

**ENVIRONMENTAL ASSESSMENT
FOR
PROPOSED BORROW AREA FOR THE BLUE
GRASS CHEMICAL
AGENT-DESTRUCTION PILOT PLANT
AT THE
BLUE GRASS ARMY DEPOT**

**FOR:
DEPARTMENT OF THE ARMY
BLUE GRASS ARMY DEPOT
RICHMOND, KENTUCKY**

PREPARED BY:

**U.S. ARMY CORPS OF ENGINEERS
LOUISVILLE DISTRICT
DECEMBER 2005**

**ENVIRONMENTAL ASSESSMENT
FOR
SITING OF THE BLUE GRASS CHEMICAL AGENT-
DESTRUCTION PILOT PLANT AND ASSOCIATED
ACCESS ROAD, PARKING AREAS AND UTILITIES AT
THE BLUE GRASS ARMY DEPOT**

TABLE OF CONTENTS

1.0 PURPOSE AND NEED.....	1
2.0 ALTERNATIVES CONSIDERED INCLUDING THE PROPOSED ACTION.....	1
2.1 Proposed Plan.....	1
2.2 Alternatives	1
2.3 No Action Alternative.....	1
3.0 AFFECTED ENVIRONMENT	2
3.1 General	2
3.2 Terrestrial.....	2
3.3 Wetlands and Aquatic Resources.....	2
3.4 Cultural Resources	2
3.5 Endangered Species.....	3
4.0 ENVIRONMENTAL CONSEQUENCES.....	3
4.1 Terrestrial.....	3
4.2 Wetlands and Aquatic Resources.....	3
4.3 Cultural Resources	4
4.4 Endangered Species.....	4
4.5 Cumulative Effects.....	4

5.0 COMPLIANCE WITH OTHER ENVIRONMENTAL REQUIRMENTS	5
5.1 National Environmental Policy Act (NEPA)	5
5.2 Clean Water Act	5
5.3 Clean Air Act	5
5.4 Fish and Wildlife Coordination Act (FWCA)	5
5.5 Comprehensive Environmental Resource Compensation Liability Act (CERCLA) and Resources Conservation and Recovery Act (RCRA)...	5
5.6 Farmland Protection Policy Act (FPPA)	6
5.7 Floodplain Management E.O. 11988.....	6
5.8 Intergovernmental Review of Federal Programs (E.O. 12372)	6
6.0 COORDINATION.....	6
7.0 REFERENCES	6

APPENDICES

- Appendix A – Site Location**
- Appendix B – Fish and Wildlife Coordination Letters**
- Appendix C -- Mailing List - Native American Tribal Groups, Agencies, Public Officials, Media, and Interested Individuals**

1.0 PURPOSE AND NEED

Public Law 99-145, subsequent related legislation and an international treaty, the Chemical Weapons Convention (CWC), require destruction of the U.S. stockpile of lethal unitary chemical agents and munitions. Thus, the need of the proposed destruction activities at Blue Grass Army Depot (BGAD) is to (1) complete the destruction of the BGAD inventory of chemical agents in compliance with US. Public Law and the CWC, and (2) conduct the destruction activities in a safe and environmentally sound manner. The need for the proposed action is to eliminate the risk to the public and to the environment from continued deterioration of the munitions in storage, and to destroy obsolete and containerized munitions and agents. The Program Manager for Chemical Demilitarization, now part of the U.S. Army Chemical Materials Agency (CMA), prepared a Final Environmental Impact Statement (FEIS), dated, December 2002, to assess the potential health and environmental impacts of the construction, operation, and closure of a facility to destroy the chemical agent and munitions stored at BGAD.

The Record of Decision (ROD)(December 2002) based upon the FEIS did not specifically site all necessary features of the facility. The purpose of this EA is to update biological and cultural information for the borrow area just east of the selected site for facility construction, i.e., the Blue Grass Chemical Agent-Destruction Pilot Plant (BGCAPP), and associated facilities and utilities. The EA addresses the site-specific effects of the construction and restoration of a borrow area for earthen materials.

2.0 ALTERNATIVES CONSIDERED INCLUDING THE PROPOSED ACTION

2.1 Proposed Plan. The demilitarization facility siting process evaluated two site locations (see Fig. 2.3 of the FEIS). Site A was chosen for the location of the demilitarization facility, to be called the Blue Grass Chemical Agent Pilot Plant (BGCAPP). A borrow area of about 22 acres adjacent to and immediately east of the construction site has been identified as necessary to provide earthen materials to level the actual construction site. About 75 to 80% of the area has been disturbed during previous construction at BGAD.

