix City Community

Interviews with Richard Bishop, Deputy City Manager (Planning/Development) for the City of Columbus, and Greg Glass, City Planner for the City of Phenix City, in 2004 helped to document the pending construction and transportation system improvement projects proposed for

the Columbus-Phenix City area during the same time frame as the DMPRC. The projects listed below are those determined to have the potential for moderate adverse impacts to resources within the ROI. Other projects were identified through these interviews and the review of relevant city planning documentation; however, they were analyzed and determined to not have the potential for incremental impacts or to contribute to cumulative impacts in the ROI. The projects identified, but not included for study in this document, may be viewed in the Columbus-Phenix City Transportation Improvement Plan, which is available for review at the DPW. Reviews of the planning documents for these cities and for the Georgia Department of Transportation (DOT) resulted in a comprehensive projected vision for the area, which is defined in further detail below.

- (25) Oxbow Meadows and Marina, Lumpkin Road, Columbus, GA (FY undetermined; tentatively scheduled to begin within the next 2-3 years), – Work would consist of the further development of the Oxbow Meadows Environmental Learning Center by creating additional outdoor classrooms, a series of walking trails, a series of hiking trails, and pavilion, and the construction (to include dredge and fill) of a 350-slip capacity marina. Approximate size of the overall project area is 10-15 acres.
- (26) Phenix City Riverwalk Phase II, Phenix City, AL (FY undetermined) – Work would consist of the construction of a hiking/biking trail between the 13th and 14th Street bridges in Phenix City. Approximate size of the overall project area is 5-10 acres.
- (27) Alternative Transportation System, Phase II, North Riverwalk, Columbus, GA (FY undetermined; scope of work decision pending implementation of Chattahoochee River Restoration Project, below) – Work would consist of continuing to construct the hiking/biking trail (Riverwalk) northward along the Chattahoochee River from 12th Street to 14th Street. Approximate size of the overall project area is 5-10 acres.
- (30) Widening/Improvements to Buena Vista Road, Columbus, GA (FY 07) – Work would consist of widening and reconstructing 1.15 miles of an existing two (2) and four (4) lane road to a four (4) through-lane system with turn lanes and medians, as required. Approximate size of the overall project area is 5-10 acres.
- (31) Widening/Improvements to St. Mary's Road, Columbus, GA (FY 05) – Work would consist of widening 0.71 miles of a two (2) lane road to a three (3) and four (4) lane system, with intersection improvements as needed. Approximate size of the overall project area is 5-10 acres.
- (32) Chattahoochee River Restoration (FY05) – work would consist of breaching the Eagle-Phenix Dam and the City Mills Dam along the Chattahoochee River, in order to restore the historic and natural flow of water along this portion of the river, which extends from just north of the City of Columbus and down to its most southern edge. Approximate size of the project area is 2 ½ miles (approximately 35 acres).

Another issue of concern with the potential to adversely affect the overall ROI is the Tri-State Water Compact, a disagreement between Georgia, Alabama, and Florida concerning withdrawals of water and public usage from the Chattahoochee-Flint-Appalachicola river systems. The Chattahoochee River originates in the Blue Ridge Mountains of the Appalachian Highlands of northeast Georgia, where it flows southwesterly for 120 miles before turning south and flowing approximately 200 miles along the Georgia and Alabama borders, and a small part of the Florida border. The Flint River includes Blackshear Dam and Lake, Flint River Dam, and Lake Worth. The river originates south of Atlanta, GA, in the Piedmont Province and flows southerly to the upper Coastal Plain, where it joins the Chattahoochee River in Lake Seminole to

form the Appalachicola River. The Appalachicola River includes the Corps-operated Jim Woodruff Lock and Dam and Lake Seminole along its length. The river lies entirely within the Coastal Plan along the 180 miles of its length and flows south across northwest Florida from the Georgia to Appalachicola Bay in Florida. For additional information, refer to the following website: www.chattahoochee.org/TriState/ACFmap.shtml.

5.4 Assessment of Impacts by Media

Preliminary analysis of each DMPRC alternative resulted in a finding of no cumulative effect, either adverse/positive or direct/indirect, on Environmental Justice, Cultural Resources, and Protection of Children. In addition, there is no potential for cumulative impacts to the following media for each alternative, because only a very minor potential adverse impact, if any, is expected: Air Quality, Hazardous Materials and Waste, Migratory Birds, Socioeconomics, Land Use, Utilities, and Transportation; therefore, these media will not be discussed in this section.

5.4.1 Soils and Vegetation (Figure 39)

The threshold level of significance for soils is any ground disturbance or other activities that would violate applicable Federal or state laws and regulations, such as the Georgia Erosion and Sedimentation Control Act (ESCA), and the potential for Notices of Violation (NOV) for the failure to receive and follow applicable state permits, such as a NPDES construction permit under the ESCA, prior to initiating a proposed action. The threshold level of significance for vegetation is removal in amounts that will alter the habitat in the ROI in a manner detrimental to the species that live there.

The ROI for soils and vegetation consists of the five county area containing Fort Benning, Columbus, and Buena Vista, GA, and Phenix City, AL, and is shown in Figure 39. Past, present, and future actions in the ROI, such as construction and road/trail maintenance, have the potential to contribute to soil disturbance and erosion and the loss of vegetative cover; however, adherence to applicable Federal, state, and local laws and regulations, such as erosion control BMPs and NPDES permits, would help minimize soil erosion. Minor soil contamination could also occur as a result of these actions, due to potential spills and accidents during construction and maintenance activities; however, legally required mitigation measures, such as secondary containments and equipment inspections, would help minimize the threat of accidents and subsequent soil contamination. In particular, the construction of the barracks on Main Post, Sand Hill, and Kelley Hill and the construction of the ISBC, IPBC, and DMPTR are the projects that have the potential for moderate adverse impacts due to disturbance to/removal of soils and vegetation in the Fort Benning portion of the ROI; however, the rehabilitation of the Maneuver Corridors have the potential for long-term positive effects due to the proposed erosion control and soil stabilization measures it will entail. Likewise, the construction of the Oxbow Meadows and Marina and the development of the North Tract would be the only community projects that have the potential for moderate adverse impacts due to disturbance to/removal of soils and vegetation in the ROI.

Alternative I: "No-Action / Status-Quo"

As a result of this alternative, military training would continue at Hastings Range until that range is upgraded via the DMPTR project (starting in FY06). During that time, current projects, such as the construction of the force protection measures and barracks projects on Fort Benning and the development of the North Tract in Columbus, would be ongoing, resulting in potential minor adverse effects to soil and vegetation due to site clearing and construction activities. Potential minor adverse effects may also occur in the vicinity of Ruth, Cactus, and Carmouche ranges as the training queue is shifted to accommodate the DMPTR construction at Hastings Range, which would remove it from the training queue. Construction of the FY06 and beyond projects, to include the DMPTR, ISBC and IPBC, would have the potential for moderate adverse impacts to soils and vegetation as a result of more extensive cut-and-fill and/or tree clearing activities. Still, these would also be minimized through adherence to applicable Federal, state, and local laws and regulations. When funding becomes available, the rehabilitation efforts planned for the North/South Maneuver Corridors would have the potential for minor positive impacts in the ROI, due to the erosion control measures and soil stabilization efforts this would entail throughout the aforementioned training compartments. Although the maneuver corridor action would also involve selective thinning of trees throughout these training compartments, it would be minimal and would only occur along existing maneuver trails and not intrude further into the adjacent stands of trees than necessary to facilitate the maneuver of the tracked vehicles; therefore, no adverse effects are predicted as a result of this rehabilitation effort. Overall, this alternative would result in no potential for incremental impacts from ongoing activities and no cumulative adverse impacts to soils and vegetation in the ROI.

