

**Implementation of
Base Realignment and Closure Recommendations
and Other Army Transformation Related Actions at
Fort Knox, Kentucky**

Environmental Assessment



Prepared for:
**U.S. Army Corps of Engineers
Mobile District**

By
Parsons
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PUBLIC NOTICE OF AVAILABILITY

Implementation of Base Realignment and Closure Recommendations and Other Army Transformation Actions at Fort Knox, Kentucky Environmental Assessment and Draft Finding of No Significant Impact

Pursuant to the Council on Environmental Quality regulations for implementing the procedural provisions of the National Environmental Policy Act (40 CFR 1500), and 32 CFR 651 Environmental Analysis of Army Actions, Fort Knox, Kentucky conducted an Environmental Assessment (EA) of the potential environmental and socioeconomic effects associated with implementing the Defense Base Closure and Realignment (BRAC) Commission recommendations for actions to occur at Fort Knox.

The BRAC Commission directed action at Fort Knox is:

- Realign Fort Knox by relocating the Armor Center and School to Fort Benning, Georgia to accommodate the activation of an Infantry Brigade Combat Team (BCT) at Fort Knox and engineer, military police, and combat service support units from Europe and Korea to Fort Knox.
- Realign Army Human Resources Command leased facilities in Alexandria, Virginia, Indianapolis, Indiana, and St. Louis, Missouri. Relocate and consolidate all functions at Fort Knox.
- Relocate U.S. Army Accessions Command and U.S. Army Cadet Command from Fort Monroe, Virginia, to Fort Knox
- Realign Fort McCoy, Wisconsin, by relocating the 84th Army Reserve Regional Training Center to Fort Knox.
- Close Louisville United States Army Reserve Center and relocate the 100th Division Institutional Training (IT) headquarters to Fort Knox.
- Realign the Park Center IV Building, a leased installation in Falls Church, Virginia, by relocating the Army Center for Substance Abuse to Fort Knox.
- Realign Lackland Air Force Base, Texas, Fort Knox, and Fort Sill, Oklahoma, by relocating the correctional function of each to Fort Leavenworth, Kansas, and consolidating them with the correctional function already at Fort Leavenworth to form a single Level II Midwest Joint Regional Correctional Facility.
- Realign Army Research Institute, Fort Knox, by relocating Human Systems Research to Aberdeen Proving Ground, Maryland

Discretionary BRAC actions at Fort Knox are:

- Relocate the Army Audit Agency (AAA) from St. Louis to Fort Knox.
- Relocate Test and Evaluation Command (TECO) from Fort Knox to Fort Benning.
- Relocate the Camp Memorial Blood Center (blood bank) from Fort Knox to Fort Benning.

Army Transformation actions at Fort Knox are:

- Establish an Infantry Brigade Combat Team (IBCT) at Fort Knox.
- Relocate Engineer, Military Police and CSS Units from Europe and Korea to Fort Knox.
- Establish the 3rd Expeditionary Sustainment Command (ESC) at Fort Knox.
- Activate the 11th Theater Aviation Command (TAC) at Fort Knox.
- Activate the Detachment 1 of the 10th Air Support Operations Squadron (ASOS) at Fort Knox.
- Relocate the Ohio Valley District Veterinary Command from Carlisle Barracks, Pennsylvania, to Fort Knox.
- Relocate the Unit of Action Capabilities Development Activity (UACDA) and Unit of Action Experimentation Element (UAEE) from Fort Knox to Fort Bliss, Texas.

Public Availability: The EA and draft FNSI will undergo a 30-day public comment period after publication of this Notice of Availability. This is in accordance with requirements specified in 32 CFR Part 651.14(2) Environmental Analysis of Army Actions. Individuals who have questions about this action, or who want to comment on the draft FNSI or request a copy of the EA, should contact Linda G. Pollock or Michael Hasty, Environmental Management Division, Directorate of Public Works, ATTN: IMSE-KNX-PWE (BLDG 1110-B); FORT KNOX, KY 40121-5000. Phone: 502-624-3629, Email: Linda.Pollock@knox.army.mil.

The EA and the Draft FNSI are available for review at the following libraries:

- 1.) Barr Library, 400 Quartermaster Street, Fort Knox; and
- 2.) Hardin County Public Library, 100 Jim Owen Drive, Elizabethtown, Kentucky; and
- 3.) Hardin County Public Library, 800 South Logsdon Parkway, Radcliff, Kentucky; and
- 4.) Meade County Public Library, 400 Library Place, Brandenburg, Kentucky; and
- 5.) Ridgway Memorial Library, 127 North Walnut Street, Sheperdsville, Kentucky; and
- 6.) Dorothea Stottman Library, 1251 Hillview Boulevard, Louisville, Kentucky; and
- 7.) Lebanon Junction Branch Library, 276 East Main Street, Lebanon Junction, Kentucky; and
- 8.) Mount Washington Branch Library, 113 Snapp Street, Mount Washington, Kentucky.

Comments on the EA and Draft FNSI should be submitted no later than 30 days from the date of this publication.

FINDING OF NO SIGNIFICANT IMPACT
Implementation of Base Closure and Realignment Recommendations
and Other Army Transformation Related Actions
at
Fort Knox, Kentucky

This Finding of No Significant Impact (FNSI) has been developed in accordance with the National Environmental Policy Act (NEPA) of 1969 and implementing regulations issued by the President's Council on Environmental Quality (CEQ); and 32 CFR Part 651. The purpose of this FNSI is to inform the decision maker and the public of the likely environmental consequences of the proposed action and alternatives.

This FNSI addresses actions that are fully documented in the *Implementation of Base Closure and Realignment Recommendations and Other Army Transformation Related Actions at Fort Knox, Kentucky, Environmental Assessment* (August 2006). The Environmental Assessment (EA) is hereby incorporated by reference in this FNSI. As noted in the EA, the action will not significantly affect the environment; consequently, an Environmental Impact Statement is not required. Therefore, information in this FNSI will be limited to an overview of key elements of the EA, and conclusions regarding the type and degree of environmental impacts that may occur as a result of the proposed action.

Proposed Action: The 2005 Defense Base Closure and Realignment (commonly referred to as BRAC) Commission and associated legislation directed that the following actions take place at Fort Knox, Kentucky:

- Realign Fort Knox by relocating the Armor Center and School to Fort Benning, Georgia to accommodate the activation of an Infantry Brigade Combat Team (BCT) at Fort Knox and engineer, military police, and combat service support units from Europe and Korea to Fort Knox.
- Realign Army Human Resources Command leased facilities in Alexandria, Virginia, Indianapolis, Indiana, and St. Louis, Missouri. Relocate and consolidate all functions at Fort Knox.
- Relocate U.S. Army Accessions Command and U.S. Army Cadet Command from Fort Monroe, Virginia, to Fort Knox
- Realign Fort McCoy, Wisconsin, by relocating the 84th Army Reserve Regional Training Center to Fort Knox.
- Close Louisville United States Army Reserve Center and relocate the 100th Division Institutional Training (IT) headquarters to Fort Knox.
- Realign the Park Center IV Building, a leased installation in Falls Church, Virginia, by relocating the Army Center for Substance Abuse to Fort Knox.
- Realign Lackland Air Force Base, Texas, Fort Knox, and Fort Sill, Oklahoma, by relocating the correctional function of each to Fort Leavenworth, Kansas,

and consolidating them with the correctional function already at Fort Leavenworth to form a single Level II Midwest Joint Regional Correctional Facility.

- Realign Army Research Institute, Fort Knox, by relocating Human Systems Research to Aberdeen Proving Ground, Maryland.

Discretionary BRAC actions are:

- Relocate the Army Audit Agency (AAA) from St. Louis to Fort Knox.
- Relocate Test and Evaluation Command (TECO) from Fort Knox to Fort Benning.
- Relocate the Camp Memorial Blood Center (blood bank) from Fort Knox to Fort Benning.

In addition to the BRAC actions, Army Transformation actions that are sufficiently well defined for analysis at this time are forecast to be implemented at Fort Knox. These Army Transformation actions are:

- Establish an Infantry Brigade Combat Team (IBCT) at Fort Knox.
- Relocate Engineer, Military Police and CSS Units from Europe and Korea to Fort Knox.
- Establish the 3rd Expeditionary Sustainment Command (ESC) at Fort Knox.
- Activate the 11th Theater Aviation Command (TAC) at Fort Knox.
- Activate the Detachment 1 of the 10th Air Support Operations Squadron (ASOS) at Fort Knox.
- Relocate the Ohio Valley District Veterinary Command from Carlisle Barracks, Pennsylvania, to Fort Knox.
- Relocate the Unit of Action Capabilities Development Activity (UACDA) and Unit of Action Experimentation Element (UAEE) from Fort Knox to Fort Bliss, Texas.

Alternatives Analyzed: Implementation of the proposed action would require construction of new facilities and expansion of an existing facility to accommodate the increase in personnel assigned to Fort Knox. Alternatives to implement the proposed action were developed and are analyzed in the EA. The alternatives are:

No Action Alternative

Under the No Action Alternative, Fort Knox would not implement the Proposed Action. Organizations presently assigned to Fort Knox would continue to train at and operate from the post. Fort Knox would use its current inventory of facilities, though routine replacement or renovation actions could occur, through normal military maintenance and construction procedures, as circumstances independently warrant.

For realignment actions directed by the BRAC Commission, it will be noted that for the No Action Alternative, maintenance of current conditions is not feasible, since the BRAC actions are required to be implemented by the BRAC legislation.

Alternative 1 – Renovation with Minimal New Construction Activities in the Cantonment and Training Facilities

Under Alternative 1, Fort Knox would accomplish the proposed action by implementing the projects identified in Table ES.2 of the Executive Summary of the EA. Alternative 1 would focus on renovation of existing facilities in the cantonment area with minimal new construction.

Alternative 2 – New Construction with Minimal Renovation Activities in the Cantonment, and Training Facilities

Under Alternative 2, Fort Knox would accomplish the proposed action by implementing the projects identified in Table ES.2 of the Executive Summary of the EA. Alternative 2 would focus on the construction of new facilities in the cantonment area with minimal renovation of existing facilities.

Alternative 3 - Combination New Construction and Renovation Activities in the Cantonment, and Training Facilities (Preferred Alternative)

Under Alternative 3, Fort Knox would accomplish the proposed action by implementing the projects identified in Table ES.2 of the Executive Summary of the EA. Alternative 3 would focus on implementing the proposed action through a combination of new construction and renovation of existing facilities in the cantonment area.

Environmental Impacts of the Proposed Action: The EA analyzed 12 resource areas for each alternative. The analyses in the EA concluded that there would be no significant adverse or significant beneficial environmental impacts resulting from the proposed action or alternatives.

- **Land Use.** Direct impacts to land use would be associated with the construction of major new facilities, and expansion or adaptive reuse of existing facilities. The proposed project areas are located within the cantonment and training land use designations and therefore would have negligible adverse impacts on land use in the areas. There would be no cumulative impacts to land use under any of the alternatives.
- **Aesthetics and Visual Resources.** Under the proposed alternatives there would be minor adverse impacts to the aesthetics of the surrounding areas. Due to ground disturbance and tree clearing, construction activities would have short-term adverse impacts to aesthetics and visual resources. However, there would be long-term beneficial impacts due to the removal of old and deteriorating buildings. For similar reasons renovation would have fewer short-term adverse impacts and fewer long-term beneficial impacts. There would be negligible cumulative impacts to aesthetics under any of the alternatives.

- **Air Quality.** Air quality would have negligible temporary adverse impacts due to construction activities and permanent minor impacts due to increased Privately Owned Vehicle (POV) and Government Owned Vehicle (GOV) traffic under all three alternatives. A permanent moderate beneficial impact would occur under Alternative 2 due to the application of new energy use systems incorporated as part of new construction activities. There would be a slight increase in the potential for short-term adverse cumulative impacts to air quality.
- **Noise.** Temporary negligible adverse impacts from noise would result under all three alternatives. During construction there would be short-term, localized noise impacts associated with the operation of construction equipment and machinery, power tools, and the delivery of construction materials. Cumulative impacts to noise are not anticipated under the three alternatives. However, for areas that are already at the upper limits of a Zone I or Zone II noise zone area, any additional noise resulting from changes associated with this alternative would cause an adverse cumulative impact if it causes the noise zone to increase to the next level.
- **Topography and Soils.** No direct effects on topography are expected. Minor short-term adverse impacts on soils would occur under all three alternatives. Soils would be disturbed by construction activities such as grading, vegetation clearing, and excavating during construction of the new facilities. With implementation of any of the action alternatives and the anticipated development in the surrounding community there is the potential for cumulative adverse impacts to soils due to soil erosion, removal, and compaction through the implementation of construction projects.
- **Water Resources.** Temporary negligible adverse impacts on water resources would result under all three alternatives. Run-off from soil disturbance from construction projects and training activities on Fort Knox combined with soil disturbance from construction projects being implemented in the surrounding community may have cumulative adverse effects on downstream water resources.
- **Biological Resources.** Minor short-term adverse impacts would occur on biological resources with all three alternatives. Minor permanent beneficial impacts for the new construction range area would be under Alternative 2. No direct effects on wetlands or threatened and endangered species are expected. It is anticipated that negligible cumulative impacts would occur to biological resources due to on-post activities.
- **Cultural Resources.** No direct effects on cultural resources are expected. There would be no cumulative impacts to cultural resources under any of the alternatives.
- **Socioeconomics.** Direct short-term beneficial economic impacts would be realized by the regional and local economy during the construction phase of the alternatives. In addition, direct long-term beneficial economic impacts would be

realized from the increase in operations and personnel associated with the alternatives. No direct effects on environmental justice issues are expected under any of the alternatives. Beneficial cumulative impacts would be in the form of increased business volume, income, and employment associated with construction activities and increased on-post operations in combination with other reasonably foreseeable on-post actions and construction projects.

- **Transportation.** Negligible, minor, and moderate permanent adverse impacts would result under all three alternatives for transportation due to increased commuter traffic and related construction activities. Short-term minor cumulative adverse impacts to transportation are expected from traffic congestion due to construction equipment entering and leaving the construction sites combined with other reasonably foreseeable construction activities on the installation.
- **Utilities.** Under utilities a negligible beneficial impact for water treatment would occur under all three alternatives and a temporary minor adverse impact would be associated with solid waste activities. Implementation of construction projects would have a long-term cumulative beneficial impact on the installation when combined with updates to utilities for other reasonably foreseeable projects and off-installation utility improvements.
- **Hazardous and Toxic Substances.** A temporary minor adverse impact is expected from housecleaning activities associated with personnel transfers as buildings are emptied to accommodate the new personnel under Alternatives 1, 2 and 3. All three of these alternatives would also have a permanent negligible beneficial impact associated with improved hazardous waste handling procedures. When combined with the potential spills from other construction projects that may be occurring on the installation or in adjacent areas, short-term cumulative impacts from hazardous and toxic substances may occur.

Mitigation Measures: As discussed in the EA, no significant adverse or significant beneficial impacts have been identified or are anticipated as a result of implementing any of the proposed action alternatives or the No Action Alternative. Consequently, no mitigation measures are required to reduce impacts to non-significant levels as part of this EA.

Fort Knox will obtain necessary permits (e.g. Stream Construction Permit, Air Construction Permit), adhere to environmental regulations, and will utilize appropriate Best Management Practices (BMPs) to minimize adverse impacts to the environment (e.g. air quality – including asbestos remediation, fugitive emissions minimization and control, and unpermitted open burning - surface water, groundwater, solid waste, hazardous and toxic substances, natural resources, and cultural resources).

Conclusion: On the basis of the findings of the EA, conducted in accordance with the requirements of NEPA, the Council on Environmental Quality regulations, Army Regulations, and 32 CFR Part 651, and after careful review of the potential impacts, I conclude that implementation of any of the Proposed Action alternatives or the No Action Alternative, would not result in a significant impact on the quality of the human or

natural environment. However, I choose to implement Alternative 3 because it offers the greatest flexibility in implementation and the best combination of renovation and construction activities to meet mission requirements. Issuance of a Finding of No Significant Impact is warranted, and preparation of an Environmental Impact Statement is not required.

Public Availability: The EA and draft FNSI underwent a 30-day public comment period after publication of the Notice of Availability. This was in accordance with requirements specified in 32 CFR Part 651.14(2) Environmental Analysis of Army Actions. Individuals who had questions about this action, or who wanted to comment on the draft FNSI or request a copy of the EA, were able to contact Linda G. Pollock or Michael Hasty, Environmental Management Division, Directorate of Public Works, ATTN: IMSE-KNX-PWE (BLDG 1110-B); FORT KNOX, KY 40121-5000. Phone: 502-624-3629, Email: Linda.Pollock@knox.army.mil.



Date 24 OCTOBER 2006

MARK D. NEEDHAM
Colonel, AR
Garrison Commander
Fort Knox, Kentucky

ENVIRONMENTAL ASSESSMENT

IMPLEMENTATION OF BASE REALIGNMENT AND CLOSURE RECOMMENDATIONS AND OTHER ARMY TRANSFORMATION ACTIONS AT FORT KNOX, KENTUCKY

Prepared by:

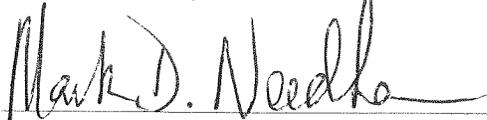
U.S. ARMY CORPS OF ENGINEERS
MOBILE DISTRICT



PETER F. TAYLOR, JR.
Colonel, Engineer
Commanding

Approved by:

FORT KNOX, KENTUCKY



MARK D. NEEDHAM
Colonel, AR
Garrison Commander

EXECUTIVE SUMMARY

ES.1 INTRODUCTION

On September 8, 2005, the Defense Base Closure and Realignment (commonly referred to as BRAC) Commission recommended that certain realignment actions occur at Fort Knox, Kentucky. These recommendations were approved by the President on September 15, 2005, and forwarded to Congress. Congress did not alter any of the BRAC Commission's recommendations, and on November 9, 2005, the recommendations became law. The BRAC Commission's recommendations must now be implemented as provided for in the Defense Base Closure and Realignment Act of 1990 (Public Law 101510), as amended.

This Environmental Assessment (EA) has been developed in accordance with the National Environmental Policy Act (NEPA) of 1969 and implementing regulations issued by the President's Council on Environmental Quality (CEQ) and the Army.¹ Its purpose is to inform decision makers and the public of the likely environmental consequences of the proposed action and alternatives.

ES.2 PROPOSED ACTION

The BRAC Commission directed actions at Fort Knox, Kentucky are:

- Realign Fort Knox by relocating the Armor Center and School to Fort Benning, Georgia, to accommodate the activation of an Infantry Brigade Combat Team (BCT) at Fort Knox and engineer, military police, and combat service support units from Europe and Korea to Fort Knox.
- Realign Army Human Resources Command leased facilities in Alexandria, Virginia, Indianapolis, Indiana, and St. Louis, Missouri. Relocate and consolidate all functions at Fort Knox.
- Relocate U.S. Army Accessions Command and U.S. Army Cadet Command from Fort Monroe, Virginia, to Fort Knox
- Realign Fort McCoy, Wisconsin, by relocating the 84th Army Reserve Regional Training Center to Fort Knox.
- Close Louisville United States Army Reserve Center and relocate the 100th Division Institutional Training (IT) headquarters to Fort Knox.
- Realign the Park Center IV Building, a leased installation in Falls Church, Virginia, by relocating the Army Center for Substance Abuse to Fort Knox.

¹ CEQ *Regulations for Implementing the Procedural Provisions of NEPA*, 40 *Code of Federal Regulations* (CFR) Parts 1500–1508, and *Environmental Analysis of Army Actions*, 32 CFR Part 651.

- 1 • Realign Lackland Air Force Base, Texas, Fort Knox, and Fort Sill, Oklahoma,
2 by relocating the correctional function of each to Fort Leavenworth, Kansas,
3 and consolidating them with the correctional function already at Fort
4 Leavenworth to form a single Level II Midwest Joint Regional Correctional
5 Facility.
- 6 • Realign Army Research Institute, Fort Knox, by relocating Human Systems
7 Research to Aberdeen Proving Ground, Maryland.

8 Discretionary BRAC actions are:

- 9 • Relocate the Army Audit Agency (AAA) from St. Louis to Fort Knox.
- 10 • Relocate Test and Evaluation Command (TECO) from Fort Knox to Fort
11 Benning.
- 12 • Relocate the Camp Memorial Blood Center (blood bank) from Fort Knox to
13 Fort Benning.

14 Army Transformation actions are:

- 15 • Relocate Engineer, Military Police and Combat Service Support (CSS) Units
16 from Europe and Korea to Fort Knox.
- 17 • Establish an Infantry Brigade Combat Team (IBCT) at Fort Knox.
- 18 • Establish 3rd Expeditionary Sustainment Command (ESC) at Fort Knox.
- 19 • Activate the 11th Theater Aviation Command (TAC) at Fort Knox.
- 20 • Activate the Detachment 1 of the 10th Air Support Operations Squadron
21 (ASOS) at Fort Knox.
- 22 • Relocate the Ohio Valley District Veterinary Command from Carlisle Barracks,
23 Pennsylvania, to Fort Knox.
- 24 • Relocate the Unit of Action Capabilities Development Activity (UACDA) and
25 Unit of Action Experimentation Element (UAEE) from Fort Knox to Fort Bliss,
26 Texas.

27 **ES.2.1 Force Structure and Population Changes at Fort Knox**

28 As a result of the force structure changes described in ES.2, there would be an addition
29 of approximately 2,100 active duty personnel, 1,400 civilians, and 15 non-DOD civilians.
30 In addition, Fort Knox would decrease the average student load to approximately 5,900
31 personnel. Table ES.1 provides a summary of the anticipated population changes.

Table ES.1 Change in Fort Knox Personnel as a Result of Proposed Action				
	Permanent Party Personnel Military	Permanent Party Personnel Civilian	Average Student Load	Federal, non-DoD, Civilian Employees
BRAC Directed Actions				
Realign Fort Knox by relocating the Armor Center and School to Fort Benning, GA to accommodate the activation of an Infantry Brigade Combat Team (IBCT) at Fort Knox.	(4,310)	(1,030)	(6,650)	(320)
Realign Army Human Resources Command leased facilities in Alexandria, VA, Indianapolis, IN, and St. Louis, MO. Relocate and consolidate all functions at Fort Knox	910	2,180	0	380
Relocate U.S. Army Accessions Command and U.S. Army Cadet Command from Fort Monroe, Virginia, to Fort Knox	70	210	0	100
Realign Fort McCoy, Wisconsin, by relocating the 84th Army Reserve Regional Training Center to Fort Knox	480	120	600	0
Close Louisville United States Army Reserve Center and relocate the 100th Division Institutional Training (IT) headquarters to Fort Knox	30	20	170	0
Realign the Park Center IV Building, a leased installation in Falls Church, Virginia, by relocating the Army Center for Substance Abuse to Fort Knox	5	10	0	10
Realign Lackland Air Force Base, TX, Fort Knox, and Fort Sill, OK, by relocating the Regional Correctional Facility to Fort Leavenworth, KS	(120)	(10)	0	0
Realign Army Research Institute, Fort Knox, by relocating Human Systems Research to Aberdeen Proving Ground, Maryland	0	(10)	0	(5)
BRAC Discretionary Actions				
Relocate the Army Audit Agency (AAA) from St. Louis to Fort Knox	0	5	0	0
Relocate Test and Evaluation Command (TECO) from Fort Knox to Fort Benning	(1)	(1)	0	0
Relocate the Camp Memorial Blood Center (blood bank) from Fort Knox to Fort Benning	(10)	(20)	0	0
Army Transformation Actions				
Relocate Engineer, Military Police and CSS Units from Europe and Korea to Fort Knox	1,730	0	0	0
Establish 3rd Expeditionary Sustainment Command (ESC) at Fort Knox	0	0	0	0
Activate the 11th Theater Aviation Command (TAC) at Fort Knox	140	30	0	0
Activate the Detachment 1st of the 10th Air Support Operations Squadron (ASOS) at Fort Knox	30	0	0	0
Relocate the Ohio Valley District Veterinary Command from Carlisle Barracks, Pennsylvania, to Fort Knox	50	10	0	0
Relocate the Unit of Action Capabilities Development Activity (UACDA) and Unit of Action Experimentation Element (UAEE) from Fort Knox to Fort Bliss, TX	(310)	(50)	0	(150)
Establish an Infantry Brigade Combat Team (BCT) at Fort Knox	3,430	0	0	0
Net change (Decrease) to Fort Knox	2,124	1,464	(5,880)	15
<i>Source: Fort Knox, 2006</i>				

ES.2.2 Construction and Renovation

Implementation of the Proposed Action would require renovation and/or construction of facilities and/or expansion of existing facilities to accommodate the increase in personnel assigned to Fort Knox. The alternatives presented in this EA correspond to the options associated with the relative degree of construction and renovation activities for the respective projects. In support of implementing the Proposed Action at Fort Knox, construction and renovation activities would include 1) A Human Resources Center of Excellence Complex and ancillary operations, 2) An Engineer Battalion Complex and ancillary operations, 3) Headquarter facilities for the 100th Division USAR and 84th Army Reserves Readiness Training Center, 4) Railway transport systems, 5) Numerous MWR facilities and 6) expansion and revitalization of training facilities. These actions would in part, support the influx of personnel and expedite their movements from on to off post activities. This construction directly supports the Army's BRAC and transformation goals.

Table ES.2 identifies proposed facilities projects that have been identified as required to support the Proposed Action. For each construction project, the table shows project number, type of facility, and the facility's estimated size (as provided).

ES.3 ALTERNATIVES

ES.3.1 No Action Alternative

The No Action Alternative will be included as required by the CEQ regulations to identify the existing baseline conditions against which potential impacts will be evaluated. The No Action Alternative must be described because it is the baseline condition or the current status of the environment if the proposed actions were not implemented. For realignment actions directed by the BRAC Commission, it will be noted that for the No Action Alternative, maintenance of current conditions is not feasible, since the BRAC actions are congressionally mandated actions.

Under the No Action Alternative, Fort Knox would not implement the proposed action and no new units would relocate to Fort Knox. Organizations presently assigned to Fort Knox would continue to train at and operate from the post. Fort Knox would use its current inventory of facilities, though routine replacement or renovations actions could occur, through normal military maintenance and construction procedures, as circumstances independently warrant. The No Action Alternative also serves as the baseline condition against which to measure impacts associated with the proposed action.

Table ES.2 Proposed BRAC and Army Transformation Related Construction/Renovation Projects at Fort Knox		
Project No.	Facility	Unit of Measure (Approximate)
GARRISON FACILITIES		
65293	Engineer Battalion Complex	300,000 SF
65306	Human Resources Command Complex – Phase 1	920,000 SF
65833	Human Resources Command Complex – Phase 2	Same as PN# 65306
65415	Deployable Command Post	5,000 new SF; 37,800 renovated SF
65326	100 th Division USAR Headquarters	81,309 SF
65307	Accessions Command Headquarters	75,527
65312	Army Cadet Command	57,458
65332	84 th Army Reserves Readiness Training Center	316,321 SF
65229	Consolidated Rail Head and Marshaling Area	37,000 SF
59207	Public Safety Station	32,500 SF
53766	Soldier Support Center	60,000 SF
57265	Chapel - Troop	22,600 SF
61038	Chapel – FH (Family Housing)	32,900 SF
51675	Physical Fitness Center	79,900 SF
65387	Physical Fitness Facility	68,000 SF
55267	Child Development Center	27,100 SF
65504	Child Development Center Connector	3,500 SF
65505	Army Community Services Center	21,978 SF
65506	Conference Center	38,836 SF
65507	Library	23,300 SF
Total		2,224,029
TRAINING FACILITIES		
61145	40 mm Garvin Machine Gun Range	3 Firing Points
05924	Infantry Squad Battle Course	1 Lane
58675	Military Operations on Urban Terrain	1 Engagement Area
64823	Infantry Platoon Battle Course	1 Firing Point
62553	Engineer Qualification/Assault Range	1 Firing Point
64825	Heavy Forces Maneuver/Training Facility	1,317 acres
35782	Digital Multipurpose Yano Range Complex	3 Lanes
SF = Square Feet		
Source: Fort Knox, 2006		

ES.3.2 Alternative 1 – Renovation with Minimal New Construction Activities in the Cantonment and Training Facilities

Under Alternative 1, Fort Knox would accomplish the proposed action by implementing the projects identified in Table ES.2. Alternative 1 would emphasize the renovation of existing facilities in the cantonment area with minimal new construction. In addition to cantonment area construction and renovation, training facility modifications would also occur under this alternative.

ES.3.3 Alternative 2 – New Construction with Minimal Renovation Activities in the Cantonment, and and Training Facilities

Under Alternative 2, Fort Knox would accomplish the proposed action by implementing the projects identified in Table ES.2. Alternative 2 would emphasize the construction of new facilities in the cantonment area with minimal renovation of existing facilities. In addition to cantonment area construction and renovation, training facility modifications would also occur under this alternative.

ES.3.4 Alternative 3 - Combination New Construction and Renovation Activities in the Cantonment, and and Training Facilities (Preferred Alternative)

Under Alternative 3, Fort Knox would accomplish the proposed action by implementing the projects identified in Table ES.2. Alternative 3 would emphasize implementing the proposed action through a combination of new construction and renovation of existing facilities. In addition to cantonment area construction and renovation, training facility modifications would also occur under this alternative. This is the installation's Preferred Alternative.

ES.4 ENVIRONMENTAL CONSEQUENCES

ES.4.1 No Action Alternative

Under the No Action Alternative, the Proposed Action would not be implemented, and Fort Knox would continue to use its current inventory of facilities. The No Action Alternative would not result in any significant impacts on land use; aesthetics and visual resources; air quality; noise; topography and soils; water resources; biological resources; cultural resources; socioeconomics; transportation; utilities; or hazardous and toxic substances in the project areas.

ES.4.2 Environmental Consequences Summary Table

The table provided below summarizes the environmental consequences of the three Proposed Action alternatives. Table ES.3 Summary of Environmental Consequences at Fort Knox, includes ratings of the adverse and beneficial direct, indirect, and cumulative impacts for each resource category examined in this EA. Because the training facility impacts are expected to be within the scope of current activities and minimal preparation will be required of training areas for future use, this table places a greater emphasis on construction activities.

Table ES.3 Summary of Environmental Consequences at Fort Knox					
Resource Category		Alternative 1	Alternative 2	Alternative 3 Preferred Alternative	Discussion
Land Use	Direct Impacts	○	◐	○/◐	Direct impacts to land use would be associated with the construction of major new facilities, and expansion or renovation of existing facilities. The proposed project areas are located within the cantonment and training land use designation and therefore would have negligible adverse impacts on land use in the areas. There are no indirect impacts or cumulative impacts to land use under any of the three alternatives.
	Indirect Impacts				
	Cumulative Impacts				
Aesthetics and Visual Resources	Direct Impacts	◐	◐	◐	Under any of the three alternatives there would be minor adverse impacts to the aesthetics of the surrounding areas. Due to ground disturbance and tree clearing, construction activities would have short-term alternative impacts to aesthetics and visual resources. There would be no indirect impacts and negligible cumulative impacts to aesthetics under any of the three alternatives.
	Indirect Impacts				
	Cumulative Impacts	○	○	○	
Air Quality	Direct Impacts	○	◐	○/◐	Air quality from the proposed actions would have negligible temporary adverse impacts due to construction activities and permanent minor impacts due to increased Privately Owned Vehicle (POV) and Government Owned Vehicle (GOV) traffic under all three alternatives. There would be a slight increase in the potential for short-term adverse cumulative impacts to air
	Indirect Impacts	○	○	○	
	Cumulative Impacts	○	◐	○/◐	
Noise	Direct Impacts	○	○	○	Temporary negligible adverse impacts from noise would result under all three alternatives. During construction there would be short-term, localized noise impacts associated with the operation of construction equipment and machinery, power tools, and the delivery of construction materials. Indirect noise impacts and cumulative noise impacts are not anticipated under any of the three alternatives.
	Indirect Impacts				
	Cumulative Impacts				
Topography and Soils	Direct Impacts	◐	◐	◐	Minor short-term adverse impacts on soils would occur under all three alternatives. Soils would be disturbed by construction activities such as grading, vegetation clearing, and excavating during construction of the new facilities. With implementation of any of the action alternatives there is the potential for cumulative adverse impacts to soils through implementation of construction projects under BRAC and non BRAC related projects.
	Indirect Impacts				
	Cumulative Impacts	◐	◐	◐	

Table ES.3 Summary of Environmental Consequences at Fort Knox					
Resource Category		Alternative 1	Alternative 2	Alternative 3 Preferred Alternative	Discussion
Water Resources	Direct Impacts	○	○	○	Temporary negligible adverse impacts on water resources would result under all three alternatives. Run-off from soil disturbance from BRAC and non BRAC related construction projects and training activities on Fort Knox combined with soil disturbance from construction projects being implemented in surrounding community would have cumulative adverse affects on downstream water resources.
	Indirect Impacts	○	○	○	
	Cumulative Impacts	◐	◐	◐	
Biological Resources	Direct Impacts	◑	◑	◑	Minor short-term adverse impacts would occur on biological resources with implementation of any of the three alternatives. Indirect impacts would be fewer with implementation of Alternative 1 than with Alternatives 2 or 3. It is anticipated that negligible cumulative impacts would occur to biological resources due to on-post activities.
	Indirect Impacts	◑	◑	◑/◑	
	Cumulative Impacts	○	○	○	
Cultural Resources	Direct Impacts				No direct impacts on cultural resources or impacts related to Indian tribal government issues are anticipated with implementation of any of the three alternatives. There would also be no anticipated indirect or cumulative impacts to cultural resources under the three alternatives.
	Indirect Impacts				
	Cumulative Impacts				
Socioeconomics	Direct Impacts	◒	◒	◒	Direct short-term beneficial economic impacts would be realized by the regional and local economy during the construction phase of any of the three alternatives. In addition, direct long-term economic impacts would be realized from the increase in operations and personnel associated with the alternatives. Minor beneficial indirect impacts are also anticipated. Beneficial cumulative impacts would be in the form of increased business volume, income, and employment associated with construction activities and increased on-post operations in combination with other non BRAC proposed on-post actions and construction projects.
	Indirect Impacts	◒	◒	◒	
	Cumulative Impacts	◒	◒	◒	
Transportation	Direct Impacts	○	◒	◒	Negligible adverse direct impacts would result under Alternative 1 while moderate beneficial direct impacts would result under Alternatives 2 and 3. Short-term minor direct adverse impacts to transportation can be expected from traffic congestion due to
	Indirect Impacts	○	◒	◒	

Table ES.3 Summary of Environmental Consequences at Fort Knox					
Resource Category		Alternative 1	Alternative 2	Alternative 3 Preferred Alternative	Discussion
	Cumulative Impacts	◐	◐	◐	construction equipment entering and leaving the construction sites combined with other BRAC and non BRAC related construction activities on the installation.
Utilities	Direct Impacts	◐	◐	◐	Under utilities a negligible beneficial impact for water treatment would occur under all three alternatives and a temporary minor adverse impact would be associated with solid waste activities. Implementation of BRAC related construction projects would have a long-term cumulative beneficial impact on the installation when combined with updates to utilities on non BRAC related projects and off-installation utility improvements.
	Indirect Impacts				
	Cumulative Impacts	◑	◑	◑	
Hazardous and Toxic Substances	Direct Impacts	◐	◐	◐	If implemented, any of the three alternatives would result in potential minor adverse direct, indirect, and cumulative impacts in regards to hazardous and toxic substances.
	Indirect Impacts	◐	◐	◐	
	Cumulative Impacts	◐	◐	◐	
<p>◑ = Moderate Adverse Impact ◐ = Minor Adverse Impact ○ = Negligible Adverse Impact = No Impact ◑ = Minor Beneficial Impact ◑ = Moderate Beneficial Impact</p>					
<i>Source: Parsons, 2006</i>					

ES.5 MITIGATION SUMMARY

As discussed in the EA, no significant adverse or significant beneficial impacts have been identified or are anticipated as a result of implementing any of the proposed action alternatives or the No Action Alternative. Consequently, no mitigation measures are required to reduce impacts to non-significant levels as part of this EA.

However, in association with the proposed action, Fort Knox has identified a number of Best Management Practices (BMPs) that would be implemented with the proposed construction and renovation activities, regardless of the alternative selected. These measures are designed to avoid, rectify, or reduce adverse impacts. For those adverse impacts that cannot be avoided, the BMPs have been developed to include features designed to: protect, maintain, restore, or enhance environmental conditions. These BMPs are summarized in Table ES.4 below.

Table ES.4 Best Management Practice Summary for Implementation of BRAC Recommendations and Other Army Transformation Actions at Fort Knox, Kentucky
<p>Silt fences</p> <p>Diversion ditches</p> <p>Re-seeding and re-establishment of vegetation</p> <p>Use a variety of landscape plantings to enhance habitat for small animals</p> <p>Use of surface water and sediment retention basins</p> <p>Use of erosion and sediment control structures</p> <p>Preparation of a Sediment and Erosion Plan Approved by Fort Knox and the Commonwealth of Kentucky</p> <p>Maintaining areas clean of pollutants</p> <p>Preventative maintenance, e.g. drip pans, changing auto fluids in designated areas</p> <p>Spill prevention, control, and countermeasures</p> <p>Retention of vegetation</p> <p>Dust suppression</p> <p>Minimize burning of vegetative waste</p> <p>Use of air curtain destructors and/or wind advisories</p> <p>If necessary, acquire construction and operation permit from KDAQ and USEPA for construction of heating and A/C systems</p> <p>Increased frequency of hazardous waste inspections for satellite accumulation areas</p> <p>Contain and control solid wastes generated from hazardous substances used in renovation and construction activities.</p> <p>Utilize Spill Prevention Control and Countermeasures Plan in the event of releases to the environment of POLs, hazardous materials, or other pollutants</p> <p>If asbestos containing materials are found in buildings being renovated, they will be abated in accordance with Army, federal, and Commonwealth of Kentucky standards</p> <p>Trees greater than 6 inches diameter at breast height would be cut only during October 15-March 31</p> <p>All provisions of the Installation Cultural Resources Management Plan would be followed if any items of cultural resources interest are found during the proposed action</p> <p>Barriers and "no trespassing" signs would be placed around construction areas to reduce the potential for injuries</p> <p>All required Clean Water Act Section 404(b)(1) permits would be acquired.</p> <p>Section 401(a) water quality certification would be acquired in conjunction with a Section 404 permit.</p> <p><i>Source: Parsons 2006</i></p>

ES.6 CONCLUSIONS

As analyzed and discussed in the EA, direct, indirect, and cumulative impacts of each of the Proposed Action alternatives and the No Action Alternative have been considered and no significant impacts (either beneficial or adverse) have been identified. Therefore, issuance of a FNSI is warranted, and preparation of an Environmental Impact Statement is not required. Alternative 3 was selected as the installation's

Preferred Alternative. This alternative offers the greatest flexibility in implementation and the best mix of renovation and construction activities to meet mission requirements.

Therefore, any of the alternatives considered, including Alternative 3, the Preferred Alternative, or the No Action Alternative, could be implemented. However, the No Action Alternative would not support Congressional requirements under the BRAC law (Public Laws 101-510 and 107-107). The BRAC Commission's recommendations must now be implemented as provided for in the Defense Base Closure and Realignment Act of 1990 (Public Law 101-510), as amended.

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SECTION 1

PURPOSE, NEED, AND SCOPE

1.1 INTRODUCTION

Fort Knox is located in North-Central Kentucky and adjoins the Ohio River along a portion of its northern boundary. Presently, Fort Knox's primary mission is to train soldiers for the armor force. The location of Fort Knox is illustrated on Figure 1.1.

On September 8, 2005, the Defense Base Closure and Realignment (commonly known as BRAC) Commission recommended that certain realignment actions occur at Fort Knox, Kentucky. These recommendations were approved by the President on September 15, 2005, and forwarded to Congress. Congress did not alter any of the BRAC Commission's recommendations, and on November 9, 2005, the recommendations became law. The BRAC Commission's recommendations must now be implemented as provided for in the Defense Base Closure and Realignment Act of 1990 (Public Law 101-510), as amended.