2.2 Alternatives. In addition to the proposed, borrow site, other alternatives exists. Additional acreage in close proximity to the proposed BGCAPP could supply the needed fill materials. Other sites could have significant impact on running buffalo clover, a federally-endangered species, a blue heron rookery, and cultural resources potentially eligible for listing in the National Register of Historic Places (NRHP). Therefore, other adjacent undisturbed sites further to the east and to the south or elsewhere on BGAD were eliminated from further consideration.

2.3. No Action Alternative. The “No Action” alternative is not an option. The chemical weapons and agents that are currently stored at BGAD will continue to deteriorate and pose a greater risk to the workers, the environment and the general public.

The temporary and minimal impacts from construction of the facilities and the borrow area would not occur.

3.0 AFFECTED ENVIRONMENT

3.1 General. The environmental setting of the project area is described in detail in the FEIS in section 4. The following supplemental information focuses on key components of the environment that are impacted by the project siting. Impacts to resources adequately addressed in the FEIS (such as Air, Water, etc.) are not discussed further in this EA.

3.2 Terrestrial. The area is described by Daniel Boone as the land of cane and clover. The land was a savanna type with mixed oaks and grass lands. The Knobs area, east of the Depot, was (and remains) a mixed hardwood forest with wet depressions. The 1939 air photos show that the land was farmland for crops and grazing with only shade trees along the larger drains. In the project area, vegetation composition has been altered because of the construction of BGAD. The land required for the proposed borrow area is maintained as fescue-dominated pasture interspersed with shrubs and trees that are periodically mowed. Much of the borrow site has had its topsoil removed during previous construction.

3.3 Wetlands and Aquatic Resources. There are wetlands scattered throughout the installation. According to the USFWS National Wetland Inventory maps (See Figure 4.9 from the FEIS) there are wetlands located approximately 0.5 miles south of the BGCAPP and small (less than 1 acre) wetlands occur along intermittent drainage ways in the proposed area for borrow.

The borrow area drains to Muddy Creek. The Environmental Protection Agency lists Muddy Creek as a 303(d) priority one impaired stream. Simply stated, Muddy Creek has been determined to not support at least one of its designated uses, being swimming. The impairment is listed as pathogens from agriculture and sedimentation. The priority listing states the order, within the watershed, that mitigation measures will be implemented.

The most common fish species found in Muddy Creek are creek chub, bluntnose minnow, silverjaw minnow, creek chub, central stoneroller, rosefin shiner, green sunfish, longear sunfish, greenside darter, faintail darter Johnny darter, rainbow darter and Kentucky bass. Three species of freshwater mussels documented in the creek are Giant floater, Fatmucket and Creeper. The predominant crayfish is *Orconectes juvenilis*. Muddy Creek has a variety of other aquatic invertebrates including species of mayflies, caddisflies, stoneflies, damselflies and water pennies.

3.4 Cultural Resources. Pertinent technical reports and publications were consulted from the U.S. Army Corps of Engineers-Louisville District Office and BGAD in Richmond, Kentucky to provide information on significant cultural resources, environmental data, overall cultural history, and previous investigations conducted within

the project area and region. Results of this literature review identified no cultural resources within the proposed 40 acres borrow area.

3.5 Endangered Species. The U.S. Fish and Wildlife Service (USFWS) has identified seven Federally-listed endangered species as occurring within 30 miles of BGAD: three mussel species, three bat species, and one plant species. Five Federally-listed threatened species and three candidate species for listing are also known to occur within this area.

Of the listed species, only the the bald eagle (*Haliaeetus leucocephalus*), and the running buffalo clover (*Trifolium stoloniferum*) are known to occur at BGAD. The bald eagle probably occurs as a migrant to Lake Vega and other water bodies on post and in the region. No nesting has occurred and no resident birds exist. The running buffalo clover occurs most commonly on rich soils in habitats with filtered light such as open woodlands, savannas, floodplains, and mesic stream terraces on well-drained sites. The clover has been positively identified as shown in Appendix A. Summer roost and foraging habitat for the endangered Indiana bat (*Myotis sodalis*) may exist within the proposed project area but previous surveys have not shown that the Indiana bat exists on the depot.

4.0 ENVIRONMENTAL CONSEQUENCES

4.1 Terrestrial. The proposed borrow area covers approximately 22 acres. The borrow area is predominately grassland (pasture and hayland), with small portions of Little Bluestem, a native grass, red clover, ox-eye daisy, burdock, Deptford pink, and scattered inclusions of rushes and sedges in shallow drainage ditches. A few areas support young trees (30 years or less old). Sycamore is one of the most common. The proposed parking lot would remove the few trees and grassland communities (including a small portion of Little Bluestem native grass remnants) through its entirety. However, similar habitat is relatively common throughout BGAD. Therefore, the impact to the terrestrial environment will be minimal.