Alternative II: "Compartment K21 (Alternate Site)"

The construction, operation, and maintenance of the DMPRC at the Alternative II area would have potential significant adverse effects to vegetation and potential moderate adverse effects to soils. Concurrent with this construction, military training would continue at Hastings Range until the proposed upgrade of the range to a DMPTR. During that time, current projects, such as the construction of the force protection measures and barracks projects on Fort Benning and the development of the North Tract in Columbus, would be ongoing, resulting in potential minor adverse effects to soil and vegetation due to site clearing and construction activities. Rehabilitation of the Maneuver Corridors would also occur during this time, as described in Alternative I above, and would result in minor positive effects to soils due to the erosion control and soil stabilization measures the project entails. There should be no potential additional adverse effects at Ruth, Cactus, and Carmouche ranges during this time; however, once the construction of the DMPTR begins in 2006, minor adverse effects to soils may occur as the training queue is shifted to accommodate the new construction. Other construction projects beginning at this time, to include the ISBC and IPBC, would have the potential for more adverse impacts to soils and vegetation as a result of more extensive cut-and-fill and/or tree clearing activities. Requirements established in the permits for these projects would minimize the potential for adverse cumulative effects, but would not prevent them entirely due to the size and scope of projects such as the DMPTR, ISBC, and IPBC. Therefore, this alternative would result in a potential for incremental impacts from the DMPRC and minor cumulative adverse effects on soils and vegetation in the ROI.

Alternative III: "Compartment D13 (Preferred Site)"

The construction, operation, and maintenance of the DMPRC at the Alternative III area would have potential significant adverse effects to vegetation and potential moderate adverse effects to soils. Concurrent with this construction, military training would continue at Hastings Range until the proposed upgrade of the range to a DMPTR. During that time, current projects, such as the construction of the force protection measures and barracks projects on Fort Benning and the development of the North Tract in Columbus, would be ongoing, resulting in potential minor adverse effects to soil and vegetation due to site clearing and construction activities. Rehabilitation of the Maneuver Corridors would also occur during this time, as described in Alternative I above, and would result in minor positive effects to soils due to the erosion control and soil stabilization measures the project entails. There should be no potential additional adverse effects at Ruth, Cactus, and Carmouche ranges during this time; however, once the construction of the DMPTR begins in 2006, minor adverse effects to soils may occur as the training queue is shifted to accommodate the new construction. Other construction projects beginning at this time, to include the ISBC and IPBC, would have the potential for more adverse impacts to soils and vegetation as a result of more extensive cut-and-fill and/or tree clearing activities. Requirements established in the permits for these projects would minimize the potential for adverse cumulative effects, but would not prevent them entirely due to the size and scope of projects such as the DMPTR, ISBC, and IPBC. Therefore, this alternative would result in a potential for incremental impacts from the DMPRC and minor cumulative adverse effects on soils and vegetation in the ROI.

5.4.2 Water Quality (Figure 41)

The threshold level of significance for water quality is the violation of applicable Federal or state laws and regulations, such as the Clean Water Act and the Georgia Water Quality Control Act, and the failure to receive and follow applicable Federal and state permits, such as a National Pollutant Discharge Elimination System (NPDES) permit (required for all projects one acre or more in size), prior to initiating a proposed action. This also includes not following management practices for "impaired streams," as defined under Georgia's 303(d) List, for Total Maximum Daily Loads (TMDLs). Waterways that could be impacted from this DMPRC proposal include: Pine Knot Creek, Little Pine Knot Creek, Bonham Creek, Upatoi Creek, and Sally Branch Creek (and tributaries or unnamed streams leading to them).

The ROI for water quality consists of the streams and other surface water bodies within the local watershed. Past, present, and foreseeable future actions in the ROI include construction and road/trail maintenance and have the potential to contribute to soil disturbance, erosion, and the loss of vegetative cover. In particular, the construction related to the privatization of the water/wastewater system and the construction of the ISBC, IPBC, and DMPTR are the projects that have the potential for minor or moderate adverse effects to water quality in the Fort Benning portion of the ROI; likewise, the construction of the Oxbow Meadows and Marina and development related to the Land Exchange would have the potential for moderate adverse effect to water quality in the ROI. The rehabilitation of the Maneuver Corridors has the potential for long-term positive effects to water quality in the ROI due to the proposed erosion control and soil stabilization measures it will entail, reducing the potential for future sedimentation of adjacent streams. Adherence to mitigation required in the Federal and state permits for these projects would further minimize potential effects.

The Tri-State Water Compact could also affect water quality in the ROI due to the possible change in water allocation and possible lowering or raising of the levels of the Chattahoochee River and its associated creeks and streams. Specifically, decreased water levels in the Upatoi Creek, the source of drinking water for Fort Benning, could occur, adversely affecting not only the quantity and flow of the creek but the creek's ability to dilute contaminants. Recreational usage of the surface water systems could also be adversely affected. These same problems could occur in many of the surface water systems in the ROI; however, the specific effects of the compact cannot be ascertained at this time.

Alternative I: "No-Action / Status-Quo"

As a result of this alternative, military training would continue at Hastings Range until that range is upgraded via the DMPTR. During that time, current projects, such as the privatization of the Fort Benning water and wastewater systems, the construction of the force protection measures and barracks projects on Fort Benning, and the development of the North Tract and Oxbow Learning Center and Marina in Columbus, would be ongoing, resulting in potential minor adverse effects to water quality due to the potential sedimentation of adjacent streams resulting from tree clearing and other construction activities. Potential minor adverse effects may also occur in the vicinity of Ruth, Cactus, and Carmouche ranges as the training queue is shifted to accommodate the construction at Hastings Range, which would remove it from the training queue. These effects, resulting from increased training at these locations, would be localized to the vicinity of the ranges. Rehabilitation of the Maneuver Corridors would also occur during this time and would result in minor positive effects to water quality, due to the erosion control and soil stabilization measures the project entails, preventing some future sedimentation of the associated streams within the corridors. Construction of the FY06 and beyond projects, to include the DMPTR, ISBC and IPBC would have potentially minor adverse effects due to tree clearing and construction activities, but these potential effects would also be minimized through adherence to applicable Federal, state, and local laws and regulations. Therefore, this alternative would result in no potential for incremental impacts from ongoing activities and no cumulative adverse effects on water quality in the ROI.

Alternative II: "Compartment K21 (Alternate Site)"

The construction, operation, and maintenance of the proposed DMPRC at the Alternative II area could result in potential temporary minor adverse effects on water quality. Concurrent with this construction, military training would continue at Hastings Range until the proposed upgrade of the range to a DMPTR (approximately the next two years). During that time, current projects, such as the privatization of the Fort Benning water and wastewater systems, the construction of the force protection measures and barracks projects on Fort Benning, and the development of the North Tract and Oxbow Learning Center and Marina in Columbus, would be ongoing, resulting in potential minor adverse effects to water quality due to the potential sedimentation of adjacent streams resulting from tree clearing and other construction activities. Rehabilitation of the Maneuver Corridors would also occur during this time and would result in minor positive effects to water quality due to the erosion control and soil stabilization measures the project entails, reducing the potential future sedimentation of the streams within the corridor. There should be no potential additional adverse effects at Ruth, Cactus, and Carmouche ranges during this time; however, once the construction of the DMPTR begins in 2006, minor adverse effects to soils may occur as the training queue is shifted to accommodate the new construction,

but would be localized. Construction of the FY06 and beyond projects, to include the DMPTR, ISBC and IPBC would have potentially minor adverse effects due to tree clearing and construction activities, but these potential effects would also be minimized through adherence to applicable Federal, state, and local laws and regulations. Therefore, this alternative would result in no potential for incremental impacts from the DMPRC and no cumulative adverse effects on water quality in the ROI.