The BRAC Commission made a number of recommendations for realignment/relocation affecting Fort Knox. The major recommendations involve realigning Fort Knox by relocating the Armor Center and School to Fort Benning, Georgia, to accommodate the activation of an Infantry Brigade Combat Team (BCT) at Fort Knox, and the relocation of engineer, military police and combat service support units from Europe and Korea, relocation of Human Resources Command (HRC), Army Accessions Command (AAC), and Cadet Command at Fort Knox to join Army Recruiting Command in a nexus that will create "a center of excellence for military personnel and recruiting functions by improving personnel lifecycle management" (See subsection 2.1 for the complete list). To enable implementation of these recommendations and the other actions listed in Section 2.1, the Army proposes to provide necessary facilities to support the changes in force structure. This environmental assessment (EA) analyzes and documents environmental effects associated with the Army's proposed actions at Fort Knox. Details on the proposed actions are set forth at subsection 2.3.

1.2 PURPOSE AND NEED FOR THE PROPOSED ACTION

The purpose of the proposed action is to implement the BRAC Commission's recommendation and other Army Transformation related actions at Fort Knox.

The need for the proposed action is to improve the ability of the Nation to respond rapidly to challenges of the 21st Century. The Army's mission is to defend the United States (U.S.) and its territories, support national policies and objectives, and defeat nations responsible for aggression that endangers the peace and security of the U.S. To carry out these tasks, the Army must adapt to changing world conditions and must improve its capabilities to respond to a variety of circumstances across the full spectrum of military operations. The following discusses four major initiatives that further define the need of the proposed action.

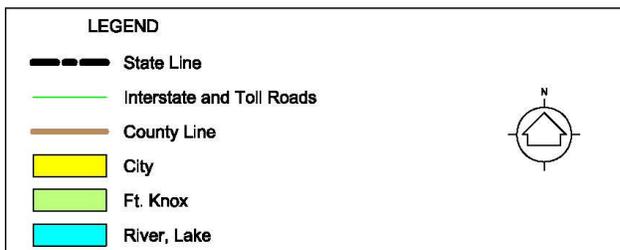
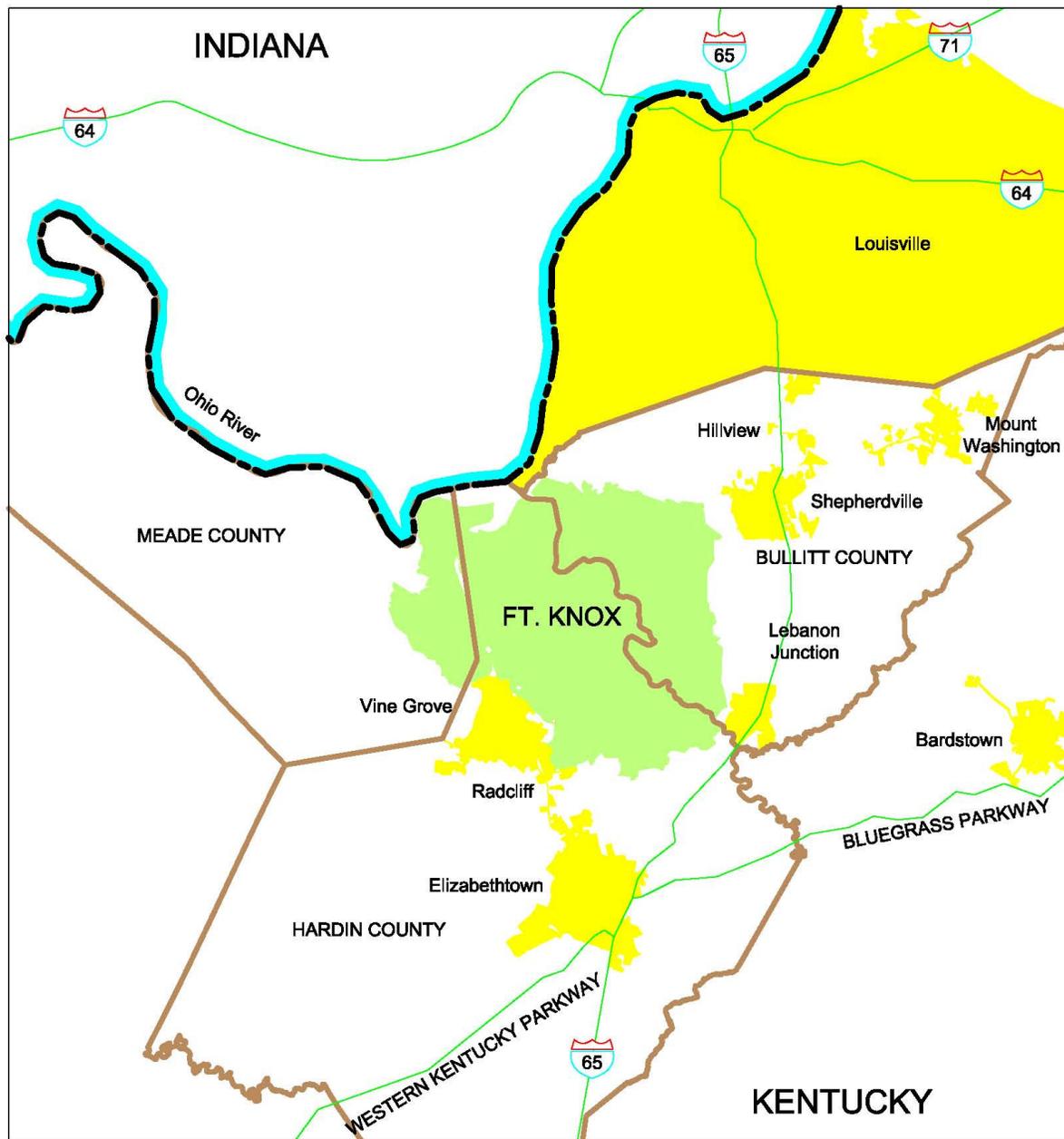


Figure 1.1
Surrounding Area
at Fort Knox

- **Base Closure and Realignment.** In previous rounds of BRAC, the explicit goal was to save money and downsize the military. In the 2005 BRAC round, the Department of Defense (DoD) sought to reorganize its installation infrastructure to most efficiently support its forces, increase operational readiness and facilitate new ways of doing business. Thus, BRAC represents more than cost savings. It supports advancing the goals of transformation, improving military capabilities, and enhancing military value. The Army needs to carry out the BRAC recommendations at Fort Knox in order to achieve the objectives for which Congress established the BRAC process.
- **Army Transformation and the Army Modular Force.** On October 12, 1999, the Secretary of the Army and the Chief of Staff articulated a vision about people, readiness, and transformation of the Army to meet challenges emerging in the 21st Century and the need to be able to respond more rapidly to different types of operations requiring military action. The strategic significance of land forces continues to lie in their ability to fight and win the Nation's wars and in their providing options to shape the global environment to the benefit of the U.S. and its allies. Transformation responds to the Army's need to become more strategically responsive and dominant at every point on the spectrum of operations. In March 2002, the Army published its *Programmatic Environmental Impact Statement for Army Transformation* for its proposal to conduct a multiyear, phased, and synchronized program of transformation. Over a 30-year period, the Army would conduct a series of transformation activities affecting virtually all aspects of Army doctrine, organization, training, material, leadership, education, personnel, and facilities. On April 11, 2002, the Army issued a Record of Decision reflecting its intent to transform the Army. This EA evaluates, as part of the proposed action, additional Army actions that comports with the transformation process, which is designed to provide the Nation with combat forces that are more responsive, deployable, agile, versatile, lethal, survivable, and sustainable.

Restructuring of Army organizations is needed to create forces that are more stand-alone and alike ("modular") while retaining their broad-spectrum capability. The Army needs to change its forces in order to: create a larger pool of units to fulfill strategic commitments; standardize combat unit designs; make units more adaptable to the range of missions – from peacekeeping to war; move from division-level (larger) to brigade-level (smaller) stand-alone units; make units capable of deploying more rapidly; and improve the Army's ability to tailor units and integrate them among components and with other Services and nations.

- **Integrated Global Presence and Basing Strategy.** At the request of the Chairman of the Joint Chiefs of Staff, combatant commanders submitted a series of recommendations for overseas basing plans for their respective areas of responsibility. The recommendations were part of an interagency assessment of the DoD's long-term overseas force projection and basing needs. The assessment resulted in a series of recommendations known as the Integrated Global Presence

and Basing Strategy (IGPBS), the blueprint outlining the size, character, and location of long-term overseas force presence. On the basis of the IGPBS results, the Secretary of Defense announced that some forces currently based overseas would return to the U.S. over a period of years. The 2005 BRAC recommendations take into account, and adopt some of, the basing recommendations of the IGPBS.

1.3 SCOPE

This EA has been developed in accordance with the National Environmental Policy Act (NEPA) of 1969 and implementing regulations issued by the President's Council on Environmental Quality (CEQ) and the Army.² Its purpose is to inform decision makers and the public of the likely environmental consequences of the proposed action and alternatives.

This EA identifies, documents, and evaluates environmental effects of realignments at Fort Knox, Kentucky. An interdisciplinary team of environmental scientists, biologists, planners, economists, engineers, archaeologists, historians, and military technicians has analyzed the proposed action and alternatives in light of existing conditions and has identified relevant beneficial and adverse effects associated with the action. The proposed action is described in Section 2, and alternatives, including the no action alternative, are described in Section 3. Conditions existing as of 2005, considered to be the environmental "baseline" conditions, are described in Section 4, Affected Environment and Environmental Consequences. The expected effects of the proposed action, also described in Section 4, are presented immediately following the description of baseline conditions for each environmental resource addressed in the EA. Section 4 also addresses the potential for cumulative effects, and mitigation measures are identified where appropriate.

The Defense Base Closure and Realignment Act of 1990 specifies that NEPA does not apply to actions of the President, the Commission, or the DoD, except "(i) during the process of property disposal, and (ii) during the process of relocating functions from a military installation being closed or realigned to another military installation after the receiving installation has been selected (Sec. 2905(c)(2)(A), Public Law 101-510, as amended). The law further specifies that in applying the provisions of NEPA to the process, the Secretary of Defense and the secretaries of the military departments concerned do not have to consider "(i) the need for closing or realigning the military installation which has been recommended for closure or realignment by the Commission, (ii) the need for transferring functions to any military installation which has been selected as the receiving installation, or (iii) military installations alternative to those recommended or selected (Sec. 2905(c)(2)(B)). The Commission's deliberation and decision, as well as the need for closing or realigning a military installation, are exempt from NEPA. Accordingly, this EA does not address the need for realignment.

² CEQ *Regulations for Implementing the Procedural Provisions of NEPA*, 40 *Code of Federal Regulations* (CFR) Parts 1500–1508, and *Environmental Analysis of Army Actions*, 32 CFR Part 651.

1.4 PUBLIC INVOLVEMENT

The Army invites public participation in the NEPA process. Consideration of the views and information of all interested persons promotes open communication and enables better decision-making. All agencies, organizations, Native American groups, and members of the public having a potential interest in the proposed action, including minority, low-income, and disadvantaged persons and groups, are urged to participate in the decision making process.

Public participation opportunities with respect to this EA and decision making on the proposed action are guided by 32 Code of Federal Regulation (CFR) Part 651. Upon completion, the draft Finding of No Significant Impact (FNSI) and the EA will be made available to the public for 30 days. At the end of the 30-day public review period, the Army will consider any comments submitted by individuals, agencies, or organizations on the proposed action, the EA, or draft FNSI. As appropriate, the Army may then execute the FNSI and proceed with implementation of the proposed action. If it is determined prior to issuance of a final FNSI that implementation of the proposed action would result in significant impacts, the Army will publish in the *Federal Register* a notice of intent to prepare an environmental impact statement, revise the proposed action to incorporate mitigation actions sufficient to reduce impacts below significance levels, or not take the action.

Throughout this process, the public may obtain information on the status and progress of the proposed action and the EA, and/or provide comments for consideration by the government. Comments may be provided to, and information may be obtained from Linda G. Pollock or Michael Hasty, Environmental Management Division, Directorate of Public Works, ATTN: IMSE-KNX-PWE (BLDG 1110-B); Fort Knox, KY 40121.

1.5 REGULATORY FRAMEWORK

A decision on how to proceed with the proposed action rests on numerous factors such as mission requirements, schedule, availability of funding, and environmental considerations. In addressing environmental considerations, Fort Knox is guided by relevant statutes (and their implementing regulations) and Executive Orders (EO) that establish standards and provide guidance on environmental and natural resources management and planning. These include the Clean Air Act (CAA), Clean Water Act (CWA), Noise Control Act, Endangered Species Act (ESA), National Historic Preservation Act (NHPA), Archaeological Resources Protection Act (ARPA), Resource Conservation and Recovery Act, and Toxic Substances Control Act. EOs bearing on the proposed action include EO 11988 (*Floodplain Management*), EO 11990 (*Protection of Wetlands*), EO 12088 (*Federal Compliance with Pollution Control Standards*), EO 12580 (*Superfund Implementation*), EO 12898 (*Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*), EO 13045 (*Protection of Children from Environmental Health Risks and Safety Risks*), EO 13101 (*Greening the Government Through Waste Prevention, Recycling, and Federal Acquisition*), EO 13123 (*Greening the Government Through Efficient Energy Management*), EO 13148 (*Greening the Government Through Leadership in Environmental Management*), EO 13175 (*Consultation and Coordination with Indian*

Tribal Governments), and EO 13186 (*Responsibilities of Federal Agencies to Protect Migratory Birds*). These authorities are addressed in various sections throughout this EA when relevant to particular environmental resources and conditions. The full text of the laws, regulations, and EOs is available on the Defense Environmental Network & Information Exchange Web site at <http://www.denix.osd.mil>.

SECTION 2 PROPOSED ACTION

2.1 INTRODUCTION

This section describes the Army's proposed action for carrying out the BRAC Commission's recommendations. The proposed action includes: implementation of the Commission's recommendations as mandated by the BRAC legislation, Public Law 101-510 and 107-107; implementation of BRAC discretionary moves; and implementation of other Army transformation actions proposed to occur at Fort Knox during the Fiscal Year (FY) 06-11 timeframe that were sufficiently well defined for analysis at this time.

BRAC Directed Actions:

- Realign Fort Knox by relocating the Armor Center and School to Fort Benning, Georgia to accommodate the activation of an Infantry Brigade Combat Team (BCT) at Fort Knox and engineer, military police, and combat service support units from Europe and Korea to Fort Knox.
- Realign Army Human Resources Command from Alexandria, Virginia, Indianapolis, Indiana, and St. Louis, Missouri, to Fort Knox. Relocate and consolidate all functions at Fort Knox.
- Relocate U.S. Army Accessions Command and U.S. Army Cadet Command from Fort Monroe, Virginia, to Fort Knox
- Realign Fort McCoy, Wisconsin, by relocating the 84th Army Reserve Regional Training Center to Fort Knox.
- Close Louisville United States Army Reserve Center and relocate the 100th Division Institutional Training (IT) headquarters to Fort Knox.
- Realign the Park Center IV Building, a leased installation in Falls Church, Virginia, by relocating the Army Center for Substance Abuse to Fort Knox.
- Realign Lackland Air Force Base, Texas, Fort Knox, and Fort Sill, Oklahoma, by relocating the correctional function of each to Fort Leavenworth, Kansas, and consolidating them with the correctional function already at Fort Leavenworth to form a single Level II Midwest Joint Regional Correctional Facility.
- Realign Army Research Institute, Human Systems Research by relocating to Aberdeen Proving Ground, Maryland.

BRAC Discretionary Actions:

- Relocate the Army Audit Agency (AAA) from St. Louis to Fort Knox.
- Relocate Test and Evaluation Command (TECO) from Fort Knox to Fort Benning.

- Relocate the Camp Memorial Blood Center (blood bank) from Fort Knox to Fort Benning.

Army Transformation Actions:

- Relocate Engineer, Military Police and CSS Units from Europe and Korea to Fort Knox.
- Establish an Infantry Brigade Combat Team (IBCT) at Fort Knox.
- Establish 3rd Expeditionary Sustainment Command (ESC) at Fort Knox.
- Activate the 11th Theater Aviation Command (TAC) at Fort Knox.
- Activate the Detachment 1 of the 10th Air Support Operations Squadron (ASOS) at Fort Knox.
- Relocate the Ohio Valley District Veterinary Command to Fort Knox.
- Relocate the Unit of Action Capabilities Development Activity (UACDA) and Unit of Action Experimentation Element (UAEE) from Fort Knox to Fort Bliss, Texas.

The proposed actions analyzed in this document consist of force structure/population changes, garrison facility requirements, training facility requirements, and changes to the number of weapons and vehicles stored and used on-post. These proposed actions will be implemented over time. Each of these components is discussed in a separate discussion below.

2.2 FORCE STRUCTURE AND FORT KNOX POPULATION CHANGES

Force structure refers to the numbers, size, and composition of units comprising Army forces. BRAC recommendations eliminate force structure through inactivation of units assigned to the post and add force structure through realignment of existing units, creation of new units and reassignment of units from overseas.

2.2.1 Existing Fort Knox Structure and Population

Fort Knox is located near the north-central border of Kentucky, 35 miles south of Louisville, Kentucky. Fort Knox encompasses approximately 109,000 acres in three Kentucky counties, with more than 2,900 buildings supporting its operations. Fort Knox has a population of over 23,000 Soldiers, family members and civilians. Fort Knox is the home of the Army Armor Center and home to the U.S. Army Recruiting Command. The vast majority of the Fort Knox complex is associated with active training and maneuver areas, including live weapon firing ranges.

The Armor Center and School is the largest organization on Fort Knox and performs the mission of training all armor Soldiers and Marines. The Army Recruiting Command headquarters oversees the mission of bringing men and women into the U.S. Army. Additionally, the Eastern Region of the Reserve Officer Training Corps (ROTC) is headquartered at Fort Knox. The Army Accessions Command also has personnel on post. Units located on Fort Knox are considered “Partners in Excellence” and include

active duty Army organizations, Army Reserve, National Guard and the U.S. Marine Corps. The Patton Museum of Armor and Cavalry is also located at Fort Knox.

2.2.2 BRAC and Army Transformation Related Force Structure and Population Changes at Fort Knox

The BRAC actions and Army Transformation actions would result in changes to the missions at Fort Knox. These changes would include gaining new missions (e.g., establishment of a BCT and the Human Resources Center of Excellence (HRCOE)), modification of existing missions, and the loss of some existing missions (e.g., Armor Center and School) at Fort Knox.

As a result of these force structure changes, there would be an addition of approximately 2,100 active duty personnel, 1,300 permanent party civilian personnel. In addition, Fort Knox would decrease its average student load to approximately 5,900 and decrease non-DOD personnel by approximately 100.

Table 2.1 shows the change in installation personnel associated with the proposed actions.

2.3 PROPOSED RENOVATION AND CONSTRUCTION PROJECTS TO IMPLEMENT THE PROPOSED ACTION

Implementation of the proposed action would require renovation of existing facilities and training ranges and construction of new facilities and training ranges to accommodate mission changes and the increase of personnel at Fort Knox.

2.3.1 Garrison Facilities

To support the proposed action at Fort Knox, construction of new facilities and expansion of existing facilities within the cantonment area would be required to accommodate the increase in personnel assigned to Fort Knox.

The various garrison facilities are listed under the appropriate proposed action. These proposed actions have been subdivided as follows to facilitate planning and analysis:

BRAC Actions:

- Engineer Battalion;
- Accessions and Cadet Commands;
- Human Resources Center of Excellence (HRCOE).

Army Transformation Actions:

- U.S. Army Reserves;
- Railhead; and
- Supporting Facilities and Activities.

**TABLE 2.1.
CHANGE IN FORT KNOX PERSONNEL AS A RESULT OF PROPOSED ACTION**

BRAC Directed Actions	Permanent Party Personnel Military	Permanent Party Personnel Civilian	Average Student Load	Federal, non-DoD, Civilian Employees
Realign Fort Knox by relocating the Armor Center and School to Fort Benning.	(4,310)	(1,030)	(6,650)	(320)
Realign Army Human Resources Command. Relocate and consolidate all functions at Fort Knox	910	2,180	0	380
Relocate U.S. Army Accessions Command and U.S. Army Cadet Command from Fort Monroe, Virginia, to Fort Knox	70	210	0	100
Realign Fort McCoy, Wisconsin, by relocating the 84 th Army Reserve Regional Training Center to Fort Knox	480	120	600	0
Close Louisville United States Army Reserve Center and relocate the 100 th Division IT headquarters to Fort Knox	30	20	170	0
Realign the Park Center IV Building, a leased installation in Falls Church, Virginia, by relocating the Army Center for Substance Abuse to Fort Knox	5	10	0	10
Realign Lackland Air Force Base, TX, Fort Knox, and Fort Sill, OK, by relocating the Regional Correctional Facility to Fort Leavenworth, KS	(120)	(10)	0	0
Realign Army Research Institute, Fort Knox, by relocating Human Systems Research to Aberdeen Proving Ground, Maryland	0	(10)	0	(5)
BRAC Discretionary Actions				
Relocate the AAA from St. Louis to Fort Knox	0	5	0	0
Relocate TECO from Fort Knox to Fort Benning	(1)	(1)	0	0
Relocate the Camp Memorial Blood Center (blood bank) from Fort Knox to Fort Benning	(10)	(20)	0	0
Army Transformation Actions				
Relocate Engineer, Military Police and CSS Units from Europe and Korea to Fort Knox	1,730	0	0	0
Establish ESC at Fort Knox	0	0	0	0
Activate the 11 th TAC at Fort Knox	140	30	0	0
Activate the Detachment 1 st of the 10 th ASOS at Fort Knox	30	0	0	0
Relocate the Ohio Valley District Veterinary Command from Carlisle Barracks, Pennsylvania, to Fort Knox	50	10	0	0
Relocate the UACDA and UAEE from Fort Knox to Fort Bliss, Texas	(310)	(50)	0	(150)
Establish an Infantry BCT at Fort Knox	3,430	0	0	0
Net change to Fort Knox	2,124	1,464	(5,880)	15
Note: () = decrease				
Source: Fort Knox, 2006				

The following is a list of the proposed projects.

BRAC Actions

The Engineering Battalion project consists of:

- Engineer Battalion Complex, Project Number (PN) 65293, entails construction of barracks, battalion headquarters, classrooms, and storage for a new Engineer Battalion activating at Fort Knox. This project would also renovate existing maintenance facilities and organizational vehicle parking (hardstand).

The HRCOE projects consist of:

- Human Resources Command Complex, Phase 1, PN 65306, consists of constructing an office complex of approximately 300,000 square feet (SF). Phase II of this project, PN 65833, consists of completing the complex by adding another 620,000 SF of office space for relocating and consolidating three geographically separated arms of the U.S. Army Human Resources Command to Fort Knox. The total space for the HRCOE complex is approximately 920,000 SF.

The Accessions and Cadet Command categories consist of the following:

- The Accessions Command Headquarters, PN 65307, consists of renovating three existing Armor school facilities relocating from Fort Monroe.
- The Army Cadet Command Headquarters, PN 65312, consists of renovating two facilities relocating from Fort Monroe.

The U.S. Army Reserves (USAR) project category consists of the following:

- 100th Division USAR Headquarters, PN 65326, consists of renovating an existing Armor School facility for relocating this U.S. Army Reserve Division Headquarters to Fort Knox.
- 84th Army Reserves Readiness Training Center (ARRTC) Headquarters, PN 65332, entails renovating three existing Armor School facilities for relocating the 84th ARRTC from Fort McCoy to Fort Knox.

Army Transformation Actions

The Railhead project category consists of the following:

- Consolidated Rail Head & Marshaling Area, PN 65229, consists of constructing a new consolidated rail head and marshaling area in support of deployment for incoming engineer units, an Infantry BCT, and multiple combat units relocating to Fort Knox from overseas.

The Supporting Facilities and Activities project category consists of the following:

- Deployable Command Post, PN 65415, consists of renovating of an existing 37,800-SF facility and construction of a 5,000-SF addition to meet the installations requirement.

- Public Safety Station, PN 59207, consists of constructing a consolidated emergency services facility containing a fire station, military police station, emergency medical technicians, emergency operations center, and 911 dispatch operations. This project provides emergency response in support of incoming military, family members, civilians and contractors as part of the DoD recommended mission changes at Fort Knox.
- Soldier Support Center, PN 53766, consists of constructing a consolidated in/out processing center for military family support. This project is required in support of incoming military and family members as part of the DoD recommended mission changes at Fort Knox. The Fort Knox mission would change from primarily a trainee and student population to a mostly permanent party, deployable combat military population, with greatly increased processing requirements.
- Chapel – Troop, PN 57265, consists of constructing a 400-seat standard design chapel in support of troops living in the unaccompanied personnel barracks area of the installation. This project would provide worship and religious education space for soldiers living in new permanent party barracks spaces generated by new missions coming to Fort Knox under BRAC 2005.
- Chapel – Family Housing, PN 61038, consists of constructing a 600-seat standard design chapel in support of military families in a newly developing area of family housing on post. This project would provide worship and religious education space for soldiers and their families living in new family housing on Fort Knox.
- Physical Fitness Center, PN 51675, entails the construction of a new standard modular design (large) physical fitness training center with gymnasium, fitness and weight rooms, large and small group exercise areas, locker rooms, latrines, shower facilities, equipment checkout, administrative and support areas, storage areas, and racquetball courts. Project includes asbestos and lead paint abatement along with the demolition of two existing fitness centers (Otto Fitness Center, 20,219 SF and Gammon Fitness Center, 33,188 SF with indoor pool). This project is to support the population increase and MWR Baseline Standards of 181,000 SF authorized due to the new missions recommended by DoD and the IGPBS.
- Physical Fitness Facility, PN 65387, FY 07, consists of constructing a standard modular design (large) physical fitness training center with gymnasium, 25 meter swimming pool, fitness and weight rooms, large and small group exercise areas, locker rooms, latrines, shower facilities, equipment checkout, administrative and support areas, storage areas, and racquetball courts. Project includes asbestos/lead paint abatement and demolition of an existing fitness center (Smith Fitness Center, 20,219 SF). This project is to support the population increase and MWR Baseline Standards of 181,000 SF authorized due to the new missions recommended by DoD and the IGPBS.

- Child Development Center – School Age, PN 55267, consists of constructing a new School Ages Services Building for ages 6-10. The existing facility does not meet DA Child Care Standards for bathroom facilities for current population. This project is to support an increase of 626, 6-10 year-old children at Fort Knox, due to the new missions recommended by DoD and the IGPBS.
- Child Development Center Connector, PN 65504, consists of renovating and constructing an administrative connector between two existing Child Development Centers freeing up several care giving rooms currently occupied by staff. This project is to support an increase of 682, infant to 5 year-old children at Fort Knox due to the new missions recommended by DoD and IGPBS.
- Army Community Services Center, PN 65505, consists of constructing a new 21,978 SF Army Community Services Center standard design to support essential and mandated programs, crisis action and response and support functions to Fort Knox.
- Conference Center, PN 65506, consists of renovating an existing 38,836 SF Conference Center, and construction of an Army standard type conference facility that would accommodate large functions up to 1,500 persons.
- Library, PN 65507, consists of renovating of an existing 12,700-SF facility and construction of an addition to meet the 23,300-SF facility in accordance with Army standard type main library facility.

2.3.2 Training Facilities

To support the proposed action at Fort Knox, construction of a new range and the modernization, rehabilitation, upgrade, and revitalization of existing training facilities, including some ranges, would be required to accommodate training activities assigned to Fort Knox.

The projects required to support the proposed action consist of the following:

- 40mm Grenade Garvin Machine Gun (MG) Range, PN 61145, modernizes Garvin and O'Brien Ranges to a 40mm grenade MG range in support of training for incoming engineer units and an Infantry BCT.
- Infantry Squad Battle Course, Kennedy, PN 05924, modernizes existing Kennedy Range to a new standard design infantry squad battle course with five firing points. This project is in support of training for incoming engineer units and an IBCT.
- Military Operations on Urban Terrain (MOUT) Expansion Zussman, Phase I, PN 58675, upgrades the existing Zussman MOUT Training Center by constructing additional buildings and structures. This project is in support of training for incoming engineer units and an Infantry BCT.
- Infantry Platoon Battle Course, Cedar Creek, PN 64823, modernizes the existing Cedar Creek Range to a standard design infantry platoon battle course with one

firing point. This project is in support of training for incoming engineer units and an IBCT.

- Engineer Qualification/Assault Range, PN 62553, involves the construction of a new standard design engineer qualification/assault range in support of training for incoming 19th Engineer Battalion Field Artillery, Infantry BCT, and Unmanned Aerial vehicles.
- Maneuver/Training Facility, Heavy Forces, PN 64825, is a rehabilitation project for maneuver land previously used by heavy maneuver forces. Project consists primarily of rough grading and seeding of approximately 1,317 acres of land in support of training for incoming engineer units and an Infantry BCT.
- Digital Multi-Purpose Range Complex – Aviation, PN 35782, revitalizes the present Yano Range to provide digitally enhanced combat platforms featured in Force XXI war fighting operations.

TABLE 2.2. PROPOSED BRAC AND ARMY TRANSFORMATION RELATED CONSTRUCTION/RENOVATION PROJECTS AT FORT KNOX		
Project No.	Facility	Unit of Measure (Approximate)
GARRISON FACILITIES		
65293	Engineer Battalion Complex	300,000 SF
65306	Human Resources Command Complex – Phase 1	300,000 SF
65833	Human Resources Command Complex – Phase 2	620,000 SF
65415	Deployable Command Post	5,000 new SF; 37,800 renovate SF
65326	100 th Division USAR Headquarters	81,309 SF
65307	Accessions Command Headquarters	75,527
65312	Army Cadet Command	57,458
65332	84 th Army Reserves Readiness Training Center	316,321 SF
65229	Consolidated Rail Head and Marshaling Area	37,000 SF
59207	Public Safety Station	32,500 SF
53766	Soldier Support Center	60,000 SF
57265	Chapel - Troop	22,600 SF
61038	Chapel – FH (Family Housing)	32,900 SF
51675	Physical Fitness Center	79,900 SF
65387	Physical Fitness Facility	68,000 SF
55267	Child Development Center	27,100 SF
65504	Child Development Center Connector	3,500 SF
65505	Army Community Services Center	21,978 SF
65506	Conference Center	38,836 SF
65507	Library	23,300 SF
Total		2,224,029
TRAINING FACILITIES		
61145	40 mm Garvin Machine Gun (MG) Range	3 Firing Points
05924	Infantry Squad Battle Course	1 Lane
58675	Military Operations on Urban Terrain	1 Engagement Area
64823	Infantry Platoon Battle Course	1 Firing Point
62553	Engineer Qualification/Assault Range	1 Firing Point
64825	Heavy Forces Maneuver/Training Facility	1,317 acres
35782	Digital Multipurpose Yano Range Complex	3 Lanes
<i>Source: Fort Knox, 2006</i>		

2.3.3 Weapon Systems and Vehicles

Implementation of the proposed action would not result in changes in the types and varieties of equipment used by units currently assigned to Fort Knox. In general terms there would be two notable changes associated with incoming units:

- A shift from armor training vehicles and weapons systems to infantry based vehicles and weapons, and
- Increase in privately owned vehicles (POVs) associated with HRCOE activities at Fort Knox.

2.3.4 Fort Knox Construction Summary

Table 2.2 identifies proposed garrison facilities projects and training facilities projects required to support the proposed action. For each construction project, the table shows project number, type of facility, and the facility's estimated size.

2.4 SCHEDULE

Under the BRAC law, the Army must initiate all realignments not later than September 15, 2007, and complete all realignments not later than September 15, 2011³. Other non-BRAC actions are scheduled to occur during FY06-11, but may start later.

Implementation of the proposed action would occur over approximately 5 years. Implementation of the non-BRAC portions of the proposed action are also currently scheduled to occur within FY06-11, but may start later. Facilities construction would be synchronized to meet the needs, on a priority basis, of units being relocated. Establishment of new units would occur as facilities for their operations and support become available.

The schedule for implementation of the BRAC portion of the proposed action must balance facilities construction timeframes and planned arrival dates of inbound units, departure of the outbound units, and stand-up dates of newly established units, all within the 6-year limitation of the BRAC law.

³ Section 2904(a), Public Law 101-510, as amended, provides that the Army must "... initiate all closures and realignments no later than two years after the date on which the President transmits a report [by the BRAC Commission] to the Congress ... containing the recommendations for such closures or realignments; and ... complete all such closures and realignments no later than the end of the 6-year period beginning on the date on which the President transmits the report ... " The President took the specified action on September 15, 2005.

SECTION 3

ALTERNATIVES

3.1 INTRODUCTION

A basic principle of NEPA is that an agency should consider reasonable alternatives to a proposed action. Considering alternatives helps to avoid unnecessary impacts and allows analysis of acceptable ways to achieve the stated purpose. To warrant detailed evaluation, an alternative must be reasonable. To be considered reasonable, an alternative must be ready for decision-making (any necessary preceding events having taken place), affordable, capable of implementation, and satisfactory with respect to meeting the purpose of and need for the action. The following discussion identifies alternatives considered by the Army and identifies whether they are feasible and, hence, subject to detailed evaluation in this EA.

Alternatives to the proposed action have been examined according to three variables: means to physically accommodate realigned units, siting of new construction, and schedule. This section presents the Army's development of alternatives and addresses alternatives available for the proposed action. The section also describes the no action alternative.

3.2 DEVELOPMENT OF ALTERNATIVES

3.2.1 Means to Accommodate Realigned or Relocated Units

Relocation of units and establishment of new units involves ensuring that the installation has adequate physical accommodations for personnel and their operational requirements. The Army considers four means of meeting increased space requirements. They are as follows:

- Use of existing facilities;
- Modernization or renovation of existing facilities;
- Leasing of off-post facilities; and/or
- Construction of new facilities.

Army Regulation 210-20, *Master Planning for Army Installations*, establishes Army policy to maximize use of existing facilities. The regulation directs that new construction would not be authorized to meet a mission that can be supported by existing underutilized adequate facilities, provided that the use of such facilities does not degrade operational efficiency. Under this policy, selection and use of facilities to support mission requirements adheres to the foregoing four choices in the order in which they are listed. That is, if there are adequate existing facilities to accommodate requirements, and absent other overriding considerations, further examination of renovation, leasing, or construction alternatives is not required. Similarly, if a combination of use of existing facilities and renovation satisfies the Army's needs, leasing or new construction need not be addressed. New construction may proceed

only when use of existing facilities, renovation, leasing, or a combination of such measures are inadequate to meet mission requirements.

3.2.2 Siting of New Construction

The Army considers both general and specific siting criteria for construction of new facilities.

General siting criteria include the following:

- Consideration of compatibility between the functions to be performed and the installation land use designation for the site;
- Adequacy of the site for the function required;
- Availability and capacity of roads;
- Efficient use of property;
- Development density;
- Potential future mission requirements;
- Special site characteristics, including environmental incompatibilities.

Specific siting criteria include consideration of location of the workforce and efficient, streamlined management of functions. Consolidation and/or collocation of similar types of functions, as opposed to dispersion, permit more efficient use of personnel, equipment, vehicle, and other assets.

3.2.3 Schedule

Alternatives for scheduling of proposed realignment actions are principally affected by three factors: the availability of facilities to house realigned personnel and functions, efforts to minimize potential disruption of mission activities based on the number of personnel involved in the relocation or the amount of work to be performed, and early realization of benefits to be gained by completion of the realignments. In most cases, minor shifts in schedule would not produce different environmental results.

3.3 ALTERNATIVES

The realignment and relocation actions are mandated by BRAC law. The following alternatives will be evaluated in this NEPA document.

3.3.1 No Action Alternative

The No Action Alternative will be included as required by the CEQ regulations to identify the existing baseline conditions against which potential impacts will be evaluated. The No Action Alternative must be described because it is the baseline condition or the current status of the environment if the proposed actions were not implemented. For realignment actions directed by the BRAC Commission, it will be noted that for the No Action Alternative, maintenance of current conditions is not feasible, since the BRAC actions are congressionally mandated actions.

Under the No Action Alternative, Fort Knox would not implement the proposed action and no new units would relocate to Fort Knox. Organizations presently assigned to Fort Knox would continue to train at and operate from the post. Fort Knox would use its current inventory of facilities, though routine replacement or renovations actions could occur, through normal military maintenance and construction procedures, as circumstances independently warrant. The No Action Alternative also serves as the baseline condition against which to measure impacts associated with the proposed action.

3.3.2 Implementation Alternatives for BRAC Directed, BRAC Discretionary, and Army Transformation Related Realignments and Relocations

The Proposed Action included BRAC directed, BRAC discretionary, and other Army transformation actions.

- **BRAC Directed Actions:** Although Public Law 101-51 eliminates the need to decide whether to realign a unit or activity to another location, it does not eliminate the requirement for an environmental analysis of how the realignment or relocation is conducted at the designated installation. Alternatives of how the units or activities could be realigned might include: phasing the move, relocating to interim facilities at the gaining installation, use of renovated facilities versus new construction, or alternative siting of construction at the gaining installation.
- **Discretionary Actions and Other Army Transformation Actions:** Although BRAC legislation eliminates the need to decide whether to realign an installation or transfer a function to another installation, it does not eliminate the requirement for an environmental analysis of how the relocation of units or activities is conducted at the designated installation. Alternatives of how the units or activities could be transferred might include: phasing the move, relocating to interim facilities at the gaining installation, use of renovated facilities versus new construction, or alternative siting of construction at the gaining installation.

Discretionary actions are not exempted from consideration of all alternatives that would be considered for any typical NEPA analysis. Discretionary realignment alternatives might also include: phasing the move, relocating to interim facilities at the gaining installation, use of renovated facilities versus new construction, or alternative siting of construction at the installation.

The Proposed Action

BRAC Directed Actions:

- Realign Fort Knox by relocating the Armor Center and School to Fort Benning, Georgia to accommodate the activation of an Infantry Brigade Combat Team (BCT) at Fort Knox and engineer, military police, and combat service support units from Europe and Korea to Fort Knox.
- Realign Army Human Resources Command from Alexandria, Virginia, Indianapolis, Indiana, and St. Louis, Missouri, to Fort Knox. Relocate and consolidate all functions at Fort Knox.

- Relocate U.S. Army Accessions Command and U.S. Army Cadet Command from Fort Monroe, Virginia, to Fort Knox.
- Realign Fort McCoy, Wisconsin, by relocating the 84th Army Reserve Regional Training Center to Fort Knox.
- Close Louisville United States Army Reserve Center and relocate the 100th Division IT headquarters to Fort Knox.
- Realign the Park Center IV Building, a leased installation in Falls Church, Virginia, by relocating the Army Center for Substance Abuse to Fort Knox.
- Realign Lackland Air Force Base, Texas, Fort Knox, and Fort Sill, Oklahoma, by relocating the correctional function of each to Fort Leavenworth, Kansas, and consolidating them with the correctional function already at Fort Leavenworth to form a single Level II Midwest Joint Regional Correctional Facility.
- Realign Army Research Institute, Human Systems Research by relocating to Aberdeen Proving Ground, Maryland.

BRAC Discretionary Actions:

- Relocate the AAA from St. Louis to Fort Knox.
- Relocate TECO from Fort Knox to Fort Benning.
- Relocate the Camp Memorial Blood Center (blood bank) from Fort Knox to Fort Benning.