4.2 Wetlands and Aquatic Resources. A site visit was conducted by two Corps of Engineers ecologists and found that the borrow area would not impact wetlands. Although there are small poorly drained areas with sedges and rushes, there are no jurisdictional wetlands, as jointly defined by the Corps, the U.S. Environmental Protection Agency, the USFWS and the Natural Resources Conservation Service, and therefore, it has been determined that no regulated wetlands will be affected by the construction. The proposed borrow area was previously disturbed about 50 years ago through borrowing to raise the foundation levels of nearby warehouses.

A Section 404(b) (1) Evaluation (Appendix C) has been previously prepared for the location of placement of the fill materials. This evaluation has found that the construction should have no detrimental effect on the aquatic ecosystem of BGAD. In accordance with Section 401 of the Clean Water Act, a Water Quality Certification will be obtained for this activity from the Kentucky Department for Environmental Protection,

Division of Water. Any mitigation measures required by the water quality certification are likely to include siltation fencing or other mechanical erosion control measures that would eliminate runoff at points where surface disturbance could otherwise affect aquatic habitats. Implementation of best management practices for erosion control and spill response would cause impacts on aquatic habitats and fish species to be of little or no consequence. Any mitigation measures required by the certification will keep off-site impacts to a minimal and insignificant level.

4.3 Cultural Resources As mentioned in the previous paragraph, the proposed borrow area has been previously disturbed. This area, due east of the proposed chemical demilitarization facility, was surveyed as part of a 450 acre planning level phase I archaeological investigation. A report detailing the findings of this survey was submitted to the Kentucky State Historic Preservation Office and approval of this report is pending. The BGAD cultural resource manager will monitor the area throughout construction and remain on call in case of any inadvertent discovery of cultural materials.

As part of the NEPA process, the EA will be made available to the appropriate Federally recognized Native American tribal groups with current or ancestral ties to the BGAD area in order to solicit comments and information on the proposed action (Appendix E). All comments received will be considered.

4.4 Endangered Species. Louisville District ecologists, Van Shipley and Mike Turner, conducted field surveys during the week of June 6 and July 5, 2005, to evaluate potential impacts of the proposed borrow area on running buffalo clover. During the field survey, each biologist walked the entire length and breadth of the proposed borrow area. The two surveys found no running buffalo clover. The habitat characteristics of the area (full sun, previously borrowed) exhibit very low suitability for running buffalo clover when compared to other sites on BGAD. This EA is being provided to the U.S. Fish and Wildlife Service for their determination regarding impacts of the proposed borrow area to the endangered running buffalo clover.

To avoid potential adverse impacts to summer-roosting Indiana bats, any tree removal activities will be restricted to the period between October 15 and March 31. If winter tree removal is not possible, the project area will be surveyed prior to or during the Indiana bat summer roosting season to determine the presence or absence of the Indiana bat and the potential impacts.

The proposed project will have no adverse effect on bald eagles due to the fact that similar habitat is available in other areas of the installation.

4.5 Cumulative Effects Cumulative impacts result when incremental impacts combine with those of other ongoing or planned activities in the same geographical area to create a collectively significant impact.

The cumulative effects (air quality, water quality, noise, socioeconomic, etc) of the construction and operation of the facility, the access road and the associated utilities

have been adequately addressed in the FEIS. In addition, BGAD has completed Records of Environmental Consideration (REC) for Installation of Sewer Lines and Lift Stations, and Installation of Communication Lines for the Chemical Demilitarization Support. These RECs are maintained at BGAD and are available for review. The environmental impacts for these actions in the areas of air quality, water quality, noise, socioeconomic, etc are similar in nature to the impacts addressed in the FEIS. The finding from the FEIS and the RECs is that there was no significant impact from these projects. Therefore, discussion of cumulative effects for the purpose of this EA is limited to impacts to any cultural or environmental resources affected by the physical location of the 22 acres borrow area.

Extensive surveys were conducted to locate cultural resources and endangered species, primarily running buffalo clover, in order to eliminate any possible adverse impacts. The cultural and biological surveys identified no adverse effects to cultural resources or endangered species for the borrow site location.

In summary, it has been determined that there will be no additional identifiable cumulative effects resulting from the proposed action.

5.0 COMPLIANCE WITH OTHER ENVIRONMENTAL REQUIREMENTS

5.1 National Environmental Policy Act (NEPA). It is anticipated that a Finding of No Significant Impact (FONSI), based upon this EA, will fulfill the requirements of NEPA.

5.2 Clean Water Act Prior to construction start-up, a storm-water permit will be obtained from the Kentucky Division of Water. BGAD will insure that all conditions of this permit will be met. Additionally, any requirements of Section 404 (b)(1) of the Clean Water Act will be met. A Section 404(b)(1) Evaluation for the project was previously prepared and circulated with the access road EA.

5.3 Clean Air Act. Madison County, Kentucky and the surrounding area are considered as an attainment area as defined in the Clean Air Act. Construction of the proposed project will only have a minor and temporary effect on air quality, and no additional work is required with regard to the Clean Air Act.