Alternative III: "Compartment D13 (Preferred Site)"

The construction, operation, and maintenance of the proposed DMPRC at the Alternative III area could also result in potential temporary minor adverse effects on water quality, although to a lesser degree than under Alternative II. Concurrent with this construction, military training would continue at Hastings Range until the proposed upgrade of the range to a DMPTR. During that time, current projects, such as the privatization of the Fort Benning water and wastewater systems, the construction of the force protection measures and barracks projects on Fort Benning, and the development of the North Tract and Oxbow Learning Center and Marina in Columbus, would be ongoing, resulting in potential minor adverse effects to water quality due to the potential sedimentation of adjacent streams resulting from tree clearing and other construction activities. Rehabilitation of the Maneuver Corridors would also occur during this time and would result in minor positive effects to water quality due to the erosion control and soil stabilization measures the project entails, reducing the potential future sedimentation of the streams within the corridor. There should be no potential additional adverse effects at Ruth, Cactus, and Carmouche ranges during this time; however, once the construction of the DMPTR begins in 2006, minor adverse effects to soils may occur as the training queue is shifted to accommodate the new construction, but would be localized. Construction of the FY06 and beyond projects, to include the DMPTR, ISBC and IPBC would have potentially minor adverse effects due to tree clearing and construction activities, but these potential effects would also be minimized through adherence to applicable Federal, state, and local laws and regulations. Therefore, this alternative would result in no potential for incremental impacts from the DMPRC and no cumulative adverse effects on water quality in the ROI.

5.4.3 Wetlands and Streambanks (Figure 41)

The threshold level of significance for wetlands is the violation of applicable Federal or state laws and regulations, such as the Clean Water Act, the GA Water Quality Control Act and the potential for Notices of Violation for the failure to follow applicable state permits, such as a Section 404 permit or a NPDES permit prior to initiating a proposed action. The threshold level for significance to streambanks is any action requiring a Stream Buffer Variance under the GA ESCA.

The ROI for wetlands and streambanks consists of the wetlands and streams located within the local watershed. Past, present, and foreseeable future actions in the ROI include construction and road/trail maintenance and have the potential to contribute to sedimentation or contamination of wetlands and damage to streambanks in the ROI. In particular, the construction of the new AAFES Main Mall, ISBC, IPBC and DMPTR on Fort Benning and the development of the marina at the Oxbow Learning Center and of the Land Exchange North Tract in Columbus have the potential for moderate adverse effects to wetlands and streambanks. The rehabilitation of the Maneuver Corridors on Fort Benning would result in positive effects to wetlands and

streambanks, due to the erosion control and soil stabilization measures' potential for reducing sedimentation of adjacent wetlands and streambanks. Adherence to applicable Federal, state, and local laws and regulations, such as following guidance in the wetlands permitting process, the Erosion, Sedimentation and Pollution Control Plans (ESPCP), and stream buffer variances, would help minimize this potential for adverse cumulative effects.

Alternative I: "No-Action / Status-Quo"

As a result of this alternative, military training would continue at Hastings Range until that range is upgraded via the DMPTR. During that time, current projects, such as the privatization of the Fort Benning water and wastewater systems and the development of the North Tract and Oxbow Learning Center and Marina in Columbus, would be ongoing, resulting in potential minor adverse effects to wetlands and streambanks due to the potential sedimentation, construction/fill, or intrusion into adjacent wetlands and/or the potential to locate roads or water/wastewater pipelines across or along the streambanks in the area. Development of the Marina, in particular, would require obtaining and complying with a section 404 wetlands permit, including potentially moderate levels of mitigation. Construction of the new AAFES Mini Mall on Fort Benning may require a section 404 wetlands permit, but the potential adverse effects would be minimal. Potential minor adverse effects to streambanks may also occur in the vicinity of Ruth, Cactus, and Carmouche ranges as the training queue is shifted to accommodate the construction at Hastings Range, which would remove it from the training queue. These effects, resulting from increased training at these locations, would be localized to the vicinity of the ranges and would be the result of an increase in the frequency of low-water crossings at and leading to these ranges. Rehabilitation of the Maneuver Corridors would also occur during this time and would result in minor positive effects to wetlands, due to the erosion control measures the project entails, preventing some future sedimentation of the associated wetlands within the corridors. Rehabilitation efforts would also include improvements or repairs to existing low-water crossings in the corridors, but would not require a Stream buffer variance, since these crossings are existing and not new. Construction of the FY06 and beyond projects, to include the DMPTR, ISBC and IPBC would have potentially minor adverse effects to wetlands due to tree clearing and construction activities, but these potential effects would be minimized through adherence to the necessary permits. Additional effects to streambanks would include the construction of new low-water crossings, which would require Stream buffer variances for each of these range projects. The potential cumulative adverse effects predicted for this alternative would be minimized via the requirements contained in the variance and any additional permits, as discussed earlier, but would not completely mitigate all potential effects. Therefore, this alternative would result in no potential for incremental impacts from ongoing operations and no cumulative adverse effects to wetlands and streambanks in the ROI.

Alternative II: "Compartment K21 (Alternate Site)"

The construction, operation, and maintenance of the proposed DMPRC at the Alternative II area would result in potential moderate adverse effects on wetlands and potential significant adverse effects on streambanks. Concurrent with this construction, military training would continue at Hastings Range until the proposed upgrade of the range to a DMPTR (approximately the next two years). During that time, current projects, such as the privatization of the Fort Benning water and wastewater systems and the development of the North Tract and Oxbow Learning Center and Marina in Columbus, would be ongoing, resulting in potential minor

adverse effects to wetlands and streambanks due to the potential sedimentation, construction/fill, or intrusion into adjacent wetlands and/or the potential to locate roads or water/wastewater pipelines across or along the streambanks in the area. Development of the Marina, in particular, would require obtaining and complying with a section 404 wetlands permit, including potentially moderate levels of mitigation. Construction of the new AAFES Mini Mall on Fort Benning may require a section 404 wetlands permit, but the potential adverse effects would be minimal. Potential minor adverse effects to streambanks may also occur in the vicinity of Ruth, Cactus, and Carmouche ranges as the training queue is shifted to accommodate the construction at Hastings Range, which would remove it from the training queue. These effects, resulting from increased training at these locations, would be localized to the vicinity of the ranges and would be the result of an increase in the frequency of low-water crossings at and leading to these ranges. Rehabilitation of the Maneuver Corridors would also occur during this time and would result in minor positive effects to wetlands, due to the erosion control measures the project entails, preventing some future sedimentation of the associated wetlands within the corridors. Rehabilitation efforts would also include improvements or repairs to existing low-water crossings in the corridors, but would not require a Stream buffer variance, since these crossings are existing and not new. Construction of the FY06 and beyond projects, to include the DMPTR, ISBC and IPBC would have potentially minor adverse effects to wetlands due to tree clearing and construction activities, but these potential effects would be minimized through adherence to the necessary permits. Additional effects to streambanks would include the construction of new low-water crossings, which would require Stream buffer variances for each of these range projects. The potential cumulative adverse effects predicted for this alternative would be minimized via the requirements contained in the variance and any additional permits, as discussed earlier, but would not completely mitigate all potential effects. Therefore, this alternative would result in a potential for incremental impacts from the DMPRC and minor cumulative adverse effects to wetlands and streambanks in the ROI.