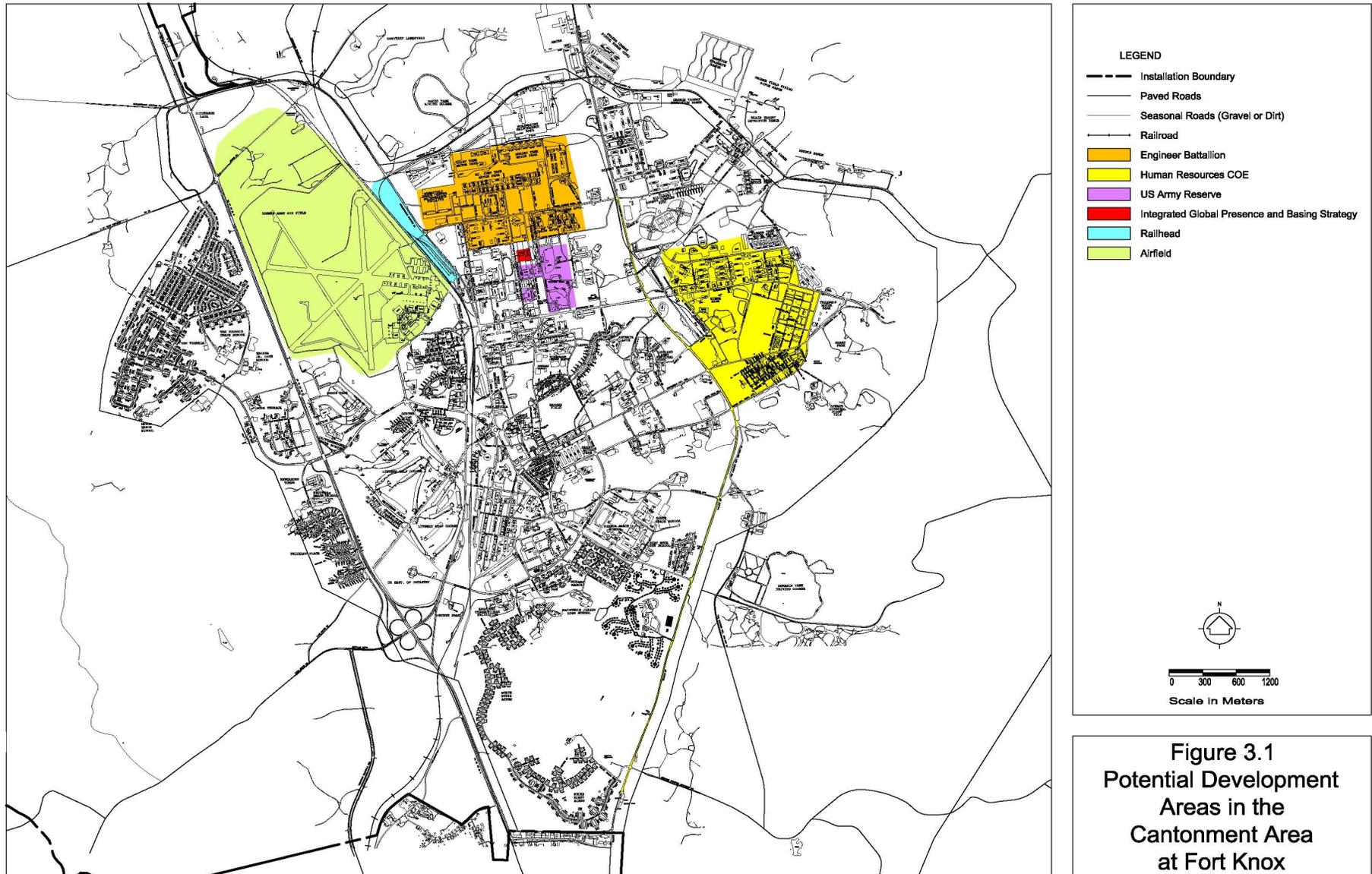
Army Transformation Actions:

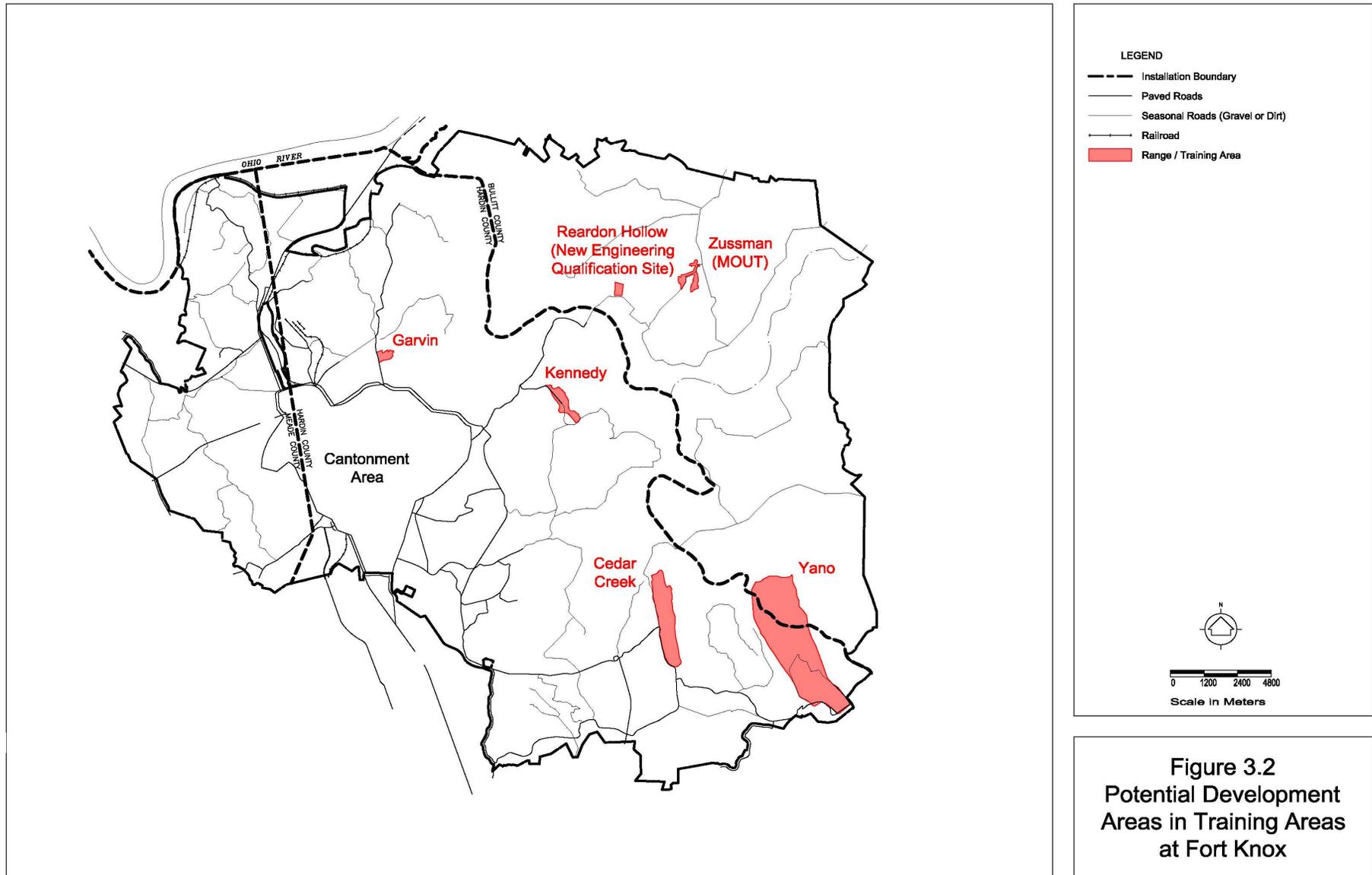
- Relocate Engineer, Military Police and CSS Units from Europe and Korea to Fort Knox.
- Establish an IBCT at Fort Knox
- Establish 3rd ESC at Fort Knox.
- Activate the 11th TAC at Fort Knox.
- Activate the Detachment 1 of the 10th ASOS at Fort Knox.
- Relocate the Ohio Valley District Veterinary Command to Fort Knox.
- Relocate the UACDA and UAEE from Fort Knox to Fort Bliss, Texas.

3.4 IMPLEMENTATION ALTERNATIVES TO THE PROPOSED ACTION

3.4.1 Introduction

Three Alternatives were selected for analysis in this EA based on different locations on Fort Knox that could accommodate the proposed action. These are described below and the locations are shown in Figures 3.1 and 3.2.





Fort Knox has identified 36 facility projects required to support the proposed action. Most of these activities would be involved within the cantonment area of the installation; however, seven projects would be involved with training facilities that exist outside of the cantonment area. PN 62553 is a range project entailing the development of a new training facility site.

Use of off-post leased space to meet Fort Knox's requirements would involve several major drawbacks. Force protection policies specify certain facilities characteristics, such as physical security features, setback from roadways, and "hardened" construction. Use of leased space in the private sector – having personnel and equipment both on-post and off-post – would adversely affect command and control functions, result in higher operational costs, and impair efficient use of resources. For these reasons, use of leased space is not feasible and is not further evaluated in this EA.

Evaluation of all facilities at Fort Knox shows a shortfall in built space to efficiently accommodate the additional personnel. Upon the relocation of the Armor Center, approximately 2.75 million SF of space would be available; however, room size, proportions, and building functional relationships are some characteristics of the space that would not be conducive for meeting the requirements of incoming units (USACE, 2005). Overall, the post requires approximately 1 million SF of additional space to meet the needs of the proposed action. The basis for this involves the additional administrative and human resource functions associated with an infantry-focused operation. To ensure such functions are logistically coordinated, a centralized approach to housing these personnel is preferred. These new facilities may or may not require the demolition of existing buildings. All new buildings, with the exception of those proposed to be built in the training areas, would be built in the existing cantonment footprint.

The schedule for implementation of the proposed action must balance facilities construction timeframes and planned arrival dates of inbound units and stand-up dates of newly-established units (see subsection 2.4).

If costs of renovation exceed 70 percent of costs of new construction, the government will choose new construction thereby eliminating or reducing long-term maintenance costs, unless a building is listed in the National Register of Historic Places (NRHP).

3.4.2 Alternative 1 - Renovation with Minimal New Construction Activities in the Cantonment Area and Training Facility Modifications

The departure of the Armor School would vacate many administration, operations, maintenance, training, and housing buildings. At least half of the cantonment area will be made available once the Armor School departs (USACE, 2005). While a portion of these buildings would need little to no renovation, some buildings would require major renovation to accommodate the proposed action. Likewise, many of the training facilities outside of the cantonment zone and presently used by the Armor School, would be vacated. Six training facilities would be revitalized to accommodate the

proposed action, and one new training facility would be constructed in the Reardon Hollow area.

The proposed railhead project would allow Fort Knox to effectively deploy the incoming infantry and engineering troops in an effective manner.

The installation has considered all existing space and infrastructure and its potential for use to support additional personnel in their realigned units' missions. Figure 3.1 identifies the areas being considered within the cantonment area and Figure 3.2 identifies the training facility activities currently identified for this EA. Under this alternative at least 75 percent of the total square footage of the required building space and training facility would be met using renovated facilities, with the balance being new construction.

3.4.3 Alternative 2 - New Construction with Minimal Renovation Activities in the Cantonment Area and Training Facility Modifications

New construction and renovation to buildings and roads on the cantonment and to buildings and training facilities outside the cantonment would be a necessity to accommodate the proposed action. Construction of new facilities is driven by the need to ensure adequate space is available for new mission requirements that place a stronger emphasis on infantry personnel. The approximately 5.5 million existing SF of building space at Fort Knox is nearly at full capacity for current mission requirements. Once the Armor School has moved to Fort Benning, reuse of exiting Armor School facilities as well as construction would be required to handle the influx of infantry and other personnel. Based on current estimates of projected building space requirements, at a minimum, 1 million SF of additional building area would be needed within the cantonment area to accommodate the HRCOE and other facilities.

Under this alternative, at least 75 percent of the total square footage of required building space and training facility would be met through new construction with the balance being renovated.

Siting of these new facilities is based principally on the precept that Fort Knox Real Property Master Plan seeks generally to collocate like uses and to separate incompatible uses. The Army's 12 general land use categories aid this effort.⁴

Proposed locations for new construction, part of which is shown in Figures 3.1 and 3.2, conform to the Fort Knox Real Property Master Plan. The proposed locations adhere to the general and specific siting criteria set forth in Section 3.2. While numerous variations of the present proposal for siting of facilities could be developed, the locations shown on Figures 3.1 and 3.2 reflect a sound, compatible set of solutions. Alternative siting schemes would produce different, but not better, layouts. Accordingly, additional alternatives for siting of facilities requirements are not evaluated in detail in this EA.

⁴ Army land use planning recognizes the following 12 land use categories: Airfields, Maintenance, Industrial, Supply/Storage, Administration, Training Facilities, Unaccompanied Personnel Housing, Family Housing, Community Facilities, Medical, Outdoor Recreation, and Open Space.

The installation has an extensive and mature energy design program for new building construction that emphasizes sustainability of its buildings and infrastructure. This specific criterion is much easier to incorporate during the design phase of a building project than through the renovation phase of such a project.

3.4.4 Alternative 3 - Combination New Construction and Renovation Activities in the Cantonment Area and Training Facility Modifications (Preferred Alternative)

Many of the projects defined in this EA are dependent on the movement of activities from other installations. As such, maximum flexibility may be necessary to accommodate short-notice changes from these other operations. Additionally, budgetary constraints may inhibit short-term responses for major construction projects. The ability to provide a rapid response plan will require a focused and balanced approach as to whether or not buildings and training facilities can be newly constructed or renovated.

Under this alternative, between 25 percent and 75 percent of the total square footage of required building space and training facilities would be renovated, and the balance developed as new construction.

Because of the dynamics associated with the movement of personnel of such magnitude, the greatest flexibility in scheduling and incorporation of activities may be realized with this approach should scheduling conflicts arise.

SECTION 4

AFFECTED ENVIRONMENT AND CONSEQUENCES

4.1 INTRODUCTION

The following discussion describes the affected environment within Fort Knox locales that are being considered in this analysis. Following a description of the affected environment, the discussion addresses the potential environmental consequences or impacts of each of the implementation alternatives evaluated. The discussion focuses on aspects of the environment that could potentially be impacted by the proposed construction projects, maintenance and operation of the proposed facilities and support elements, and implementation of new activities associated with the proposed action. The potential environmental consequences of the No Action Alternative and each of the implementation alternatives are described for each resource category.

The discussion is structured using the following environmental resource categories:

- Land Use;
- Aesthetics and Visual Resources;
- Air Quality;
- Noise;
- Topography and Soils;
- Water Resources;
- Biological Resources;
- Cultural Resources;
- Socioeconomics;
- Transportation;
- Utilities; and
- Hazardous and Toxic Substances.

Alternatives being considered in the environmental consequences section of this EA are the following:

- No Action Alternative;
- Alternative 1 - Renovation with Minimal New Construction Activities in the Cantonment, and Training Facility Modifications;
- Alternative 2 - New Construction with Minimal Renovation Activities in the Cantonment, and Training Facility Modifications; and

- Alternative 3 - Combination New Construction and Renovation Activities in the Cantonment, and Training Facility Modifications (Preferred Alternative).

4.1.1 Definition of Key Terms

4.1.1.1 Environmental Baseline

The existing environmental baseline conditions have been established based on conditions at the installation as of November 2005.

4.1.1.2 Impact

An environmental consequence (hereinafter referred to in this document as an impact) is defined as a noticeable change in a resource from the existing environmental baseline conditions caused by the proposed action. The terms “impact” and “effect” are synonymous as used in this EA. Impacts may be determined to be beneficial or adverse and may apply to the full range of natural, aesthetic, cultural, and economic resources of the installation and its surrounding environment.

4.1.1.3 Direct Versus Indirect Impacts

Where applicable, the analysis of impacts associated with each course of action has been further divided into direct and indirect impacts. Definitions and examples of direct and indirect impacts as used in this document are as follows:

- **Direct Impacts.** A direct impact is caused by the proposed action and occurs at the same time and place. Both short-term and long-term direct impacts may occur;
- **Indirect Impacts.** An indirect impact is caused by the proposed action and occurs later in time or is farther removed in distance, but is still reasonably foreseeable; and
- **Application of Direct versus Indirect Impacts.** For direct impacts to occur, a resource must be present in a particular area. For example, if highly erodible soils were disturbed due to construction, there would be a direct impact to soils from erosion at the development site. Sediment-laden runoff might indirectly affect surface water quality in adjacent areas downstream from the development site.

4.1.1.4 Impact Characterization

Impacts are characterized by their relative magnitude. Adverse or beneficial impacts that are significant are the highest level of impacts. Conversely, negligible adverse or beneficial impacts are the lowest level of impacts. In this document, five descriptors are used to characterize the level of impacts. In order of degree of impact, the descriptors are:

- No Impact;
- Negligible Impact;

- Minor Impact;
- Moderate Impact; and
- Significant Impact.

The following figure graphically represents this hierarchy of impacts.



4.1.2 Significance

The term “significant,” as defined in Section 1508.27 of the Regulations for Implementing NEPA (40 CFR 1500), requires consideration of the context or intensity of the impact evaluated. Significance can vary in relation to the context of the proposed action. Thus, the significance of an action must be evaluated in several contexts which vary with the setting of the proposed action. For example, context may include consideration of effects on a national, regional, and/or local basis depending upon the action proposed. Both short-term and long-term effects may be relevant.

In accordance with the CEQ implementing guidance, impacts are also evaluated in terms of their intensity or severity. Factors contributing to the evaluation of the intensity of an impact include, but are not limited to the following:

- Because an impact may be both beneficial and adverse, a significant impact may exist even if, on balance, the impact is considered beneficial;
- The degree to which the action affects public health or safety;
- Unique characteristics of the geographic area where the action is proposed such as proximity to parklands, historic or cultural resources, wetlands, prime farmlands, wild and scenic rivers or ecologically critical areas, and rare flora and fauna species;
- The degree to which the effects on the quality of the human environment are likely to be controversial;
- The degree to which the effects of the action on the quality of the human environment are likely to be highly uncertain or involve unique or unknown risks;
- The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration;
- Whether the action is related to other actions with individually insignificant but cumulatively significant impacts. Significance exists if it is reasonable to anticipate a cumulatively significant impact on the environment. Significance cannot be avoided by terming an action temporary or by breaking it down into small component parts;

- 1 • The degree to which the action may adversely affect districts, sites, highways,
2 structures, or objects listed in or eligible for listing in the National Register of Historic
3 Places or may cause loss or destruction of significant scientific, cultural, or historical
4 resources;
- 5 • The degree to which the action may adversely affect an endangered or threatened
6 species or its habitat that has been determined to be critical under the Endangered
7 Species Act (ESA) of 1973; and
- 8 • Whether the action threatens a violation of Federal, state, or local law or
9 requirements imposed for the protection of the environment (i.e., Clean Water Act
10 (CWA) and ESA, etc.).

11 As noted in the following analysis, none of the potential impacts identified in this EA are
12 considered significant.

13 **Geology.** The analysis of geology considered the following:

- 14 • Topographic features;
- 15 • Geologic features;
- 16 • Caves; and
- 17 • Seismicity.

18 Implementation of the proposed action would not result in any change to these geologic
19 elements. As a result of this, detailed consideration of potential geological resource
20 impacts has not been included in this analysis.

21 **4.2 LAND USE**

22 **4.2.1 Affected Environment**

23 **4.2.1.1 Regional Geographic Setting and Location**

24 Fort Knox is located 30 miles southwest of Louisville in north central Kentucky
25 (See Figure 1.1). Fort Knox occupies portions of Bullitt, Hardin and Meade
26 counties. The Ohio River runs along the northwest boundary of the
27 installation.

28 **4.2.1.2 Installation Land**

29 Fort Knox is divided into two general areas: the cantonment (or built-up area
30 of the installation) and the portions of the installation used as maneuver
31 training facilities, ranges, and range impact areas. The training facilities
32 occupy approximately 108,955 acres of Fort Knox, while the cantonment
33 occupies approximately 6,902 acres, or approximately 6.3 percent of the
34 installation. As shown in Figure 4.1, Fort Knox's cantonment is the portion of
35 the installation that has been developed into a variety of urban land uses that
36 together comprise the elements necessary for a complete community.

1 The process of analyzing impacts on land use requires the definition of
2 existing land use zones and the identification of compatible and non-
3 compatible zones. Table 4.1 provides a short description for each land use
4 type on Fort Knox. Land use categories used by the Army are functional in
5 nature, have a common purpose, and denote major land uses, not minor
6 adjuncts to the primary use. For example, an industrial land use area may
7 also contain administration, medical, community facilities, and supply and
8 storage areas.

9 The U.S. Bullion Depository is located at Fort Knox on a 30-acre tract of land
10 completely surrounded by the installation. The Depository, located at the
11 northeast corner of U.S. Highway 31W and Bullion Boulevard, is a restricted
12 area.

13 Godman Army Airfield is located in the northwest corner of the cantonment
14 and consists of four runways (two active and two closed), a helicopter landing
15 area, and 31 helicopter parking pads. These runways are 5,253 feet by 75
16 feet and 5,585 feet by 150 feet and are designed to accommodate light-to-
17 medium duty aircraft. Both runways have 200-foot paved overruns, 1000- by
18 3000-foot clear zones, and an obstruction clearance safety surface area with
19 a 1:40 ratio.

20 There are seven temporary flight strips on the installation (Cedar Creek, Otter
21 Creek, Twin Knobs, East Gate, West Point, Wilcox Lake and Mt. Eden
22 Church). They are located throughout the perimeter of the installation in the
23 impact and training facilities. Each strip is approximately 500 feet long, is
24 graded and turfed, and maintained for emergency, training, and temporary
25 use of Army light aircraft.

26 Fort Knox has a designated Special Use Airspace - Restricted Area
27 R3704A&B that extends from the surface up to 20,000 feet above mean sea
28 level. This Restricted Area is located over the installation ranges and impact
29 areas.

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**TABLE 4.1
DESCRIPTION OF PRESENT LAND USE CATEGORIES AT FORT KNOX**

Land Use	Approximate Acreage	Category Description
Administration	519	Headquarters and offices, professional and technical activities, records, files and administrative supplies.
Airfield	201	Airfield related facilities including landing and takeoff areas, aircraft maintenance areas, airfield operations and training facilities, and navigational and training aids.
Community Facilities	417	Commercial and service support facilities similar to those associated with a civilian community. The commercial facilities include a Commissary and Post Exchange that would make up the commercial aspects of a community center. The service support facilities include educational, post office, library, childcare center, youth center, and chapel and religious education functions.
Family Housing	1,495	Facilities to house enlisted and officer families, including relocatable housing provided for arriving and departing families who are assigned permanent quarters.
Industrial	120	Facilities to house activities for utility plants and waste disposal facilities; includes Directorate of Public Works and Logistics repair shops and facilities engineering shops.
Maintenance	413	Facilities and shops for maintenance and repair of all types of U.S. Army equipment found at the installation level and unit levels.
Medical Facilities	32	Facilities providing for both inpatient and outpatient medical and dental care for active duty and retired personnel.
Open Space	2,408	Safety clearances, security areas, utility easements, water areas, wetlands, conservation areas, forest stands, and grazing areas.
Outdoor Recreational	638	Outdoor athletic and recreational facilities of all types and intensities of use, including natural resources, outdoor recreation and cultural values.
Supply/Storage	180	Bulk-type storage for all classes of Army supply. Includes ammunition storage, cold storage, and general purpose warehouses.
Training Facilities	102,052	Two distinct types of facilities fall under this land use and are identified as cantonment and non-cantonment. Firing ranges and training facilities make up the majority of the non-cantonment uses within this land use. Academic training facilities, indoor firing ranges, U.S. Army Reserve and National Guard centers, range control towers, ammunition breakdown and distribution sheds, target storage and maintenance facilities, range control buildings, simulator buildings, training courses and outdoor facilities make up the cantonment type of facilities within this land use.
Troop Housing/ Unaccompanied Personnel Housing	479	Unaccompanied enlisted and officer personnel barracks, including dining, unit administration, supply, outdoor recreation and community retail and service facilities.
Total Area	108,955	

Source: Fort Knox, 2006.

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2 4.2.1.3 Surrounding Land Use

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The City of Radcliff, in Hardin County, is the largest community adjacent to Fort Knox. Southern Heights, Arlington Woods, and Naples Valley are three developments under construction in the City of Radcliff in Hardin County that are adjacent to Fort Knox. The developments consist of single family homes,

1 zoned as R3, and Naples Valley additionally, allows for quadplexes, zoned as
2 R5. Southern Heights has 79 available lots, Arlington Woods has 170
3 available lots, and Naples Valley has 57 available lots.

4 4.2.1.4 Current and Future Development in the Region

5 Since 1990, the area of zoned land in the Radcliff area has increased by
6 approximately 1,300 acres. In 2003, 70 percent of the Radcliff community
7 was zoned for residential land use, 17 percent was zoned for commercial land
8 use, and 6 percent was zoned for industrial land use. It is projected that the
9 existing industrial zone located adjacent to the southeastern boundary of the
10 installation would be redeveloped to a light industrial zone consisting primarily
11 of warehouse and small commercial applications. Expansion of the regional
12 transportation network is identified under subsection 4.14.

13 4.2.2 Consequences

14 4.2.2.1 No Action Alternative

- 15 • **Direct Impacts.** No changes in land use are anticipated under this
16 alternative as compared to baseline conditions.
- 17 • **Indirect Impacts.** No changes in land use are anticipated under this
18 alternative as compared to baseline conditions.

19 4.2.2.2 Alternative 1 - Renovation with Minimal New Construction Activities in 20 the Cantonment, and Training Facility Modifications

- 21 • **Direct Impacts.** Implementation of the proposed action within the
22 cantonment area would have minor effects on land use. Renovation of
23 the present buildings and new construction to accommodate the
24 HRCOE would convert a large area currently designated mostly as
25 unaccompanied personnel housing to an administration land use
26 designation. This location contained WWII wooden barracks until
27 demolition in the early 1990s. Other designations in the area are open
28 space and community facilities.

29 Renovation of existing buildings and minimal new construction in the
30 cantonment area would decrease the chance that open areas would be
31 converted to other designations, and therefore, this alternative would
32 have the least adverse impacts on land use among the action
33 alternatives.

34 Revitalizations and new training facilities would not change the land
35 use designations that are currently established throughout the training
36 facilities of the installation. The relocation of the Armor School would
37 reduce the amount of heavy maneuvering that takes place on the
38 ranges. Under the proposed action, dismounted infantry training would
39 increase in the training facilities.

- **Indirect Impacts.** No indirect impacts are anticipated for the cantonment or training facilities at this time.

4.2.2.3 Alternative 2 - New Construction with Minimal Renovation Activities in the Cantonment, and Training Facility Modifications

- **Direct Impacts.** Implementation of this alternative would have similar impacts on land use as Alternative 1. However, new construction in the cantonment area could increase the chance of minor impacts occurring to areas that are currently designated as open space.

Impacts to the training facilities under this alternative would be similar to those mentioned for Alternative 1.

- **Indirect Impacts.** No indirect impacts are anticipated for the cantonment or training facilities at this time.

4.2.2.4 Alternative 3 - Combination New Construction and Renovation Activities in the Cantonment, and Training Facility Modifications (Preferred Alternative)

- **Direct Impacts.** Implementation of this alternative would have similar impacts on land use as Alternatives 1 and 2. Under this alternative, these impacts would not be as great as Alternative 2, but could exceed the impacts of Alternative 1. Impacts to the training facilities under this alternative would be similar to those mentioned for Alternatives 1 and 2.

- **Indirect Impacts.** No indirect impacts are anticipated for the cantonment or training facilities at this time.

4.3 AESTHETICS AND VISUAL RESOURCES

4.3.1 Affected Environment

Fort Knox encompasses approximately 108,955 acres of land including over 102,000 acres of range and training lands, and over 3,000 buildings and structures. Located in the Pennyroyal Plain area of the Mississippian Plateau Region, Fort Knox is comprised of a variety of landscapes from lower lying karst plains and dissected plateaus to rounded uplands with moderately steep slopes. These areas are dissected by gently flowing creeks and flat alluvial plains. Native vegetation types line major thoroughfares throughout the post. Selected parcels that have been cleared by demolition are being allowed to grow back to their natural states, increasing the volume of flora present within the cantonment and providing additional buffer space between remaining structures.

Architecturally, the installation has mostly transitioned from temporary WWII-era buildings to a modern day training campus with varied contemporary permanent structures. Many of the more recently constructed buildings on the installation are aesthetically pleasing and complement the surrounding natural and man-made environment. Also, the demolition of WWII temporary wooden buildings has improved

1 the visual image at Fort Knox, and landscaped areas are well-maintained and create
2 attractive settings.

3 **4.3.2 Consequences**

4 **4.3.2.1 No Action Alternative**

- 5 • **Direct Impacts.** Under the No Action Alternative, no new construction
6 would occur and old deteriorating buildings would remain at Fort Knox
7 causing long-term adverse impacts to the aesthetics of the Fort Knox
8 cantonment area. Under the No Action Alternative, maneuver training
9 associated with the Armor School would continue to disturb the
10 landscape. These maneuver areas would not have the opportunity to
11 recover and would continue to be aesthetically unattractive.
- 12 • **Indirect Impacts.** No indirect impacts are anticipated for the
13 cantonment or training facilities at this time.

14 **4.3.2.2 Alternative 1 - Renovation with Minimal New Construction Activities in 15 the Cantonment, and Training Facility Modifications**

- 16 • **Direct Impacts.** Short-term minor adverse impacts to the aesthetics of
17 areas surrounding renovation and new construction would be
18 expected. Because renovation is less intrusive to surrounding areas
19 than new construction, the short-term impacts associated with this
20 alternative would be fewer than those for Alternative 2 or Alternative 3.
21 With minimal new construction, fewer tree and ground clearing would
22 occur. However, the demolition of older deteriorating buildings, the
23 renovation of existing buildings, and the construction of new buildings
24 would have a long-term beneficial impact on the aesthetics and visual
25 resources at Fort Knox.

26 Due to the impacts of maneuver training associated with the Armor
27 School, the landscapes throughout maneuver training facilities are
28 highly disturbed. Relocation of the Armor School would result in a
29 decrease of disturbance to the landscape (armor training is more
30 intrusive to the landscape than infantry training) causing a long-term
31 beneficial impact to the aesthetics of the training facilities.

- 32 • **Indirect Impacts.** No indirect impacts are anticipated for the
33 cantonment or training facilities at this time.

34 **4.3.2.3 Alternative 2 - New Construction with Minimal Renovation Activities in 35 the Cantonment, and Training Facility Modifications**

- 36 • **Direct Impacts.** Impacts under this alternative would be similar to
37 those mentioned for Alternative 1, but greater short-term adverse
38 impacts would occur due to more new construction. However, more
39 new construction would result in greater long-term beneficial impacts
40 due to the removal of old and deteriorating buildings.

1 Impacts to the training facilities under this alternative would be similar
2 to those mentioned for Alternative 1.

- 3 • **Indirect Impacts.** No indirect impacts are anticipated for the
4 cantonment or training facilities at this time.

5 **4.3.2.4 Alternative 3 - Combination New Construction and Renovation Activities** 6 **in the Cantonment, and Training Facility Modifications (Preferred** 7 **Alternative)**

- 8 • **Direct Impacts.** Impacts under this alternative would be similar to
9 those mentioned in Alternative 1 depending upon the amounts of
10 renovation and new construction that would take place in the
11 cantonment. Renovations would have fewer short-term adverse
12 impacts and new construction would have greater long-term beneficial
13 impacts.

14 Impacts to the training facilities under this alternative would be similar
15 to those mentioned for Alternative 1.

- 16 • **Indirect Impacts.** No indirect impacts are anticipated for the
17 cantonment or training facilities at this time.

18 **4.4 AIR QUALITY**

19 **4.4.1 Affected Environment**

20 Air quality is determined within regional boundaries and by pollutant concentration
21 guidelines as defined and enforced by the United States Environmental Protection
22 Agency (USEPA) and state agencies as authorized under the CAA. Pursuant to the
23 CAA, USEPA has established National Ambient Air Quality Standards (NAAQS),
24 ambient air concentrations of the criteria air pollutants (sulfur dioxide (SO_x) carbon
25 monoxide (CO), ozone, nitrogen oxides (NO_x), lead, and respirable particulate matter)
26 intended to protect the public health and welfare within an acceptable margin of error.

27 **4.4.1.1 Ambient Air Quality Conditions**

28 Ambient air is defined as the outside air to which the general public is
29 exposed. The primary NAAQS are intended to protect public health, while the
30 secondary NAAQS are intended to protect the environment (*e.g.*, crops and
31 wildlife). The primary and secondary NAAQS are listed in Table 4.2.

Air Pollutant	Averaging Period	Standard	Ambient Concentration parts per million (ppm), $\mu\text{g} / \text{m}^3$
Particulate Matter < 10 μ (PM ₁₀)	Annual*	1° and 2°	50
	24 hours	1° and 2°	150
Particulate Matter < 2.5 μ (PM _{2.5})	Annual*	1°	15
	24 hours	1°	65
Sulfur Dioxide (SO ₂)	Annual*	1°	0.03 / 80
	24 hours	1°	0.14 / 365
	3 hours	2°	0.5 / 1,300
Carbon Monoxide	8 hours	1°	9 / 10
	1 hour	1°	35 / 40
Ozone	1 hour	1°	0.12 / 235
Nitrogen Dioxide (NO ₂)	Annual*	1° and 2°	0.053 / 100
Lead	Annual*	1° and 2°	1.5
<i>Notes: * =Arithmetic mean; $\mu\text{g}/\text{m}^3$ = micrograms / cubic meter; mg/m^3 = milligrams / cubic meter; ppm = parts per million. Source: 40 CFR Part 50.</i>			

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The Clean Air Act Amendments of 1990 defined air pollutant non-attainment areas and air pollution control requirements. It also expanded the list of hazardous air pollutants to the current list of 188 pollutants, introduced technology-based control standards, established a new Federal Operating Permit (Title V) program and addressed mobile source emissions, acid rain, and ozone.

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USEPA regulations also allow state air quality permitting programs consistent with the requirements of Title V of the CAA. These regulations define the minimum elements required by the CAA for state Operating Permit programs, and the corresponding standards and procedures by which the USEPA Administrator would approve, oversee, and withdraw approval of state Operating Permit programs.

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An area that does not meet the NAAQS for a pollutant is classified as a non-attainment area for the pollutant. Non-attainment areas are under strict regulatory restriction in an effort to lower pollutant concentrations to acceptable levels. An area defined as being in attainment for all criteria pollutants is considered to have acceptable or “good” air quality.

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4.4.1.2 Air Pollutant Emissions at Installation

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Fort Knox is located in the North Central Quality Control Region for Air Quality and in the Kentucky portion of the southeast air quality zone. Ambient air quality at Fort Knox is in attainment for all criteria pollutants and within USEPA’s NAAQS guidelines for acceptable air quality.

1 Fort Knox holds a Title V operating permit (Number V-02-030) that was
2 issued on March 21, 2003. The permit is valid for 5 years from the date it was
3 issued. The Title V permit covers all known point sources located at Fort
4 Knox. Emission sources include storage and use of gasoline, distillate fuel,
5 jet fuel, paint booth operations, oil and gas fired boilers, and degreaser tanks.
6 The permit requirements include an annual inventory update on each of these
7 sources and also covers monitoring, recordkeeping, and reporting
8 requirements.

9 **4.4.1.3 Regional Air Pollutant Emissions Summary**

10 Section 176 of the CAA, the General Conformity Provision, is intended to
11 ensure that federal programs and activities do not hinder the attainment and
12 maintenance of regional air quality goals. More specifically, conformity
13 consists of determining whether a federal action would contribute to or cause
14 a violation of a NAAQS, increase the frequency of an existing violation, or
15 delay the timely attainment of a NAAQS. The National Highway System
16 Designation Act of 1995 modified Section 176 of the CAA to make conformity
17 non-applicable in air quality attainment areas. Thus, the General Conformity
18 Provision applies to non-attainment and maintenance areas. The Fort Knox
19 cantonment area is located in an attainment or maintenance area and is
20 therefore not subject to a conformity analysis.

21 Only one surrounding county is designated as a non-attainment area. Bullitt
22 County, which encompasses a small portion of the eastern boundary of Fort
23 Knox, is non-attainment for ozone and PM 2.5. While the Zussman (MOUT)
24 training facility is within the Bullitt County boundary and the Yano training
25 facility extends into Bullitt County, these ranges would continue with their
26 existing uses. The proposed actions for the Yano training facility would not
27 extend into Bullitt County. The Reardon Hollow (Engineer Qualification)
28 training facility activities however, would occur within the Bullitt County non-
29 attainment area. A General Conformity Analysis, IAW 40CFR Part 93
30 Subpart B will be required prior to this project being initiated. Any mitigations
31 that are determined necessary as a result of the conclusions reached in the
32 conformity analysis will be implemented.

33 **4.4.2 Consequences**

34 **4.4.2.1 No Action Alternative**

- 35 • **Direct Impacts.** No changes in the level of current direct air quality
36 impacts at Fort Knox are anticipated under this alternative. Current
37 trends in local air quality would continue to be unchanged.
- 38 • **Indirect Impacts.** No changes in the level of current indirect impacts
39 on air quality would occur under this alternative.

4.4.2.2 Alternative 1 - Renovation with Minimal New Construction Activities in the Cantonment, and Training Facility Modifications

- **Direct Impacts.** Renovation of building facilities and range areas would generate a temporary negligible adverse impact associated with criteria pollutants. Based on EPA AP-42 emission factor guidelines, emissions associated with renovation projects typically are lower than construction projects, unless substantial demolition work is associated with the project. Renovation activities could require construction permits and/or a revision to the existing Title V permit by the Kentucky Division of Air Quality (KDAQ). Renovated facilities and buildings would generate additional heating and cooling emissions proportional to their increase in building design and dimensions, where applicable. The incorporation of energy efficient heating and cooling systems with renovation projects, such as geothermal systems, would help to minimize this impact.

Asbestos-containing material (ACM) is known to be present in some buildings at the installation. ACMs would be identified prior to renovation. If present, ACM would be abated in accordance with federal, state and Army standards to avoid the potential for the release of asbestos fibers.

Table 4.3 highlights the calculated criteria pollutant emissions for the respective building projects based on square footage projections and associated equipment operating hours for projects of such scale. Building projects that did not have such dimensions clearly identified are included in the *All Other Buildings* category as an estimate. The cumulative emission totals are compared to Prevention of Significant Deterioration (PSD) permit requirements that require two analytical provisions: a determination of the Best Available Control Technology for each criteria pollutant and a modeling analysis that demonstrates no significant environmental deterioration resulting from the proposed project or activity.

**TABLE 4.3
POTENTIAL AIR EMISSION IMPACTS FROM BUILDING RENOVATION ACTIVITIES AT FORT KNOX
DUE TO THE PROPOSED ACTION**

Project	Approximate Square Footage	CO	VOC	NO _x	SO _x	PM 10
Human Resources Center of Excellence – Phase I & II Combined	920,000	0.80	0.22	2.2	0.24	0.15
84 th Army Reserve Readiness	316,321	0.27	0.08	0.76	0.08	0.06
100 th Division	81,309	0.07	0.02	0.19	0.02	0.01
Army Accessions Command	72,527	0.22	0.04	0.55	0.06	0.04
Army Cadet Command	57,458	0.18	0.04	0.43	0.05	0.03
Conference Center	38,836	0.03	0.01	0.09	0.01	0.01
Fitness Center Phase I	79,900	0.07	0.02	0.19	0.02	0.01
Library	23,300	0.02	0.01	0.06	0.01	0.01
Community Service Center	21,978	0.02	0.01	0.05	0.01	0.01
Fitness Center Phase II	68,000	0.06	0.02	0.16	0.02	0.01
Engineer Battalion Complex	300,000	0.26	0.07	0.72	0.08	0.05
Deployable Command Post	37,800	0.4	0.11	1.14	0.12	0.09
Child Development Center	27,100	0.02	0.01	0.06	0.01	0.01
Child Development Center Connector	3,500	0.04	0.01	0.11	0.01	0.01
Chapel 1	22,600	0.24	0.07	0.68	0.07	0.05
Chapel 2	32,900	0.35	0.1	0.99	0.11	0.07
Rail Head	37,000	0.03	0.01	0.09	0.01	0.01
Public Safety	32,500	0.03	0.01	0.08	0.01	0.01
All Other Buildings (Estimated)	100,000	0.31	0.06	0.76	0.08	0.05
Total – All Renovation Projects (Tons)	2,163,485 ft²	3.42	0.92	9.31	1.02	0.68

Source: AP-42 Volume 2 Mobile Sources

Square Footages provided by Fort Knox Stationing Charette and USACE Scope of Work for BRAC EA

Assumes no building demolition with the renovation projects

84th ARR and 100th Division will be renovation only and not new construction per Ft. Knox

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The proposed action would require an increase of military, civilian, and contractor personnel at the installation. This would result in a minor permanent adverse impact from certain criteria air pollutants based on the addition of approximately 4,220 POVs per day to the installation (Booz Allen Hamilton, 2005). The increase in vehicular air emissions for volatile organic compounds (VOCs), CO, and NO_x is denoted in Table 4.4 and would result in a minor permanent adverse impact. Assuming that the personnel adjustments to Fort Knox would occur over a five-year transition period, emission increases would occur in a similar timeframe. This impact would also be anticipated in Alternative 2 and Alternative 3.