5.4 Fish and Wildlife Coordination Act (FWCA). Letter dated September 2, 2003 initiated consultation with USFWS and a subsequent letter from USFWS was received, dated October 1, 2003 (Appendix D). **(Update with most recent letter from USFWS. Expected this week.)** Site development plans have incorporated the USFWS conditions. BGAD is committed to the protection of endangered species and their critical habitat.

5.5 Comprehensive Environmental Resource Compensation Liability Act (CERCLA) and Resources Conservation and Recovery Act (RCRA). These two acts pertain to hazardous, toxic and radioactive wastes (HTRW). A site inspection was

performed on the area considered for the proposed borrow area found no evidence that would indicate a reasonable probability of HTRW contamination on the project site.

5.6 Farmland Protection Policy Act (FPPA). The FPPA directs Federal agencies to identify and take into account the adverse effects to their programs on the preservation of farmlands. Mr. Bobby Elkins of the Madison County Conservation District verified that no prime farmland exists within the proposed project area. Therefore, no land designated as prime farmland will be affected by the proposed work.

5.7 Floodplain Management E.O. 11988. The objectives of Executive Order (EO) 11988 have been considered. The following determination has been made pertaining to Floodplain Management: The considered action does not conflict with applicable state and local standards concerning Floodplain protection. The considered action will have no affect on the floodplain.

5.8 Intergovernmental Review of Federal Programs (E.O. 12372). The EA is being distributed to Federal, State and local government agencies having jurisdictional responsibilities, or otherwise having an interest in the project.

6.0 COORDINATION

Throughout the preparation of this EA, consultation took place between the U.S. Army Corps of Engineers, the preparer, and the following agencies/individuals:

U.S. Fish and Wildlife Service
Kentucky State Historic Preservation Office
Alan Colwell, Blue Grass Army Depot
Joe Elliott, Blue Grass Army Depot
Ruth Flanders, Env. Law Team Leader, Aberdeen Proving Ground, MD
Jon Ware, Env. Team Leader, Aberdeen Proving Grond, MD
Nathan White, Blue Grass Army Depot

This EA will be provided, for comments, to pertinent agencies, public officials, and interested individuals.

7.0 REFERENCES

Blue Grass Army Depot, 2004. *Record of Environmental Consideration, Installation of Sewer Lines and Lift Stations, Blue Grass Army Depot, Richmond, Kentucky 40475*. Environmental Office

Blue Grass Army Depot, 2002. *Record of Environmental Consideration, Installation of Communication Lines for Chemical Demil Support, Blue Grass Army Depot, Richmond, Kentucky 40475*. Environmental Office

Department of the Army, 2002. *Destruction of Chemical Munitions at Blue Grass Army Depot, Kentucky, Draft Environmental Impact Statement*. Department of the Army. Program Manager for Chemical Demilitarization.

Blue Grass Army Depot, 2004. *Environmental Assessment for Siting of the Blue Grass Chemical Agent-Destruction Pilot Plant and Associated Access Road, Parking Areas and Utilities at the Blue Grass Army Depot*. Richmond, Kentucky 40475. Environmental Office.

Cultural Resource Analysts. March, 2005. *An Archaeological Survey of Proposed Timber Management Areas at the Blue Grass Army Depot, Madison County, Kentucky*. By Alexandra B. Bybee, RPA With contributions from D. Randall Cooper, Jonathan P. Kerr, RPA and Lori O'Connor. Prepared for Mr. Alan R. Colwell, Natural Resources Specialist, Blue Grass Army Depot by Cultural Resource Analysts, 151 Walton Avenue, Lexington, KY 40508.

APPENDIX A
SITE LOCATION

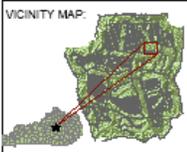


BGCAPP Borrow Area



Legend

- Buildings
- Borrow_Area
- Road
- Rail Roads



	Scale: 0 100 200 400 feet	Coordinate System: KY State Plane South, FIPS 1602	Units: Feet	Date: December 06, 2005
	Horizontal Datum: NAD 83	Path: P:\GIS\Chet\HProj\GIS\Chet\Borrow\Borrow Area.mxd	Created By: JCH	

APPENDIX B

FISH AND WILDLIFE COORDINATION LETTERS



United States Department of the Interior

FISH AND WILDLIFE SERVICE

3761 GEORGETOWN ROAD

FRANKFORT, KY 40601

October 1, 2003

Mr. Mike Turner
U.S. Army Corps of Engineers
P.O. Box 59
Louisville, Kentucky 40201-0059

Subject: FWS #04-0028; Proposed construction of two parking areas and a road at the Bluegrass Army Depot, Madison County, Kentucky

Dear Mr. Turner:

Thank you for your correspondence of September 2, 2003, regarding the proposed construction of two parking areas and a road at the Bluegrass Army Depot in Madison County, Kentucky, as shown on the attachments to your correspondence. The proposed project is a late construction addition to the Army Chemical Stockpile Disposal Program Final Environmental Impact Statement for which an Environmental Assessment is being prepared. Fish and Wildlife Service (Service) personnel have reviewed the information, and we offer the following comments.