Alternative III: "Compartment D13 (Preferred Site)"

The construction, operation, and maintenance of the proposed DMPRC at the Alternative III area would result in potential moderate adverse effects on wetlands and potential significant adverse effects on streambanks. Concurrent with this construction, military training would continue at Hastings Range until the proposed upgrade of the range to a DMPTR. During that time, current projects, such as the privatization of the Fort Benning water and wastewater systems and the development of the North Tract and Oxbow Learning Center and Marina in Columbus, would be ongoing, resulting in potential minor adverse effects to wetlands and streambanks due to the potential sedimentation, construction/fill, or intrusion into adjacent wetlands and/or the potential to locate roads or water/wastewater pipelines across or along the streambanks in the area. Development of the Marina, in particular, would require obtaining and complying with a section 404 wetlands permit, including potentially moderate levels of mitigation. Construction of the new AAFES Mini Mall on Fort Benning may require a section 404 wetlands permit, but the potential adverse effects would be minimal. Potential minor adverse effects to streambanks may also occur in the vicinity of Ruth, Cactus, and Carmouche ranges as the training queue is shifted to accommodate the construction at Hastings Range, which would remove it from the training queue. These effects, resulting from increased training at these locations, would be localized to the vicinity of the ranges and would be the result of an increase in the frequency of low-water crossings at and leading to these ranges. Rehabilitation of

the Maneuver Corridors would also occur during this time and would result in minor positive effects to wetlands, due to the erosion control measures the project entails, preventing some future sedimentation of the associated wetlands within the corridors. Rehabilitation efforts would also include improvements or repairs to existing low-water crossings in the corridors, but would not require a Stream buffer variance, since these crossings are existing and not new. Construction of the FY06 and beyond projects, to include the DMPTR, ISBC and IPBC would have potentially minor adverse effects to wetlands due to tree clearing and construction activities, but these potential effects would be minimized through adherence to the necessary permits. Additional effects to streambanks would include the construction of new low-water crossings, which would require Stream buffer variances for each of these range projects. The potential cumulative adverse effects predicted for this alternative would be minimized via the requirements contained in the variance and any additional permits, as discussed earlier, but would not completely mitigate all potential effects. Therefore, this alternative would result in a potential for incremental impacts from the DMPRC and minor cumulative adverse effects to wetlands and streambanks in the ROI.

5.4.4 Unique Ecological Areas (Figure 12)

The threshold level of significance for a Unique Ecological Area (UEA) is the removal or destruction of vegetation combined with impacts due to military training at the new DMPRC which make the UEA no longer functional as an ecosystem unit.

The ROI for UEAs consists of a very localized area and is contained within the Installation boundary. Past, present, and foreseeable future actions in the ROI include construction and road/trail maintenance and do have the potential to contribute to adverse effects to the UEA. Most of these areas, however, have been previously disturbed by past and ongoing mechanized and infantry training on the Installation, both in the maneuver areas and on existing ranges, and future construction is not predicted to result in significant cumulative adverse effects. For example, the proposed DMPTR would be constructed on the existing Hastings Range, of which the Hastings Relict Sandhills Community UEA is a part. No adverse effects to this UEA have occurred as a result of this past training and only temporary minor adverse effects are expected to occur as a result of construction in this area. Overall, however, no adverse cumulative effect is predicted. On the other hand, the proposed rehabilitation of the Maneuver Corridors has the potential for positive effects to the UEAs, resulting in erosion control, soil stabilization, and a reduction in sedimentation of the streams and wetlands located within the UEAs. No other projects on Fort Benning are sufficiently proximate to the UEAs to result in additional potential adverse effects. Additional mitigation, as required per project, to include permits and monitoring, would also help reduce the potential for adverse effects.

Alternative I: "No Action / Status Quo"

As a result of this alternative, military training would continue at Hastings Range until that range is upgraded via the DMPTR. During that time, only routine maintenance, repair, and training on existing ranges and within existing training compartments would have the potential for minor adverse effects to UEAs in the ROI. As stated earlier, no adverse effects have yet to be observed as a result of these routine and ongoing actions. When the DMPTR begins construction in 2006, there is a potential for minor adverse effects to UEAs in the vicinity of Ruth, Cactus, and Carmouche ranges as the training queue is shifted to accommodate the

construction of the DMPTR at Hastings Range, which would remove it from the training queue. The Hastings Relict Sandhills UEA, in particular, would experience potential minor adverse effects as a result of the construction on the DMPTR, but this effect would only be temporary in nature. These effects, resulting from increased training at these locations, would be localized to the vicinity of the ranges and would be the result of an increase in the frequency of low-water crossings of the streams located within the UEAs surrounding these ranges. Rehabilitation of the Maneuver Corridors would also occur during this time and would result in minor positive effects to UEAs, due to the erosion control measures the project entails, preventing some future sedimentation of the associated streams and wetlands within the corridors. Rehabilitation efforts would also include improvements or repairs to existing low-water crossings in the corridors, but would not require a Stream buffer variance, since these crossings are existing and not new. Construction of the FY06 and beyond projects, to include the DMPTR, ISBC, and IPBC would have potentially minor adverse effects to UEAs due to tree clearing and construction activities, but these potential effects would be minimized through adherence to the necessary permits. Additional effects to streambanks within the UEAs would include the construction of new low-water crossings, which would require Stream buffer variances for each project. The potential cumulative adverse effects predicted for this alternative would be minimized via the requirements contained in the variance and any additional permits. Therefore, this alternative would result in no potential for incremental impacts from ongoing activities and no cumulative adverse effects to UEAs in the ROI.

Alternative II: "Compartment K21 (Alternate Site)"

The construction, operation, and maintenance of the proposed DMPRC at the Alternative II area could result in potential moderate adverse effects on UEAs; in particular, the Pine Knot Blackwaters UEA function would be impaired as a result of the construction of the DMPRC at this location. Concurrent with this construction, military training would continue at Hastings Range until the proposed upgrade of the range to a DMPTR (approximately the next two years). During that time, only routine maintenance, repair, and training on existing ranges and within existing training compartments would have the potential for minor adverse effects to other UEAs in the ROI. As stated earlier, no adverse effects have yet to be observed as a result of these routine and ongoing actions. When the DMPTR begins construction in 2006, there is a potential for minor adverse effects to UEAs in the vicinity of Ruth, Cactus, and Carmouche ranges as the training queue is shifted to accommodate the construction of the DMPTR at Hastings Range, which would remove it from the training queue. The Hastings Relict Sandhills UEA, in particular, would experience potential minor adverse effects as a result of the construction on the DMPTR, but this effect would only be temporary in nature. These effects, resulting from increased training at these locations, would be localized to the vicinity of the ranges and would be the result of an increase in the frequency of low-water crossings of the streams located within the UEAs surrounding these ranges. Rehabilitation of the Maneuver Corridors would also occur during this time and would result in minor positive effects to UEAs, due to the erosion control measures the project entails, preventing some future sedimentation of the associated streams and wetlands within the corridors. Rehabilitation efforts would also include improvements or repairs to existing low-water crossings in the corridors, but would not require a Stream buffer variance, since these crossings are existing and not new. Construction of the FY06 and beyond projects, to include the DMPTR, ISBC, and IPBC would have potentially minor adverse effects to UEAs due to tree clearing and construction activities, but these potential effects would be minimized

through adherence to the necessary permits. Additional effects to streambanks within the UEAs would include the construction of new low-water crossings, which would require Stream buffer variances for each of these range projects. The potential cumulative adverse effects predicted for this alternative would be minimized via the requirements contained in the variance and any additional permits. Overall, this alternative would result in potential incremental impacts from the DMPRC and significant cumulative adverse effects to UEAs in the ROI.