**TABLE 4.4
PRIVATELY OWNED VEHICLE AIR EMISSION IMPACTS AT FORT KNOX DUE TO THE
PROPOSED ACTION**

Vehicle Emission Parameter	VOCs	CO	NO _x
Cumulative Air Emission Increase (est. by 2011)	0.1	77.1	11.1
Annual Air Emission Increase -2007 – 2011 (assumes uniform phasing of personnel)	0.02	15.4	2.22
Daily Air Emission Increase	0.0001	0.08	0.01

Source: AP-42 Volume 2 Mobile Sources
Notes: * = AP 42 Mobile Source Emissions (Appendix H -Table 1.1B.1)
Assumes 10 miles roundtrip travel for 4,220 vehicles @ 200 times/year
Measured in Tons Per Year (TPY)

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Some training activities generate vehicle emissions and smoke. Fugitive dust may also be generated during training maneuvers and routine operational functions when equipment crosses exposed soils. During these temporary activities, training ranges would be managed so that impacts are within historical levels. Techniques to minimize fugitive dust would be employed, as appropriate. All controls on fugitive dust would conform to established regulations.

Current projections show more than 3,000 pieces of equipment coming to Fort Knox from the IBCT. More than half of this inventory involves vehicular equipment. Consequently, it is estimated that there would be a 25 percent net increase for Government owned vehicles (GOVs) and related equipment coming to Fort Knox relative to that leaving. The increase in GOV air emissions for VOCs, CO, NO_x is denoted in Table 4.5 and would result in a negligible permanent adverse impact. This impact would also be expected under Alternative 2 and Alternative 3. Assuming that the personnel adjustments to Fort Knox would occur over a five year transition period, emission increases would also occur in a similar timeframe.

Vehicle Emission Parameter	VOCs	CO	NOx
Cumulative Air Emission Increase (est. by 2011)	0.38	3.51	0.51
Annual Air Emission Increase -2007 – 2011 (assumes uniform phasing of personnel)	0.07	0.70	0.10
Daily Air Emission Increase	0.01	0.14	0.02

*Notes: * = AP 42 Mobile Source Emissions (Appendix J (Table 2.01)
Assumes additional 400 GOVs utilized 50 days per year.
Measured in Tons Per Year (TPY)*

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- **Indirect Impacts.** The proposed action would require a temporary influx of contractor personnel to perform the activities. This would result in a negligible temporary adverse impact due to the influx of contractors' POVs traveling on the installation to perform the work.

6 This alternative would also likely result in negligible increased indirect
7 air quality impacts. These impacts would be associated with increased
8 business stimulus off-post and an associated increase in construction
9 and operational emissions.

10 **4.4.2.3 Alternative 2 - New Construction with Minimal Renovation Activities in**
11 **the Cantonment, and Training Facility Modifications**

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- **Direct Impacts.** Construction of buildings and training facilities would generate a temporary minor adverse impact associated with criteria pollutants. Depending on how the projects are funded for completion will determine their impact on air quality. Based on EPA AP-42 guidelines, emission factors associated with construction projects typically are higher than renovation projects. Construction activities that have a potential for air emissions would include earthwork, parking and road construction and utility placement. Engine exhaust emissions from construction vehicles would also occur during construction periods. Construction related impacts would be localized and short-term. Much of the proposed construction is located in the cantonment and therefore, some potential exists for human exposure to air emissions during construction.

25 Construction activities would require construction permits and/or a
26 revision to the existing Title V permit by the KDAQ. Table 4.6
27 highlights the calculated criteria pollutant emissions for the respective
28 building projects based on square footage projections and associated
29 equipment operating hours for projects of such scale. Building projects
30 that did not have such dimensions clearly identified are included in the

1 *All Other Buildings* category as an estimate. Depending on the extent
 2 of construction activities and emissions generated for a calendar year,
 3 a PSD review could be warranted. This type of review verifies the
 4 impacts of emissions as they relate to regional air quality.
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**TABLE 4.6
 AIR EMISSION IMPACTS FROM NEW CONSTRUCTION ACTIVITIES AT FORT KNOX DUE TO THE
 PROPOSED ACTION**

Project	Approximate Square Footage	CO	VOC	NO_x	SO_x	PM 10
Human Resources Center of Excellence – Phase I & II Combined	920,000	9.85	2.79	27.64	2.96	2.09
Army Accessions Command	72,527	2.73	0.55	6.72	0.73	0.44
Army Cadet Command	57,458	2.16	0.44	5.32	0.58	0.35
Conference Center	38,836	1.46	0.29	3.6	0.39	0.24
Fitness Center Phase I	79,900	1.25	0.25	3.07	0.33	0.20
Library	23,300	0.88	0.18	2.16	0.23	0.14
Community Service Center	21,978	0.83	0.17	2.04	0.22	0.13
Fitness Center Phase II	68,200	0.76	0.15	1.87	0.20	0.12
Engineer Battalion Complex	300,000	0.26	0.07	0.72	0.08	0.05
Deployable Command Post	5,000	0.4	0.11	1.14	0.12	0.09
Child Development Center	27,100	0.02	0.01	0.06	0.01	0.01
Child Development Center Connector	3,500	0.04	0.01	0.11	0.01	0.01
Chapel 1	22,600	0.24	0.07	0.68	0.07	0.05
Chapel 2	32,900	0.35	0.1	0.99	0.11	0.07
Rail Head	37,000	0.03	0.01	0.09	0.01	0.01
Public Safety	32,500	0.03	0.01	0.08	0.01	0.01
All Other Buildings (Estimated)	100,000	3.77	0.76	9.26	1.00	0.61
Total – All Construction Projects (Tons)	2,238,029 ft²	25.06	5.97	65.55	6.64	4.62

*Source: AP-42 Volume 2 Mobile Sources
 Square Footages provided by Fort Knox Stationing Charette and USACE Scope of Work
 Deployable Command Post – Smaller building dimensions if newly constructed*

7
 8 The proposed action would involve the utilization of a Heavy Forces
 9 Training Range, encompassing the development and grading of
 10 approximately 1,317 acres. This project would have a negligible
 11 temporary adverse impact due to construction activities associated
 12 with the site. Air emissions associated with these projects is denoted
 13 in Table 4.7 below.
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TABLE 4.7 CONSTRUCTION PROJECT PM 10 AIR EMISSIONS AT FORT KNOX DUE TO THE PROPOSED ACTION	
Construction Project	PM-10 Levels
Heavy Equipment Training Area	0.48
Total PM 10 Air Emissions	<i>0.48</i>
<i>Notes: * = AP 42 Uncontrolled Open Dust Source (Table 11.9-1) Assumes soil transfers as follows: Training Range = 5000 T Measured in Tons Per Year (TPY)</i>	

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The proposed action would require a permanent increase of military, civilian, and contractor personnel at the installation. The impacts from POV air emissions would be similar to Alternative 1.

Fort Knox incorporates energy efficient systems as part of its building construction projects. Part of this program utilizes geothermal heat pump systems as a means of providing heating and cooling to facilities. The basis for this system utilizes the natural heating and cooling properties below the earth’s surface to provide building heating, ventilation, and air conditioning (HVAC) system utilization through a network of underground piping and an air distribution process. To date, Fort Knox has incorporated more than 2 million square feet of building space, approximately 36 percent of the existing building space, for use with geothermal heat pump systems.

The construction of new facilities utilizing geothermal heat pump systems would result in a permanent moderate beneficial impact to the installation. Based on calculations comparing conventional gas and electrical 4-pipe heating and cooling systems to geothermal heat pump systems, it is estimated that more than half would reduce the total energy use for a 100,000 square foot building. This would result in an approximate net reduction of 739 tons of carbon dioxide (CO₂), 6 tons of SO_x, NO_x emissions annually for every 100,000 SF building constructed. If all building projects utilize geothermal heat pump systems as the central energy source, there would be a substantial decrease in air emissions for CO₂, SO_x, and NO_x as denoted in Table 4.8.

**TABLE 4.8
AIR EMISSION IMPACTS AT FORT KNOX DUE TO CONSTRUCTION ASSOCIATED WITH THE
PROPOSED ACTION AND UTILIZATION OF GEOTHERMAL ENERGY SYSTEMS**

Emission Parameter	CO₂	SO_x	NO_x
Standard Emission Reduction per 100,000 ft ² Building Space	- 739	- 6	- 2
Emission Reductions for Entire 1,633,694 ft ² Building Space – New Construction	- 12,072	98	32
<i>Source: Ft. Knox 2006 Measured in Tons/Year (TPY)</i>			

- **Indirect Impacts.** The proposed action would require a temporary influx of contractor personnel to perform the activities. This would result in a negligible temporary adverse impact due to the increased use of contractors' POVs on the installation to perform the work.

This alternative would also likely result in negligible increased indirect air quality impacts associated with off-post business stimulus and an associated increase in construction and operational emissions.

4.4.2.4 Alternative 3 - Combination New Construction and Renovation Activities in the Cantonment, and Training Facility Modifications (Preferred Alternative)

- **Direct Impacts.** Construction and renovation of facilities and range areas would generate a temporary minor adverse impact associated with criteria pollutants. Emission factors associated with construction and renovation differ based on the amount and types of activities associated with each, and are reflected in the types of emission factors found in AP-42. Depending on the amount of construction and renovation associated with the building projects, an estimated projection can be made with respect to air emission impacts.

The proposed action would require a permanent increase of military, civilian, and contractor personnel at the installation. The impacts from POV air emissions would be similar to Alternative 1.

The construction of new facilities utilizing geothermal heat pump systems would result in a permanent minor beneficial impact to the installation. Incorporation of such systems is more cost effective during the initial construction phase as opposed to retrofitting existing equipment during the renovation phase. Since this alternative involves partial construction and renovation phases, it is assumed that the construction phases would incorporate this type of HVAC system into its building design but renovation activities would not. Table 4.9 denotes the air emission reductions for CO₂, SO_x, and NO_x based on

1 the assumption that half of the projected building space required would
2 be new construction.

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Emission Parameter	CO₂	SO_x	NO_x
Standard Emission Reduction per 100,000 ft ² Building Space	- 739	- 6	- 2
Emission Reductions for Approximate 816,847 ft ² Building Space – New Construction	- 6,036	- 49	- 16
<i>Source: Ft. Knox 2006 Measured in Tons/Year (TPY)</i>			

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- 6 • **Indirect Impacts.** Impacts under this alternative would be similar to
7 those mentioned in Alternatives 1 and 2, depending upon the amounts
8 of renovation and new construction that would occur.

9 4.5 NOISE

10 4.5.1 Affected Environment

11 The Noise Control Act of 1972 directs federal agencies to comply with federal, state,
12 and local noise control regulations. The Act also exempts noise generated by weapons
13 and equipment in military training facilities from noise regulation. AR 200-1,
14 *Environmental Protection and Enhancement*, incorporates Federal laws on
15 environmental noise for Army activities through the use of the Army's Environmental
16 Noise Management Program. Studies prepared to comply with AR 200-1 are intended
17 to protect an installation's mission and the public by identifying areas adversely affected
18 by noise associated with the installation's facilities and aircraft operations.

19 Noise is defined as unwanted sound, indicating that perceived noise impacts are
20 inherently subjective. Measured in terms of air pressure, sound intensity spans several
21 orders of magnitude. As a result, the response of the human ear to sound is best
22 represented by a logarithmic scale rather than a linear scale. The basic unit of measure
23 on this logarithmic scale is the decibel (dB), and various weighted decibel scales
24 (A, B, C) are used to approximate how people perceive different types of sounds.
25 USEPA has found that widespread community complaints occur when an intrusive
26 sound is 5 dB or more above the background noise level.

27 Military environmental noise typically is not steady, but varies in intensity from moment
28 to moment. To account for these fluctuations, USEPA defined a long-term average
29 noise descriptor, the "equivalent" noise level, or Leq. Finding that the Leq did not
30 adequately account for individuals' increased sensitivity to sound at night, USEPA

1 defined the Day-Night Average Sound Level (DNL), which consists of the Leq with a
2 10-dB penalty for night-time noise. USEPA has endorsed the DNL as the accepted
3 noise descriptor for assessing community noise impacts.

4 The Army recognizes three noise impact zones for its installations, the definitions of
5 which are based on A-weighted noise levels (dBA) for transportation and small-arms
6 noise, and C-weighted noise levels (dBC) for blast noise. dBA is used interchangeably
7 with the term A-weighted day-night level (ADNL) and dBC is used interchangeably with
8 the term C-weighted day-night level (CDNL). These Noise Zones (NZ) are as follows:

- 9 • Zone III (Unacceptable (for noise-sensitive activities)) is the area where the DNL is
10 greater than 75 dBA for aircraft, vehicle, and small arms range noise, and greater
11 than 70 dBC for noise from weapon systems larger than 20 mm. This zone is
12 considered an area of severe noise exposure and is unacceptable for noise-
13 sensitive activities.
- 14 • Zone II (Normally Unacceptable (for noise-sensitive activities)) is the area where the
15 DNL is between 65 and 75 dBA or between 62 and 70 dBC. This area is considered
16 to have a significant noise exposure and is, therefore, normally only acceptable for
17 activities such as industrial, manufacturing, transportation, and resource production.
18 However, if the community determines that these land areas must be used for
19 residential purposes, then noise level reduction features should be incorporated into
20 the design and construction of the buildings.
- 21 • Zone I (Acceptable (for noise-sensitive activities)) is the area where the DNL is less
22 than 65 dBA or less than 62 dBC. This area, considered to have moderate to
23 minimal noise exposure from aircraft operations, weapons firing and other noise
24 sources, is acceptable for noise-sensitive land uses including housing, schools, and
25 medical facilities.

26 The primary noises sources on and adjacent to Fort Knox are tank weapons firing and
27 aircraft operations. Other sources of noise include small weapons firing, operation of
28 civilian and military vehicles, lawn and landscape equipment, construction activities, and
29 vehicle maintenance operations.

30 Fort Knox is required to have an Environmental Noise Management Zone program. The
31 two primary sources of noise at military installations that could potentially have adverse
32 impacts on other installation activities and the surrounding community are aircraft
33 operations, and weapons training and qualification. Fort Knox has an assigned military
34 aircraft and weapons firing range. The location of the range has the potential to cause
35 adverse noise impacts on either on-post or surrounding community land uses.

36 **4.5.2 Consequences**

37 **4.5.2.1 No Action Alternative**

- 38 • **Direct Impacts.** Noise levels within and surrounding Fort Knox would
39 remain at current levels. No additional noise impacts are anticipated for
40 the No Action Alternative.

- 1 • **Indirect Impacts.** No additional indirect impacts on existing noise
2 levels are anticipated when compared to baseline conditions.

3 **4.5.2.2 Alternative 1 - Renovation with Minimal New Construction Activities in**
4 **the Cantonment, and Training Facility Modifications**

- 5 • **Direct Impacts.** It is anticipated that the proposed expansion of the
6 airport runway would have a temporary negligible adverse impact on
7 noise levels at Fort Knox. Based on the understanding that increased
8 air traffic from current levels would be primarily associated with the
9 deployment of infantry personnel, noise increases would be infrequent
10 due to the sporadic flight schedules associated with personnel
11 transfers to Fort Knox.

12 There are two plans associated with the construction of the proposed
13 runway extension. The plans demonstrate that Zone III noise contours
14 would remain predominantly within the confines of the airport
15 boundary. Those sections of the Zone III contour outside the airport
16 boundary would remain within unpopulated zones. In both plans, Zone
17 I levels would influence a minimal portion of the surrounding population
18 inside the cantonment area. Figures 4.2 and 4.3 illustrate the extent of
19 the noise contours for the respective plans.

20 Based on simulation modeling by the DA in 2003, noise contouring
21 was conducted for anticipated weapons training operations at Fort
22 Knox. The noise modeling shows that the small caliber weapons
23 training range Zone III contours do not extend beyond the boundaries
24 of Fort Knox. The Zone II contours minimally extend beyond the
25 southwestern, southeastern, and eastern boundaries of Fort Knox less
26 than 1,600 meters. For the large caliber weapons training range, the
27 noise modeling indicates that the Zone III contours extend beyond the
28 eastern boundary less than 700 meters. The Zone II contours extend
29 beyond the southwestern to the southeastern boundary of Fort Knox
30 from 300 to 1,300 meters. Figure 4.4 illustrates the noise contour
31 zones for the small and large caliber weapons training ranges.

32 Construction noise associated with this alternative would be a
33 temporary negligible adverse impact. Construction noise typically does
34 not contribute substantially to long-term average noise levels but
35 consists of frequent, highly intrusive sounds of 87 to 96 dBA (Suter,
36 2002). The duration of noise from site preparation for either of the
37 airport runway plans would be similar since they involve nearly
38 equivalent areas of site preparation and construction. Additionally,
39 BMPs for these construction activities would be limited to typical
40 working schedules and would thereby lessen the impact to installation
41 personnel.

- **Indirect Impacts.** No indirect impacts on existing noise levels are anticipated as compared to baseline conditions.

4.5.2.3 Alternative 2 - New Construction with Minimal Renovation Activities in the Cantonment, and Training Facility Modifications

- **Direct Impacts.** Impacts to the cantonment area and training facilities under this alternative would be similar to those mentioned for Alternative 1.
- **Indirect Impacts.** No indirect impacts on existing noise levels are anticipated as compared to baseline conditions.

4.5.2.4 Alternative 3 - Combination New Construction and Renovation Activities in the Cantonment, and Training Facility Modifications (Preferred Alternative)

- **Direct Impacts.** Impacts to the cantonment area and training facilities under this alternative would be similar to those mentioned for Alternatives 1 and 2.
- **Indirect Impacts.** No indirect impacts on existing noise levels are anticipated as compared to baseline conditions.

4.6 TOPOGRAPHY AND SOILS

4.6.1 Affected Environment

4.6.1.1 Topographic Conditions

The topography of Fort Knox has a wide variation from flat, alluvial floodplains along rivers to rugged knobs and broad ridge tops, narrow valleys, and steep to sloping cliffs. Bottomlands along rivers and creeks are level to gently sloping. Most of the installation lies within a rolling to hilly landscape featuring karst topography of intermittent sinkholes, outcropping knobs, narrow steep ridges, sinking streams, caves, and other karst features. Muldraugh Hill is a steep ridge that runs northwest to southeast through Fort Knox. Elevations on Fort Knox vary from 380 feet along the banks of the Ohio River near Hughes Landing to 990 feet at Dawson Knob (Fort Knox ICRMP, 2005).

4.6.1.2 Soils

Native soils at Fort Knox consist of materials that have developed on unconsolidated stream deposits and residual soils formed on limestone, shale, siltstone, and sandstone. These soils can be divided into four broad groups: (1) broad second terrace floodplain soils parallel to the Salt River, (2) narrow, nearly level and sloped first terrace floodplain soils immediately adjacent to the Salt River and small streams, (3) steep slopes on ridges up-gradient from the floodplain, and (4) ridge top soils (Parsons, 2002).

Native soils in the specific areas of the 6500 area and proposed BCT East cantonment area consist of the following (Parsons, 2002):

- 1 • The soils generally located on the western and southern sections of
2 these areas are classified as Crider silt loam with 6 to 12 percent
3 slopes. These soils are deep and well-drained with moderate
4 permeability and high water capacity. Due to the slope and the soil's
5 tendency to erode, construction in these areas should be on the
6 contour with minimum removal of vegetation and quick re-
7 establishment in denuded areas.
- 8 • Soils classified as Vertrees Silt Loam are found on the areas with 20 to
9 30 percent slopes and are located generally on the southwestern
10 portion of the area. These soils are deep, steep, and well-drained with
11 slow permeability and high available water capacity. Vertrees Silt Loam
12 soils are subject to erosion if plant cover is removed and must be re-
13 vegetated soon thereafter.
- 14 • In the remaining areas, the soils are classified as Nicholson Silt Loam.
15 These soils tend to be gently sloping (0 to 12 percent) and moderately
16 well-drained with moderate permeability and water capacity. This soil
17 erodes easily when exposed, so disturbed sites must be quickly
18 re-vegetated.

19 Fort Knox soils are susceptible to erosion due to the installation's topography,
20 complex drainage system, and land use. Training facilities that are of
21 particular erosion concern are maneuver areas, bivouac sites, firing points or
22 other assembly areas, unimproved creek crossings, and roads and trails in
23 shallow rocky soils (Fort Knox ICRMP, 2005).

24 4.6.2 Consequences

25 4.6.2.1 No Action Alternative

- 26 • **Direct Impacts.** No changes to topography and soils are anticipated
27 under this alternative as compared to baseline conditions. Heavy
28 forces maneuver training would still be conducted in training facilities.
29 This training would continue to cause soil disturbance and erosion, and
30 long-term impacts to soils would continue to occur.
- 31 • **Indirect Impacts.** No changes to topography and soils are anticipated
32 for the cantonment and training facility under this alternative as
33 compared to baseline conditions.

34 4.6.2.2 Alternative 1 - Renovation with Minimal New Construction Activities in 35 the Cantonment, and Training Facilities Modifications

- 36 • **Direct Impacts.** Direct minor short-term adverse impacts would occur
37 as a result of soil disturbance associated with renovation and
38 construction in the cantonment area. Environmental impacts would be
39 minimized through the use of BMPs and standard construction
40 practices.

1 Once renovations and construction have taken place, an increase in
2 impervious surfaces (i.e., roads, buildings, and parking lots) would
3 exist in the cantonment area. Areas around the buildings and parking
4 lots would be well-vegetated to minimize soil erosion. Soil erosion that
5 would occur as a result of increased run-off associated with the
6 additional impervious surface would be a long-term minor adverse
7 impact.

8 Renovating facilities would result in minimal amounts of bare soil
9 exposure for short durations of time, whereas new construction would
10 result in higher amounts of soils being exposed over a greater amount
11 of time. Therefore, impacts to soils would not be as great under this
12 alternative as identified under the impacts discussed in Alternatives 2
13 and 3.

14 Direct minor short term adverse impacts would occur as a result of soil
15 disturbance and land clearing associated with the revitalization and
16 construction of training facilities. Environmental impacts would be
17 minimized through the use of BMPs and standard construction
18 practices.

19 Implementation of the proposed action would have long-term beneficial
20 impacts on soils in the training facilities because soil disturbance and
21 erosion would be reduced. Heavy forces maneuver training associated
22 with the Armor School causes soils to become highly disturbed.
23 Relocation of the Armor School would decrease impacts to the
24 landscape reducing soil disturbance and erosion.

25 No direct impacts are foreseen to the topography of the cantonment
26 area or training facilities.

- 27 • **Indirect Impacts.** No indirect impacts to Topography and Soils in the
28 cantonment or training facilities are anticipated.

29 **4.6.2.3 Alternative 2 - New Construction with Minimal Renovation Activities in** 30 **the Cantonment and Training Facility Modifications**

- 31 • **Direct Impacts.** Due to more extensive new construction in the
32 cantonment area, this increases the amounts of ground clearing and
33 soil disturbance. Therefore, short-term adverse impacts to soils would
34 be higher under this alternative. Impacts to the training facilities under
35 this alternative would be similar to those described in Alternative 1.
- 36 • **Indirect Impacts.** No indirect impacts to Topography and Soils in the
37 cantonment or training facility are anticipated at this time.

4.6.2.4 Alternative 3 - Combination New Construction and Renovation Activities in the Cantonment and Training Facility Modifications (Preferred Alternative)

- **Direct Impacts.** Impacts to soils under this alternative would be similar to those described in Alternative 1. The amount of new construction under this alternative would be fewer than described in Alternative 2. Therefore, short-term adverse impacts to Topography and Soils would not be as great under this alternative. Impacts to the training facilities under this alternative would be similar to those described in Alternative 1.
- **Indirect Impacts.** No indirect impacts to Topography and Soils in the cantonment or training facility are anticipated at this time.

4.7 WATER RESOURCES

4.7.1 Affected Environment

The following discussion addresses natural water resources within the proposed development areas. Surface water, hydrogeology/groundwater floodplains are discussed in this section. Potable water, storm water, and wastewater systems are addressed in subsection 4.12 (Utilities).

4.7.1.1 Surface Water

Fort Knox is located on an upland sinkhole plain bordered by streams to the north, east, southeast, and west. The limestone deposits of the Mississippian St. Louis Limestone underlie the upland area, whereas the steep valley walls of the streams are cut through the Mississippian Salem Limestone and other underlying formations. The St. Louis Limestone may be as much as 230 feet thick and typically has deep clay residual soil developed at the surface. The Salem Limestone is 80 to 130 feet thick and is characterized as a mixture of limestone, shale, and dolomite with at least two thick shale zones (Parsons, 2002).

Surface waters on Fort Knox include both streams and lakes. There are more than 25 water bodies that serve multiple purposes, ranging from wildlife habitat to recreation to drinking water. In the vicinity of the cantonment area, there are several creeks and two ponds. Mill Creek, the nearest major body of water, is classified as a warm-water aquatic habitat and a primary/secondary contact recreation stream. Mill Creek is also classified as "water quality limited" by Kentucky, due to metals, ammonia, and low dissolved oxygen concentrations (Parsons, 2002).

4.7.1.2 Hydrogeology/Groundwater

The limestones of the St. Louis formation are particularly susceptible to erosion by chemical dissolution, which results in the development of caves, sinkholes, and other karst features. Within the upland, there are relatively few

1 surface streams because rainwater that does not directly infiltrate the soil
2 typically drains to sinkholes. As a result, surface water quickly becomes
3 groundwater and can travel rapidly through solution conduits in the rock.
4 Groundwater in this flow regime moves from the upland areas to emerge at
5 lower elevations in springs and seeps, predominantly at or near the St Louis
6 Limestone-Salem Limestone boundary in the surrounding baseline stream
7 valleys (Parsons, 2002).

8 A large upland area, like that occupied by Fort Knox, can be divided into an
9 assemblage of groundwater basins, each of which drains to a specific spring
10 or series of related springs. As the conduit system matures (old conduits
11 become clogged and new ones open up), groundwater basins can change
12 shape. On a more transitory basis, changes in groundwater recharge volume
13 may also cause changes in basin shape. Heavy rains or drought conditions
14 may cause higher- or lower-flow passages to be used, which may lead to
15 different springs than those dominating the discharge during base flow
16 conditions (Parsons, 2002).

17 Groundwater used for the Fort Knox drinking water supply is from 15 deep
18 wells in the Ohio River Alluvium near West Point, Kentucky, located
19 approximately 7 miles north of Fort Knox. This alluvium, predominantly
20 Pleistocene glacial outwash sediments, consists of unconsolidated sand,
21 gravel, silt, and clay deposits along the Ohio River. The coarse sand and
22 gravel beds supply large volumes of water to industrial, municipal, and
23 domestic wells (KDEP, 1994). Fort Knox has a Wellhead Protection Plan and
24 a Source Water Assessment and Protection Plan for protecting its water
25 sources.

26 Kentucky Administrative Regulation (401 KAR 5:037) establishes the
27 requirement to prepare and implement ground water protection plans for the
28 protection of all current and future uses of groundwater and to prevent
29 groundwater pollution. Fort Knox has a Groundwater Protection Plan that
30 establishes guidelines for BMPs to prevent groundwater pollution
31 (Parsons, 2002).

32 **4.7.1.3 Floodplains**

33 The Salt River is a major drainage that enters the Ohio River just northwest of
34 the installation. The 100-year floodplains associated with the Salt River, and
35 several of its tributaries, Mud Creek, and Pond Creek Cedar Branch, traverse
36 portions of Fort Knox. The floodplains of Rolling Fork River and Salt River
37 intersect the Training Impact Area. The 100-year floodplains associated with
38 Mill Creek, Rolling Fork and Flat Lick traverse portions of the installation. All
39 of the floodplain areas are subject to flooding, which can be severe when the
40 Ohio River causes upstream flooding along the Salt and Rolling Fork Rivers.
41 Within the cantonment however, drainage is primarily through sinkholes and
42 drainage ditches.

4.7.2 Consequences

4.7.2.1 No Action Alternative

- **Direct Impacts.** Various activities at Fort Knox may contribute sediment and other nonpoint source pollutants to nearby water bodies through storm water runoff. Runoff from training facilities may carry sediments, vehicle fluids, and metals (e.g., lead), as well as phosphorus and toxics contained in munitions. Runoff may also contain nonpoint source pollution such as pesticides, fertilizers, animal waste, oil, and grease. Runoff from areas that have been harvested for timber may contain sediment, large organic debris, oil, and grease.
- **Indirect Impacts.** No indirect impacts on water resources are anticipated under this alternative as compared to baseline conditions.

4.7.2.2 Alternative 1 - Renovation with Minimal New Construction Activities in the Cantonment, and Training Facility Modifications

- **Direct Impacts.** The potential of a temporary negligible adverse impact could result from rainwater runoff making contact with hazardous substances used and wastes stored in association with construction and renovation activities.
- **Indirect Impacts.** As a result of construction, renovation and repair activities, water usage at the installation would temporarily increase resulting in a negligible temporary adverse impact to the West Point Well Field aquifer and McCracken Springs surface water sources identified in Section 4.12.1.1.

The projected increase in industrial and domestic water usage at the installation would result in a permanent negligible adverse impact based on a slight increase in water usage from the West Point Well Field aquifer and McCracken Springs surface water sources identified in Section 4.12.1.1.

4.7.2.3 Alternative 2 - New Construction with Minimal Renovation Activities in the Cantonment, and Training Facility Modifications

- **Direct Impacts.** Impacts under this alternative would be similar to those mentioned in Alternative 1.
- **Indirect Impacts.** Impacts from this alternative would be similar to those identified in Alternative 1.

Additionally, under this alternative, approximately 20 acres of impervious surfaces (buildings and parking lots) would be added to the cantonment area. There would be potential permanent negligible adverse impacts, depending on rainfall runoff rates, to the water resources identified in Alternative 1.

4.7.2.4 Alternative 3 - Combination New Construction and Renovation Activities in the Cantonment, and Training Facility Modifications (Preferred Alternative)

- **Direct Impacts.** Impacts under this alternative would be similar to those mentioned in Alternatives 1 and 2, depending upon the amounts of renovation and new construction that would occur.
- **Indirect Impacts.** Impacts from this alternative would be similar to those identified in Alternative 1.

4.8 BIOLOGICAL RESOURCES

4.8.1 Affected Environment

4.8.1.1 Vegetation and Timber

A variety of vegetative communities are found at Fort Knox. The terrestrial habitat at Fort Knox can generally be categorized within one of the following communities:

- beech-maple forest,
- cedar glade,
- disturbed areas,
- oak-hickory forest,
- old field and grasslands,
- pine plantation, and
- bottomland forest.

Oak, hickory, and maple forest is dominant in the uplands, common species include white oak (*Quercus alba*), shagbark hickory (*Carya ovata*), and sugar maple (*Acer saccharum*). There is a significant component of white ash (*Fraxinus americana*) and yellow poplar (*Liriodendron tulipifera*) forest, with a minor presence of sugar maple, occurring on ravines, north slopes, and flats.

The old field and early successional habitats located in the northern portion of the installation contain almost pure stands of sassafras (*Sassafras albidum*) or black locust (*Robinia pseudoacacia*). The bottomland forest is dominated on the upper floodplain terraces by white oak (*Quercus alba*), bur oak (*Quercus macrocarpa*), and sugar maple (*Acer saccharum*). There is also a substantial component of American beech (*Fagus grandifolia*), green ash (*Fraxinus pennsylvanica*), sweet pignut hickory (*Carya ovalis*), bitternut hickory (*Carya laciniosa*), shagbark hickory (*Carya ovata*), persimmon (*Diospyros virginiana*), and sweetgum (*Liquidambar styraciflua*) in the bottomland forest communities. Riparian forests are dominated by silver maple (*Acer saccharinum*), cottonwood (*Populus deltoides*), sycamore (*Platanus occidentalis*), and boxelder (*Acer negundo*). The old-field and

1 grassland areas of the installation are dominated by exotic species such as
2 fescue (*Festuca arundinacea*) and sericea lespedeza (*Lespedeza cuneata*).
3 There are isolated grassland areas of the installation that contain remnant
4 populations of native warm season grasses such as big bluestem
5 (*Andropogon gerardii*), little bluestem (*Andropogon scoparius*), and Indian
6 grass (*Sorghastrum nutans*), and areas that have been seeded with these
7 grasses.

8 Fescue- and bluegrass-covered lawns are interspersed with a variety of
9 hardwood trees throughout the cantonment area.

10 **4.8.1.2 Fish and Wildlife**

11 Fort Knox has approximately 59,000 acres available for hunting and fishing.
12 Principal species that may be found on the installation include mammals such
13 as white-tailed deer, raccoon, gray and fox squirrels, Eastern chipmunks,
14 opossum, woodchucks, coyotes, and striped skunks. Small reptiles, such as
15 the box turtle, rat snake, and garter snake, also inhabit the area. Numerous
16 neo-tropical migratory birds, such as thrushes, flycatchers, sparrows, and
17 warblers inhabit Fort Knox during the spring and summer months. Common
18 wildlife species present on Fort Knox are identified in Table 4.10.

19

TABLE 4.10 COMMON WILDLIFE SPECIES AT FORT KNOX	
Common Name	Scientific Name
White-tailed Deer	<i>Odocoileus virginianus</i>
Raccoon	<i>Procyon lotor</i>
Eastern Gray Squirrel	<i>Sciurus carolinensis</i>
Eastern Fox Squirrel	<i>Sciurus niger</i>
Eastern Cottontail	<i>Sylvilagus floridanus</i>
Eastern Chipmunk	<i>Tamias striatus</i>
Opossum	<i>Didelphis virginiana</i>
Woodchuck	<i>Marmota monax</i>
Striped skunk	<i>Mephitis mephitis</i>
Eastern box turtle	<i>Terrapene carolina</i>
Rat snake	<i>Elaphe obsoleta</i>
Eastern Garter snake	<i>Thamnophis sirtalis</i>
Rainbow Trout	<i>Oncorhynchus mykiss</i>
Brown Trout	<i>Salmo trutta</i>
Channel Catfish	<i>Ictalurus punctatus</i>
Largemouth Bass	<i>Micropterus salmoides</i>
Bluegill	<i>Lepomis macrochirus</i>
Redear Sunfish	<i>Lepomis microlophus</i>
White Crappie	<i>Pomoxis annularis</i>
Mourning Dove	<i>Zenaida macroura</i>
American Robin	<i>Turdus migratorius</i>
Common Crow	<i>Corvus brachyrhynchos</i>
Blue Jay	<i>Cyanocitta cristata</i>
<i>Source: Fort Knox, 2006</i>	

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2 **4.8.1.3 Threatened and Endangered Species**

3 Fort Knox and the immediate surrounding area provide suitable habitat for
 4 certain federally-listed Threatened and Endangered (T&E) species and
 5 species of Management Concern. Several species listed by the Kentucky
 6 State Nature Preserves Commission as threatened, endangered, or of special
 7 concern are also present in the area. Table 4.11 presents a list of the federal
 8 and state T&E species and species of concern found at Fort Knox.

9 Two federally-listed endangered species are known to occur on the
 10 installation: the gray bat and the Indiana bat. The federally-listed threatened
 11 bald eagle is frequently on and adjacent to the installation to overwinter and
 12 during fall and spring migration events. Fort Knox is also in the migratory
 13 pathway for several federally-listed birds. Migratory birds are protected by the
 14 Migratory Bird Act. Fort Knox has an Endangered Species Management Plan
 15 to protect the federally-listed threatened and endangered species and their
 16 habitats on the installation.

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Four federally-identified species of concern are present on the installation. They are the Henslow's sparrow, cerulean warbler, northern cavefish, and the white walnut.

The areas proposed for construction under the proposed action and the areas proximate to the facilities being considered for construction and renovation are currently cleared and/or developed and are not suitable habitat for any of these species.

**TABLE 4.11
THREATENED AND ENDANGERED SPECIES AND SPECIES OF MANAGEMENT OR SPECIAL CONCERN AT FORT KNOX**

Scientific Name	Common Name	Federal Status	State Status
Birds			
<i>Accipiter striatus</i>	Sharp-shinned hawk	None	SSC
<i>Ammodramus henslowii</i>	Henslow's sparrow	SMC	SSC
<i>Ardea herodias</i>	Great blue heron	None	SSC
<i>Certhia Americana</i>	Brown creeper	None	Endangered
<i>Dendroica cerulean</i>	Cerulean warbler	SMC	None
<i>Haliaeetus leucocephalus</i>	Southern bald eagle (migratory)	Threatened	Endangered
Mammals			
<i>Myotis grisescens</i>	Gray bat	Endangered	Endangered
<i>Myotis sodalis</i>	Indiana bat	Endangered	Endangered
<i>Nycticeius humeralis</i>	Evening bat	None	Threatened
<i>Sorex hoyi winnemana</i>	Pygmy shrew	SMC	None
Amphibians			
<i>Hyla versicolor</i>	Northern gray tree frog	None	SSC
Crustaceans			
<i>Orconectes inermis</i>	Cave crayfish	None	SSC
Fishes			
<i>Amblyopsis spelaea</i>	Northern cavefish	SMC	SSC
Plants			
<i>Heteranthera limosa</i>	Blue mud-plantain	None	SSC
<i>Juglans cinerea</i>	White walnut	SMC	SSC
<i>Sedum telephiodes</i>	Allegheny stonecrop	None	Threatened
<i>Silphium laciniatum</i>	Compass plant	None	Endangered
<i>Spiranthes magnicamporum</i>	Great Plains Ladies' tresses	None	Threatened
<i>Sporobolus heterolepis</i>	Northern Dropseed	None	Endangered
<i>Viola egglestonii</i>	Glade violet (Eggleston's violet)	None	SSC
SMC = species of management concern (federal) SSC = species of special concern (state) Source: Parsons, 2006.			

9

1 4.8.1.4 Wetlands

2 Congress enacted the CWA in 1972 to restore and maintain the chemical,
3 physical, and biological integrity of the Nation's waters. Section 404 of the
4 CWA delegates jurisdictional authority over wetlands to the U.S. Army Corps
5 of Engineers (USACE) and the USEPA. Waters of the United States
6 protected by the CWA include rivers, streams, estuaries, most ponds, lakes,
7 and wetlands.

8 The USACE, which has regulatory authority for administering the CWA,
9 defines a wetland as follows:

10 *"Those areas that are inundated or saturated by surface or ground water*
11 *at a frequency and duration sufficient to support, and that under normal*
12 *circumstances do support, a prevalence of vegetation typically adapted for*
13 *life in saturated soil conditions. Wetlands generally include swamps,*
14 *marshes, bogs, and similar areas (USACE, 1987)."*

15 Wetlands are typically classified by the Cowardin system (Cowardin et al.,
16 1979). According to a 1994 U.S. Fish and Wildlife survey wetland survey on
17 Fort Knox, 978 acres are classified as palustrine forested wetlands, 22 acres
18 are classified as palustrine emergent wetlands, and 155 acres are classified
19 as palustrine scrub-shrub wetlands (Merritt and Carter, 1994).

20 Wetlands are important in several natural processes, including groundwater
21 discharge and recharge, flood flow attenuation, sediment stabilization,
22 nutrient removal or transformation, and fish and wildlife habitat. Figure 4.4
23 shows the areas in the cantonment and training facility that have been
24 classified as National Wetland Inventory (NWI) wetlands. The NWI is simply
25 a tool to assist in the location of potential jurisdictional wetlands and should
26 not be used in place of jurisdictional wetland delineations.

27 4.8.2 Consequences

28 4.8.2.1 No Action Alternative

- 29 • **Direct Impacts.** No changes to biological resources within the
30 cantonment or training facilities are anticipated under this alternative
31 as compared to baseline conditions.
- 32 • **Indirect Impacts.** No changes to biological resources are anticipated
33 under this alternative as compared to baseline conditions. Heavy
34 forces maneuver training would still be conducted in training facilities.
35 This training would continue to cause soil disturbance and erosion, and
36 long-term impacts to biological resources would continue to occur.

37 4.8.2.2 Alternative 1 - Renovation with Minimal New Construction Activities in 38 the Cantonment, and Training Facility Modifications

- 39 • **Direct Impacts.** Renovation and new construction located within Fort
40 Knox's cantonment would have minor adverse impacts on the flora and

1 fauna, as well as their habitats. All the sites that are proposed for
2 building within the cantonment are located in previously developed
3 areas. Therefore, impacts to biological resources that could occur
4 would most likely occur during construction and occupation of the new
5 facilities. Because renovating old buildings would not require the
6 amounts of ground and vegetation disturbance that new construction
7 would, this alternative would have slightly fewer impacts than
8 Alternative 2 and Alternative 3.