Information available to the Service indicates that wetlands exist in the vicinity of the proposed project. Attached is a copy of a portion of the Moberly quadrangle with the referenced wetlands highlighted. This information is provided for your convenience. We suggest that you thoroughly investigate the proposed project corridor to determine if any jurisdictional wetlands will be impacted by the proposed road and parking areas. At our recent site visit, several areas that may be wetlands were observed within the proposed project corridor. If these areas are wetlands and will be impacted by the proposed project, the Louisville District should prepare a wetland mitigation plan that would identify how these impacts would be mitigated.

Similarly, we note that the proposed project will cross several perennial, intermittent, and ephemeral streams. We recommend that plans for the proposed project include stringent erosion and sediment control measures and that these streams be bridged where possible. We also recommend that the design of each crossing be carefully considered and each crossing designed to pass flood flows without causing degradation to the streams. Crossings should also be designed to allow aquatic organisms to freely pass upstream and downstream of the crossing (e.g., the bottoms of culverts should be constructed at the grade of the stream and should be open bottom to maintain habitat connectivity).

In addition, we would like to see over-sized crossings (i.e., > 100-year flood event) at all stream crossings. This would help to ensure that riparian areas and stream banks are not degraded from scouring and that occupied and potential habitat for the federally listed running buffalo clover

and Indiana bats is maintained. We would expect the Louisville District to pay particular attention to road crossings that occur in watersheds where running buffalo clover populations are known. As we discussed at one site, an undersized culvert near the southern terminus of the project has the potential to cause bank destabilization that could result in the loss of at least one patch of running buffalo clover.

Two federally listed species may occur in the vicinity of the proposed project area. These species are listed below:

<u>Common Name</u>	<u>Scientific Name</u>	<u>Federal Status</u>
Indiana bat	<i>Myotis sodalis</i>	endangered
running buffalo clover	<i>Trifolium stoloniferum</i>	endangered

Summer roost habitat for the endangered Indiana bat (*Myotis sodalis*), may exist within the proposed project site. Based on this information, we believe that forested areas in the vicinity of and on the project area may provide potentially suitable summer roosting and foraging habitat for the Indiana bat. Our belief that potentially suitable habitat may be present, and possibly occupied by this species, is based on the information provided in your correspondence, the fact that the project site and surrounding areas contain forested habitats that are within the natural ranges of these species, and our knowledge of the life history characteristics of these species.

The Indiana bat utilizes a wide array of forested habitats, including riparian forests, bottomlands, and uplands for both summer foraging and roosting habitat. Indiana bats typically roost under exfoliating bark, in cavities of dead and live trees, and in snags (i.e., dead trees or dead portions of live trees). Trees in excess of 16 inches diameter at breast height (DBH) are considered optimal for maternity colony roosts, but trees in excess of 9 inches DBH appear to provide suitable maternity roosting habitat. Male Indiana bats have been observed roosting in trees as small as 3 inches DBH.

Prior to hibernation, Indiana bats utilize the forest habitat around the hibernacula, where they feed and roost until temperatures drop to a point that forces them into hibernation. This "swarming" period lasts, depending on weather conditions in a particular year, from about September 15 to about November 15. This is a critical time for Indiana bats, since they are acquiring additional fat reserves and mating prior to hibernation. Research has shown that bats exhibiting this "swarming" behavior will range up to five miles from chosen hibernacula during this time. For hibernation, the Indiana bat prefers limestone caves, sandstone rockshelters, and abandoned underground mines with stable temperatures of 39 to 46 degrees F and humidity above 74 percent but below saturation.

Because we have concerns relating to this species on this project, we recommend that you only remove trees within the project area between October 15 and March 31 in order to avoid impacting summer roosting Indiana bats. However, if any Indiana bat hibernacula are identified on the project area or are known to occur within 10 miles of the project area, we recommend that the Louisville District only remove trees between November 15 and March 31 in order to avoid impacting Indiana bat "swarming" behavior.