Alternative III: "Compartment D13 (Preferred Alternative)"

The construction, operation, and maintenance of the proposed DMPRC at the Alternative III area could result in minor adverse effects on UEAs. Concurrent with this construction, military training would continue at Hastings Range until the proposed upgrade of the range to a DMPTR. During that time, only routine maintenance, repair, and training on existing ranges and within existing training compartments would have the potential for minor adverse effects to other UEAs in the ROI. As stated earlier, no adverse effects have yet to be observed as a result of these routine and ongoing actions. When the DMPTR begins construction in 2006, there is a potential for minor adverse effects to UEAs in the vicinity of Ruth, Cactus, and Carmouche ranges as the training queue is shifted to accommodate the construction of the DMPTR at Hastings Range, which would remove it from the training queue. The Hastings Relict Sandhills UEA, in particular, would experience potential minor adverse effects as a result of the construction on the DMPTR, but this effect would only be temporary in nature. These effects, resulting from increased training at these locations, would be localized to the vicinity of the ranges and would be the result of an increase in the frequency of low-water crossings of the streams located within the UEAs surrounding these ranges. Rehabilitation of the Maneuver Corridors would also occur during this time and would result in minor positive effects to UEAs, due to the erosion control measures the project entails, preventing some future sedimentation of the associated streams and wetlands within the corridors. Rehabilitation efforts would also include improvements or repairs to existing low-water crossings in the corridors, but would not require a Stream buffer variance, since these crossings are existing and not new. Construction of the FY06 and beyond projects, to include the DMPTR, ISBC, and IPBC would have potentially minor adverse effects to UEAs due to tree clearing and construction activities, but these potential effects would be minimized through adherence to the necessary permits. Additional effects to streambanks within the UEAs would include the construction of new low-water crossings, which would require Stream buffer variances for each of these range projects. The potential cumulative adverse effects predicted for this alternative would be minimized via the requirements contained in the variance and any additional permits. Therefore, this alternative would result in minor potential incremental impacts from the DMPRC and minor cumulative adverse effects to UEAs in the ROI.

5.4.5 Protected Species (Figure 42)

5.4.5.1 Federally Protected Species

The threshold level of significance for Federally protected species occurs if an alternative disrupts normal behavioral patterns or disturbs habitat at a level that substantially impedes the Installation's ability to either avoid jeopardy or conserve and recover the species.

The ROI for Federally protected species consists of the populations within the Installation boundary plus the area of the Land Exchange (North Tract). Past, present, and foreseeable future actions in the ROI include construction and road/trail maintenance and have the potential to contribute to degradation or loss of RCW habitat (pine trees 30-60 years of age or older) in the ROI. In particular, the construction of the force protection measures, the routine maintenance, repair, and training on existing ranges and within existing training compartments on Fort Benning and the development of the North Tract in Columbus would have the potential for minor adverse effects to RCWs in the ROI. Although the rehabilitation of the North/South Maneuver Corridors would include selective thinning of trees in areas containing Federally protected species, all thinning activities would be minimal, as described earlier, and would be in accordance with guidelines laid out in the RCW ESMP. On Fort Benning, adherence to the RCW ESMP, the 2003 Recovery Plan for the RCW, and the Fort Benning INRMP during construction projects would be required, which would minimize potential effects. Fort Benning has identified the potential for incidental take of RCW clusters and/or trees in the Biological Assessment for the proposed DMPRC; this process could also occur in future projects, if needed. The installation of erosion control measures in the maneuver corridors would avoid other Federally listed species, such as Relict trillium, if found. Other means to minimize potential effects may also be employed. Fort Benning will request USFWS coordination/consultation as appropriate for future projects in the ROI.

Alternative I: "No-Action / Status-Quo"

As a result of this alternative, military training would continue at Hastings Range until that range is upgraded via the DMPTR. During this time, the construction of the force protection measures and the routine maintenance, repair, and training on existing ranges and within existing training compartments would have the potential for minor adverse effects on Fort Benning. In addition, the development of the North Tract in Columbus would be ongoing, resulting in potential minor adverse effects to RCWs as a result of removal of or intrusion into their habitat in the area. Potential minor adverse effects as a result of training may also occur in the vicinity of Ruth, Cactus, and Carmouche ranges as the training queue is shifted to accommodate the construction at Hastings Range, which would remove it from the training queue. These effects, resulting from increased training at these locations, would be localized to the vicinity of the ranges. Rehabilitation of the Maneuver Corridors would also occur during this time and would result in minor positive effects to RCW habitat in the ROI, due to the erosion control and soil stabilization measures the project entails, which will improve the overall quality of the habitat. Construction of the FY06 and beyond projects, to include the DMPTR, ISBC and IPBC would have potentially minor adverse effects due to tree clearing and construction activities, but these potential effects would be minimized through adherence to the existing Installation policies and guidelines and through coordination/consultation with USFWS. Therefore, this alternative would result in no potential incremental impacts from ongoing activities and no cumulative adverse effects to RCWs in the ROI.

Alternative II: "Compartment K21 (Alternate Site)"

The construction, operation, and maintenance of the proposed DMPRC at the Alternative II area could result in potential significant adverse effects on RCWs. Concurrent with this construction, military training would continue at Hastings Range until the proposed upgrade of the range to a DMPTR (approximately the next two years). Also during this time, the

construction of the force protection measures and the routine maintenance, repair, and training on existing ranges and within existing training compartments would have the potential for minor adverse effects on Fort Benning. In addition, the development of the North Tract in Columbus would be ongoing, resulting in potential minor adverse effects to RCWs as a result of removal of or intrusion into their habitat in the area. Potential minor adverse effects as a result of training may also occur in the vicinity of Ruth, Cactus, and Carmouche ranges as the training queue is shifted to accommodate the construction at Hastings Range, which would remove it from the training queue. These effects, resulting from increased training at these locations, would be localized to the vicinity of the ranges. Rehabilitation of the Maneuver Corridors would also occur during this time and would result in minor positive effects to RCW habitat in the ROI, due to the erosion control and soil stabilization measures the project entails, which will improve the overall quality of the habitat. Construction of the FY06 and beyond projects, to include the DMPTR, ISBC and IPBC, would have potentially minor adverse effects due to tree clearing and construction activities, but these potential effects would be minimized through adherence to the existing Installation policies and guidelines and through coordination/consultation with USFWS. Therefore, this alternative would result in a potential incremental impact from the DMPRC and minor cumulative adverse effects to RCWs in the ROI.

Alternative III: "Compartment D13 (Preferred Site)"

The construction, operation, and maintenance of the proposed DMPRC at the Alternative III area could result in potential significant adverse effects on RCWs. Concurrent with this construction, military training would continue at Hastings Range until the proposed upgrade of the range to a DMPTR. Also during this time, the construction of the force protection measures and the routine maintenance, repair, and training on existing ranges and within existing training compartments would have the potential for minor adverse effects on Fort Benning. In addition, the development of the North Tract in Columbus would be ongoing, resulting in potential minor adverse effects to RCWs as a result of removal of or intrusion into their habitat in the area. Potential minor adverse effects as a result of training may also occur in the vicinity of Ruth, Cactus, and Carmouche ranges as the training queue is shifted to accommodate the construction at Hastings Range, which would remove it from the training queue. These effects, resulting from increased training at these locations, would be localized to the vicinity of the ranges. Rehabilitation of the Maneuver Corridors would also occur during this time and would result in minor positive effects to RCW habitat in the ROI, due to the erosion control and soil stabilization measures the project entails, which will improve the overall quality of the habitat. Construction of the FY06 and beyond projects, to include the DMPTR, ISBC and IPBC, would have potentially minor adverse effects due to tree clearing and construction activities, but these potential effects would be minimized through adherence to the existing Installation policies and guidelines and through coordination/consultation with USFWS. Therefore, this alternative would result in a potential incremental impact from the DMPRC and minor cumulative adverse effects to RCWs in the ROI.

5.4.5.2 State Protected Species (Figure 42)

The threshold level of significance for state protected species is an impact that would either jeopardize the future existence of a state listed species in the ROI or lead to the Federal listing of that species.