9 NWI wetlands are present in the cantonment area. Presently no
10 proposed sites are located in areas where NWI wetlands are present.
11 During the planning stages of renovations or new construction,
12 potential sites would be delineated to determine if jurisdictional
13 wetlands do exist. If jurisdictional wetlands are present, these areas
14 would be avoided. If these areas can not be avoided, the appropriate
15 permits would be obtained in accordance with Section 404 of the CWA.
16 If jurisdictional wetlands are to be affected because of the proposed
17 action, appropriate mitigation would be conducted.

18 During the construction of the new Engineer Qualification/Assault
19 Range and the revitalization of other ranges, timber would be removed
20 and grasslands would be cleared. Removal and/or disturbance of
21 these habitats during revitalization and construction of training facilities
22 would result in short-term moderate adverse impacts to existing flora
23 and fauna due to destruction of habitat and displacement of biota.

24 On training facilities where timber must be removed, a timber sale
25 would be required. Therefore, the timber would be marked and put up
26 for bid before any removal would take place. Furthermore, to ensure
27 compliance with the Section 7 provisions of the ESA and to avoid
28 potential impacts to endangered Indiana bats, trees that are 6 inches
29 or more in diameter at breast height would be cut only during the
30 period of October 15 through March 31.

31 According to NWI mapping, as illustrated on Figure 4.4, Wilcox, Yano
32 and Kennedy training facilities contain NWI wetlands. Yano training
33 facility also sustains mitigated wetlands. During the planning stages of
34 revitalizations or construction, potential sites would be delineated to
35 determine if jurisdictional wetlands do exist. If jurisdictional wetlands
36 are present, these areas should be avoided. If these areas can not be
37 avoided the appropriate permits would be obtained in accordance with
38 Section 404 of the CWA. If jurisdictional wetlands are to be affected
39 because of the proposed action, appropriate mitigation would be
40 conducted.

- 41 • **Indirect Impacts.** Renovating facilities would result in minimal
42 amounts of bare soil exposure for a minimal amount of time, whereas

1 new construction would result in higher amounts of soils being
2 exposed over a greater amount of time. Therefore, minor adverse
3 impacts on biological resources resulting from soil displacement and
4 erosion under this alternative would be lower than Alternative 2 and
5 Alternative 3.

6 To revitalize the training facilities, many areas on the training facilities
7 would have to be regraded and cleared to meet future mission
8 requirements. Moderate short-term adverse impacts would result to
9 flora and fauna due to soil displacement and erosion associated with
10 grading and clearing. Implementation of the proposed action would
11 have indirect long-term beneficial impacts on biological resources
12 because soil disturbance and erosion would be reduced. Heavy forces
13 maneuver training associated with the Armor School highly disturbs the
14 landscape. Relocation of the Armor School would result in reducing
15 soil disturbance and erosion, thereby decreasing impacts to the
16 landscape.

17 **4.8.2.3 Alternative 2 - New Construction with Minimal Renovation Activities in** 18 **the Cantonment, and Training Facility Modifications**

- 19 • **Direct Impacts.** Implementation of this alternative would have similar
20 impacts on biological resources as Alternative 1. However, greater
21 new construction in the cantonment area would result in more ground
22 clearing and habitat disturbance. Therefore, short-term adverse
23 impacts to biological resources would be greater under this alternative.

24 Impacts to wetlands would be similar to those mentioned in
25 Alternative 1.

26 Impacts to the training facilities under this alternative would be similar
27 to those mentioned for Alternative 1.

- 28 • **Indirect Impacts.** Implementation of this alternative would have
29 similar indirect impacts on biological resources as Alternative 1.
30 However, greater new construction in the cantonment area would
31 result in more ground clearing and an associated increase in soil
32 disturbance and erosion. Therefore, short-term adverse impacts to
33 biological resources would be greater under this alternative compared
34 to Alternative 1.

35 Impacts to the training facilities under this alternative would be similar
36 to those mentioned for Alternative 1.

37 **4.8.2.4 Alternative 3 - Combination New Construction and Renovation Activities** 38 **in the Cantonment, and Training Facility Modifications (Preferred** 39 **Alternative)**

- 40 • **Direct Impacts.** Implementation of this alternative would have similar
41 impacts on biological resources as Alternatives 1 and 2. The amount

1 of new construction under this alternative would be fewer than that for
2 Alternative 2. Therefore, short-term adverse impacts to biological
3 resources would be fewer under this alternative.

4 Impacts to wetlands would be similar to those mentioned in
5 Alternative 1.

6 Impacts to the training facilities under this alternative would be similar
7 to those mentioned for Alternatives 1 and 2.

- 8 • **Indirect Impacts.** Implementation of this alternative would have
9 similar indirect impacts on biological resources as Alternative 1. The
10 amount of new construction under this alternative would be fewer than
11 that for Alternative 2. Therefore, indirect short-term adverse impacts to
12 biological resources would not be as great under this alternative.

13 Impacts to the training facilities under this alternative would be similar
14 to those mentioned for Alternative 2.

15 4.9 CULTURAL RESOURCES

16 4.9.1 Affected Environment

17 4.9.1.1 Regulatory Overview

18 Identified archaeological and architectural resources are protected by a
19 variety of laws and regulations; the NHPA of 1966 as amended in 2000; the
20 Archeological and Historic Preservation Act of 1974; the ARPA of 1979, and
21 AR 200-4. The Advisory Council on Historic Preservation further guides
22 treatment of archaeological and architectural resources on historic
23 preservation regulations and the protection of historic properties
24 (36 CFR 800).

25 Since the proponent of the proposed action is the U.S. Army and involves
26 Federal funding and Federal permitting, licensing or approval (36 CFR
27 800.16(y)), this project is under the purview of Section 106 of the NHPA of
28 1966, as amended. Identification of archaeological sites and architectural
29 resources was conducted according to the requirements of 36 CFR 800 for
30 Section 106 of the NHPA, and initiation of the process was implemented with
31 the Kentucky State Historic Preservation Office (SHPO). As stipulated in
32 Section 800.8, federal agencies are encouraged to coordinate compliance
33 with Section 106 with the requirements of NEPA.

34 An undertaking is considered to have an effect on a historic property when
35 the undertaking may alter characteristics of the property that may qualify the
36 property for inclusion in the NRHP. An effect is considered adverse when it
37 diminishes the integrity of the property's location, design, setting, materials,
38 workmanship, feeling, or association. Adverse effects on historic properties
39 would include, but not be limited to:

- 40 • physical destruction, damage, or alteration of all or part of the property;

- 1 • isolation of the property from or alteration of the character of the
- 2 property's setting when that character contributes to the property's
- 3 qualification for the NRHP;
- 4 • introduction of visual, audible, or atmospheric elements that are out of
- 5 character with the property or alter its setting;
- 6 • neglect of a property resulting in its deterioration or destruction; and
- 7 • transfer, lease, or sale of the property (36 CFR 800.9[b]).

8 Impacts to archaeological sites include physical disturbance through surface
9 grading, building excavation and construction, road construction, utility line
10 trenching, use of staging areas for heavy equipment and supplies, and borrow
11 pit excavations. These types of physical disturbance would disturb or destroy
12 the integrity of the archaeological sites and subsequently, its eligibility for the
13 NRHP. Any ground-disturbing action in the area of an NRHP-eligible or
14 potentially eligible archaeological site, or modification to such a site, can
15 affect the integrity of that cultural resource, resulting in alteration or
16 destruction of those characteristics or qualities which make it potentially
17 eligible for inclusion in the NRHP. Under Section 106 of the NHPA, these
18 types of impacts are "adverse effects."

19 Impacts to architectural resources and cemeteries may include demolition,
20 alteration of architectural elements, structural instability through vibration,
21 short-term audio intrusions during construction and visual intrusions to historic
22 settings and cultural landscapes. Any visual or audio intrusions to the setting
23 or demolition or alteration of architectural elements, can affect the integrity of
24 that a NRHP-eligible or potentially eligible architectural resource, resulting in
25 alteration or destruction of those characteristics or qualities which make it
26 potentially eligible for inclusion in the NRHP. Under Section 106 of the
27 NHPA, these types of impacts are "adverse effects."

28 **4.9.1.2 Area of Potential Effect Definition**

29 In order to identify cultural resources that could be impacted by the proposed
30 action, the area within which archaeological and architectural resources
31 would be affected or are likely to be affected must be determined. As defined
32 by 36 CFR 800.16(d) of Section 106 of the NHPA, the Area of Potential Effect
33 (APE) is the "geographic area or areas within which an undertaking could
34 cause changes in the character or use of historic properties, if any such
35 exists." In delineating the APE, factors taken into account include the
36 elements of the proposed project, the existence of buildings, vegetation and
37 terrain with respect to potential visual or audible impacts, and construction
38 activities necessary for the proposed project.

39 The APE for archaeological and architectural (cultural) resources for this
40 analysis includes the area where resources might be directly affected by
41 construction or construction staging activities. Consequently, the APE

1 includes the footprint of the project areas, any linear corridors representing
2 construction of infrastructure such as roads and utilities, and an area
3 approximately 200 feet beyond each of the project areas to include areas
4 where NRHP-eligible or potentially eligible architectural resources might be
5 directly affected or subject to either visual or audible impacts.

6 **4.9.1.3 Prehistoric and Historic Background of Fort Knox**

7 Evidence of human activity in Fort Knox and the surrounding areas spans
8 several thousand years. Paleoindians were the earliest group to leave
9 definitive material records of their presence during the late Pleistocene glacial
10 epoch more than 10,000 years ago. Their descendants and the descendants
11 of other Native American groups who migrated to the region lived in the Falls
12 of the Ohio area and the lower Ohio River Valley for the next 10 millennia.
13 This prehistoric era lasted until the arrival of the European explorers and
14 settlers in the 17th and 18th centuries, the beginning of the Historic Period
15 (Fort Knox ICRMP, 2006).

16 The first permanent settlement in the vicinity began in 1780 when Colonel
17 Andrew Hynes, Captain Thomas Helm, and Samuel Haycraft built three small
18 forts within a mile of each other in Severns Valley near present-day
19 Elizabethtown. Settlement accelerated during the 1780s and several
20 communities were established during the 1790s on major rivers or streams.

21 By the turn of the nineteenth century, hundreds of pioneers had established
22 settlements in and around what would become Fort Knox. Over the next six
23 decades, these pioneer settlements would grow into villages and towns that
24 provided a variety of marketing, manufacturing, and trade services to nearby
25 farmers. By the mid-1850s the area encompassed by Hardin, Bullitt, and
26 Meade Counties had become quite prosperous, with a mixture of agriculture,
27 commerce, and industry.

28 In July 1903 the Secretary of War notified Kentucky's Adjutant General that
29 the area around West Point had been selected as the site for Army training
30 maneuvers. In early October approximately 30,000 troops from cavalry,
31 infantry, and artillery units in both the Regular Army and the National Guard
32 began arriving at West Point, and for the next few days the town and the
33 surrounding area became known temporarily as Camp Young.

34 Military activity did not occur again in the area until the start of World War I.
35 Camp Zachary Taylor was organized on the southern edge of Louisville to
36 accommodate training for soldiers. As the war progressed, the Army was
37 accommodating an increasing number of artillery units, and Camp Taylor
38 lacked the land necessary for training facilities. By May of 1918, the War
39 Department chose to purchase land around the town of Stithton. The
40 following month, Congress allocated \$1.6 million to purchase the land around
41 Stithton. The site was named Camp Henry Knox in honor of George
42 Washington's chief of artillery during the American Revolution.

1 Postwar retrenchment of the Army began in earnest in 1921. As a result, the
2 artillery units at Camp Knox were transferred to Fort Sill, Oklahoma. In June
3 1922 the War Department reevaluated Camp Knox and decided to use it only
4 for summer training within the Fifth Corps Area. During these interwar years,
5 the Army began to further their experimentation with tanks and mechanized
6 warfare. With the decision to allow the cavalry to experiment with
7 mechanization, the War Department authorized creation of a mechanized
8 cavalry organization. From the disbanded mechanized force at Camp Eustis,
9 the Cavalry received the headquarters, tank units, armored cars, and support
10 units. They moved to Camp Knox, where they became the new 7th Cavalry
11 Brigade. In November 1931 personnel from the mechanized force transferred
12 from Camp Eustis to Camp Knox. The following January the Kentucky post
13 was renamed Fort Knox, to reflect its new permanence as the home of the
14 mechanized cavalry.

15 On July 10, 1940 the War Department announced creation of the “Armored
16 Force” as a separate command and Fort Knox was designated the
17 headquarters for the new organization. In July 1940 there were 864 buildings
18 at Fort Knox. With its new role, the post was in desperate need of new
19 construction. Building construction often reached a rate of 160 buildings per
20 month resulting in approximately 3,820 buildings on the post by August 1943.
21 Within the same period, the acreage of the post more than tripled, from
22 30,000 acres to 106,861 acres. During the course of WWII, the nation’s
23 Armored Force also grew to include 16 armored divisions and over 100
24 separate tank battalions and mechanized cavalry squadrons.

25 During the Viet Nam War, thousands of troops were trained at Fort Knox
26 before heading overseas. By the late 1960s, more than 1,000,000 trainees
27 had completed one or more training programs in the Fort Knox Training
28 Center since its inception in 1940. Throughout the Cold War officers, enlisted
29 men, and noncommissioned officers were trained with Soviet and Chinese
30 weaponry in mind. The training literature included how the enemy fought and
31 how he could be countered. With the end of the Cold War, training shifted to
32 peacekeeping activities, a civilian presence, and restrictive rules of
33 engagement. Currently, the Army has turned to anti-terrorism training for
34 soldiers on Fort Knox.

35 The 194th Armored Brigade at Fort Knox was inactivated a result of the Force
36 Structure Plan associated with the 1995 BRAC on June 29, 1995.

37 The 19th Engineer Battalion was activated 16 October 2005 at Fort Knox,
38 Kentucky as a newly organized modular Engineer Battalion, capable of
39 commanding any type of Engineer organization from sappers to construction
40 to topographic units. Along with the organic Headquarters Support Company
41 and Forward Support Company, the 15th Engineer Company (Horizontal), the
42 60th and 76th Engineer Companies (Vertical), and the 72nd Survey and Design

1 Detachment were activated and assigned to the 19th Engineer Battalion. (Fort
2 Knox ICRMP, 2006).

3 **4.9.1.4 Status of Cultural Resource Inventories and Section 106 Consultations** 4 **Archaeological Resources**

5 Archaeological sites located at Fort Knox are divided into two broad
6 categories based on their primary cultural component: prehistoric sites and
7 historic sites. To date 825 separate archaeological sites have been identified
8 within Fort Knox. A total of 240 historic period archaeological sites, 436
9 prehistoric archaeological sites, 131 archaeological sites containing both
10 prehistoric and historic components, and 18 sites which have undetermined
11 cultural components have been identified. A list of these sites can be found in
12 Appendix A.

13 The prehistoric sites reported at Fort Knox include isolated finds, lithic
14 manufacturing stations, general manufacturing stations, food procurement
15 stations, possible mounds, rockshelter sites, and base camps. Village sites,
16 petroglyphs or pictographs, and cave sites may exist on the installation, but
17 have not been identified. In light of the fact that approximately two-thirds of
18 the installation has not been surveyed for archaeological resources, it is
19 estimated that well over 1,000 additional prehistoric archaeological sites exist
20 on Fort Knox.

21 However, there have been 436 prehistoric sites and 131 historic/prehistoric
22 sites identified at Fort Knox and assigned official state site numbers by the
23 Kentucky Office of State Archeology (OSA). The most pervasive prehistoric
24 archaeological sites at the facility include 143 simple open air habitations
25 without mounds and 256 prehistoric workshops. Most of the sites in these
26 categories are lithic scatters of various sizes and artifact densities.

27 Of the 240 historic period sites (excluding those sites which contain both
28 historic and prehistoric components) identified at Fort Knox, 180 are
29 associated with former farmsteads and residences and often include remnant
30 architectural features such as stone foundations, root cellars, and house
31 ruins. Seven historic industrial sites are located within the installation as well
32 as three sites associated with military activities.

33 Of the 825 archaeological sites that have been identified at Fort Knox, 479 do
34 not meet the minimum criteria for inclusion on the NRHP and are not eligible
35 for inclusion. These include 220 prehistoric sites, 168 historic sites, 82
36 prehistoric/historic sites, and 2 stone mounds. A total of 156 archaeological
37 sites have been determined to be potentially eligible for inclusion on the
38 NRHP. Additional Phase II testing excavations are required to determine if
39 the sites meet the minimum criteria for inclusion in the NRHP. Of these sites,
40 84 are prehistoric sites, 48 are historic sites, and 24 are prehistoric/historic
41 sites (Fort Knox ICRMP, 2006). An additional 181 sites have not been
42 adequately investigated to determine their NRHP eligibility. These sites

1 include 122 prehistoric sites, 21 historic sites, 23 prehistoric/historic sites, and
2 15 stone mounds. Location information for 9 additional sites has proven
3 inadequate to relocate the sites.

4 **Cemeteries**

5 The establishment of Fort Knox and the subsequent acquisition of additional
6 land from private landowners over the years have resulted in the installation
7 acquiring 121 cemetery sites with approximately 3,900 confirmed burials.
8 Most cemeteries found on Fort Knox were privately owned cemeteries
9 purchased by the Army in 1918 and the 1940s and 1950s. (Fort Knox
10 ICRMP, 2006). In addition, there is one military Post Cemetery. Appendix B
11 lists these cemeteries. Each section of the Post Cemetery is relatively small,
12 with a combined acreage of approximately 2 acres. The Post Cemetery has a
13 total of 887 graves.

14 **Architectural Resources**

15 Fort Knox's entire architectural inventory can be found in Appendix C. There
16 are 189 buildings on Fort Knox eligible for listing on the NRHP excluding all
17 buildings determined eligible and covered by a programmatic agreement or
18 program comment. While World War II temporary buildings, Capehart and
19 Wherry Era Family Housing, unaccompanied personnel housing, and
20 ammunition storage facilities constructed between 1939 and 1974 are
21 considered eligible for listing on the NRHP, they require no further NHPA
22 Section 106 review under agreements made by DoD and ACHP.

23 The following six buildings are considered individually eligible for the NRHP:

- 24 • Hangar 1/Building 5220;
- 25 • Landing Ship, Tank (LST) Building/Building 1538;
- 26 • Old Guest House/Building 4248;
- 27 • Water Treatment Plant/Building 1205 (Contributing structure in Historic
28 District);
- 29 • Post Headquarters/Building 1101 (Contributing structure in Historic
30 District);
- 31 • Cavalry Chapel/Building 6587;and
- 32 • Building 2368-Gaffey Hall.

33 The Fort Knox Cantonment Historic District has the following 182 buildings
34 eligible for the NRHP:

- 35 • Contributing Buildings and Structures: Building numbers 1, 86, 92-94, 96,
36 98, 100, 101, 203, 204, 414-462, 469, 480-486, 1001-1005, 1008, 1101,
37 1102, 1109, 1110, 1113, 1117-1136, 1173, 1174, 1190, 1191, 1200-1207,
38 1225 (flagpole), 1307-1310, 1401-1436, 1438-1468, and 1472.
- 39 • Contributing Site: parade ground.

- Non-contributing buildings within the historic district: Building numbers 97, 107, 205, 474, 480, 481, 487, 488, 489, 1103, 1116, 1137, 1227, 1300, 1313, 1399, 1437, 1469, 1470, 1487, 1488, 1493, 1494, and 1495.

The Louisville and Nashville (L&N) Turnpike is currently listed on the NRHP. This is a limestone based road with three limestone constructed bridges located on the northern portion of the installation. Construction on the road began near West Point, Kentucky in 1837. Beneath the asphalt surface of Old Wilson Road, much of the original stone surface of the old Louisville and Nashville Turnpike still exists. The stone bridges are the only ones of their kind still in existence along the original L&N Turnpike in Kentucky. The bridges remain unchanged except for a few minor repairs by POWs during WWII.

4.9.1.5 Native American Resources

No recorded Native American traditional cultural properties or sacred sites as defined by the American Indian Religious Freedom Act of 1978 are known to occur on Fort Knox. While no Native American burials or other resources have yet been documented on the installation, there is a possibility that they are present. Two possible earth mounds are reported at Fort Knox. However, these have not been tested and may be natural features.

On May 14, 1998, President Clinton issued EO 13084, Consultation and Coordination with Indian Tribal Governments. This EO recognizes the unique legal relationship the US government has with Indian tribal governments as set forth in the Constitution of the United States, treaties, statutes, EOs, and court decisions. Since the formation of the Union, the United States has recognized Indian tribes as domestic dependent nations under its protection. In treaties, our Nation has guaranteed the right of Indian tribes to self-government. As domestic dependent nations, Indian tribes exercise inherent sovereign powers over their members and territory. The United States continues to work with Indian tribes on a government-to-government basis to address issues concerning Indian tribal self-government, trust resources, and Indian tribal treaty and other rights.

The order also notes that government agencies should establish regular and meaningful consultation and collaboration with Indian tribal governments in the development of regulatory practices on Federal matters that significantly or uniquely affect their communities to reduce the imposition of unfunded mandates upon Indian tribal governments, and to streamline the application process for and increase the availability of waivers to Indian tribal governments. Specifically, the order requires that government agencies, to the extent possible, be guided by the principles of respect for Indian tribal self-government and sovereignty, for tribal treaty and other rights, and have an effective process to permit elected officials and other representatives of Indian tribal governments to provide meaningful and timely input in the

1 development of regulatory policies on matters that significantly or uniquely
2 affect their communities.

3 It is to be the Army's policy to fully comply with EO 13084 by incorporating
4 Indian tribal concerns in decision-making processes supporting Army policies,
5 programs, projects and activities. In this regard, the Army ensures that it
6 would identify, disclose, and respond to potential adverse social and
7 environmental impacts on tribal populations within the area affected by a
8 proposed Army action.

9 **4.9.2 Consequences**

10 **4.9.2.1 No Action Alternative**

- 11 • **Direct Impacts.** No substantial changes in the level of current direct
12 cultural resources impacts are anticipated under this alternative.
13 Existing installation cultural resources management policies and
14 procedures help preclude inadvertent impacts to cultural resources.
15 Consequently, it is not anticipated that any additional archaeological
16 sites or architectural resources would be adversely affected with the
17 No Action Alternative.

18 No substantial changes in the level of current direct cultural resources
19 impacts are anticipated under this alternative. Existing installation
20 cultural resources management policies and procedures help preclude
21 inadvertent impacts to cultural resources. Consequently, it is not
22 anticipated that any additional archaeological sites or architectural
23 resources would be adversely affected with the No Action Alternative.

- 24 • **Indirect Impacts.** No substantial changes in the level of indirect
25 impacts are anticipated for the cantonment or training facilities.

26 **4.9.2.2 Alternative 1 - Renovation with Minimal New Construction Activities in 27 the Cantonment, and Training Facility Modifications**

- 28 • **Direct Impacts.** Potentially eligible NRHP archeological sites are
29 present in the airfield area. Plans should be configured to avoid these
30 sites. If impacts become unavoidable, mitigation measures would be
31 developed in accordance with 36 CFR 800.

32 Presently in a large portion of the cantonment, Phase I archeological
33 surveys have been conducted. However, it is possible that renovations
34 and new construction related to the proposed action could occur in
35 areas that have not been surveyed. In addition, there is a potential
36 that the linear corridors for access roads and utilities could be located
37 in areas that have not been surveyed to current Phase I standards. If
38 renovations or construction would occur in areas that have not been
39 surveyed, the government would require the planned routes and sites
40 to be surveyed prior to renovation or construction. Following all
41 Phase I and II cultural resources investigations, all efforts would be

1 made to avoid disturbing or destroying NRHP-eligible archaeological
2 sites. Therefore, no adverse impacts are anticipated under this
3 alternative.

4 Potentially eligible NRHP archeological sites are present at Cedar
5 Creek and Yano training facilities. Plans should be configured to avoid
6 these sites. If impacts become unavoidable, mitigation measures
7 would be developed in accordance with 36 CFR 800.

8 Phase I archeological surveys have been conducted in a large portion
9 of the training facilities. However, it is not possible to safely survey in
10 all areas. Some of the areas not previously surveyed cannot be
11 surveyed due to life, health, safety risks associated with direct or
12 indirect contact with unexploded ordnance. If revitalizations or
13 construction would occur in areas that have not been surveyed, those
14 areas would be surveyed prior to renovation or construction to the
15 extent that the surveys could be safely accomplished. However,
16 surveys would be omitted where there is any chance of direct or
17 indirect contact with unexploded ordnance.

18 Following all Phase I and II cultural resources investigations, all efforts
19 would be made to avoid disturbing or destroying NRHP-eligible
20 archaeological sites. Therefore, no adverse impacts are anticipated
21 under this alternative.

- 22 • **Indirect Impacts.** No substantial changes in the level of indirect
23 impacts are anticipated for the cantonment or training facilities at this
24 time.

25 **4.9.2.3 Alternative 2 - New Construction with Minimal Renovation Activities in** 26 **the Cantonment, and Training Facility Modifications**

- 27 • **Direct Impacts.** Direct impacts associated with cultural resources to
28 the cantonment and training facility areas under this alternative would
29 be similar to those discussed under Alternative 1.
- 30 • **Indirect Impacts.** No substantial changes in the level of indirect
31 impacts are anticipated for the cantonment or training facilities at this
32 time.

33 **4.9.2.4 Alternative 3 - Combination New Construction and Renovation Activities** 34 **in the Cantonment, and Training Facility Modifications (Preferred** 35 **Alternative)**

- 36 • **Direct Impacts.** Direct impacts associated with cultural resources to
37 the cantonment and training facility areas under this alternative would
38 be similar to those discussed under Alternative 1.

- **Indirect Impacts.** No substantial changes in the level of indirect impacts are anticipated for the cantonment or training facilities at this time.

4.10 SOCIOECONOMICS

Fort Knox's Region of Influence (ROI) for the socioeconomic analysis is comprised of Bullitt County, Hardin County, and Meade County, Kentucky. Portions of Fort Knox are located in each of these three counties. Thus, these counties realize the greatest social and economic impacts from Fort Knox. These impacts include off-post purchase and rental of housing, purchase of goods and services, and employment generation as directly and indirectly related to DoD civilian and military employment on Fort Knox.

4.10.1 Affected Environment

The following sections discuss the existing economic and social conditions of the Fort Knox ROI in respect to labor force, employment, population, housing and quality of life. Existing social and economic characteristics of Fort Knox are also discussed.

4.10.1.1 Economic Development

Regional Economic Activity

The latest year for which the annual average labor force and unemployment rate is available is 2004. The annual civilian labor force within the ROI was approximately 91,000 workers in 2004 with total employment estimated at 86,720 workers (BLS, 2005) as shown in Table 4.12. The average annual unemployment rate in the ROI in 2004 was 5.2 percent, approximately the same as the statewide rate for Kentucky. The current labor force represents an approximate 4 percent increase since 2001, greater than the statewide increase of less than 1 percent during the same period. The majority of the labor force increase occurred in Hardin County, with only a negligible increase in Meade County.

County	Percent Increase, 2000-2004	2004 Labor Force	Unemployment Rate (percent)
Bullitt	1.4	33,923	4.8
Hardin	6.8	45,790	5.3
Meade	Negligible	11,741	5.7
ROI TOTAL	3.9	91,454	5.2
Kentucky	0.9	1,976,204	5.3

*Source: U.S. Department of Labor, Bureau of Labor Statistics, 2004.
¹Represents annual average.*

Employment in the major industry sectors by "place of work" for 2004 is shown in Table 4.13. Employment by "place of work" reflects workers

1 commuting to work outside their county of residence and, thus, results in the
 2 receiving county's employment exceeding the county labor force. Total
 3 employment within the ROI was approximately 93,000 workers in 2004,
 4 representing a 4 percent increase from 2001. Local and regional employment
 5 trends reflect national trends as the services, government, and retail trade
 6 sectors account for 2/3 of the regional employment. The government sector
 7 accounts for 1/3 of the employment in Hardin County, with the military
 8 representing almost 50 percent of government employment. Fort Knox is the
 9 major employer within the region, with state and local governments other
 10 major employers. Larger private industrial sector employers include AGC
 11 Automotive America; Ambrake Corporation; Dow Corning Corporation; Gates
 12 Rubber Company; and Dana Corporation.

13

TABLE 4.13 TOTAL FULL TIME AND PART-TIME EMPLOYMENT BY INDUSTRY BY PLACE OF WORK, FORT KNOX REGION OF INFLUENCE, 2004 (NORTH AMERICAN INDUSTRIAL CLASSIFICATION SYSTEM).		
Industry	Region of Influence	
	Total	Percent
Farm Employment	3,748	4
Forestry, Fisheries	107	<1
Mining	147	<1
Construction	6,749	7
Manufacturing	9,332	10
Transportation, Warehousing, Utilities	1,681	2
Wholesale Trade	666	<1
Retail Trade	11,040	12
Finance, Insurance, Real Estate	5,857	6
Services	26,481	29
Government	23,658	26
TOTAL EMPLOYMENT	92,736²	100
<i>Source: U.S. Department of Commerce, Bureau of Economic Analysis, Regional Economic Information system, 2004</i>		

14

15 Fort Knox Contribution to Regional Economic Activity

16 Fort Knox is a major contributor to the local and regional economy. Table
 17 4.14 reflects the annual expenditures of Fort Knox in direct outputs for
 18 payrolls and other expenditures. In FY05 the combined military and civilian
 19 payrolls was approximately \$460 million, with an additional \$570 million
 20 expended for services, supplies, utilities, and contractual services. In
 21 addition, other economic impacts to the region include installation-related off-
 22 post employment, personal income and business sales; local real estate
 23 taxes and sales taxes; and expenditures by Fort Knox visitors. The total

1 direct economic impact of Fort Knox on the local and regional economy
 2 exceeds one billion dollars annually.

3

TABLE 4.14 MAJOR EXPENDITURES, FORT KNOX, FY 2005.	
Expenditure	Dollars (million)
Military and Civilian Payroll	\$460,000,000
Supplies/Contractual Services	\$570,480,000
Total Expenditures	\$1,030,480,000
<i>Source: Directorate of Resource Management, Fort Knox, Ky., Annual Statistical Report, September, 2005.</i>	

4 **4.10.1.2 Demographics**

5 **Regional Population**

6 Table 4.15 depicts the population distribution and trends within the ROI. The
 7 population of the ROI increased from 160,977 people in 1990 to 181,759
 8 people in 2000. This was approximately a 13 percent increase compared to a
 9 statewide increase of less than 10 percent during the same time period. The
 10 greatest absolute and relative increase in population occurred in Bullitt
 11 County, with Meade County having the smallest absolute and relative
 12 increases.

13 The 2005 population estimate of approximately 194,000 people in the Fort
 14 Knox ROI represents almost a 7 percent increase since 2000. This relative
 15 growth rate compares to a 3 percent rate for the State of Kentucky during the
 16 same period. Population projections for 2015 for the ROI indicate a
 17 continuation of this growth rate. However, these projections were made prior
 18 to the most recent BRAC actions regarding realignment of Fort Knox.

**TABLE 4.15
REGIONAL AND LOCAL POPULATION TRENDS, FORT KNOX REGION OF INFLUENCE, 1990-2015.**

County	2015 Projected Population ¹	2005 Population Estimates ²	Percent Change 1990-2000	2000 Population	1990 Population
Bullitt	78,222	68,474	28.7	61,236	47,567
Hardin	108,505	96,947	5.5	94,174	89,240
Meade	30,636	28,447	0.9	26,349	24,170
ROI Total	217,363	193,868	12.9	181,759	160,977
Fort Knox CDP ³	NA	NA	(42.4)	12,377	21,495
Elizabethtown	NA	NA	24.0	22,542	18,167
Radcliff	NA	NA	11.1	21,961	19,772
Kentucky	4,502,595	4,173,405	9.6	4,041,769	3,685,296

Source: U.S. Department of Commerce, U.S. Census Bureau, 1990 and 2000 U.S. Census.

¹ U.S. Census Bureau, Population Division.

² U.S. Census Bureau, Population Division.

³ CDP denotes Census Designated Place. A CDP represents a concentration of population in an unincorporated (non-municipal) area.

NA - Population estimates and projections not available at this geographic level.

1

2 Natural changes, i.e., births minus deaths or deaths minus births, and net
3 migration are responsible for population growth or decline. Net migration is
4 the difference between people moving into an area (in-migration) and people
5 moving out of that area (out-migration). Table 4.16 portrays the relative
6 importance of these two components of population growth during 2000-2005
7 for the Fort Knox ROI.

8 During 2000-2005, net in-migration was responsible for almost 50 percent of
9 the population growth within the ROI. This relative importance of net
10 migration was approximately the same as that of the State of Kentucky during
11 the same time period. Bullitt County experienced the greatest in-migration
12 with almost 75 percent of its population growth attributable to migration.
13 Hardin County, however, had a net out-migration during this period.
14 Population migration within the ROI is influenced by the activities and
15 personnel changes at Fort Knox.

16

County	Population Increase¹	Natural Increase	Net Migration²	Percent Due to Migration
Bullitt	7,238	2,006	5,341	74
Hardin	2,777	3,990	-1,111	0
Meade	2,098	790	1,350	64
ROI Total	12,113	6,786	5,580	46
Kentucky	131,120	77,156	59,604	45

Source: U.S. Department of Commerce, U.S. Census Bureau, Population Division.
¹ Total population change includes residual population.
² Includes both domestic and international migration.

1

2 **Fort Knox Population**

3 Table 4.17 shows the 2005 military and civilian population associated with
4 Fort Knox. The 2005 Fort Knox on-post population was approximately 24,500
5 people, and is comprised of 11,921 military personnel, 6,799 civilians, and an
6 estimated 5,830 military family members. Additional off-post population within
7 the surrounding five-state area directly associated with Fort Knox includes
8 85,000 military family members of active Army and retirees, and 114,000
9 retired military and reserve personnel.

10

TABLE 4.17 FORT KNOX ON-POST POPULATION, SEPTEMBER, 2005.	
Personnel	Number
Military	
Armor Center School	3,737
Partners in Excellence	1,358
Students/Trainees	3,444
Reserve Comp Training	2,709
Others Under Command	673
On-Post Military Family Members	5,830
Total Military Related Personnel	17,751
Civilian	
Armor Center/School Civil Service	1,715
Armor Center Non-Civil Service	1,238
Partners in Excellence	1,296
Contract Employees	2,550
Total Civilian Personnel	6,799
TOTAL	24,550
<i>Source: Directorate of Resource Management, Ft. Knox, KY, Annual Statistical Report, September, 2005.</i>	

1

2 **4.10.1.3 Housing**3 **Regional Housing and Household Characteristics**

4 In 1999 there were a total of 71,126 housing units within the Fort Knox ROI
5 according to the 2000 U.S. Census, as shown in Table 4.18. The number of
6 housing units increased by 23 percent during the 1990-2000 period. Over
7 50 percent of the total housing units within the region are in Hardin County.
8 According to the 2000 U.S. Census, single-family residential is the dominant
9 housing type comprising approximately 65 percent of the total housing units
10 within the Fort Knox ROI.

11 Selected housing characteristics related to occupancy status, median value,
12 vacancy rate and median household income are shown in Table 4.18. In the
13 ROI, the owner-occupancy rate ranges from 67 percent in Hardin County to
14 84 percent in Bullitt County. The median value of owner-occupied housing in
15 2000 ranged from \$75,500 in Meade County to \$99,400 in Bullitt County.
16 Within the ROI, 7 percent of the housing units were vacant in 2000.
17 Approximately 1,600 of the vacant units were for rent, while 925 were for sale.

18

**TABLE 4.18
HOUSING CHARACTERISTICS, FORT KNOX REGION OF INFLUENCE, 2000.**

County	Total Housing Units 2000	Percent Vacant 2000	Percent Owner Occupied 2000	Median Value Owner Occupied 2000	Median Rent Renter Occupied 2000	Median Household Income 2000
Bullitt	23,160	4.2	84.0	\$99,400	\$425	\$45,105
Hardin	37,673	8.4	66.9	\$84,700	\$355	\$37,745
Meade	10,293	7.9	73.7	\$75,500	\$340	\$36,965
ROI Total	71,126	7.0	73.6	\$88,926	\$365	\$40,055
Elizabethtown	10,043	7.3	58.8	\$95,000	\$435	\$35,823
Radcliff	9,487	10.5	57.2	\$79,400	\$433	\$35,763

Source: U.S. Department of Commerce, Bureau of the Census, Population and Housing Characteristics, 2000.

1
2 As shown in Table 4.18, the median household income in 2000 within the ROI
3 ranged from approximately \$37,000 in Meade County to \$45,000 in Bullitt
4 County according to the 2000 U.S. Census. The overall median household
5 income for the ROI exceeded that of the State of Kentucky by approximately
6 20 percent.

7 Table 4.19 shows the number of housing units authorized by building permit
8 within the Fort Knox ROI during 2001-2005. During this 5-year period, over
9 10,500 housing units were authorized for construction, almost 80 percent of
10 which were for single-family homes. As indicated in Table 4.19, the pace of
11 residential construction within the Fort Knox region has accelerated since the
12 year 2000. Approximately 60 percent of the building permit activity has been
13 in Hardin County.

14

**TABLE 4.19
HOUSING UNITS AUTHORIZED BY BUILDING PERMIT, 2001-2005, FORT KNOX REGION OF INFLUENCE.**

County	2005		2004		2003		2002		2001	
	SF ²	MF ³	SF	MF	SF	MF	SF	MF	SF	MF
Bullitt	719	69	783	171	790	113	647	120	607	63
Hardin ¹	1,050	424	1,135	310	949	274	692	340	715	272
Meade	154	19	133	16	6	-	6	-	-6	-
Total	1,923	512	2,051	497	1,745	387	1,345	460	1,328	335

Source: State of the City Data System, U.S. Census Bureau Building Permit Survey, 2001-2005.

¹ Includes the cities of Elizabethtown and Radcliff.

² Represents single-family units.

³ Represents multiple-family units.

15

1 The housing market in the Fort Knox ROI has generally been stable with an
 2 adequate supply of reasonably priced owner-occupied and rental units. The
 3 May 15, 2006, Kentucky Association of Realtors Multiple Listing Service
 4 (MLS), contained 758 single-family homes for sale in Hardin County, Bullitt
 5 County, and Meade County. The median listed price was approximately
 6 \$150,000. Table 4.20 shows the distribution of these current for-sale
 7 properties by listed price range.

8

Listed Price Range	Number of Homes Listed
\$ 50,000 - \$ 75,000	38
\$ 75,000 - \$100,000	82
\$100,000 - \$125,000	122
\$125,000 - \$150,000	139
\$150,000 - \$175,000	81
\$175,000 - \$200,000	111
\$200,000 - \$225,000	59
\$225,000 - \$350,000	126
TOTAL	758

Source: Kentucky Association of Realtors, Multiple Listing Service, May 15, 2006.

9

10 The current rental housing supply includes apartments, duplexes,
 11 condominiums, single-family homes and mobile homes, with apartments
 12 comprising the majority of the rental units. Average monthly rents range from
 13 \$450 to \$650 for two-bedroom units and \$500-800 for three-bedroom units.

14 **Fort Knox Housing**

15 On-post housing at Fort Knox consists of a mixture of housing types as
 16 shown in Table 4.21. There are 2,837 family housing units for permanent
 17 party military personnel and 10,802 barracks spaces for unaccompanied
 18 enlisted personnel; military trainees and students; Bachelor Enlisted Quarters;
 19 Senior Officer Quarters; and Geographical Bachelor Quarters. In addition,
 20 707 transient quarters are provided.

1

TABLE 4.21 SUMMARY OF FORT KNOX ON-POST HOUSING.	
Housing Type	Number of Housing Units
Family Housing	2,837
Barracks Spaces	10,802
Transient Quarters	707
Total	14,346
<i>Source: Directorate of Resource Management, Ft. Knox, Annual Statistical Report, September, 2005. .</i>	

2

3 Under its Residential Communities Initiative (RCI) to improve family housing
 4 on military installations across the country, the U.S. Army, along with a private
 5 developer, is in the final stages of completing a community development and
 6 management plan for privatization of the existing family housing units at Fort
 7 Knox. Scheduled transfer date to the developer is early 2007. The purpose
 8 of the plan is to eliminate current inadequate family housing with the
 9 construction/replacement of almost 755 units, and renovation/repair of over
 10 1,471 units. The total estimated cost of this improvement plan is \$345 million
 11 for the first 10 years of the program.