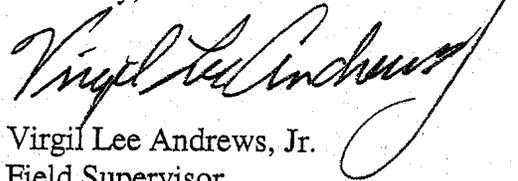
If this recommendation cannot be incorporated as a project condition, the Louisville District should survey the project area prior to or during the Indiana bat summer roosting season in which the proposed construction will occur. This will help us determine the presence or absence of the species within the project area in an effort to determine if potential impacts to these species are likely. A qualified biologist who holds the appropriate collection permits for these species must undertake such surveys, and we would appreciate the opportunity to approve the biologist's survey plan prior to the survey being undertaken and to review all survey results, both positive and negative. If any Indiana bats are identified, we request written notification of such occurrence(s) and further coordination and consultation with the Louisville District.

Several populations of running buffalo clover (*Trifolium stoloniferum*), a federally listed endangered plant, occur within the boundaries of the Bluegrass Army Depot, and within the project area. Running buffalo clover is known to occur in habitats ranging from stream banks and low mesic (moderately moist) forests to lawns and cemeteries. Although most populations of this species on the Bluegrass Army Depot are known, the Louisville District should survey the final project corridor during the flowering season for this species in order to determine the presence or absence of this species. This survey should be conducted in the year prior to or during which the proposed construction of the project will occur. A qualified biologist, and preferably one who holds the appropriate collection permits for this species, must undertake such surveys, and we would appreciate the opportunity to approve the biologist's survey plan prior to the survey being undertaken and to review all survey results, both positive and negative. If this species is identified, we request written notification of such occurrence(s) and further coordination and consultation with you.

As noted above, a patch of running buffalo clover exists just downstream of a proposed stream crossing. We request that the design of the crossing be adequate to support flooding events and prevent any bank scouring. This would avoid impacts to the species from bank destabilization and the loss of any potential habitat which may exist downstream of the crossing. Because of the potential impacts to running buffalo clover and the Indiana bat, we recommend that the Louisville District initiate informal consultation with this office under section 7 of the Endangered Species Act. The use of existing road corridors could preclude the need for additional consultation and reduce impacts to streams and wetlands.

Thank you for the opportunity to comment on this action. If you have any questions on the information we provided, please contact Mindi Brady at (502) 695-0468 (ext. 229).

Sincerely,



Virgil Lee Andrews, Jr.
Field Supervisor



United States Department of the Interior

FISH AND WILDLIFE SERVICE

3761 GEORGETOWN ROAD

FRANKFORT, KY 40601

July 26, 2004

Mr. Michael Turner
Supervisory Ecologist
Economics and Environmental
Protection Section
U.S. Army Corps of Engineers
P.O. Box 59
Louisville, Kentucky 40201-0059

Attention: Alan R. Colwell, Natural Resources, Building S-14

Subject: FWS #04-1391; Sewer Line Installation, Blue Grass Army Depot, Madison County, Kentucky

Dear Mr. Turner:

Thank you for your correspondence of June 21, 2004, regarding the proposed construction of 6.2 miles of sewer line on Blue Grass Army Depot (BGAD), Madison County, Kentucky. Based on your correspondence, 90 percent of the proposed sewer line installation will occur along previously disturbed and maintained road and power-line right-of-way areas. The remaining 10 percent (0.7 mile) of sewer lines will cross an open field/pasture. The sewer line will be used for the collection and transfer of human-generated sanitary wastewater from a proposed chemical demilitarization facility on BGAD.

We have reviewed the information that was submitted for the proposed project. The following constitute the comments of the U. S. Department of the Interior provided in accordance with the provisions of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 *et seq.*) and the Endangered Species Act.

Threatened and Endangered Species

Two federally listed species may occur within the proposed project area and are listed below:

<u>Common Name</u>	<u>Scientific Name</u>	<u>Federal Status</u>
Indiana bat	<i>Myotis sodalis</i>	Endangered
Running buffalo clover	<i>Trifolium stoloniferum</i>	Endangered

Indiana Bat

Summer roost habitat for the endangered Indiana bat (*Myotis sodalis*) may exist within the proposed project area. Based on this information, we believe that forested areas in the project area may provide potentially suitable summer roosting and foraging habitat for the Indiana bat. Our belief that potentially suitable habitat may be present, and possibly occupied by this species,

is based on the information provided in your correspondence, the fact that the project site and surrounding areas contain forested habitats within the natural range of the species, our knowledge of the life history of the species, and our knowledge of the project area.

The Indiana bat utilizes a wide array of forested habitats, including riparian forests, bottomlands, and uplands for both summer foraging and roosting habitat. Indiana bats typically roost under exfoliating bark, in cavities of dead and live trees, and in snags (i.e., dead trees or dead portions of live trees). Trees in excess of 16 inches DBH are considered optimal for maternity colony roosts, but trees in excess of 9 inches DBH appear to provide suitable maternity roosting habitat. Male Indiana bats have been observed roosting in trees as small as 3 inches DBH.