The ROI for State protected species is localized and consists of the populations of Gopher tortoise, Pickering's morning glory, and Indian olive within the Installation boundary and the area of the Land Exchange (North Tract). Past, present, and foreseeable future actions in the ROI include construction and road/trail maintenance and have the potential to contribute to degradation or loss of sufficient habitat in the ROI. In particular, the construction of the ISBC, IPBC, and DMPTR are the projects that have the potential for moderate adverse impacts due to disturbance of habitat in the ROI; however, the rehabilitation of the Maneuver Corridors has the potential for long-term positive effects due to overall habitat quality improvements. On Fort Benning, adherence to the existing Installation management practices for the Gopher Tortoise, Pickering's Morning Glory, and Indian Olive would be required during both construction and training on Post. For the Gopher Tortoise, mitigation would consist of surveys and relocation prior to construction; in addition, relocation is also a viable option for the Pickering's Morning Glory and Indian Olive populations, if any are found during the pre-construction surveys, per existing Installation management practices.

Alternative I: "No-Action / Status-Quo"

As a result of this alternative, military training would continue at Hastings Range until that range is upgraded via the DMPTR project. During this time, the routine maintenance, repair, and training on existing ranges and within existing training compartments would have the potential for minor adverse effects on state protected species. In addition, the development of the North Tract in Columbus would be ongoing, resulting in additional potential minor adverse effects to or intrusion into habitat in the area. Potential minor adverse effects as a result of training may also occur in the vicinity of Ruth, Cactus, and Carmouche ranges as the training queue is shifted to accommodate the construction at Hastings Range, which would remove it from the training queue. These effects, resulting from increased training at these locations, would be localized to the vicinity of the ranges. Rehabilitation of the Maneuver Corridors would also occur during this time and would result in minor positive effects to state protected species in the ROI, due to the erosion control and soil stabilization measures the project entails, which will improve the overall quality of the habitat. Construction of the FY06 and beyond projects, to include the DMPTR, ISBC and IPBC, would have potentially minor adverse effects due to earth-moving activities, but these potential effects would be minimized through adherence to the existing Installation policies and guidelines. Therefore, this alternative would result in no potential incremental impact from ongoing activities and no cumulative adverse effects to state protected species in the ROI.

Alternative II: "Compartment K21 (Alternate Site)"

Alternative II would have potential moderate adverse effects to gopher tortoises and their habitat. Concurrent with this construction, military training would continue at Hastings Range until the proposed upgrade of the range to a DMPTR (approximately the next two years). In addition, the routine maintenance, repair, and training on existing ranges and within existing training compartments would have the potential for minor adverse effects on state protected species. Potential minor adverse effects as a result of training may also occur in the vicinity of Ruth, Cactus, and Carmouche ranges as the training queue is shifted to accommodate the construction at Hastings Range, which would remove it from the training queue. These effects, resulting from increased training at these locations, would be localized to the vicinity of the ranges. Rehabilitation of the Maneuver Corridors would also occur during this time and would

result in minor positive effects to state protected species in the ROI, due to the erosion control and soil stabilization measures the project entails, which will improve the overall quality of the habitat. Construction of the FY06 and beyond projects, to include the DMPTR, ISBC and IPBC, would have potentially minor adverse effects due to earth-moving activities, but these potential effects would be minimized through adherence to the existing Installation policies and guidelines. The development of the North Tract in Columbus would also be ongoing, resulting in potential minor adverse effects to or intrusion into habitat in the area. Therefore, this alternative would result in a potential incremental impact from the DMPRC and minor cumulative adverse effects to state protected species in the ROI.

Alternative III: "Compartment D13 (Preferred Alternative)"

Alternative III would have potential minor adverse effects to gopher tortoises and their habitat. Concurrent with this construction, military training would continue at Hastings Range until the proposed upgrade of the range to a DMPTR. The routine maintenance, repair, and training on existing ranges and within existing training compartments would have the potential for minor adverse effects on state protected species. Potential minor adverse effects as a result of training may also occur in the vicinity of Ruth, Cactus, and Carmouche ranges as the training queue is shifted to accommodate the construction at Hastings Range, which would remove it from the training queue. These effects, resulting from increased training at these locations, would be localized to the vicinity of the ranges. Rehabilitation of the Maneuver Corridors would also occur during this time and would result in minor positive effects to state protected species in the ROI, due to the erosion control and soil stabilization measures the project entails, which will improve the overall quality of the habitat. Construction of the FY06 and beyond projects, to include the DMPTR, ISBC and IPBC would have potentially minor adverse effects due to earth-moving activities, but these potential effects would be minimized through adherence to the existing Installation policies and guidelines. The development of the North Tract in Columbus would also be ongoing, resulting in potential minor adverse effects to or intrusion into habitat in the area. Therefore, this alternative would result in a potential incremental impact from the DMPRC and minor cumulative adverse effects to state protected species in the ROI.

5.4.6 Noise

The threshold level of significance for noise is the existence of any Zone III (incompatible) noise contours where sensitive noise receptors (residences, hospitals, libraries, and etc.) are located.

The ROI for Noise consists of the five county ROI, including the cities of Columbus and Buena Vista, GA, and Phenix City, AL. The Army Environmental Hygiene Agency (the predecessor of the Army Center for Health Promotion and Preventative Medicine) provided Fort Benning with the first heavy weapons noise contour in 1982 (US Army), 1988 (US Army), and 1993 (US Army). Comparisons between these and the 2003 noise modeling studies shows that noise levels along the eastern boundary have increased during this time. In 1982, for example, the off post Zone II covered about the same area as the current off post Zone III. At the same time, the Zone II has also increased in size. While the noise has been increasing to support the military training mission, the suburban areas of Columbus and Marion County have been expanding with increased residential and commercial developments along the northern boundary of Fort Benning. This trend is likely to continue to increase the number of sensitive receptors

affected by noise from Fort Benning military operation. The upgrade of Hastings Range to a DMPTR would include an increase in activity and firing rounds, but those increases would be balanced by a reduction in rounds fired at the proposed DMPRC (see Table 10). There is no plan for increased heavy weapons firing in this area of the Installation.

Alternative I: "No Action/Status Quo" (Figure 43)

Operation and maintenance at existing Fort Benning ranges and the proposed construction of a DMPTR at Hastings Range could result in increased noise levels in the future; also, the Zone I noise would cover slightly more area near the northern Installation boundary than the noise generated from current operations. The Zone II (normally incompatible) and Zone III (incompatible) noise contours would remain approximately the same. Because suburban development in this area may expand in the future, additional temporary sources of noise due to construction may occur adjacent to Fort Benning in the communities of Columbus and Buena Vista, GA, as well as other areas in the surrounding counties. The main change for the cumulative effects for noise is that operation of the DMPTR would result in Zone III slightly leaving the Installation at the northeast boundary, but this noise will be less than that generated under current conditions and would be near only one residence. Therefore, this alternative would result in a potential incremental impact from ongoing activities and significant cumulative adverse effects to noise in the ROI.

Alternative II: "Compartment K21 (Alternate Site) (Figure 44)

Alternative II would move some of the heavy weapons training away from Hastings Range and the northeast boundary to a more interior Installation location. Figure 44 shows that the Zone III (incompatible) noise contour would decrease from the existing area near the northeastern Installation boundary because Fort Benning would move most of the heavy weapons firing away from Hastings Range to the Alternative II site. That would reduce the area affected by existing significant noise levels (Zone III) to more moderate Zone II levels in the area near Hastings Range, resulting in potential positive effects in the ROI from this DMPRC alternative. The main change for the cumulative effects for noise is that operation of the DMPTR would result in Zone III slightly leaving the Installation at the northeast boundary, but the off-Post affected area will be less than under current conditions and will affect only one residence. A comparison of figures 36 and 44 shows that with the DMPTR, the Zone II noise contour would shrink in the Hastings Range and Ruth Range areas of the north-northeast while it expands slightly towards and exits the east-central Installation boundary. Some residents near the east-central boundary would detect a moderate increase in noise levels resulting from heavy weapons firing, but only Zone II (normally incompatible) and Zone 1 (compatible) noise would affect that area. Therefore, this alternative would result in a potential incremental impact from the DMPRC and significant cumulative adverse effects to noise in the ROI.