12 **4.10.1.4 Quality of Life**

13 **Education**

14 **On-Post**

15 The Fort Knox Community Schools is a Domestic Dependents Elementary
 16 and Secondary School District under the direction of Fort Knox. The school
 17 district is supported with four elementary schools, two intermediate schools,
 18 one middle school, and one high school. Total district enrollment at the
 19 beginning of the 2005-2006 school year was approximately 2,700 students.
 20 Enrollment capacity of the eight schools is 3,600 students. These schools
 21 educate children of military personnel living on Fort Knox. The school district
 22 has a 10-year master plan with a primary objective of sustaining current
 23 facilities with the on-post RCI program. A new high school to replace the
 24 existing high school is in the Pentagon's fiscal year 2007 budget request.

25 There are two child development centers on Fort Knox comprised of part day
 26 pre-school and before/after kindergarten care. Fort Knox also has a Youth
 27 Family Child Care program which is in-home certified care provided by a
 28 family member on government quarters.

29 The Army Continuing Education System Division provides a comprehensive
 30 range of educational opportunities on Fort Knox ranging from on-post college
 31 extension courses to correspondence courses. The following universities and
 32 colleges offer various degree programs on Fort Knox: Eastern Kentucky
 33 University; University of Kentucky; University of Louisville; Western Kentucky
 34 University; Embry Riddle Aeronautical University; University of Southern

1 California; Sullivan Junior College of Business; and Elizabethtown Community
2 and Technical College.

3 **Off-Post**

4 Fort Knox off-post military personnel are supported primarily by the Hardin
5 County School District and Meade County School District. Based on current
6 off-post military residency, approximately 60 percent of the school-age
7 dependents of military personnel attend Hardin County schools and
8 20 percent attend Meade County schools. The remaining 20 percent attend
9 other public school districts, including the Elizabethtown Independent
10 Schools, and private schools within the area.

11 The Hardin County School District has eleven elementary schools, five middle
12 schools, three high schools, and one alternative high school. Total enrollment
13 at the beginning of the 2005-2006 school year was 14,000 students.
14 Approximately 12 percent of the enrollment consists of dependents of military
15 personnel. The district received \$250,000 in Impact Aid funds in 2005-2006.
16 Impact Aid represents financial support to school districts impacted by federal
17 activities as a result of losing the tax base because of federal property
18 ownership. The district is currently at enrollment capacity in all elementary
19 schools and near capacity in the middle schools. High school enrollment is
20 currently between 75-80 percent of capacity. The district is funding the
21 impending construction of a new \$16 million elementary school at Rineyville
22 to replace the existing school.

23 The Meade County School District has one primary school; six elementary
24 schools; one middle school; and one high school. Total enrollment in the
25 2005-2006 school year was approximately 4,900. The district has not
26 received any Impact Aid funds for the last 5 years because of the small
27 amount of funds it would receive. The district is currently at its enrollment
28 capacity, and is using portable trailers at several schools. Short-term capital
29 improvements include the construction of a new elementary school to be
30 completed by January, 2008, and the addition of a new gymnasium to the
31 high school.

32 The Elizabethtown Independent Schools consists of two elementary schools;
33 one middle school; and one high school. Student enrollment during the
34 2005-2006 school year approximated 2,500. The school district currently has
35 sufficient capacity at the middle school and high school levels, but is at
36 capacity at the elementary level.

37 In addition to the on-post college extension programs, there are two local
38 off-post colleges. These are the Elizabethtown Community and Technical
39 College in Elizabethtown, and McKendree College in Radcliff. These
40 institutions provide education and training through Bachelor Degrees,
41 Associate Degrees, and certificate programs in various occupations.

1 Health

2 On-Post

3 Ireland Army Community Hospital is Fort Knox's primary medical service
4 facility. The hospital serves the Fort Knox community with primary and
5 specialty care providers. Members of the Medical Department Activities
6 (MEDDAC) team staff a troop medical clinic and a Battalion Aid Station to
7 provide acute care services to the installation. The hospital also staffs the
8 Camp Memorial Blood Center. This center collects blood in support of the
9 Armed Forces Blood Program and performs essential testing for all military
10 donor centers in the eastern United States. In addition to Kentucky, Ireland
11 Army Community Hospital's area of responsibility also includes Ohio, Indiana,
12 Michigan, Illinois, Wisconsin, and Minnesota. The MEDDAC serves the
13 active duty population within this seven-state area.

14 Off-Post

15 Hardin Memorial Hospital is a regional healthcare center located in
16 Elizabethtown. The hospital has more than 300 beds, 1,550 employees, and
17 over 200 physicians on staff. This not-for-profit acute care hospital offers
18 24-hour full emergency service, a full range of in-patient and out-patient
19 services, and a wide variety of surgical specialties. In addition to Hardin
20 Memorial Hospital, there are a number of hospitals in nearby Louisville,
21 including Jewish Hospital Medical Center South.

22 Law Enforcement

23 On-Post

24 The Law Enforcement Command (LEC) provides command and control for
25 assigned and attached units on Fort Knox. The LEC consists of a battalion
26 style command structure with the LEC commander also being the Fort Knox
27 Provost Marshal. The Provost Marshal Office (PMO) provides safety, security
28 and law enforcement activities on Fort Knox. The PMO consists of 142
29 military police whose duties include criminal investigations; traffic accident
30 investigations; vehicle registration; game warden patrol; civilian police liaison;
31 and dispatch-alarms monitoring physical security and access control. .The
32 PMO also includes the Criminal Investigation Division, which consists of 13
33 personnel and is responsible for investigating more serious crimes.

34 Off-Post

35 The City of Radcliff Police Department has 38 uniformed officers on duty in
36 addition to eight dispatchers and other personnel. The City of Elizabethtown
37 Police Department has 42 uniformed officers, eight dispatchers, and other
38 department personnel. Each of the three counties within the Fort Knox ROI
39 has its own Sheriff's Department that is responsible for county-wide law
40 enforcement.

1 **Fire Protection**

2 **On-Post**

3 The Fire Protection Division at the Fort Knox Fire Department provides
4 on-post fire protection from Fire Station #1 located on Old Ironsides Avenue,
5 and from stations on Wilson Road and at Godman Army Airfield. A total of 43
6 firefighters, including inspectors, man these three stations. Emergency
7 medical services (EMS) and rescue operations are also provided in
8 conjunction with fire protection services.

9 **Off-Post**

10 Off-post fire protection services within the Fort Knox ROI are provided by the
11 cities of Elizabethtown and Radcliff, and the respective counties. The City of
12 Radcliff has two fire stations that provide ambulance and rescue/extraction
13 services in addition to fire protection. The City of Elizabethtown has a
14 full-time fire department with three fire stations and 50 employees.

15 Fire protection services in Bullitt County are provided by the Zonetown Fire
16 District which has two fire stations and 42 volunteer fire fighters. The Meade
17 County Fire Protection District is also a volunteer fire department with two fire
18 stations and over 50 fire fighters. Other fire protection and emergency/rescue
19 services are provided by the Central Hardin County Volunteer Fire
20 Department. The majority of the smaller municipalities within the Fort Knox
21 ROI also have their own municipal or volunteer fire departments.

22 **Recreation**

23 **On-Post**

24 A wide variety of on-post recreational facilities are available to military
25 personnel and their dependents, and to civilian employees on a
26 space-available basis. Recreation facilities are under the supervision of the
27 Directorate of Morale, Welfare and Recreation. Major on-post recreational
28 facilities include the following:

- 29 • Anderson Indoor Aquatics Center, which includes an Olympic-size pool
30 and a water park;
- 31 • Houston Bowling Center;
- 32 • Camp Carlson Army Recreational Area;
- 33 • Four physical fitness centers;
- 34 • Devers Youth Center;
- 35 • French Shooting Club, including skeet and trap, and archery range;
- 36 • Riding stables;
- 37 • Lindsey Golf Course;

- 1 • Kilianski Sports Complex, which includes six lighted softball/baseball
- 2 fields, two lighted combination football/soccer fields, and batting cages;
- 3 • Keyes Park; and,
- 4 • Thorn Park.

5 **Off-Post**

6 There is a wide variety of off-post park and recreation facilities and
7 opportunities in the Fort Knox ROI. The larger communities such as
8 Elizabethtown and Radcliff have Parks and Recreation Departments that are
9 responsible for the operation and maintenance of recreation facilities. The
10 City of Elizabethtown has six parks, a swim and fitness center, three golf
11 courses, two soccer complexes, softball and baseball parks, and a community
12 center. The City of Radcliff has several parks, soccer and football fields,
13 playgrounds, and a community center. Each of the three counties within the
14 Fort Knox ROI also provides park and recreational facilities, nature preserves,
15 and camp grounds.

16 **4.10.1.5 Environmental Justice**

17 The following discussion of environmental justice issues has been developed
18 to address two Presidential EOs.

19 **EO 12898**

20 On February 11, 1994, President Clinton issued EO 12898, *Federal Actions*
21 *to Address Environmental Justice in Minority and Low-Income Populations*.
22 The purpose of this EO is to avoid the disproportionate placement of adverse
23 environmental, economic, social, or health impacts from Federal actions and
24 policies on minority and low-income populations or communities. An element
25 emanating from this order was the creation of an Interagency Federal
26 Working Group on Environmental Justice comprised of the heads of
27 seventeen Federal departments and agencies, including the US Army. Each
28 department or agency is to develop a strategy and implementation plan for
29 addressing environmental justice.

30 It is the Army's policy to fully comply with EO 12898 by incorporating
31 environmental justice concerns in decision-making processes supporting
32 Army policies, programs, projects, and activities. In this regard, the Army
33 ensures that it would identify, disclose, and respond to potential adverse
34 social and environmental impacts on minority and/or low-income populations
35 within the area affected by a proposed Army action.

36 The initial step in the environmental justice analysis process is the
37 identification of minority populations and low income populations that might
38 be affected by implementation of the Proposed Action or alternatives. For
39 environmental justice considerations, these populations are defined as
40 individuals or groups of individuals, which are subject to an actual or potential

1 health, economic, or environmental threat arising from existing or proposed
 2 Federal actions and policies. *Low income*, or the poverty threshold, is defined
 3 as the aggregate annual mean income for a family of four in 2003 correlating
 4 to \$18,600.

5 Low income and minority population data was compared for the Fort Knox
 6 ROI, the cities of Elizabethtown and Radcliff, and the State of Kentucky. This
 7 comparative analysis is summarized in Table 4.22. Based on 2003 U.S.
 8 Census estimates, the percent of low-income persons are lower for the Fort
 9 Knox ROI (9.5 percent) than for the State of Kentucky (14.9 percent). The
 10 percentage of low-income population has remained the same since 2000, and
 11 is rather evenly distributed among the three counties of the ROI.

12

County	Total Population (2000)	Percent Minority Population (2000)	Median Household Income in Dollars (2003)	Persons Below Poverty (2003)	Percent Persons Below Poverty (2003)
Bullitt	61,236	2.0	\$48,120	6,357	9.5
Hardin	94,174	18.1	\$42,120	10,431	11.3
Meade	26,349	7.7	\$40,161	3,072	10.9
ROI, Total/Average.	181,759	11.1	\$43,900	19,860	9.5
Elizabethtown	22,542	14.0	NA	NA	NA
Radcliff	21,961	37.3	NA	NA	NA
Kentucky	4,041,769	9.0	\$36,663	605,948	14.9

Source: U.S. Department of Commerce, U.S. Census Bureau, 2000 U.S. Census; Small Area Income and Poverty Estimates, 2003.
 NA= Information not available at this geographic level.

13
 14 However, the percent minority population is higher for the ROI (11.1 percent)
 15 than for the State of Kentucky (9.0 percent). Hardin County has the highest
 16 percentage of both minority population (18.1 percent) and population below
 17 the poverty level (11.3 percent). Bullitt County has the lowest percentage of
 18 both minority population (2.0 percent) and population below the poverty level
 19 (9.5 percent). The City of Radcliff, adjacent to Fort Knox, has a concentration
 20 of minority population with over 37 percent of the population classified as
 21 minority by the U.S. Census Bureau. This minority concentration is a result of
 22 the military personnel associated with Fort Knox.

23 EO 13045

24 On April 21, 1997, President Clinton issued EO 13045, Protection of Children
 25 from Environmental Health Risks and Safety Risks. This EO recognizes that
 26 a growing body of scientific knowledge demonstrates that children may suffer
 27 disproportionately from environmental health risks and safety risks. These

1 risks arise because children's bodily systems are not fully developed;
2 because they eat, drink, and breathe more in proportion to their body weight;
3 because their size and weight can diminish protection from standard safety
4 features; and because their behavior patterns can make them more
5 susceptible to accidents. Based on these factors, President Clinton directed
6 each Federal agency to make it a high priority to identify and assess
7 environmental health risks and safety risks that might disproportionately affect
8 children. President Clinton also directed each Federal agency to ensure that
9 its policies, programs, activities, and standards address disproportionate risks
10 to children that result from environmental health risks or safety risks.

11 It is the Army's policy to fully comply with EO 13045 by incorporating these
12 concerns in decision-making processes supporting Army policies, programs,
13 projects, and activities. In this regard, the Army ensures that it would identify,
14 disclose, and respond to potential adverse social and environmental impacts
15 on children within the area affected by a proposed Army action. Construction
16 sites and equipment would be fenced or barricaded as preventive safety and
17 hazard measures for the protection of children.

18 **4.10.2 Consequences**

19 **4.10.2.1 No Action Alternative**

- 20 • **Direct Impacts.** Under the No Action Alternative there would be no
21 additional economic impacts since the proposed facilities and
22 operations would not occur.
- 23 • **Indirect Impacts.** No indirect impacts to Socioeconomics are
24 anticipated under this alternative at this time.

25 **4.10.2.2 Alternative 1 – Renovation with Minimal New Construction Activities in 26 the Cantonment and Training Facility Modifications**

- 27 • **Direct Impacts.** Direct short-term beneficial economic impacts would
28 be realized by the regional and local economy during the construction
29 phase of this alternative. Employment generated by construction
30 activities would result in wages paid, an increase in business sales
31 volume, and expenditures for local and regional services, materials
32 and supplies. In addition, direct long-term economic impacts would be
33 realized from the increase in operations associated with this
34 alternative. These impacts would be in the form of increased business
35 volume, income, and employment associated with the increased on-
36 post operations.

37 The Economic Impact Forecasting (EIFS) model developed by the
38 USACE, Construction Engineering and Research Laboratory, was
39 used to assess the impacts of this alternative on the economy. The
40 EIFS model was used to project both the short-term temporary regional
41 economic impacts of project construction, and long-term economic

1 impacts of the increase in installation operations. The EIFS model
2 provides a systematic method for evaluating the regional
3 socioeconomic effects of government actions, particularly military
4 actions.

5 Using employment and income multipliers developed with a
6 comprehensive regional/local database combined with economic
7 export base techniques, the EIFS model estimates the regional
8 economic impacts with respect to changes in employment generated,
9 and expenditures directly and indirectly resulting from project
10 construction. The EIFS model evaluates economic impacts in terms of
11 regional change in sales (business) volume, employment, personal
12 income, and population.

13 Projected economic impacts of BRAC-related construction and other
14 Army construction under Alternative 1 are based on the assumption
15 that construction activity would consist of 75 percent renovation and 25
16 percent new construction. Other assumptions used for the EIFS Model
17 are estimated construction costs of \$175/SF for new construction and
18 \$95/SF for renovation, and an estimated 2.1 million square feet of new
19 construction/renovation. The estimated total "hard" construction costs
20 (material, supplies, labor) of \$277 million (2006 dollars) for the
21 construction of the new facilities, including the training facilities, was
22 used as the EIFS input for change in capital costs. Although the
23 overall construction period is programmed for five years, the majority of
24 the construction would occur during the first two years of construction
25 activity. Therefore, an estimated construction period of 2.5 years was
26 used as an input for the EIFS Model. The total construction cost was
27 pro-rated over a 2.5-year construction period to calculate annual
28 average impacts. The ROI was considered to be the three-county area
29 surrounding Fort Knox. The EIFS employment and income multiplier
30 for this ROI is 2.35. Appendix D contains the EIFS report including the
31 model forecast inputs and outputs for both proposed construction and
32 increased operations resulting from the proposed actions.

33 Table 4.23 portrays the estimated direct, indirect and total annual
34 economic impacts of construction activities on sales (business)
35 volume, income and employment. As a result of construction
36 expenditures for materials, supplies and services, in addition to
37 construction labor wages, the EIFS Model estimates there would be a
38 \$74.5 million increase in direct annual business volume (sales); \$23.4
39 million increase in direct annual personal income; and an increase of
40 709 direct jobs created in the construction, retail trade, service and
41 industrial sectors. These impacts would be realized annually over the
42 length of the construction period. The increase in sales volume,
43 income and employment includes capital expenditures, income and

labor directly associated with the construction activity. Table 4.23 also portrays the indirect impacts on business volume, income and employment as a result of the initial direct impacts of the construction activities.

**TABLE 4.23
ESTIMATED ANNUAL ECONOMIC IMPACTS, ALTERNATIVE 1, FORT KNOX REGION OF INFLUENCE.**

Variable	Direct Impacts	Indirect Impacts	Total	RTV ¹
Annual Construction Impacts²				
Sales (Business Volume)	\$74,470,150	\$100,534,700	\$175,004,800	5.36%
Income	\$ 23,431,080	\$ 20,278,910	\$43,709,990	1.31%
Employment	709	586	1,295	1.62%
Annual Operations Impacts, Net Change²				
Sales (Business Volume)	\$55,493,320	\$74,916,000	\$130,409,320	3.99%
Income	\$44,235,000	\$15,112,000	\$ 59,347,000	1.77%
Employment	-1,953	437	-1,516	-1.89%
Local Total Population	-	-	3,091	
Local Off-Base Population	-	-	6,327	5.14%

Source: Economic Impact Forecast System, U.S. Army Corps of Engineers, Construction Engineering Research Laboratory.
¹ Rational Threshold Value.
² 2006 Dollars.

The EIFS model also includes a Rational Threshold Value (RTV) profile that is used in conjunction with the forecast models to assess the significance of impacts of an activity for a specific geographic area. For each variable (sales volume, employment, income and population), the current time-series data available from the United States Department of Congress Bureau of Economic Analysis are calculated along with the annual change, deviation from the average annual change, and the percent deviation for each of these variables. A threshold is calculated and defined for significant annual regional economic impacts for a variable. Within the EIFS model the RTV is calculated for each of these variables when assessing the regional economic impacts of a specific project. If the RTV for a particular variable associated with the impacts of a specific project exceeds the maximum annual historic deviation for that variable, then the economic impacts are considered to be significant. If the RTV for a variable is less than the maximum annual historic deviation for that variable, then the regional economic impacts are not considered significant.

Table 4.23 portrays the RTV associated with each of the economic impacts resulting from the construction activity. The regional positive

1 RTVs for each economic variable as indicated in Appendix D are as
2 follows: sales volume (9.21%); income (8.90%); employment (6.49%);
3 and population (5.63%). Thus, as indicated in Table 4.23, the RTVs
4 for income and employment were found to be considerably less than
5 the respective regional RTV. For this reason, impacts on regional
6 employment and income directly associated with construction activity
7 under this alternative would be minor on a regional basis. However,
8 the resulting RTV for sales volume is of greater magnitude, therefore,
9 reflecting moderate impacts on the regional and local economy.

10 As indicated in Table 4.23, direct annual regional economic impacts
11 would occur as a result of the increased operations under Alternative
12 1. Separate EIFS Model runs were completed for the trainees (5,880)
13 that would be lost by Fort Knox under the Proposed BRAC and related
14 actions, and the military/civilian personnel (3,603) that would be gained
15 under the proposed actions. The EIFS outputs (business sales,
16 income, and employment) resulting from the loss of the trainees was
17 subtracted from the EIFS outputs for the gaining military/civilian
18 personnel to estimate net annual economic impacts. These net direct
19 impacts are represented by a decrease of 1,953 employees in the
20 government (including military), retail trade, services and industrial
21 sectors; an increase in the regional economy by \$55.5 million in
22 business volume (sales); and an increase of \$44.2 million in direct
23 personal income. Loss or gain in employment and income of the
24 trainees and permanent party military/civilian personnel are included in
25 the net direct employment and direct income. The direct income
26 represents the earnings of employees in the government (including
27 military), retail, wholesale and service establishments that would be
28 initially or directly affected by the net gain of military and civilian
29 employees. The increase in business volume reflects increases in the
30 sales of goods, services, and supplies to the military and civilian
31 personnel, and other employment directly associated with project
32 operations. Local off-base population would increase by approximately
33 6,300 people as projected in the EIFS Model. However, total
34 population would increase by approximately 3,100. The gain in off-
35 base population exceeds total population gain because the majority of
36 the net gain in population occurs off-base while a greater net loss in
37 population occurs with the on-base military personnel.

38 As indicated in Table 4.23 the RTV for each of the economic variables
39 associated with the increased operations is less than the respective
40 regional RTV. However, the resulting RTV for sales volume is almost
41 at the mid-point on the scale of zero to the maximum regional positive
42 RTV in respect to this variable. Therefore, the increased operations
43 would result in moderate annual economic impacts on regional
44 business volume. For example, annual sales volume would increase

1 by four percent within the Fort Knox ROI. The RTV for off-post
2 population increase resulting from an increase in installation operations
3 approaches the maximum positive RTV for this variable as indicated in
4 Table 4.23. However, the proposed increased operations and
5 personnel realignment would occur over a period of two or more years.
6 Thus, the annual positive RTV for this variable would be diminished
7 when the impacts are distributed over a period of time exceeding one
8 year.

9 It is noted that the annual increase in installation expenditures (e.g.,
10 supplies, services, utilities, etc.) associated with the proposed action
11 was not included in the EIFS Model inputs because of the current
12 unavailability of this information. Such increased installation
13 expenditures would result in additional business volume, income and
14 employment within the ROI. Consequently, the RTV's for each of
15 these variables would increase.

16 Direct long-term impacts would occur in respect to both on-post and
17 off-post population in the Fort Knox region. There would be a net
18 decrease in on-post military population of approximately 4,200 as a
19 result of the proposed action. This decrease would be the result of the
20 net reduction in the average annual student load of 5,880 personnel in
21 combination with an on-post increase of permanent party military
22 personnel and family members. It is assumed that 50 percent of the
23 net change of 2,124 permanent party military personnel would live on-
24 post. In addition, it is assumed that 25 percent of the on-post
25 permanent party military would be married with 1.3 children per family.
26 This would result in an increase of approximately 1,675 military
27 personnel and family members. Thus, there would be almost a 25
28 percent decrease in on-post military-related population. With the net
29 addition of 1,479 civilian personnel, the day-time on-post population
30 would decrease by approximately 11 percent.

31 Off-post population would increase as a result of the relocation of
32 permanent party military and accompanying civilians to the Fort Knox
33 region under the Proposed Action. In addition to the estimated 1,479
34 civilians who would relocate, it is assumed that 50 percent of the 2,124
35 permanent party military would reside off-post. This assumption is
36 based on the current lack of suitable on-post housing. Assuming that
37 50% of the off-post civilian and military personnel are married with 1.3
38 to 1.5 children per family, the off-post population would increase by
39 5,450 – 5,725 people. The EIFS model estimates an off-post increase
40 in population of 6,327 people. The EIFS estimate is based on a factor
41 of 2.5 persons per military and civilian household relocating. This
42 increase in off-post population would represent a moderate impact on
43 the regional population as the population increase would occur over a

1 period exceeding one year. The annual increase in the ROI population
2 during the 2001-2005 period has approximated 2,400.

3 The relocation of military personnel associated with this alternative
4 would result in short-term moderate impacts to on-post housing.
5 Currently, there is not adequate on-post housing for accompanied
6 enlisted and officer personnel. Under the RCI program, scheduled for
7 initiation in 2007, over 2,100 family housing units would be
8 constructed/replaced/renovated. Thus, because of currently
9 inadequate on-post family housing, a substantial portion of the
10 incoming military personnel may have to live off-post.

11 There could be a moderate impact on off-post housing because of the
12 Proposed Action. Assuming that 50 percent of the incoming military
13 personnel (1,062) would reside off-post in addition to the 1,480 civilian
14 personnel, there could be a demand for an additional 2,540 housing
15 units. This potential additional demand is equivalent to three percent
16 of the existing housing units, and represents more than one year of
17 recent annual authorized housing units in the Fort Knox ROI.
18 Currently, there are approximately 750 housing units listed for-sale in
19 the ROI. According to the 2000 U.S. there were approximately 1,600
20 housing units available for rent, including single-family homes,
21 apartments, and condominiums. It is assumed that the majority of the
22 incoming military and civilian personnel would prefer to own rather than
23 rent their home. Thus, the existing supply of housing in the ROI would
24 appear to be inadequate to accommodate the additional demands that
25 could be imposed by the incoming personnel.

26 Additional demands would be imposed on both on-post and off-post
27 school facilities as a result of the Proposed Action. There could be an
28 additional 345 on-post children assuming that 25 percent of the new
29 on-post military personnel are married with 1.3 children/family. This
30 potential enrollment increase would represent an approximate 13
31 percent increase over the 2005-2006 enrollments in the DDESS
32 schools. Enrollment during the 2005-2006 school year was
33 approximately 75 percent of enrollment capacity. Although some
34 adjustments and modifications to current school facilities may be
35 necessary, it appears that there is an overall sufficient capacity to
36 accommodate the potential additional students.

37 Off-base school facilities could be moderately impacted by the
38 potential increase in school enrollment resulting from the Proposed
39 Action. There could be potentially 1,650 additional off-base school-age
40 students assuming that 50 percent of the civilian and off-post military
41 personnel are married with 1.3 children/family. Based on the current
42 off-post residency distribution of civilian and military personnel, the
43 Hardin County School District would experience the greatest impact

1 with the Meade County School District also being moderately
2 impacted. The potential increase in school enrollment resulting from
3 the Proposed Action would represent approximately seven percent of
4 the current enrollment in both of these school districts. Both school
5 districts are currently at or near enrollment capacity. Thus, additional
6 new schools and/or expansion of existing schools could be necessary
7 to sufficiently accommodate this potential additional enrollment.

8 There are no adverse anticipated socioeconomic impacts of the
9 Proposed Action related to environmental justice. However, some
10 economic benefits could be derived by minority populations through
11 employment during the construction phase of the Proposed Action.
12 Some potential short-term minor adverse effects on the protection of
13 children could be expected. Because construction sites can be
14 enticing to children, construction activity could be an increased safety
15 risk. Therefore, during construction, safety measures as stated in 29
16 CFR 13. 1926, *Safety and Health regulations for Construction*, and
17 Army Regulation 385-10, *Army Safety Program*, would be followed to
18 protect the health and safety of all residents on Fort Knox as well as
19 construction workers. As safety measures, barriers and “no
20 trespassing” signs would be placed around the perimeter of
21 construction sites to deter children from playing in these areas, and
22 construction vehicles and equipment would be secured when not in
23 use. These measures would reduce the potential for injuries to
24 children.

- 25 • **Indirect Impacts.** The anticipated increase in construction activity, on-
26 post operations, and permanent population under the Proposed Action
27 would have indirect socioeconomic impacts on the Fort Knox region.
28 These impacts would be in respect to employment, income, business
29 volume, housing, educational and community facilities, public services,
30 and government revenues and expenditures.

31 Indirect short-term economic impacts would be realized by the regional
32 and local economy during both the construction and operations phases
33 of this alternative. Employment generated by construction activities
34 would result in additional indirect wages paid, an increase in indirect
35 business sales volume, and indirect expenditures for local and regional
36 services, materials and supplies as indicated in Table 4.23.

37 Subsequently, annual on-going operations associated with the
38 Proposed Action would also result in the above economic impacts to
39 the local and regional economy.

40 Table 4.23 portrays the indirect economic impacts of the proposed
41 construction activities on sales (business) volume, income and
42 employment. As a result of construction expenditures for materials,
43 supplies and services, in addition to construction labor wages, the

1 EIFS model estimates there would be approximately \$100.5 million
2 increase in indirect business volume (sales); \$20.3 million increase in
3 indirect or induced personal income; and an increase of 586 indirect
4 jobs created in the construction, retail trade, service and industrial
5 sectors. These impacts would be realized on an annual basis during
6 the length of the construction period. The increase in income and
7 employment would have minor impacts on the regional economy, while
8 the increase in annual business volume would have moderate impacts
9 on the regional economy.

10 Also portrayed in Table 4.23 are the annual indirect impacts of the
11 proposed operations on sales (business) volume, income and
12 employment. The magnitude of the indirect impacts on the regional
13 and local economy would be reflective of the direct impacts in respect
14 to the relative RTVs as discussed under "Direct Impacts". It is
15 anticipated that the current housing supply should be sufficient to
16 accommodate the additional housing demand associated with the
17 Proposed Action. However, some new housing construction could be
18 encouraged by this new demand, albeit modest. Any new
19 development would be added to the tax rolls which would result in
20 increased property tax revenues. In addition, there would be increases
21 in sales tax, utility tax and other revenues resulting from the additional
22 population. Some supportive infrastructure and public services may be
23 subject to additional demand from the new population directly
24 associated with the Proposed Action.

25 Indirect impacts would occur in respect to population, housing,
26 schools, public services, government revenues and expenditures, and
27 supportive commercial services and development. The additional
28 potential demand on housing requirements by the relocated personnel
29 could result in higher housing prices and values in the Fort Knox ROI.
30 Such potential increases in housing prices could price some people out
31 of the housing market.

32 The potential direct impacts on off-post school enrollments, especially
33 in Hardin and Meade Counties, could have indirect impacts on
34 provision of services and facilities. Additional classroom teachers,
35 counselors and administrative staff could be required. There could be
36 commensurate increases in educational related expenses regarding
37 services, supplies, equipment and transportation. The impacted
38 school district (s) would receive additional Federal Impact Aid (FIA)
39 associated with military-affiliated students. However, the additional
40 Impact Aid would not be substantial assuming that the majority of the
41 new student enrollees would live off-base.

42 The potential additional population and housing requirements by the
43 relocated personnel would result in increased government

1 expenditures for provision of supportive infrastructure (e.g. water,
2 sewers, etc.) and public services (e.g. fire, police, EMS). Additional
3 new supportive commercial development and services would most
4 likely occur to serve the demands and needs of the expanded
5 population base. However, new development associated with the
6 realigned personnel would result in an increased tax base, and
7 additional real property and other tax revenues to finance expanded
8 public improvements and services. In addition, there would be an
9 increase in local sales tax revenues as a result of increased personal
10 income and purchasing power by the relocated personnel.

11 **4.10.2.3 Alternative 2 - New Construction with Minimal Renovation Activities in** 12 **the Cantonment and Training Facility Modifications**

- 13 • **Direct Impacts.** Direct short-term beneficial economic impacts would
14 be realized by the regional and local economy during the construction
15 phase of this alternative. The same type of impacts, although on a
16 different scale, would be realized under this alternative as under
17 Alternative 1.

18 Projected economic impacts of BRAC-related construction under
19 Alternative 2 are based on the assumption that construction activity
20 would consist of 75 percent new construction and 25 percent
21 renovation. Other assumptions used for the EIFS model are estimated
22 construction costs of \$175/SF for new construction and \$95/SF for
23 renovation, and an estimated 2.1 million square feet of new
24 construction/renovation. The estimated total “hard” construction costs
25 (materials, supplies, labor) of \$360 million (2006 dollars) for the
26 construction of the new facilities, including the training facilities, was
27 used as the EIFS input for change in capital costs. The estimated
28 construction period for the new facilities under this alternative is also
29 2.5 years. The total construction cost was pro-rated over an estimated
30 2.5-year construction period to calculate annual average impacts.

31 Table 4.24 portrays the estimated direct, indirect and total annual
32 economic impacts of construction activities on sales (business)
33 volume, income and employment under Alternative 2. As a result of
34 construction expenditures for materials, supplies and services, in
35 addition to construction labor wages, the EIFS model estimates there
36 would be a \$94.6 million increase in direct annual business volume
37 (sales); \$27.5 million increase in direct annual personal income; and
38 an increase of 827 direct jobs created in the construction, retail trade,
39 service and industrial sectors. These impacts would be realized
40 annually over the length of the construction period. The increase in
41 sales volume, income and employment includes capital expenditures,
42 income and labor directly associated with the construction activity.

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TABLE 4.24 ESTIMATED ANNUAL ECONOMIC IMPACTS, ALTERNATIVE 2, FORT KNOX REGION OF INFLUENCE.				
Variable	Direct Impacts	Indirect Impacts	Total	RTV¹
Annual Construction Impacts²				
Sales (Business Volume)	\$94,570,150	\$127,669,700	\$222,239,850	6.80%
Income	\$ 27,485,460	\$ 25,752,330	\$53,237,790	1.59%
Employment	827	745	1,572	1.97%
Annual Operations Impacts, Net Change²				
Sales (Business Volume)	\$55,493,320	\$74,916,000	\$130,409,320	3.99%
Income	\$44,235,000	\$15,112,000	\$ 59,347,000	1.77%
Employment	-1,953	437	-1,516	-1.89%
Local Total Population	-	-	3,091	
Local Off-Base Population	-	-	6,327	5.14%
<i>Source: Economic Impact Forecast System, U.S. Army Corps of Engineers, Construction Engineering Research Laboratory.</i>				
¹ Rational Threshold Value.				
² 2006 Dollars.				

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As indicated in Table 4.24 the annual economic impacts are greater under Alternative 2 because of the assumption that a greater portion of the construction would consist of new construction rather than renovation. However, the RTVs for income and employment are considerably fewer than the respective regional RTV, and, therefore, have negligible to minor economic impacts. The RTV for annual sales volume, however, reflects moderate impacts on the local and regional economy. The direct annual economic impacts from increased BRAC-proposed operations would be the same as under Alternative 1. Other direct social and economic impacts would be the same as described under Alternative 1.

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- **Indirect Impacts.** Table 4.24 portrays the indirect annual economic impacts of the proposed construction activities on sales (business) volume, income and employment under Alternative 2. As a result of the construction expenditures for materials, supplies and services, in addition to construction labor wages, the EIFS model estimates there would be approximately \$127.7 million increase in indirect business volume; \$25.7 million increase in indirect or induced personal income; and an increase of 745 indirect jobs created in the construction, retail trade, service and industrial sectors. These indirect impacts would represent minor additions to the local and regional economy. The indirect annual economic impacts from increased operations would be

1 the same as under Alternative 1. Other indirect social and economic
2 impacts would be the same as those described under Alternative 1.

3 **4.10.2.4 Alternative 3 – Combination New Construction and Renovation**
4 **Activities in the Cantonment and Training Facility Modifications**
5 **(Preferred Alternative)**

- 6 • **Direct Impacts.** Direct short-term beneficial economic impacts would
7 be realized by the regional and local economy during the construction
8 phase of this alternative. The same type of impacts, although on a
9 different scale, would be realized under this alternative as under
10 Alternatives 1 and 2.

11 Projected economic impacts of BRAC-related construction under
12 Alternative 3 are based on the assumption that construction activity
13 would consist of 50 percent new construction and 50 percent
14 renovation. Other assumptions used for the EIFS Model are estimated
15 construction costs of \$175/SF for new construction and \$95/SF for
16 renovation, and an estimated 2.1 million square feet of new
17 construction/renovation. The estimated total “hard” construction costs
18 (materials, supplies, labor) of \$318 million (2006 dollars) for the
19 construction of the new facilities, including the training facilities, was
20 used as the EIFS input for change in capital costs. The estimated
21 construction period for the new facilities under this alternative is also
22 2.5 years. The total construction cost was pro-rated over an estimated
23 2.5-year construction period to calculate annual average impacts.

24 Table 4.25 portrays the estimated direct, indirect and total annual
25 economic impacts of construction activities on sales (business)
26 volume, income and employment under Alternative 3. As a result of
27 construction expenditures for materials, supplies and services, in
28 addition to construction labor wages, the EIFS model estimates there
29 would be a \$84.5 million increase in direct annual business volume
30 (sales); \$25.4 million increase in direct annual personal income; and
31 an increase of 768 direct jobs created in the construction, retail trade,
32 service and industrial sectors. These impacts would be realized
33 annually over the length of the construction period. The increase in
34 sales volume, income and employment includes capital expenditures,
35 income and labor directly associated with the construction activity.

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TABLE 4.25. ESTIMATED ANNUAL ECONOMIC IMPACTS, ALTERNATIVE 3, FORT KNOX REGION OF INFLUENCE.				
Variable	Direct Impacts	Indirect Impacts	Total	RTV¹
Annual Construction Impacts²				
Sales (Business Volume)	\$84,470,150	\$114,034,700	\$198,504,850	6.08%
Income	\$ 25,448,190	\$ 23,002,000	\$48,450,190	1.45%
Employment	768	665	1,433	1.79%
Annual Operations Impacts, Net Change²				
Sales (Business Volume)	\$55,493,320	\$74,916,000	\$130,409,320	3.99%
Income	\$44,235,000	\$15,112,000	\$ 59,347,000	1.77%
Employment	-1,953	437	-1,516	-1.89%
Local Total Population	-	-	3,091	
Local Off-Base Population	-	-	6,327	5.14%
<i>Source: Economic Impact Forecast System, U.S. Army Corps of Engineers, Construction Engineering Research Laboratory.</i>				
¹ Rational Threshold Value.				
² 2006 Dollars.				

As indicated in Table 4.25, the annual economic impacts from construction activity under Alternative 3 are fewer than under Alternative 2, but greater than under Alternative 1. This is because of the assumption that the scope of construction would be evenly divided between new and construction and renovation of existing facilities. Similar to Alternatives 1 and 2, the RTV for each of economic variables under Alternative 3 was considerably fewer than the respective regional RTV, with the exception of annual sales volume as with Alternatives 1 and 2. Direct annual economic impacts resulting from the proposed increased operations would be the same as under Alternatives 1 and 2.

- Indirect Impacts.** Table 4.25 portrays the indirect annual economic impacts of the proposed construction activities on sales (business) volume, income and employment under Alternative 3. As a result of the construction expenditures for materials, supplies and services, in addition to construction labor wages, the EIFS model estimates there would be approximately \$114 million increase in indirect business volume; \$23 million increase in indirect or induced personal income; and an increase of 665 indirect jobs created in the construction, retail trade, service and industrial sectors. These indirect impacts would represent minor additions to the local and regional economy, with the exception of the increase in sales volume which would represent a moderate impact on the economy. The indirect economic and social impacts from increased operations would be the same as under Alternatives 1 and 2.

4.11 TRANSPORTATION

4.11.1 Affected Environment

Fort Knox and the communities in the surrounding region are served by a road and street network, a rail system, pedestrian walks, trails and bike paths, and a military airport. The transportation system serves installation traffic consisting of everyday working, living, and recreational trips.

4.11.1.1 Roadways and Traffic

Two U.S. highways, 31W and 60, traverse the installation. Highway 313 serves as a connection road between 31W and Interstate 65 at the southern portion of the installation. The installation has approximately 178 miles of permanent roads consisting of asphalt or concrete and approximately 77 miles of dirt and/or gravel temporary roadways. Currently, there are three public access entrances onto the installation. The Wilson Road Gate accounts for approximately 43 percent of the traffic, while the Chaffee Avenue and Brandenburg Station Road incoming traffic flow is estimated to be 25 percent and 16 percent, respectively. Traffic volume data collected at Fort Knox entrance gates during May 2006 showed an average of 33,000 vehicles per day traveling onto Fort Knox (Booz Allen Hamilton, 2005).

4.11.1.2 Installation Transportation

The Paducah Louisville Railroad traverses the installation from north to south utilizing the 12 miles of track that bisects the installation. Fort Knox has nine railheads for loading and unloading equipment and supplies from railcars.

The major railways serving the surrounding community are the Seaboard Systems Railroad, Paducah Louisville Railroad, and the Southern railroad. The major hub for all rail services is located in Louisville, Kentucky providing service to all parts of the country.