Prior to hibernation, Indiana bats utilize the forest habitat around the hibernacula, where they feed and roost until temperatures drop to a point that forces them into hibernation. This "swarming" period lasts, depending on weather conditions in a particular year, from about September 15 to about November 15. This is a critical time for Indiana bats, since they are acquiring additional fat reserves and mating prior to hibernation. Research has shown that bats exhibiting this "swarming" behavior will range up to five miles from chosen hibernacula during this time. For hibernation, the Indiana bat prefers limestone caves, sandstone rockshelters, and abandoned underground mines with stable temperatures of 39 to 46 degrees F and humidity above 74 percent but below saturation.

If the proposed sewer line installation requires the removal of trees (Routes 3 and 120), we request that these activities be restricted to the period between October 15 and March 31 in order to avoid potential impacts to summer-roosting Indiana bats. If tree removal is restricted to this time period, then the Service believes that the proposed project is "not likely to adversely affect" the Indiana bat. In view of this, we believe that the requirements of section 7 of the ESA have been fulfilled for this action with respect to the Indiana bat. Your obligations under section 7 must be reconsidered, however, if (1) new information reveals that the proposed action may affect listed species in a manner or to an extent not previously considered, (2) the proposed action is subsequently modified to include activities which were not considered during this consultation, or (3) new species are listed or critical habitat designated that might be affected by the proposed action.

If winter tree removal cannot be incorporated as a project condition, the project area should be surveyed prior to or during the Indiana bat summer roosting season in which the proposed construction will occur. This will help us determine the presence or absence of the species within the project area in an effort to determine if potential impacts to these species are likely. A qualified biologist who holds the appropriate collection permits for these species must undertake such surveys, and we would appreciate the opportunity to approve the biologist's survey plan prior to the survey being undertaken and to review all survey results, both positive and negative. If any Indiana bats are identified, we request written notification of such occurrence(s) and further coordination with your office.

Running Buffalo Clover

Numerous populations of running buffalo clover (*Trifolium stoloniferum*), a federally endangered plant, occur within boundaries of the BGAD. Throughout its range, the species

occurs in habitats ranging from stream banks and low mesic (moderately moist) forests to lawns and cemeteries. The BGAD populations represent one of the largest known concentrations of the species and are a critical component of the species' recovery.

As documented in the biological assessment report completed by your agency, no populations of running buffalo clover were discovered during a field survey of the proposed project area, and the closest known population of the species occurs approximately 500 feet from the project boundary. The biological assessment concluded with a "no effect" finding for running buffalo clover. Based on the widespread occurrence of the species on the BGAD, the close proximity of the proposed project area to known running buffalo clover sites, and the importance of the BGAD populations to recovery efforts for the species, the Service cannot concur with the "no effect" finding reported in the biological assessment. The Service believes that a finding of "not likely to adversely affect" is more appropriate. If your agency concurs with this finding, no additional response is necessary, and we believe that the requirements of section 7 of the ESA have been fulfilled for this action with respect to running buffalo clover. Your obligations under section 7 must be reconsidered, however, if (1) new information reveals that the proposed action may affect listed species in a manner or to an extent not previously considered, (2) the proposed action is subsequently modified to include activities which were not considered during this consultation, or (3) new species are listed or critical habitat designated that might be affected by the proposed action.

Fish and Wildlife Resources

We note that seven unnamed tributaries in the Muddy Creek watershed will be crossed by the proposed sewer lines. In general, we are concerned that construction activities may frequently accelerate erosion and sedimentation in these systems, resulting in adverse effects to the aquatic environment and adjacent riparian areas that may support populations of running buffalo clover. The use of heavy equipment to move earth and existing vegetation disrupts natural drainage patterns and exposes large areas of disturbed soil to erosion. Excessive sedimentation can clog stream channels and contribute to increased flooding. It can also increase water temperatures and cause oxygen demands that can damage or destroy fish and invertebrate populations. Deposition of sediment on the channel bottom also degrades aquatic habitat by filling in substrate cavities, burying demersal eggs, and smothering bottom organisms. In addition, turbidity, as induced by accelerated erosion and sedimentation, results in further damage to aquatic systems. Increased particulate matter suspended in the water column may drive fish from the polluted area by irritating the gills, concealing forage, and/or destroying vegetation that may be essential for spawning and cover habitat for particular species. Turbidity also degrades water quality by reducing light penetration, pH and oxygen levels, and the buffering capacity of the water. Degraded water quality may continue downstream from where erosion occurs.

Prevention of excessive sedimentation can occur only through application of best management practices (BMPs) during daily project activities. Rigid application of erosion control standards can preclude most sedimentation problems. In some cases, however, additional measures will need to be taken by on-site inspectors that are trained in erosion and sediment control methods. We request that you consider having an inspector on-site during all harvest activities to ensure that work areas are stabilized on a daily or regular basis.