Alternative III: "Compartment D13 (Preferred Alternative)" (Figure 45)

Alternative III would move some of the heavy weapons training away from Hastings Range and the northeast boundary to a more interior Installation location. Figure 45 shows that the Zone III (incompatible) noise contour would move back inside the Installation boundary because Fort Benning would move most of the heavy weapons firing away from Hastings Range to the Alternative III site. That would reduce noise from existing significant levels (Zone III) to more moderate Zone II levels at Hastings Range, resulting in potential positive effects in the ROI

from this DMPRC alternative. Once the DMPTR is constructed at Hastings Range, however, this would result in Zone III again slightly leaving the Installation at the northeast boundary, but the off-Post affect area would still be less than under current conditions and would affect only one residence. A comparison of figures 37 and 45 shows that with the DMPTR, the Zone III contour would shrink in the Hastings Range and Ruth Range areas of the north-northeast while it expands slightly towards and exits the east-central Installation boundary. Some residents near the east-central boundary would detect a moderate increase in noise levels resulting from heavy weapons firing, but only Zone II (normally incompatible) and Zone I (compatible) noise would affect that area. Therefore, this alternative would result in a potential incremental impact from the DMPRC and significant cumulative adverse effects to noise in the ROI.

Table 10: Estimated Rounds Fired on Key Ranges

(Changes to rounds fired on Hastings Range during construction of the DMPTR are not indicated on this table, because it is temporary.)

Cumulative Effects:

Fort Benning Range Gunnery Use

		Alternative I	**Alternatives 2 & 3**	**Cumulative**
Range	**Type of Rounds**	**without DMPRC** Future Training *estimated* rounds fired	**with DMPRC Training 2007** *est.* rounds	w/ DMPTR **upgrade Hastings** *2010*
Cactus				
	25mm[1]	10,000	10,000	10,000
	120mm	0	0	0
Carmouche				
	25mm	84,000	84,000	84,000
	120mm	924	924	924
Hastings	*25mm*	56,000	0	14,000
-	*120mm*	3,276	0	350
Ruth	*25mm*	0	0	0

	120mm	0	0	0
-				
DMPRC	*25mm*	N/A	56,000	42,000
Alts. 2 and 3	*120mm*	N/A	3,276	2,926
TOTALS	*25mm*	150,000	150,000	150,000
	120mm	4,200	4,200	4,200

5.4.7 Public Health and Safety (no figures)

The threshold level of significance for Public Health and Safety is exceeded when the Surface Danger Zone (SDZ) of a range extends off the Installation, when a violation of Occupational Safety and Health Administration Act (OSHA) standards occurs, or when access to the construction site is not adequately maintained (unauthorized access).

The ROI for public health and safety is localized and contained within the Installation boundary. During the next 10 years, there are several new and/or upgraded ranges scheduled for Fort Benning, including the upgrade of Hastings Range to a DMPTR in FY06, the upgrade of Galloway Range to an ISBC in FY05, and the rehabilitation of the maneuver corridors; however, SDZ standards, as outlined per DA PAM 385-63 and Installation policies and guidelines, would be followed during the construction, renovation, operation and maintenance of all ranges. In addition, adherence to OSHA protocols for worker safety would be required for all construction, renovation, and maintenance projects.

Alternative I: "No-Action / Status-Quo"

This alternative would result in no potential for incremental impacts and no cumulative adverse effects on public health and safety in the ROI.

Alternative II: "Compartment K21 (Alternate Site)"

This alternative would result in no potential for incremental impacts and no cumulative adverse effects on public health and safety in the ROI.

Alternative III: "Compartment D13 (Preferred Alternative)"

This alternative would result in no potential for incremental impacts and no cumulative adverse effects on public health and safety in the ROI.

Table 11. Summary of Potential Cumulative Impacts and Mitigation – All Alternatives

Table Legend

ℵ No Adverse Cumulative Effect
θ Minor Adverse Cumulative Effect
⊗ Significant Adverse Cumulative Effect

Affected Environment	Alternative I	Alternative II	Alternative III
Soils & Vegetation	ℵ	θ	θ
Water Quality	ℵ	ℵ	ℵ
Wetlands & Streambanks	ℵ	θ	θ
UEAs	ℵ	⊗	θ
Federally Protected Species	ℵ	θ	θ
State Protected Species	ℵ	θ	θ
Noise	⊗	⊗	⊗
Public Health & Safety	ℵ	ℵ	ℵ

6.0 Summary of Additional Potential Effects

6.1 Irreversible and Irretrievable Commitment of Resources

An irreversible/irretrievable commitment of resources results from a decision to use or modify resources when they are renewable only over a long period of time, such as soil productivity, or when they are nonrenewable resources, such as cultural resources. The single most irreversible and irretrievable commitment of resources associated with the proposed action is the loss of forested lands for the DMPRC, including its support facilities and access roads. It is considered an irreversible commitment because, for the foreseeable future, this area will be used for a range and re-establishing it as a forest is not reasonable for quite some time. Some wetland areas and vegetation will be permanently lost due to construction; in addition, there is a potential for the displacement of wildlife or the loss of protected species and their habitat. Although these actual resources will be lost, through the design and other mitigation, much of the impacts will be offset or minimized.

The materials and energy required for the construction, operation, and maintenance of the DMPRC also represents an irretrievable commitment of resources. The total amount of construction materials required for this action is relatively insignificant when compared to the resources available in the region. The energy required for construction consists of the fuels necessary to operate heavy construction equipment and trucks. Although energy conservation is a vital and critical issue, the energy resource commitment to this project is not anticipated to be excessive in terms of region-wide usage. Materials and energy are not in short supply and their use would not have an adverse effect upon continued availability of these resources. Construction, operation, and maintenance would also require a substantial expenditure of Federal funds that would not be directly retrievable.

6.2 Unavoidable Adverse Effects

The environmental analysis of the alternatives includes the avoidance, minimization, or other mitigation of potential adverse effects on natural, cultural, and environmental resources; however, all adverse impacts may not be completely avoided and/or mitigated. Some adverse effects would be temporary in nature; for example, there would be temporary minor adverse effects to air quality due to the presence of construction equipment and subsequent training by mechanized vehicles, in addition to the ongoing use of prescribed fire for habitat management. Other adverse effects could be long-term in nature; for example, the removal of protected species habitat due to land-clearing activities for construction and subsequent training/use by mechanized vehicles.

Construction and subsequent activities would transform the sites of the two action alternatives (II and III) from a forested landscape to a range complex, including all of its support facilities and access roads. Even though the land use would still be training, these action alternatives would result in less vegetated cover and could indirectly contribute to erosion control concerns in this and adjoining areas. Disturbance, displacement, or loss of wildlife and/or protected species may occur as a consequence of habitat loss and increased training activity in these previously undisturbed areas. Newly constructed and/or enhanced roads and their associated use can impact wildlife due to human activities associated with new access. Sedimentation of adjacent and connecting surface water bodies could exceed natural rates where

roads and/or trails are being built and maintained or where management activities include harvesting and removal of timber, such as Fort Benning. The use of best management practices (BMPs) and monitoring and evaluation of all mitigation efforts should limit the extent, severity, and duration of these effects.