Godman Army Airfield is located on Fort Knox adjacent to the main cantonment. The airfield serves missions of Army aviation units in coordination with existing armor ground troop programs. The airfield's current primary design accommodates light to medium aircraft solely for military purposes. There are also four temporary flight strips at the installation located within the training complex. Each strip is approximately 500 feet long and is designed for emergency, training, and temporary use of Army light craft. The existing runway is inadequate for most types of aircraft used in major deployment actions. Elizabethtown Addington Field, located 14 miles south of Fort Knox, is a class III general aviation airport with a 100'x 6,000' runway with instrument approach capability. The facility serves business and industries prop and jet aircraft. The airport is a full service center providing fuel and maintenance. The facility qualifies as a business center with potential for regional jet service.

4.11.1.3 Public Transportation

Commercial airline transportation is available through four major airports: Louisville International Airport, Bluegrass Airport (Lexington), Northern Kentucky, Cincinnati and Nashville Airports. The Louisville International Airport is capable of handling the largest aircraft in the military inventory and is also a joint use facility with the Kentucky Air National Guard.

There is a public bus transit system for residents in the Meade, Hardin, and Bullitt County region. The Radcliff-Elizabethtown Metropolitan Planning Organization has contracted to conduct a public transportation study to evaluate public transit services for the Fort Knox surrounding community.

4.11.2 Consequences

4.11.2.1 No Action Alternative

- **Direct Impacts.** As identified by the Kentucky Transportation Cabinet Highway Information System database, there are four roadway systems that are designated as congested based on specific criteria in the database system (Booz Allen Hamilton, 2005). These roadways include the West Lincoln Trail Boulevard (KY 1815) from KY Route 313 to U.S. 31W, Vine Grove Road (KY 144) from KY Route 1646 to U.S. 31 W, U.S. 31W from KY Route 313 to KY Route 1815, and U.S. 31W Wilson Road to Fort Knox Boulevard. Not implementing the proposed action on these roadway systems would result in a minor permanent adverse impact associated with traffic flow and congestion.
- **Indirect Impacts.** Indirect impacts are not anticipated to differ from baseline conditions.

4.11.2.2 Alternative 1 - Renovation with Minimal New Construction Activities in the Cantonment, and Training Facility Modifications

- **Direct Impacts.** It is assumed the HRCOE Command Center would not be part of the new construction projects under this alternative and that incoming HRCOE personnel would be dispersed in renovated existing buildings. Since the incoming work force would therefore not be as centralized as with new construction, the expansion of Wilson Road is not as critical.

Current projections show more than 3,000 pieces of equipment coming to Fort Knox from the IBCT. More than half of this inventory involves vehicular equipment requiring the use of petroleum, oils, and lubricants (POLs). While there are no detailed inventory listings for outgoing and incoming mechanical equipment associated with BRAC, it is estimated that there would be a 25 percent net increase in the amount of GOVs and related equipment coming to Fort Knox. This would have a minor permanent adverse impact on traffic flow patterns and would be the same for Alternative 2 and Alternative 3.

1 A minor long-term beneficial impact to logistical operations would be
2 the result of the railhead expansion project.

- 3 • **Indirect Impacts.** It is assumed the HRCOE Command Center would
4 not be one of the new construction projects and that incoming HRCOE
5 personnel would be dispersed in renovated existing buildings. Since
6 the incoming work force would therefore not be as centralized as with
7 new construction, the expansion of Wilson Road would be less
8 important as the use of multiple entry gates into Fort Knox, by HRCOE
9 staff, would be anticipated.

10 **4.11.2.3 Alternative 2 - New Construction with Minimal Renovation Activities in** 11 **the Cantonment and Training Facility Modifications**

- 12 • **Direct Impacts.** Impacts from this alternative would be similar to
13 those described for Alternative 3 since it is assumed the HRCOE
14 Command Center would be one of the new construction projects.

15 A moderate long-term adverse impact to traffic flow would result from
16 increased congestion along Wilson Road.

17 A minor long-term beneficial impact to logistical operations would be
18 the result of the railhead expansion project.

- 19 • **Indirect Impacts.** Wilson Road currently has the highest accident rate
20 on the installation (Booz Allen Hamilton, 2005), as a result of placing
21 the HRCOE Command Center along Wilson Road, the increased traffic
22 flow would have a moderate long-term adverse impact on traffic safety
23 and thereby increase the accident rate for this roadway.

24 **4.11.2.4 Alternative 3 - Combination New Construction and Renovation Activities** 25 **in the Cantonment and Training Facility Modifications (Preferred** 26 **Alternative)**

- 27 • **Direct Impacts.** Impacts from this alternative would be similar to
28 those described for Alternative 2 since it is assumed the HRCOE
29 Command Center would be one of the new construction projects. This
30 project would centralize the incoming work force on the east side of the
31 cantonment area.

32 A minor long-term beneficial impact to logistical operations would be
33 the result of the railhead expansion project.

- 34 • **Indirect Impacts.** Impacts from this alternative would be similar to
35 those described for Alternative 2 since it is assumed the HRCOE
36 Command Center would be part of the new construction projects. This
37 project would centralize the incoming work force on the east side of the
38 cantonment area.

4.12 UTILITIES

4.12.1 Affected Environment

4.12.1.1 Potable Water Supply

Potable water at Fort Knox is provided by two sources: the West Point Well Field in the Ohio River alluvial aquifer and surface water from McCracken Springs near Otter Creek.

Fort Knox has two water plants. The Fort Knox Central Water Plant treats both groundwater and surface water while the Muldraugh Water Plant treats only groundwater. The two plants operate 24 hours a day, 7 days a week, and serve a daytime, on-installation population of approximately 26,000 people. Together, the plants treat an average of 3.065 mgd and are designed for a maximum capacity of 13 mgd. The water is softened with lime, disinfected with chlorine, and amended with fluoride. Treated water is supplied to the installation and sold to the City of Muldraugh and Hardin County Water District #1.

Ownership and operation of the drinking water treatment and supply system is planned for privatization in 2007.

4.12.1.2 Wastewater System

The Fort Knox Wastewater Treatment Plant (WWTP) treats wastewater generated from Fort Knox. The facility was constructed in 1996 and was designed for an average wastewater flow of 6 mgd, a maximum hydraulic capacity of 14 mgd, and a peak wastewater flow of 18 million gallons. The facility handles flow from the installation and the City of Muldraugh and treats an average domestic flow of about 2.5 mgd. The Fort Knox WWTP has a Kentucky Pollutant Discharge Elimination System (KPDES) permit (No. KY0002917, Outfall 001), which limits the daily maximum and monthly average concentrations of specified pollutants.

The wastewater collection system consists of approximately 927,870 linear feet (or 175 miles) of sewer mains ranging in diameter from 2 inches to 30 inches with 8 inches being the most common size. There are approximately 1,745 manholes within the installation collection system. Of that total, approximately 516,807 linear feet of sewer mains and 1,205 manholes were installed before 1950; approximately 304,507 linear feet of sewer mains and 486 manholes were installed between 1950 and 1989, and approximately 101,515 linear feet of sewer mains and 54 manholes were installed between 1990 and 2000.

Ownership and operation of the Fort Knox wastewater system was transferred to Hardin County Water District No. 1 (District) in partnership with Veolia Water North America – South, LLC (Veolia Water). Under a 20-year, public-private partnership agreement, Veolia Water would operate all the systems on the installation for the District. The District was formed in 1952,

1 has 9,300 retail customers, and provides water to two other water systems.
2 The service area includes the City of Radcliff, as well as 120 square miles
3 covering the northwest corner of Hardin County, in addition to the cantonment
4 area at Fort Knox.

5 The wastewater system at Fort Knox is generally adequate to convey and
6 treat wastewater from all existing and future development.

7 **4.12.1.3 Storm Water System**

8 Fort Knox has a KPDES permit (KY0002917), which covers storm water
9 discharges and construction activities within the confines of the installation,
10 provided a BMP Plan is developed for the site. All construction activities
11 require the contractor to provide a copy of its Pollution Prevention and Soil
12 Erosion Control BMP Plan to the Water Quality Program Manager, EMD,
13 DPW, for review and approval. The District also owns and operates the storm
14 water collection system at Fort Knox. The storm drainage system consists of
15 collection and diversion structures, such as pipelines, manholes, headwalls,
16 catch basins, curb inlets, metal and concrete culverts, and open concrete
17 ditches. The storm water drainage system at Fort Knox is generally able to
18 meet the demands of normal rainfall conditions.

19 **4.12.1.4 Energy Sources**

20 Electricity is supplied to Fort Knox by Nolin Rural Electric Co-Op Corporation.
21 Capacities of these utilities are adequate and are able to meet current and
22 future demands.

23 **4.12.1.5 Communications**

24 The installation is currently served with a network of shielded copper cables
25 and fiber optic cables. The system meets the current installation demands
26 and is updating to a trunking system that would support existing and future
27 anticipated actions.

28 **4.12.1.6 Solid Waste**

29 Solid wastes generated by Fort Knox are recycled or land disposed.

30 Solid waste generated from family housing, dining facilities, and
31 administrative and maintenance facilities is collected by a contractor and
32 transported to the Outer Loop Recycling and Disposal Facility located in
33 Louisville, Kentucky.

34 Fort Knox operates, through a private contractor, a Commonwealth of
35 Kentucky-permitted construction/demolition debris (CDD) landfill that is
36 located on Baker Road. The CDD landfill is projected to last another 15
37 years. Construction and demolition debris, as well as storm-related debris, is
38 disposed of at this landfill. Waste from outside the installation boundary is not
39 accepted at the landfill. Contractors, units, government employees, and

1 residents of family housing may utilize the landfill and must haul their own
2 waste to the facility.

3 Fort Knox operates three storage facilities for used tires. Used tires
4 generated at Fort Knox only can be taken to the landfill, the Auto Craft Shop,
5 or the Boatwright Maintenance Complex for permitted storage and pickup by
6 a contractor that recycles tires.

7 Fort Knox has an active household and office recycling program to reduce the
8 amount of solid waste generated. Items that are recycled include office
9 paper, newspaper, toner and ink jet cartridges, aluminum cans, glass, plastic
10 bottles, cardboard, tin and steel cans, boxboard, cardboard, wooden pallets,
11 and lumber.

12 Fort Knox also has a deconstruction debris recycling program in which at
13 least 50 percent of a building's materials (by weight) must be recovered and
14 reused or recycled. The program diverts significant amounts of waste from
15 the Fort Knox CDD landfill.

16 4.12.2 Consequences

17 4.12.2.1 No Action Alternative

- 18 • **Direct Impacts.** No changes in baseline conditions are anticipated.
19 Maintenance and repair of infrastructure would continue at historical
20 levels.
- 21 • **Indirect Impacts.** No indirect impacts to infrastructure are anticipated
22 as no change in the operation of utilities would occur under the No
23 Action Alternative.

24 4.12.2.2 Alternative 1 - Renovation with Minimal New Construction Activities in 25 the Cantonment, and Training Facility Modifications

- 26 • **Direct Impacts.** Direct infrastructure impacts anticipated for renovation
27 projects are outlined below.

28 **Potable Water.** An increase in the average daily water demand is
29 estimated at less than 0.035 mgd (based on an assumed daily water
30 use of 100 gallons per person). Under current conditions, the water
31 treatment facilities treat 3 mgd and are designed to provide treatment
32 of up to 13 mgd. Thus, there is sufficient capacity to accommodate the
33 increase in population. Additionally, a permanent negligible beneficial
34 impact would be realized due to the increased flow rates to the
35 distribution system. Since the system does not have a permanent
36 flushing mechanism associated with it, the increased flow of water
37 would reduce the potential for water stagnation and the formation of
38 biological organisms on piping systems.

39 **Wastewater Collection and Treatment.** An increase in the average
40 daily domestic sewage production under this alternative is estimated at

0.023 mgd (based on an assumed domestic sewage production of 75 gallons per day per person). The Fort Knox WWTP was designed to treat up to 6 mgd (it currently treats an average of 2.5 mgd), so the facility can easily accommodate the increase in domestic sewage production as a result of this alternative.

Energy Systems. Existing electrical systems would be used for the renovated facilities and would be able to accommodate the anticipated increase of personnel.

Communication Systems. Existing communication systems would be used for the renovated facilities and would be able to accommodate the anticipated increase of personnel.

Solid Waste. Permanent negligible adverse direct impacts to solid waste disposal are anticipated from the influx of additional personnel. The existing capacity of the Outer Loop Recycling and Disposal Facility would be able to accommodate the anticipated increase in solid waste associated with the increase of personnel.

Minor adverse direct impacts to solid waste disposal are anticipated from renovation activities. It is estimated that demolition material would contribute roughly 2 cubic yards per building (approximately 1,700 pounds)⁵ of material to the CDD landfill, or approximately 42,000 tons of construction material. Approximately 50,000 tons of debris is disposed of in the CDD landfill every year. Therefore, disposal of the demolition debris would have a minor adverse impact on the life expectancy of the landfills.

Long-term indirect impacts could impact the installation recycling program that collects aluminum, glass, paper, cardboard, plastic and metal. The Regional Corrections Facility labor group operates the program and the movement of this group to Fort Leavenworth could decrease the scope of the recycling program.

- **Indirect Impacts.** Long-term indirect impacts could impact the installation recycling program that collects aluminum, glass, paper, cardboard, plastic and metal. The Regional Corrections Facility labor group operates the program and the movement of this group to Fort Leavenworth could decrease the scope of the recycling program.

4.12.2.3 Alternative 2 - New Construction with Minimal Renovation Activities in the Cantonment, and Training Facility Modifications

- **Direct Impacts.** Direct infrastructure impacts anticipated for renovation projects are described below.

⁵ Note: Assume 1 yd³ of metal is equivalent to 850 lbs. Obtained from standard volume-to-weight conversion factors.

1 **Potable Water.** Under Alternative 2, the impacts to the potable water
2 system would be similar to Alternative 1.

3 **Wastewater Collection and Treatment.** Under Alternative 2, the
4 impacts to the wastewater collection and treatment system would be
5 similar to Alternative 1.

6 **Storm water.** It is estimated that it would take 33 acres of parking
7 space to accommodate the Human Resources Command operation.
8 This would result in a permanent minor adverse impact to the storm
9 water collection system based on an increase of 0.02 mgd addition to
10 the flow through of the WWTP.⁶

11 **Energy Systems.** Existing electrical systems would be used for the
12 constructed facilities and would be able to accommodate the
13 anticipated increase of personnel. However, the location of the
14 HRCOE building would determine the need for the addition of a
15 transformation substation due to limited loads on some of the existing
16 substations. Since it is more feasible to incorporate new energy
17 sources as part of construction activities compared to removing and
18 retrofitting existing energy sources during renovation, an advantage to
19 incorporate more energy efficient processes is provided with this
20 alternative. The installation currently has more than 25 percent of its
21 facilities utilizing geothermal heat pump systems and where feasible,
22 utilizes this technology with its new building projects. The use of
23 geothermal heat pump systems for new construction activities would
24 improve BtU efficiencies for cooling systems approximately 300
25 percent and heating systems nearly 400 percent in each of the new
26 buildings as compared to conventional four-pipe gas fired boiler
27 systems (Fort Knox, 2006) resulting in a moderate long-term beneficial
28 impact. Additionally, the incorporation of T-8 lights, LED signs, and
29 faucet aerators are other utility saving mechanisms that would typically
30 be used for new construction activities.

31 **Communication Systems.** Existing communication systems would
32 be used for the constructed and renovated facilities and would be able
33 to accommodate the anticipated increase of personnel.

34 **Solid Waste.** Permanent negligible adverse direct impacts to solid
35 waste disposal are anticipated from the influx of additional personnel.
36 The existing capacity of the Outer Loop Recycling and Disposal Facility
37 would accommodate the anticipated increase in solid waste associated
38 with the increase of personnel.

⁶ Rational Method Formula = Assumes rainfall @ 1in/hr for 100 hours of annual precipitation.

1 It is estimated that construction material would contribute roughly 1
 2 cubic yard per building (approximately 850 pounds)⁷ of material to the
 3 CDD landfill, or approximately 21,000 tons of construction material.
 4 Approximately 50,000 tons of debris is disposed in the CDD landfill
 5 every year. The CDD landfill is projected to last another 15 years.
 6 Therefore, disposal of the construction debris would have a minor
 7 adverse impact on the life expectancy of the landfills.

- 8 • **Indirect Impacts.** Indirect impacts from this alternative would be the
 9 same as Alternative 1.

10 **4.12.2.4 Alternative 3 - Combination New Construction and Renovation Activities** 11 **in the Cantonment, and Training Facility Modifications (Preferred** 12 **Alternative)**

- 13 • **Direct Impacts.** Impacts from this alternative would be the same as
 14 the alternatives identified in Alternative 1, except it would be
 15 proportional to the amount of renovation and construction activities that
 16 are completed.
- 17 • **Indirect Impacts.** Indirect impacts from this alternative would be the
 18 same as Alternative 1.

19 **4.13 HAZARDOUS AND TOXIC SUBSTANCES**

20 **4.13.1 Affected Environment**

21 **4.13.1.1 Uses of Hazardous Materials**

22 Specific environmental statutes and regulations govern hazardous material
 23 and hazardous waste management activities at Fort Knox. For the purpose of
 24 this analysis, the terms *hazardous waste*, *hazardous materials*, and *toxic*
 25 *substances* include those substances defined as hazardous by the
 26 Comprehensive Environmental Response, Compensation, and Liability Act,
 27 the Resource Conservation and Recovery Act (RCRA), Army Regulation 200-
 28 1 (AR 200-1), and Toxic Substances Control Act (TSCA). In general, they
 29 include substances that, because of their quantity, concentration, or physical,
 30 chemical, or toxic characteristics, may present moderate danger to public
 31 health or welfare or the environment when released into the environment.

32 **4.13.1.2 Storage and Handling Areas**

33 Storage of the installation's hazardous waste is designated in Building 2949.
 34 Additionally, Building 2962 is utilized as the 90-day hazardous waste storage

⁷ Note: Assume 1 yd³ of metal is equivalent to 850 lbs. Obtained from standard volume-to-weight conversion factors.

1 area and there are also more than 50 satellite hazardous waste accumulation
2 storage areas throughout the installation.

3
4 Underground storage tanks (USTs) are regulated by 40 CFR 280,
5 Commonwealth of Kentucky laws, and Department of the Army policies. A
6 total of 159 UST sites were identified at Fort Knox (Fort Knox, 2003). All
7 substandard regulated USTs were removed by Dec. 22, 1998. This was
8 accomplished by removal of all regulated USTs and consolidation of fueling
9 facilities into 21 aboveground storage tanks. There are currently 47 USTs still
10 located at the installation and all contain heating oil.

11 Approximately 90 percent of the waste solvents at Fort Knox are generated
12 from vehicle and aircraft maintenance facilities (Fort Knox, 2002). Parts
13 washers and carburetor cleaners represent the major contributors of waste
14 solvents. Other sources of solvents include weapon pools, recreational
15 facilities, and maintenance activities throughout the installation. Used
16 solvents are not disposed of as RCRA hazardous waste because they are
17 reused through a program run by a private contractor. Disposal of hazardous
18 waste and some non-hazardous waste occurs through government contracts
19 that are coordinated through the installation's Defense Reutilization and
20 Marketing Organization (DRMO). Operations at the Colby Tank Motor Park
21 Tactical Equipment Maintenance Area require the use of various hazardous
22 materials. These vehicle maintenance activities have included prior spills of
23 materials and the associated clean-up of the area. Fort Knox has identified
24 spill prevention, control and countermeasures procedures (SPCCP) designed
25 to provide guidance for the safe and effective response to accidental spills or
26 releases.

27 **4.13.1.3 Hazardous Waste**

28 Fort Knox is a large quantity hazardous waste generator and has a RCRA
29 Part B permit for a treatment, storage, and disposal (TSD) facility. The types
30 of wastes generated and stored at the installation include those found in
31 maintenance activities, printing and painting operations, as well as electrical
32 and mechanical shops. Many of the wastes received for disposal are expired
33 commercial chemical products.

34 All hazardous waste generated at Fort Knox is manifested under Fort Knox's
35 USEPA identification number (KY6210020479). Fort Knox operates under a
36 Hazardous Waste Management Program RCRA Part B Permit issued by the
37 Commonwealth of Kentucky. The regulatory requirements for this program
38 meet the USEPA regulations and the Commonwealth of Kentucky
39 regulations. If the Commonwealth of Kentucky regulations are stricter than
40 USEPA's RCRA regulations, the installation's operations would follow those
41 guidelines identified by the Commonwealth of Kentucky (Knox, 2002). The
42 facility's RCRA Part B Permit is set to expire on February 21, 2007. It is

1 anticipated that in lieu of renewing the permit, the installation would
2 reconfigure the existing TSD facility to a 90-day storage building and increase
3 the number of satellite accumulation storage areas to better manage
4 hazardous waste generation on-site.

5 **4.13.1.4 Site contamination and Cleanup**

6 Fort Knox currently has seven compliance cleanup sites, six of which are
7 located in the cantonment area and one located in the training range area.
8 Additionally, the installation has 48 solid waste management units (SWMUs).
9 The distinction between the two programs has to do with the age of the
10 unit/area and its current use. Both of these cleanup programs are managed
11 under the existing RCRA Part B permit corrective action provisions. POLs
12 and metals are the most prevalent constituents found at these sites.

13 It is anticipated that response actions associated with the compliance cleanup
14 sites would be completed for all the sites by FY 2007. For the SWMU
15 closures, a much longer closure phase period is expected due to two of the
16 sites having to meet landfill closure requirements. By 2011, all but five of the
17 SWMUs are scheduled to meet the RCRA closure criteria. Figure 4.5 shows
18 the location of SWMUs at Fort Knox.

19 **4.13.1.5 Special Hazards**

20 **PCBs**

21 Currently there are 125 polychlorinated biphenyls (PCB) transformers in use
22 at Fort Knox. The transformers are maintained and serviced by a private
23 contractor. All inspection and disposal recordkeeping requirements are done
24 in accordance with TSCA regulations and are maintained by the Fort Knox
25 environmental staff. In 2005, 16 PCB transformers were taken out of service
26 and disposed of in accordance with federal, state, and Army regulations.

27 All light ballasts that are taken out of service and not marked as “non-PCB”,
28 are assumed to contain PCBs. These ballasts are stored in an interim
29 storage building prior to off-site disposal.

30 **Asbestos**

31 Asbestos and ACM are managed at Fort Knox in accordance with federal and
32 local standards. Abatement is on a project-by-project basis and consists of
33 removal of the ACM by qualified personnel and disposal in accordance with
34 USEPA, Commonwealth of Kentucky, and Army guidelines.

35 ACM is known to be present in buildings within the 1400 Area that are being
36 considered for use within this analysis. ACM is found primarily in flooring and
37 mastics, although it may be present in other construction materials. Any
38 potential ACM encountered during renovation would be removed in
39 accordance with established standards. No other sites considered in this EA
40 are known to have ACM.

1 **Lead-Based Paint**

2 Remediation of Lead Based Paint (LBP) is, as with asbestos, handled on a
3 project-by-project basis. LBP exposure is minimized by preventing
4 deterioration of LBP surfaces.

5 **Pesticides**

6 Use of pesticides, herbicides, and rodenticides are strictly controlled.
7 Pesticides are stored and used in accordance with federal and state
8 regulations, and the installation's Integrated Pest Management Plan.

9 **4.13.2 Consequences**

10 Irrespective of the type of building project activity or alternative selected, Fort
11 Knox would relinquish the current RCRA Part B permit and manage the waste
12 streams utilizing temporary storage areas in accordance with RCRA
13 regulations. By relinquishing the RCRA permit, this action would better serve
14 the planned personnel changes associated with BRAC since there would be a
15 greater influx of infantry personnel, who in turn would generate greater
16 quantities of hazardous wastes than current levels. Materials such as rifle
17 bore patches and pipe cleaners are a frequently generated waste with the
18 19th Engineering Battalion and IBCT. The increase in satellite accumulation
19 areas would be coordinated to accommodate the increase in and dispersion
20 of personnel, thus reducing the potential for mismanagement or
21 misplacement of these and other waste streams generated by installation.
22 During the initial phases of personnel transfers, it is expected that the number
23 of satellite accumulation areas would temporarily increase by 100 percent.
24 After all personnel transfers are completed, the increase in satellite
25 accumulation areas would be approximately 50 percent above the current
26 number for these storage areas. A permanent negligible beneficial impact is
27 expected from this decentralizing action of waste storage areas as the
28 amount of hazardous waste being transported would be minimized. A
29 negligible adverse impact would be expected due to the increase in the
30 likelihood of spills based on the greater availability of these storage areas.

31 **4.13.2.1 No Action Alternative**

32 **Direct Impacts.** Under this alternative, hazardous and toxic substances
33 would continue to be generated, used, stored, and disposed of in current
34 locations. Use and disposal of these substances would continue to be
35 managed in accordance with existing federal and state laws and Army
36 regulations; therefore, impacts are not anticipated to differ from baseline
37 conditions.

38 **Indirect Impacts.** Indirect impacts are not anticipated to differ from baseline
39 conditions.

4.13.2.2 Alternative 1 - Renovation with Minimal New Construction Activities in the Cantonment, and Training Facility Modifications

- **Direct Impacts.** A temporary minor adverse impact would be expected from housecleaning activities associated with personnel transfers as buildings are emptied to accommodate the new personnel.

Current projections show more than 3,000 pieces of equipment coming to Fort Knox from the IBCT. More than half of this inventory involves vehicular equipment requiring the use of POLs. Based on the inventory listings for outgoing and incoming mechanical equipment associated with the BRAC and Army transformation related actions, it is estimated that there would be a 25 percent net increase in the amount of POL-related vehicular equipment coming to Fort Knox. There is a potential for small spills of hazardous substances associated with the use of this equipment and containment of spills that may occur from maintenance of vehicles is outlined in the SPCC Plan.

Because of this inventory increase, it is anticipated that there would be a corollary increase in the number of parts washer tanks and POL collection points resulting in a permanent negligible adverse impact due to additional solvent use.

Renovation of existing facilities under this alternative would entail the use of various paints, lacquers, adhesives, sealants, fuel, and other hazardous substances. Generation of small quantities of toxic and hazardous wastes during renovation is likely. The potential would exist for small spills or leaks of hazardous substances that would potentially generate small quantities of contaminated media requiring disposal. Fort Knox has documented SPCCP designed to minimize the impact of accidental spills of POL products, hazardous media, pollutants, or contaminants. A temporary negligible adverse impact is expected for this type of material use.

Demolition of existing facilities would be minimal, so there is little potential for any large-scale generation of ACM or LBP wastes during renovation. Renovation of existing facilities in the 1400 Area may involve ACM insulation. Disturbance of ACM materials may be an exposure source for on-site personnel. However, if present, ACMs would be identified prior to renovation and abated in accordance with federal, state, and Army standards, therefore the presence of ACM would be a temporary negligible adverse impact.

The removal of light ballasts would be a central activity during building renovations. How the renovations are scheduled would determine the increase in the number of PCB-contained ballasts. There is expected to be ample existing storage capacity to accommodate any reasonable

1 influx in the number of these types of ballasts, so a temporary
2 negligible adverse impact is anticipated.

- 3 • **Indirect Impacts.** Due to increased training exercises from additional
4 personnel, there would be a minor adverse impact from hazardous and
5 toxic substances, due to additional lead and metal contamination to
6 range areas from training activities.

7 **4.13.2.3 Alternative 2 - New Construction with Minimal Renovation Activities in** 8 **the Cantonment, and Training Facility Modifications**

- 9 • **Direct Impacts.** Direct impacts would be the similar to those identified
10 for Alternative 1.

11 An increase in personnel would result in an increase in the amounts of
12 hazardous wastes generated and used (e.g., oil, solvents, paints, POL
13 products, and pesticides).

14 Construction of new facilities under this alternative would entail the use
15 of various paints, lacquers, adhesives, sealants, fuel, and other
16 hazardous substances. Generation of small quantities of toxic and
17 hazardous wastes during construction is likely. The potential would
18 exist for small spills or leaks of hazardous substances, which would
19 potentially generate small quantities of contaminated media requiring
20 disposal. Fort Knox has documented SPCCP designed to minimize
21 the impact of accidental spills of POL products, hazardous media,
22 pollutants, or contaminants. It is expected that the use of such
23 materials would be in larger quantities than for renovation projects
24 resulting in a temporary minor adverse impact.

- 25 • **Indirect Impacts.** Indirect impacts would be similar to Alternative 1.

26 **4.13.2.4 Alternative 3 - Combination New Construction and Renovation Activities** 27 **in the Cantonment and Training Facility Modifications (Preferred** 28 **Alternative)**

- 29 • **Direct Impacts.** Impacts from this alternative would be the same as
30 the alternatives identified for Alternative 1 and Alternative 2, except it
31 would be proportional to the amount of renovation and construction
32 activities that are completed.

- 33 • **Indirect Impacts.** Indirect impacts would be similar to Alternative 1.

34 **4.14 CUMULATIVE EFFECTS**

35 **4.14.1 Introduction**

36 The cumulative impact analysis evaluates the incremental effects of implementing any
37 of the alternatives when added to past, present, and reasonably foreseeable future
38 U.S. Army actions at Fort Knox and the actions of other parties in the surrounding area.
39 The cumulative impact analysis has been prepared at a level of detail that is reasonable

1 and appropriate to support an informed decision by the U.S. Army in determining that
2 significant impacts will not occur. The cumulative impact discussion is presented for
3 each of the alternatives.

4 The key components of the cumulative impact analysis include the following:

5 **Cumulative Impact Analysis Area.** The cumulative impact analysis area includes the
6 area that has the potential to be affected by implementation of the proposed action at
7 Fort Knox. This includes the installation and the area proximate to the installation
8 boundary and varies by resource category being considered:

- 9 • **Land Use.** The cumulative impact analysis area for land use is defined by the
10 installation boundary and the counties adjacent to the installation. The greatest
11 direct and indirect impacts of the proposed action are expected to occur within this
12 area, and anticipated to be most concentrated in the communities bordering the
13 installation boundary.
- 14 • **Aesthetics and Visual Resources.** The cumulative impact analysis area for
15 aesthetics and visual resources includes all areas within the boundaries of the
16 installation, as well as the viewshed of the installation from off-post.
- 17 • **Air Quality.** The cumulative impact analysis area for air quality includes all areas
18 within the boundaries of the installation, as well as the three counties of the ROI.
- 19 • **Noise.** The cumulative impact analysis area for noise includes all areas within the
20 boundaries of the installation, as well as all counties bordering the installation.
- 21 • **Topography and Soils.** The cumulative impact analysis area for topography and
22 soils, including topography, is defined by the installation boundary.
- 23 • **Water Resources.** The cumulative impact analysis area for water resources,
24 including physiography and surface drainage, surface water, surface water quality,
25 groundwater, floodplains, and storm water is defined as the watersheds on-post and
26 the watersheds adjacent downstream of the installation.
- 27 • **Biological Resources.** The cumulative impact analysis area for biological
28 resources includes the installation, and an area of comparable size, outside of and
29 immediately surrounding the installation.
- 30 • **Cultural Resources.** The cumulative impact analysis area for cultural resources
31 includes all areas within the boundaries of installation.
- 32 • **Socioeconomic Environment.** The cumulative impact analysis area for
33 socioeconomic environment is the economic ROI.
- 34 • **Transportation.** The cumulative impact analysis area for transportation is defined
35 by the installation boundary and the area proximate to the installation boundary.
- 36 • **Utilities.** The cumulative impact analysis area for utilities is defined by the
37 installation boundary and the area proximate to installation boundary.

- 1 • **Hazardous and Toxic Substances.** The cumulative impact analysis area for
2 hazardous and toxic materials includes all areas within the installation boundaries.

3 **Past and Present Actions.** Past actions are defined as actions within the cumulative
4 analysis areas under consideration that occurred before November 2005 (the
5 environmental baseline for this EA). These include past actions at Fort Knox and past
6 demographic, land use, and development trends in the areas that surround the
7 installation.

8 In most cases, the characteristics and results of these past and present actions are
9 described in the Affected Environment sections under each of the resource categories
10 covered in this EA. Past and present actions that have been identified and considered
11 in the analysis of cumulative impacts are listed below. These actions are grouped to
12 indicate those that occur on-post and those that occur off-post.

13 **Past and present off–post actions include the following:**

- 14 • Off-post airspace use and flight altitude instruction during training missions;
15 • Past development and land use patterns within the Fort Knox region that comprise
16 the affected environment as described in this EA and are considered as part of the
17 environmental baseline conditions.
18 • Continued urban encroachment from the areas surrounding Fort Knox, especially
19 those to the south and west (CERL, 2005).
20 • The development of additional supportive commercial land uses, primarily along the
21 major transportation routes across the area.

22 **Reasonably Foreseeable Future Actions.** Reasonably foreseeable future actions are
23 mainly limited to those that have been approved and that can be identified and defined
24 with respect to timeframe and location. Reasonably foreseeable future actions that
25 have been identified and considered in the analysis of cumulative impacts, both on-post
26 and off-post, are listed below.

27 **Reasonably foreseeable on–post actions include the following:**

- 28 • Update of the Installation Real Property Master Plan.
29 • Consolidation of Industrial/Maintenance activities in one central area.
30 • Support of the Army Transformation with a BCT/FCS Integration Center, Maneuver
31 Center (Interim and Objective Force), Basic Officer Leadership Course, and
32 Homeland Defense Regional Training Center.
33 • Construction and maintenance of support facilities, including but not limited; airfield
34 control, airfield taxiways, airfield maintenance, airfield deployment ramp, IGPBS,
35 youth sports complex, and east access corridor complex.

36 **Reasonably foreseeable future off–post actions include the following:**

- 37 • Development of management actions within the surrounding civilian community to
38 meet future civilian development trends.

- 1 • Construction of the Elizabethtown Connector. This project includes the
2 reconstruction of KY 1600 from the US 31W Bypass in Elizabethtown north 2 miles,
3 and then a new route from KY 1600 to KY 313 in Radcliff. The project would provide
4 an alternative north-south travel route connecting Elizabethtown and Radcliff. A
5 FNSI for this project was approved on May 6, 2005. This project would support
6 current development in the area as well as provide additional areas for development
7 especially along road intersections.
- 8 • Extension of KY 313 from Vine Grove to US 60. This project is noted in the Six-Year
9 Highway Plan Projects. The first phase should commence in FY 2007. This project
10 would enhance travel in the area which would influence economic development.
- 11 • Continued civilian encroachment around the Fort Knox installation.
- 12 • Continued development along Highway 31W south of the installation.

13 **4.14.2 Consequences**

14 The influx of personnel and transfer of operations to Fort Knox would occur under all
15 three alternatives in comparable phases. The basic difference between the three
16 alternatives involves how they would be accommodated at the installation. Based upon
17 the following environmental analysis, none of the cumulative impacts identified were
18 considered substantive.

19 **4.14.2.1 No Action Alternative**

20 No additional support facilities would be developed for the new operations.
21 Existing on-going mission activities at Fort Knox would continue at historical
22 intensity and frequency. Aesthetics and visual resources could be impacted
23 by the deterioration of existing buildings. Cumulative impacts occurring as a
24 result of activities in the region would continue.

25 **4.14.2.2 Alternative 1 - Renovation with Minimal New Construction Activities in 26 the Cantonment, and Training Facility Modifications**

27 Cumulative impacts under Alternative 1 by resource category are as follows:

28 **Land Use.** There would be no cumulative impacts to land use under
29 Alternative 1 since all projects constructed on post would be compatible with
30 existing uses. They would represent expansion of existing functional land use
31 areas.

32 **Aesthetics and Visual Resources.** There would be no substantial
33 cumulative impacts to aesthetics and visual resources under Alternative 1. All
34 BRAC and non-BRAC related projects on Fort Knox would be developed in
35 compliance with Master Planning guidelines. Additionally, most of these
36 projects are located within the cantonment area or previously disturbed areas
37 on the installation.

38 **Air Quality.** There would be a slight increase in the potential for short-term
39 adverse cumulative impacts to air quality associated with the proposed

1 construction projects. The potential increases in short-term fugitive dust from
2 on- and off-post construction activities may combine with dust and particulate
3 matter generated through training activities and other previously approved
4 construction projects on-post. These emissions would accumulate with other
5 pollutants from adjacent and regional activities. This would likely only be an
6 issue when atmospheric conditions are stagnant such as on hot humid days
7 in late summer. Increased traffic emissions from the increase in POVs and
8 GOVs would also occur.

9 **Noise.** The construction and operation of training facility projects would not
10 result in any substantial cumulative noise impacts.

11 **Topography and Soils.** Under this alternative there is the potential for
12 cumulative adverse impacts to soils due to soil erosion, removal, and
13 compaction through the implementation of construction projects under BRAC
14 and non-BRAC-related projects. Future development projects in the
15 surrounding communities when combined with the impacts from installation
16 construction and renovation projects have the potential to result in cumulative
17 adverse impacts to soils. These impacts would be short-term and because
18 most of the development would take place on previously disturbed or
19 developed areas, the impacts would be minor.

20 **Water Resources.** Run-off from soil disturbance from BRAC and
21 non-BRAC-related construction projects and training activities on Fort Knox
22 combined with soil disturbance from construction projects being implemented
23 in surrounding community could have cumulative adverse affects on
24 downstream water resources. The City of Radcliff is one area of concern
25 based on historical flooding issues associated with the karst topography in
26 that area.

27 **Biological Resources.** Because most of the renovation activities that would
28 be implemented under Alternative 1 are located within or adjacent to the
29 existing cantonment area or previously disturbed areas, it is not anticipated
30 that any major cumulative impacts to biological resources would occur due to
31 on-post activities. However, development within the surrounding community
32 would continue. Consequently, there would be a potential for adverse
33 cumulative impacts to biological resources due to loss or degradation of
34 habitat. This loss of habitat could cause potential displacement of some
35 individuals of a species from their existing off-post habitats.

36 **Cultural Resources.** There would be no cumulative impacts to cultural
37 resources under Alternative 1. There are six buildings currently eligible for
38 the NRHP. Prior to any renovation activities on these buildings, proper
39 procedures would be followed to minimize impacts, if any, on such resources.

40 **Socioeconomics.** On post development combined with housing and other
41 development in the surrounding communities would result in long-term
42 cumulative economic impacts. Beneficial cumulative impacts would be in the

1 form of increased business volume, income, and employment associated with
2 construction activities and increased on-post operations. Beneficial
3 cumulative economic impacts would be realized by the regional and local
4 economy during both the construction and operations phases of this
5 alternative. Employment generated by construction activities would result in
6 additional indirect wages paid, an increase in indirect business sales volume,
7 and indirect expenditures for local and regional services, materials and
8 supplies. These impacts would be beneficial because the development would
9 improve housing and other support facilities within the surrounding
10 communities. Other cumulative socioeconomic impacts include an increase
11 in school enrollment, increased demand on public services, and an enhanced
12 tax base and tax revenues.

13 **Transportation.** Short-term minor cumulative adverse impacts can be
14 expected from traffic congestion due to construction equipment entering and
15 leaving the installation construction sites combined with other BRAC and non-
16 BRAC-related construction activities on the installation.

17 **Utilities.** Implementation of proposed action construction and renovation
18 projects, which includes updates and continued expansion of the utilities,
19 would have a long-term cumulative beneficial impact on the installation when
20 combined with updates to utilities on non-BRAC-related projects and off-post
21 utility improvements, especially involving energy use.

22 **Hazardous and Toxic Substances.** With the BRAC-related construction
23 projects considered under this alternative, the possibility for spills from
24 construction equipment is increased. This would result in short-term
25 cumulative impacts when combined with the potential spills from other
26 construction projects and ongoing mission activities that may be occurring on
27 the installation or in adjacent areas.

28 **4.14.2.3 Alternative 2 - New Construction with Minimal Renovation Activities in** 29 **the Cantonment, and Training Facility Modifications**

30 Cumulative impacts under Alternative 2 by resource category are as follows:

31 **Land Use.** The potential cumulative impacts to land use under Alternative 2
32 would be the same as those of Alternative 1.

33 **Aesthetics.** The potential cumulative impacts to aesthetics under Alternative
34 2 would be the same as those of Alternative 1.

35 **Air Quality.** The potential cumulative impacts to air quality under Alternative
36 2 would be slightly increased due to the greater emphasis on construction
37 activities.

38 **Noise.** The potential cumulative impacts to noise under Alternative 2 would
39 be the same as those of Alternative 1.