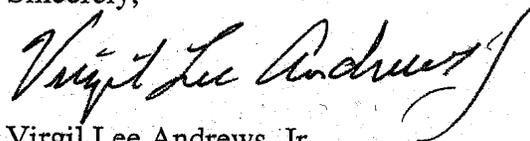
The following BMPs are specifically recommended for the avoidance and/or minimization of impacts to stream corridors:

1. Erosion and sediment control measures, including but not limited to the following, should be implemented on all vegetatively denuded areas:
 - a. Preventive planning: A well-developed erosion control plan which entails a preliminary investigation, detailed contract plans and specifications, and final erosion and sediment control contingency measures should be formulated and made a part of the contract.
 - b. Silt barriers: Appropriate use should be made of silt fences, hay bale and brush barriers, and silt basins in areas susceptible to erosion.
 - c. Temporary seeding and mulching: All disturbed areas should be seeded as soon as possible.
 - d. Limitation of in-stream activities: In-stream activities, including temporary fills and equipment crossings, should be limited to those absolutely necessary. A 100-foot no-disturbance buffer should be established along all stream corridors.
2. Existing transportation corridors should be used in lieu of temporary crossings where possible.

Efforts should be made to minimize any negative effects on wetlands and aquatic resources in the Muddy Creek watershed. The Kentucky Department of Fish and Wildlife Resources, The Nature Conservancy, and the Service are currently implementing a riparian and prairie habitat restoration initiative in the Muddy Creek watershed and much of this effort is centered around the recovery of running buffalo clover on non-federal lands. Since a portion of Muddy Creek flows through the BGAD, any positive efforts to help control on- and off-site erosion and sedimentation would be helpful and greatly appreciated. In particular, we recommend that appropriate best management practices be used during all phases of the timber harvest.

We appreciate the opportunity to provide input on the proposed project. If you have any questions, please contact Dr. Michael Floyd of my staff at (502) 695-0468.

Sincerely,



Virgil Lee Andrews, Jr.
Field Supervisor

APPENDIX C

**MAILING LIST
NATIVE AMERICAN TRIBAL GROUPS
AGENCIES, PUBLIC OFFICIALS,
INTERESTED INDIVIDUALS, AND MEDIA**

Mailing List
Native American Tribal Groups

Mr. Charles Enyart
Chief Eastern Shawnee Tribe of Oklahoma
P.O. Box 350
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Mr. Chad Smith
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Tahlequah, OK 74465

Mr. Leon Jones
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P.O. Box 455
Cherokee, NC 28719

Mr. Floyd E. Leonard
Chief Miami Tribe of Oklahoma
P.O. Box 1326
Miami, OK 74355

Mr. Bill Anoatubby
Governor Chickasaw Nation
Arlington at Mississippi
P.O. Box 1548
Ada, OK 74821

Mr. Dee Ketchum
Chief, Delaware Tribe
200 NW Virginia
Bartlesville, OK 74003

Mr. John P. Froman
Chief Peoria Indian Tribe of Oklahoma
P.O. Box 1527
Miami, OK 74355

Mr. Ron Sparkman
Chairman Shawnee Tribe
P.O. Box 189
Miami, OK 74355

Mr. Bruce Gonzales
President Delaware Nation
P.O. Box 825
Anadarko, OK 73005

Mr. Gregory Pyle
Chief Choctaw Nation of Oklahoma
P.O. Drawer 1210, 16th and Locust
Street
Durant, OK 74702

Mr. Dallas Proctor
Chief United Keetoowah Band of
Cherokee Indians
P.O. Box 746
Tahlequah, OK 74464

Mr. Lee Edwards
Governor Absentee
Shawnee Tribe of Oklahoma
2025 S. Gordon Cooper Drive
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Mailing List
Agencies, Public Officials and Interested Individuals

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Federal Emergency Management Agency
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Washington, DC 20472

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Executive Director
Advisory Council on Historic Preservation
Old Post Office Bldg.
1100 Pennsylvania Ave NW
Washington, DC 2004

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U.S. Fish and Wildlife Service
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Office of Environmental Policy and
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Regional Forester
Southern Region Regional Office
U.S. Department of Agriculture
1720 Peachtree Road, Suite 760S
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Administrator
National Oceanic & Atmospheric Admn
Department of Commerce
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US EPA Region IV
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Director of Field Services
Southern Resource Center
Department of Transportation
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Regional Director
National Park Service
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1924 Building
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Mr. Kenneth Holt
Centers for Disease Control &
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Mr. Jeff Pratt
Director, Kentucky Division of Water
14 Reilly Road
Frankfort, KY 40601

Mr. David L. Morgan
State Historic Preservation Officer
Kentucky Heritage Council
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United States Senate
601 W. Broadway, Rm 630
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Honorable Steve Connelly
Mayor of Berea
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