Alternative I current noise impacts near the Installation boundary would continue and not be readily avoided or completely mitigated. Adverse impacts from Zone III noise in the action alternatives cannot be completely avoided or minimized. Operation of the range would result in noise generation. Limiting night firing on the range is currently on a voluntary basis only; however, rigid restrictions on night firing would decrease the realism of the training for soldiers and, therefore, impede the training mission of Fort Benning. Continued communication with the public would help address noise concerns. Any mitigation measures identified in the future will be considered to mitigate the unavoidable adverse effects that have been identified in this DMPRC FEIS.

7.0 CONCLUSIONS AND RECOMMENDATIONS

7.1 Conclusions

Alternative I, "No Action/Status Quo," would have minimal to no adverse effect on the natural and human environment at Fort Benning. Although temporary minor adverse effects to soils, water quality, and Unique Ecological Areas (UEAs) do occur at Hastings Range, the Alternative I location, these effects are easily mitigated through compliance with existing Federal and state laws and regulations and through the implementation of Installation policies, guidelines, and, where applicable, best management practices (BMPs). Minor adverse to wetlands, streambanks, Federally-protected species, state-protected species, migratory birds, and air quality also occur, but are minimized through these same processes. Moderate adverse effects to land use resulting from noise are ongoing at this location, due to its use as an active Tank and BFV gunnery range. Significant adverse effects to noise also occur at this area; while no "physical" mitigation (such as monitors or barriers) is currently in place for this adverse effect, the Public Affairs Office (PAO) routinely submits notices to Fort Benning personnel, residents, and the public for larger-than-normal training events where noise levels are predicted to be more obtrusive than the existing levels. Noise complaints are also managed by the PAO. There would be no adverse effect on socioeconomics, cultural resources, utilities, public health and safety, hazardous materials, or transportation under this alternative. Cumulatively, this alternative would not result in any incremental adverse effects on most of the natural and cultural resources; however, significant cumulative effects as a result of noise are predicted. This alternative does not meet the purpose and need for advanced gunnery training.

Alternative II, "Compartment K21 (Alternate Site)," would have minor adverse effects to water quality, state protected species, migratory birds, land use, noise, air quality, and hazardous materials and wastes. Effects to water quality would be mitigated through implementation of mitigative measures required through the associated National Pollutant Discharge Elimination System (NPDES) Permit and by implementation of the Spill Pollution Control and Countermeasures (SPCC). Any effects on state protected species would be mitigated through relocation of the gopher tortoises prior to initiating any earth-moving activities; and effects to air quality would be mitigated through adherence to the construction permit for the DMPRC. Moderate adverse effects are predicted for soils and UEAs in the area. Effects to soils would be mitigated through implementation of an ESPCP. Effects to UEAs would be minimized through implementation of established Installation policies and guidelines. Significant adverse effects are predicted for vegetation, wetlands and streambanks, and Federally-protected species. Significant effects vegetation would also occur as a result of earth-moving activities and tree clearance for the DMPRC and its associated support facilities; and its associated BMPs and through adherence to protocols established in the Timber Harvest Plan for the DMPRC. Mitigation for wetlands would be in adherence to the 404 Permit and the ESPCP for the DMPRC and through either restoration of wetlands on Post or through the purchase of off-Post credits. Mitigation for streambanks would be through the use of BMPs for soil erosion and the restoration of streambanks outside of the construction area. Mitigation for Federally protected species would occur through adherence to guidance obtained through consultation with the United States Fish and Wildlife Service (USFWS); as of this time, protective berms will be placed in locations suitable to protect/prevent impacts to RCW cluster trees, additional RCW management staff will be hired, and recruitment clusters will be established, with the

understanding that additional mitigation may also be required. Temporary minor positive effects are predicted for socioeconomics and minor positive effects are predicted for utilities, primarily due to the fact that, respectively, the construction of the DMPRC would provide additional job sources and bring utilities access to previously unconnected portions of the Installation. There would be no adverse effect on cultural resources, public health, and safety or transportation under this alternative. Cumulatively, this alternative would result in no incremental adverse effects on water quality and public health and safety; minor incremental adverse effects on soils and vegetation, wetlands and streambanks, and Federally and state protected species, and significant incremental adverse effects on UEAs and noise. This alternative would result in more potential adverse effects than Alternative III and less potential adverse effects than Alternative I. In addition, this alternative meets the purpose and need for this action.

Alternative III: "Compartment D13 (Preferred Alternative)" would have a minor adverse effect to water quality, UEAs, state protected species, migratory birds, land use, air quality, noise, and hazardous materials and wastes; effects would be mitigated as described under Alternative II. Moderate adverse effects are predicted for soils; effects would be mitigated as described under Alternative II. Significant adverse effects would occur to vegetation, wetlands and streambanks, Federally protected species; effects would be mitigated as described under Alternative II. Specific mitigation for this alternative is also detailed in the DMPRC Mitigation and Monitoring Plan. Temporary minor positive effects are predicted for socioeconomics and minor positive effects are predicted for utilities. There would be no adverse effect on cultural resources, public health and safety, or transportation under this alternative. Cumulatively, this alternative would result in no incremental effects on water quality and public health and safety; minor cumulative effects are predicted for soils and vegetation, wetlands and streambanks, UEAs, and Federally and state protected species; and significant incremental adverse effects on noise. This alternative would result in less adverse potential effects than Alternative II and more adverse potential effects than Alternative I. In addition, this alternative meets the purpose and need for this action.

7.2 Recommendation

Alternative III, "Compartment D13 (Army Preferred Alternative)," is the recommended course of action because it meets the purpose and need for the action while resulting in fewer adverse environmental effects than the other action alternative analyzed in this FEIS. Although Alternative I is the Environmentally Preferred Alternative because it has the least adverse environmental effects, it fails to meet the purpose and need and is therefore not the recommended alternative. All predicted adverse environmental effects would be subject to the appropriate mitigation, permitting, and monitoring, in accordance with NEPA and other Federal and state laws and regulations.

8.0 LIST OF PREPARERS

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9.O REFERENCES AND PERSONS/AGENCIES CONSULTED

9.1 Persons & Agencies Consulted

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9.3 ACRONYMS AND ABBREVIATIONS

AEC	Army Environmental Center
AR	Army Regulation
BFV	Bradley Fighting Vehicle
CAA	Clean Air Act
COE	Corps of Engineers
COE-R	Corps of Engineers – Regulatory Branch
CWA	Clean Water Act
DMPRC	Digital Multi-Purpose Range Complex
ENMP	Environmental Noise Management Plan
ESA	Endangered Species Act
ESCA	Georgia Erosion and Sedimentation Control Act
FORSCOM	Forces Command
FM	Field Manual
ICUZ	Installation Compatible Use Zone
IMA	Installation Management Agency
MACOM	Major Command (or higher headquarters)
MCA	Military Construction, Army
NEPA	National Environmental Policy Act
NESHAP	National Emission Standards for Hazardous Air Pollutants (per CAA)
NHPA	National Historic Preservation Act
PAO	Public Affairs Office

PM	Particulate Matter (per CAA)
RCW	Red-cockaded woodpecker
ROI	Region of Influence (for Cumulative Effects under NEPA)
SACE	Savannah District, Army Corps of Engineers
SDZ	Surface Danger Zone
SERO	South East Regional Office (higher headquarters/approving authority for Fort Benning, GA, and several other Installations)
SHPO	State Historic Preservation Office
STRICOM	Simulation, Training, & Instrumentation Command
TM	Technical Manual
TRADOC	Training and Doctrine Command
UEA	Unique Ecological Area
USACHPPM and	United States Army Center for Health Promotion Preventive Medicine
USFWS	U.S. Fish and Wildlife Service
VOC	Volatile Organic Compound (per to CAA)

9.4 INDEX