1 **Topography and Soils.** The potential cumulative impacts to topography and
2 soils under Alternative 2 would be the greater than those of Alternative 1 due
3 to site preparation and land disturbance associated with construction
4 activities.

5 **Water Resources.** The potential cumulative impacts to water resources
6 under Alternative 2 would be the same as those of Alternative 1.

7 **Biological Resources.** The potential cumulative impacts to biological
8 resources under Alternative 2 would be the same as those of Alternative 1
9 due to site preparation and land disturbance associated with construction
10 activities.

11 **Cultural Resources.** The potential cumulative impacts to cultural resources
12 under Alternative 2 would be the same as those of Alternative 1.

13 **Socioeconomics.** The potential cumulative impacts to socioeconomics
14 under Alternative 2 would be the same as those of Alternative 1.

15 **Transportation.** The potential cumulative impacts to transportation under
16 Alternative 2 would be similar to those of Alternative 1. The expansion of
17 Wilson Road however, would result in short-term minor cumulative impacts
18 due to construction activities associated with this project.

19 **Utilities.** Utility impacts under Alternative 2 would be similar to those under
20 Alternative 1, except there would be less solid waste generated from
21 construction activities as compared to renovation activities. The cumulative
22 effect is minor.

23 **Hazardous and Toxic Substances.** The potential cumulative impacts from
24 hazardous and toxic substances would be the same as those of Alternative 1.

25 **4.14.2.4 Alternative 3 - Combination New Construction and Renovation Activities** 26 **in the Cantonment, and Training Facility Modifications (Preferred** 27 **Alternative)**

28 Cumulative impacts under Alternative 3 by resource category are as follows:

29 **Land Use.** The potential cumulative impacts to land use under Alternative 3
30 would be the same as those of Alternative 1.

31 **Aesthetics.** The potential cumulative impacts to aesthetics under Alternative
32 3 would be the same as those of Alternative 1.

33 **Air Quality.** The potential cumulative impacts to air quality under Alternative
34 3 would be comparable to Alternative 1 and would be proportional to the
35 amount of renovation and construction activities.

36 **Noise.** The potential cumulative impacts to noise under Alternative 3 would
37 be the same as those of Alternative 1.

38 **Topography and Soils.** The potential cumulative impacts to topography and
39 soils under Alternative 3 would be the same as those of Alternative 1.

1 **Water Resources.** The potential cumulative impacts to water resources
2 under Alternative 3 would be the same as those of Alternative 1.

3 **Biological Resources.** The potential cumulative impacts to biological
4 resources under Alternative 3 would be the same as those of Alternative 1.

5 **Cultural Resources.** The potential cumulative impacts to cultural resources
6 under Alternative 3 would be the same as those of Alternative 1.

7 **Socioeconomics.** The potential cumulative impacts to socioeconomics
8 under Alternative 3 would be the same as those of Alternative 1.

9 **Transportation.** The potential cumulative impacts to hazardous and toxic
10 substances under Alternative 3 would be the same as those of Alternative 1.

11 **Utilities.** The potential cumulative impacts to utilities under Alternative 3
12 would be comparable to Alternative 1 and would be proportional to the
13 amount solid waste generated from renovation and construction activities.

14 **Hazardous and Toxic Substances.** The potential cumulative impacts from
15 hazardous and toxic substances under Alternative 3 would be the same as
16 those under Alternative 1.

17 **4.15 MITIGATION AND BEST MANAGEMENT PRACTICES SUMMARY**

18 As discussed in Sections 4.2 through 4.13 above, no significant adverse or significant
19 beneficial impacts have been identified or are anticipated as a result of implementing
20 any of the proposed action alternatives or the No Action Alternative. Consequently, no
21 mitigation measures are required to reduce impacts to non-significant levels as part of
22 this EA.

23 In accordance with definitions provided in 40 CFR 1508.20 (a–e) and 32 CFR
24 Part 651.15, measures can be taken to diminish adverse impacts in the following ways:

- 25 • Avoiding the impact altogether by not taking a certain action or parts of an action;
- 26 • Minimizing impacts by limiting the degree or magnitude of the action and its
27 implementation;
- 28 • Rectifying the impact by repairing, rehabilitating, or restoring the affected
29 environment;
- 30 • Reducing or eliminating the impact over time by preservation and maintenance
31 operations during the life of the action;
- 32 • Compensating for the impact by replacing or providing substitute resources or
33 environments.

34 In association with the proposed action, Fort Knox has identified a number of Best
35 Management Practices (BMP) that would be implemented with the proposed
36 construction activities, regardless of the alternative selected. These measures are
37 designed to avoid, rectify, or reduce adverse impacts. Fort Knox will work with
38 governmental agencies to comply with the respective regulations and avoid adverse

1 impacts wherever possible. Wherever reasonable and possible to do so, unavoidable
2 adverse impacts would be lessened under coordination with the appropriate agencies.
3 For those adverse impacts that cannot be avoided, the BMPs have been developed to
4 include features designed to: protect, maintain, restore, or enhance environmental
5 conditions. These BMPs are summarized in Table 4-26.
6

**TABLE 4-26
BEST MANAGEMENT PRACTICE SUMMARY FOR IMPLEMENTATION OF BRAC RECOMMENDATIONS AND OTHER ARMY TRANSFORMATION ACTIONS AT FORT KNOX, KENTUCKY**

Best Management Practice	Resource Category																								
	Land Use		Aesthetics and Visual Resources		Air Quality		Noise		Topo- graphy and Soils		Water Resources		Biological Resources		Cultural Resources		Socio- economics		Trans- portation		Utilities		Hazardous and Toxic Substances		
	D	I	D	I	D	I	D	I	D	I	D	I	D	I	D	I	D	I	D	I	D	I	D	I	
Silt fences									●			●													
Diversion ditches																									
Re-seeding and re-establishment of vegetation			●	●					●			●													
Use a variety of landscape plantings to enhance habitat for small animals												●	●												
Use of surface water and sediment retention basins												●													
Use of erosion and sediment control structures									●			●													
Preparation of a Sediment and Erosion Plan Approved by Fort Knox and the Commonwealth of Kentucky																									
Maintaining areas clean of pollutants																									●
Preventative maintenance, e.g. drip pans, changing auto fluids in designated areas																									●
Spill prevention, control, and countermeasures									●	●	●	●	●	●										●	●

**TABLE 4-26
BEST MANAGEMENT PRACTICE SUMMARY FOR IMPLEMENTATION OF BRAC RECOMMENDATIONS AND OTHER ARMY TRANSFORMATION ACTIONS AT FORT
KNOX, KENTUCKY**

Best Management Practice	Resource Category											
	Land Use	Aesthetics and Visual Resources	Air Quality	Noise	Topography and Soils	Water Resources	Biological Resources	Cultural Resources	Socio-economics	Transportation	Utilities	Hazardous and Toxic Substances
Retention of vegetation	D	I										
Dust suppression			•									
Minimize burning of vegetative waste			•									
Use of air curtain destructors and/or wind advisories			•									
If necessary, acquire construction and operation permit from KDAQ and USEPA for construction of heating and A/C systems			•									
Increased frequency of hazardous waste inspections for satellite accumulation areas												•
Contain and control solid wastes generated from hazardous substances used in renovation and construction activities.												•

**TABLE 4-26
BEST MANAGEMENT PRACTICE SUMMARY FOR IMPLEMENTATION OF BRAC RECOMMENDATIONS AND OTHER ARMY TRANSFORMATION ACTIONS AT FORT KNOX, KENTUCKY**

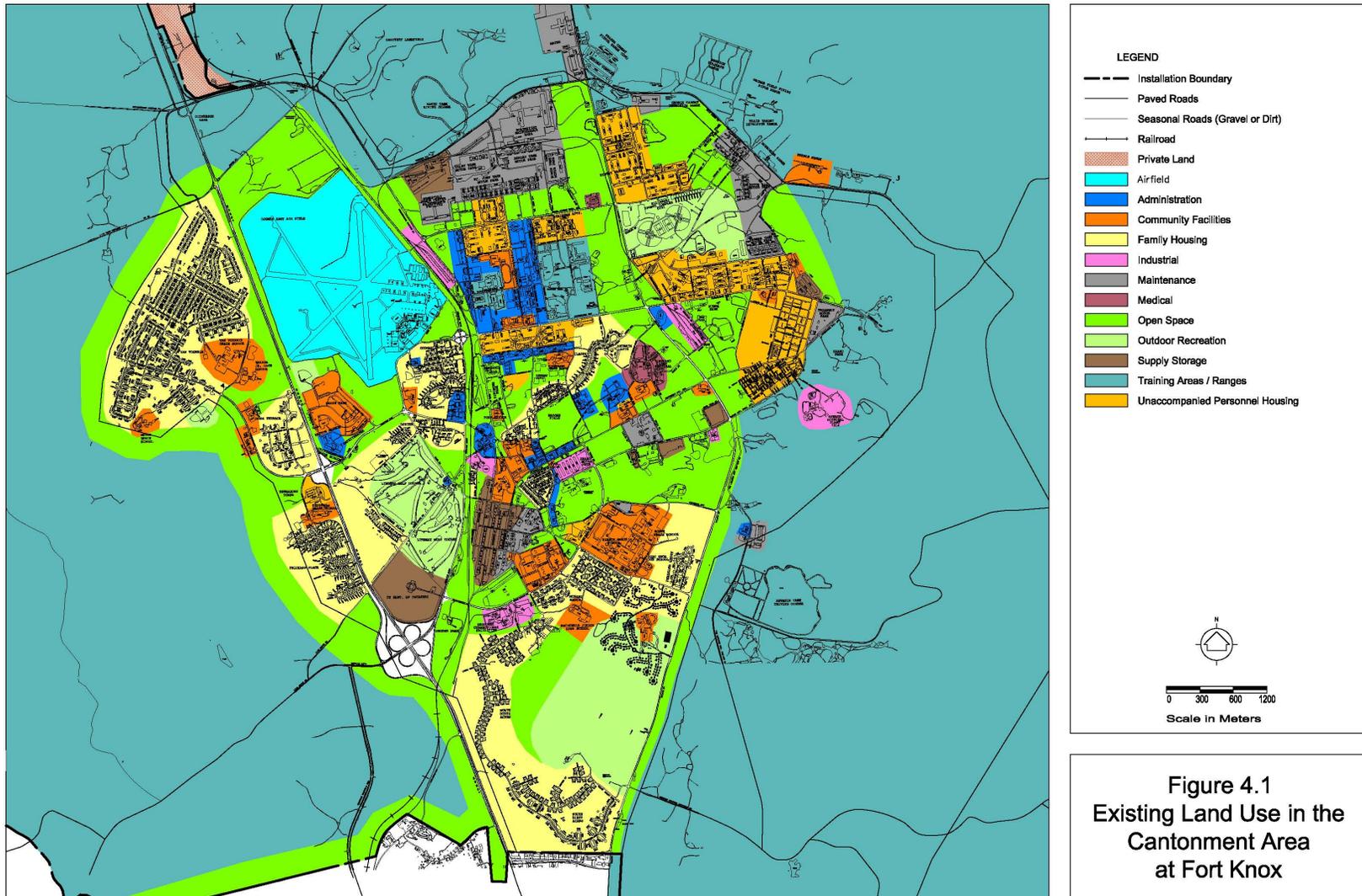
	Resource Category																									
	Land Use		Aesthetics and Visual Resources		Air Quality		Noise		Topography and Soils		Water Resources		Biological Resources		Cultural Resources		Socio-economics		Transportation		Utilities		Hazardous and Toxic Substances			
Best Management Practice	D	I	D	I	D	I	D	I	D	I	D	I	D	I	D	I	D	I	D	I	D	I	D	I		
<p>All provisions of the Installation Cultural Resources Management Plan would be followed if any items of cultural resources interest are found during the proposed action</p> <p>Barriers and "no trespassing" signs would be placed around construction areas to reduce the potential for injuries</p> <p>All required Clean Water Act Section 404(b)(1) permits would be acquired. Section 401(a) water quality certification would be acquired in conjunction with a Section 404 permit.</p> <p>D – Direct impact lessened I – Indirect impact lessened <i>Source: Parsons, 2006</i></p>																										

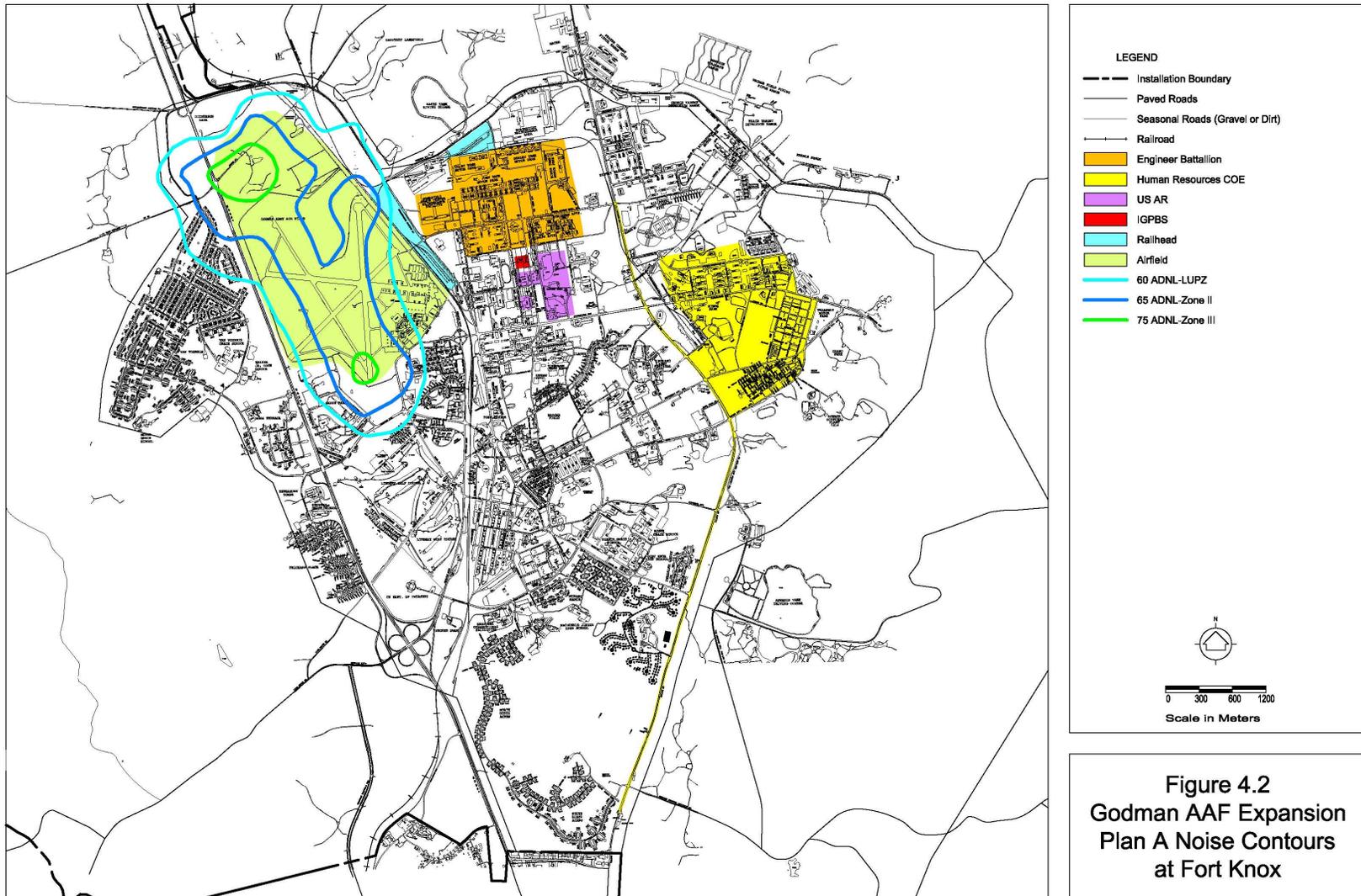
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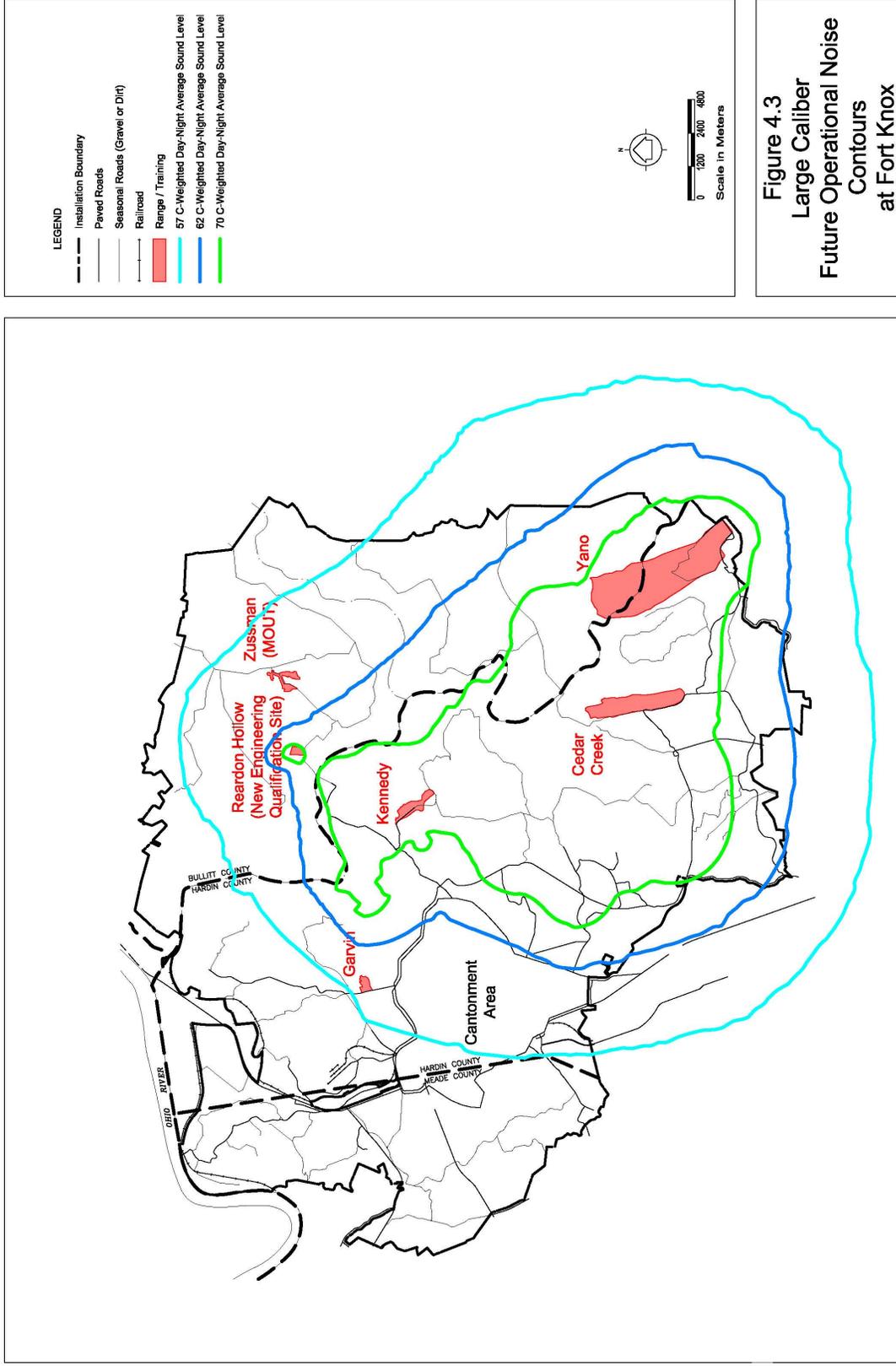
4.16 FINDINGS AND CONCLUSIONS

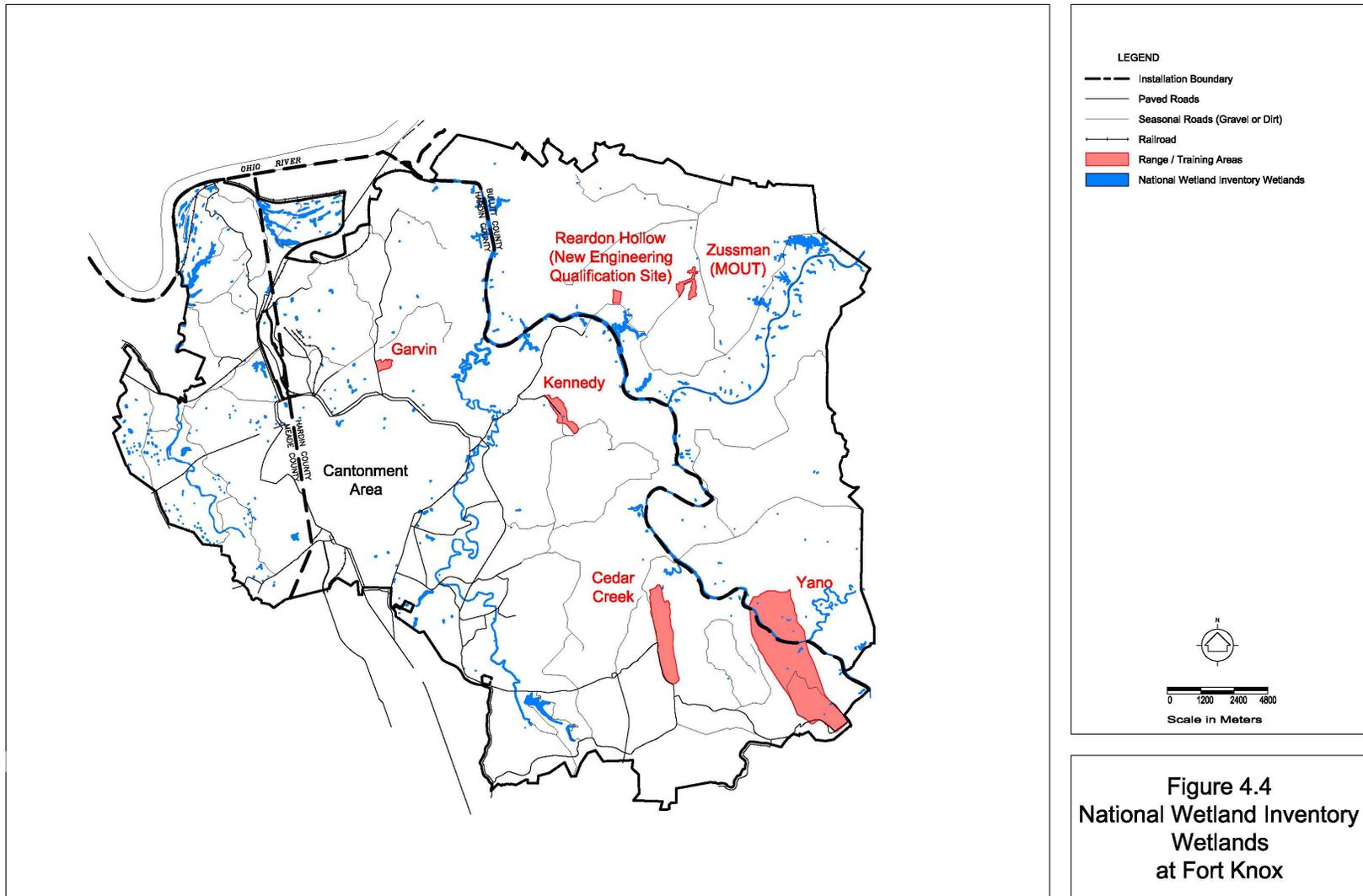
As analyzed and discussed in the EA, direct, indirect, and cumulative impacts of the each of the Proposed Action alternatives and the No Action Alternative have been considered and no significant impacts (either beneficial or adverse) have been identified. Therefore, issuance of a FNSI is warranted, and preparation of an Environmental Impact Statement is not required.

Therefore, any of the alternatives considered, including Alternative 3, the Preferred Alternative, or the No Action Alternative, could be implemented. However, the No Action Alternative would not support Congressional requirements under the BRAC law (Public Laws 101-510 and 107-107); consequently, it has not been selected for implementation. Alternative 3 offers the greatest flexibility in implementation and the best mix of renovation and construction activities to meet mission requirements; therefore Alternative 3 - Combination New Construction and Renovation Activities in the Cantonment, and Training Facility Modifications (Preferred Alternative) is recommended for implementation.









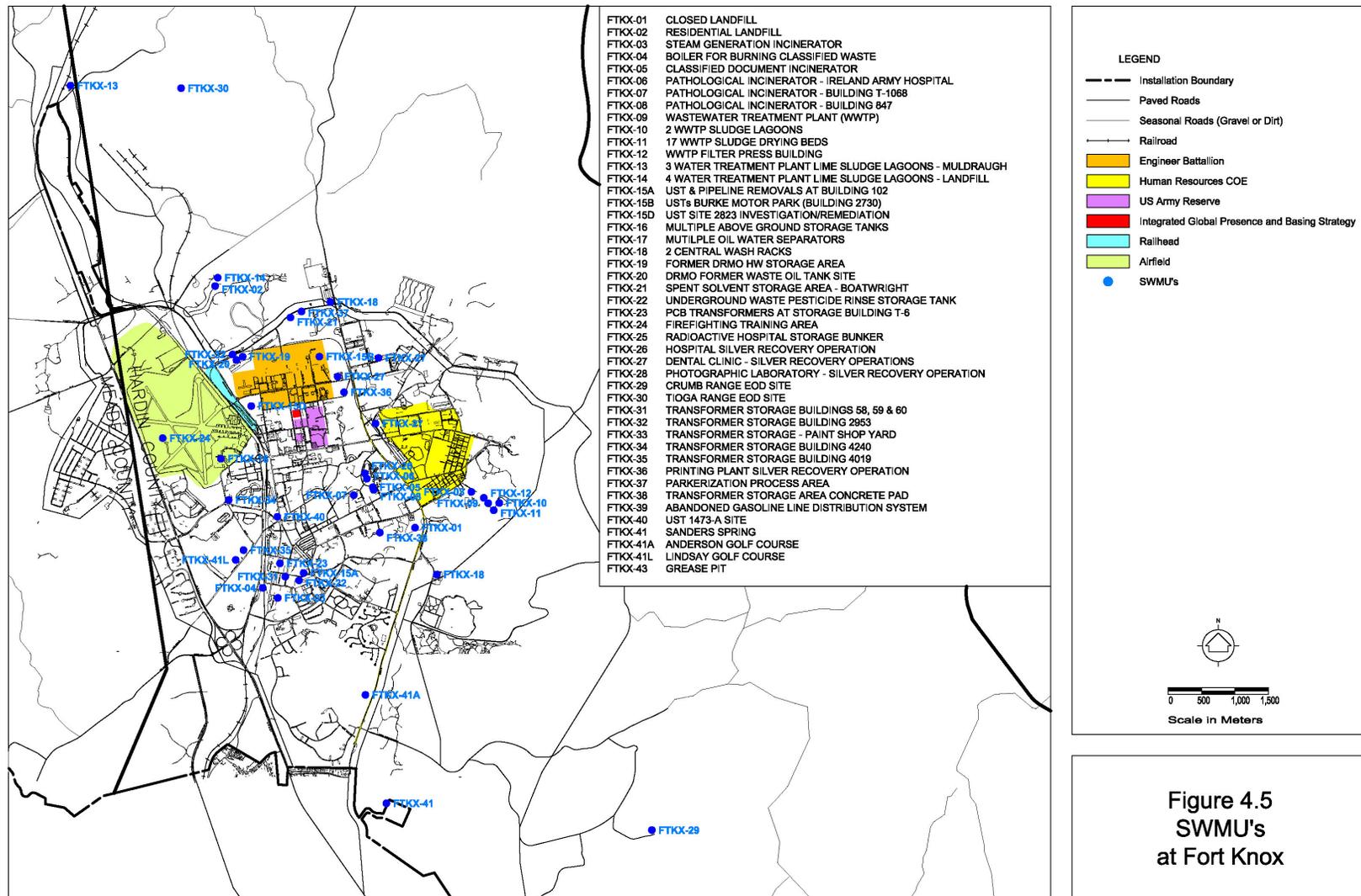


Figure 4.5
SWMU's
at Fort Knox

SECTION 5

LIST OF PREPARERS

Personnel involved in the development of this EA include the following:

Name	Education and Experience	Primary Responsibilities
Darrel B. Sisk, Jr.	B.E.D. Environmental Design; M.S. Architectural Engineering; 17 years experience in base civil engineering, military planning and environmental planning and impact assessment.	Project Manager/Senior Project Planner; data collection and key participant in description of proposed action, alternatives formulation, and related environmental analyses.
Donald Beisel	B.S. Geography; M.A. Geography; 28 years of experience in community/urban planning, environmental planning, and socioeconomic studies.	Senior Project Planner; data collection and preparation of socioeconomic analysis and related text sections.
Karen Boulware	B.S. Geology; M.S. Resource Planning; ten years experience in environmental assessment impact studies and planning.	Environmental Scientist; data collection, analysis, and key participant in preparation of EA text and supporting sections.
Doug Bice	A.S. Environmental Studies; B.S. Occupational Safety; M.S. Environmental/Occupational Health. 20 years experience in environmental and occupational health.	Senior Planner; data collection, analysis and key participant in preparation of EA text and supporting sections.
Luke Eggering	B.S., Fish and Wildlife Management; M.S., Biology; 13 years experience in wetland management; wildlife, fisheries and endangered species management; preparation of environmental documents.	Environmental Scientist; data collection, analysis and key participant in preparation of the EA text and supporting sections relating to biological resources.
Virginia Flynn	B.S. Horticulture; M.S. Botany; Eight years experience in biological surveys, natural resource management, ecological restoration, and environmental impact assessment.	Senior Environmental Scientist; data collection, analysis and key participant in preparation of EA text and supporting sections.

Name	Education and Experience	Primary Responsibilities
Rich Hall	B.S. Environmental Biology, M.S. Zoology, 24 years of experience in environmental assessment and impact studies, biological community investigations and ecosystem restoration.	Principal Environmental Scientist, technical review, editing, and quality assurance of EA.
Darren Mitchell	B.S. Biology; M.S. Biology; four years experience in fish and wildlife biology and management, and aquatic entomology and ecology.	Environmental Scientist; data collection, analysis and key participant in preparation of EA text and supporting sections.
Randy Norris	B.S. Plant and Soil Science; Master of Urban Planning/Environmental Planning, 12 years experience in environmental impact assessment, environmental management and planning.	Environmental Planner; data collection, biological resources assessment and alternatives analysis.
Jayne Park	B.A. Environmental Science; M.S. Environmental Engineering; eight years of experience in environmental assessments and site investigations	Environmental Engineer: data collection and analysis, preparation of EA text
Enid Staten	B.S. Biology; Master of Environmental Management; 4 years of experience in natural resource surveys, environmental impact assessment, environmental management and planning.	Environmental Scientist; participant in the editing of EA text and supporting sections.

SECTION 6

DISTRIBUTION LIST

As noted in Section 1.4, Fort Knox's public participation program includes a 30 day public review of the Environmental Assessment and draft FNSI. As part of this effort, copies of both documents will be made available to public agencies, private organizations, and the general public.

As part of the initial scoping effort, the following were contacted:

- US Fish and Wildlife Service
- City Manager's Office

SECTION 7

REFERENCES

References that were used during the development of this Environmental Assessment include the following:

Reference	Description
Booz Allen Hamilton, 2005	Fort Knox, Kentucky Traffic and Transportation Analysis – Projected Impact from Army Modular Force, Integrated Global Presence and Basing Strategy and 2005 Base Realignment and Closure Recommendations. December 2005.
CERL, 2005	Fort Knox Trend Analysis, Encroachment Study and Perimeter Expansion Opportunities in Support of Military Training. Prepared by ERDC/CERL Technical Report. August 2005.
DA, 1993	Department of the Army, 1993. Master Planning for Army Installations.
DA, 2006	Department of the Army, 2006. Operational Noise Contours for Fort Knox, Kentucky. February 2006.
DA, 2006	Department of the Army, 2006. Environmental Baseline Survey of the Army Residential Communities Initiatives Properties at Fort Knox, Kentucky. January 2006.
KAR, 2005	Kentucky Association of Realtors, Multiple Listing Service, October, 2005.
KDEP, 1994	1994. Groundwater Sensitivity Regions of Kentucky. Prepared by Kentucky Department of Environmental Protection.
Knox, 1999	Environmental Assessment – Yano Multipurpose Tank Range Complex Streambank Stabilization Project, Fort Knox, Kentucky. June 1999.
Knox, 2002	U.S. Army Armor Center & Fort Knox, Northern Training Complex Final Environmental Impact Statement, Fort Knox, Kentucky. Prepared by Fort Knox, Kentucky, May 2002.
Knox, 2003	U.S. Army Armor Center & Fort Knox, Summary Development Plan, Fort Knox, Kentucky. Prepared by Fort Knox Kentucky, July, 2003.
Knox, 2003	Environmental Assessment – Military Family Housing Whole Neighborhood Development – Phase II, US Army Garrison, Fort Knox, Kentucky. Prepared by Fort Knox, Kentucky, December 2003.

Reference	Description
Knox, 2004	Environmental Assessment – Privatization of the Wastewater Treatment Facilities, US Army Garrison, Fort Knox, Kentucky. Prepared by Fort Knox, Kentucky, October 2004.
Knox, 2004	Environmental Assessment – Barracks Complex Master Construction/Operating Plan, US Army Garrison, Fort Knox, Kentucky. Prepared by Fort Knox, Kentucky, June 2004.
Knox, 2004	Environmental Assessment – Fort Knox Army Lodging Center, US Army Garrison, Fort Knox, Kentucky. Prepared by Fort Knox, Kentucky, June 2004.
Knox, 2005	Environmental Assessment – Installation Integrated Pest Management Plan, US Army Garrison, Fort Knox, Kentucky. Prepared by Fort Knox, Kentucky, December 2005.
Knox, 2005	Fort Knox Statistical Card, March 2005.
Knox, 2005	2006 IAP Fort Knox Military Reservation Compliance-Related Cleanup Action Plan. Prepared by Fort Knox, Kentucky, March 2005.
Knox, 2005	2006 IAP Fort Knox Military Reservation Installation Action Plan. Prepared by Fort Knox, Kentucky, March 2005.
Knox, 2006	Fort Knox Energy Program, ERDC-CERL. Prepared by Fort Knox, Jan 2006.
KSNP, 2005	Kentucky State Nature Preserve website www.nr.state.ky/us/nrepc/dnr/ksnpc/index.htm
KSNPC, 2000	Threatened and Endangered Species Survey (With Emphasis on Summer Populations of Indiana Bat (<i>Myotis sodalis</i>) for Proposed Northern Training Complex, Fort Knox Bullitt County, KY. Prepared by Kentucky State Nature Preserves Commission. August 2000.
ORNL, 2005	Ecological Models at Fort Knox. Prepared by Environmental Science Division of Oak Ridge National Lab. http://www.esd.ornl.gov/programs/SERDP/EcoModels/knox.html Downloaded October 11, 2005. [Refers to three sources: Arns et al., 1979: Soil Survey of Hardin and Larue Counties, Kentucky; Kentucky Geological Survey, 1985: Caves and Karst of Kentucky; Whittaker and Waters, 1986: Soil Survey of Bullitt and Spencer Counties, Kentucky.]
Parsons, 2002.	Final Environmental Impact Statement for Proposed Multi purpose Digital Training Range. Prepared by Parsons. April 2002.

Reference	Description
Suter, 2002	Construction Noise: Exposure, Effects, and the Potential for Remediation; a Review and Analysis. American Industrial Hygiene Association Journal (63: 768-789). November/December 2002.
USACE, 1995	Louisville District, U.S. Army Corps of Engineers, September 1995. Environmental Assessment of the Master Plan and Ongoing Mission.
USACE, 2002	Mobile District, U.S. Army Corps of Engineers, February 2002. Programmatic Environmental Assessment for Army Transformation. Prepared with the assistance of Tetra Tech, Inc.
USACE, 2005	Mobile District, U.S. Army Corps of Engineers, August 2005. Fort Knox Trend Analysis, Encroachment Study, and Perimeter Expansion Opportunities in Support of Military Training.
USACE, 2005	Mobile District, U.S. Army Corps of Engineers, October 2005. Focused EA in Support of FY06 IGPBS and Army Modularity Force at Fort Knox, Kentucky.
USACE, 2005	Louisville District, U.S. Army Corps of Engineers, December 2005. Fort Knox Stationing Charrette, 2006.
USACE, 2006	Mobile District, U.S. Army Corps of Engineers, February 2006. Water Quality Assessment Final Report for BRAC Action.
USDA, 1996	Resource Inventory and Conservation Plan. Prepared by U.S. Department of Agriculture, Natural Resources Conservation Service and Hardin County Conservation District. 1996.
White et al., 1994	An Endangered Species Survey of Fort Knox Military Reservation, Kentucky. Kentucky State Nature Preserves Commission. Prepared by Deborah White, Brainard Palmer-Ball, Jr., and Ronald R. Cicerello. 1994.

SECTION 8 ACRONYMS

A		CWA	Clean Water Act
AAA	Army Audit Agency		
AAC	Army Accessions Command	D	
ACHP	Advisory Council on Historic Preservation	DA	Department of the Army
ACM	Asbestos-Containing Material	dB	Decibel
APE	Area of Potential Effect	dBA	A-weighted decibels
ARPA	Archeological Resources Protection Act	dBC	C-weighted decibels
ARRTC	Army Reserves Readiness Training Center	DNL	Day-Night Average Sound Level
ASOS	Air Support Operations Squadron	DoD	Department of Defense
B		E	
BCT	Brigade Combat Team	EA	Environmental Assessment
BMPs	Best Management Practices	EO	Executive Order
BRAC	Base Closure and Realignment	ESA	Endangered Species Act
		ESC	Expeditionary Sustainment Command
		ESMP	Endangered Species Management Plan
C		F	
CAA	Clean Air Act	FNSI	Finding of No Significant Impact
CDD	Construction/demolition debris	FY	Fiscal Year
CEQ	Council on Environmental Quality	G	
CFR	Code of Federal Regulations	GOV	Government Owned Vehicle
CO	Carbon Monoxide	H	
CO ₂	Carbon Dioxide	HRC	Human Resources Command
CSS	Combat Service Support		

HRCOE	Human Recourses Center of Excellence	NHPA	National Historic Preservation Act
HVAC	Heating, Ventilation, and Air Conditioning	NOx	Nitrogen Oxides
		NRHP	National Register of Historic Places
I		NWI	National Wetlands Inventory
IGPBS	Integrated Global Presence and Basing Strategy	NZ	Noise Zone
INCRMP	Integrated Cultural Resources Management Plan	O	
IT	Institutional Training	P	
J		PCB	Polychlorinated Biphenyls
JCERTE	Joint Center of Excellence for Religious Training and Education	PM2.5	Particulate Matter less than 2.5 microns in size
		PM10	Particulate Matter less than 10 microns in size
K		PN	Project Number
KPDES	Kentucky Pollution Discharge Elimination System	POL	Petroleum, Oils, and Lubricants
L		ppm	Parts per Million
LBP	Lead Based Paint	PSD	Prevention of Significant Deterioration
M		POV	Privately Owned Vehicles
MG	Machine Gun	PX	Post Exchange
MEDDAC	Medical Department Activities	Q	
mgd	Million gallons per day	R	
MOUT	Military Operations on Urban Terrain	RCRA	Resource Conservation and Recovery Act
N		ROI	Region of Influence
NAAQS	National Ambient Air Quality Standards	ROTC	Reserve Officer Training Corps
NEPA	National Environmental Policy Act	S	
		SF	Square Foot or Square Feet

SHPO	State Historic Preservation Officer	UST	Underground Storage Tank
SO _x	Sulfur Dioxide		
SPCCP	Spill Prevention, Control and Countermeasures Procedures	V	
		VOC	Volatile Organic Compounds
SUA	Support Unit of Action		
SWMU	Solid Waste Management Unit	W	
		WWII	World War II
		WWTP	Waste Water Treatment Plant
T			
T&E	Threatened and Endangered	X	
TAC	Theater Aviation Command	Y	
TCP	Traditional Cultural Property	Z	
TECO	Test and Evaluation Command		
TRADOC	U.S. Army Training and Doctrine Command		
TSCA	Toxic Substances Control Act		
TSD	Treatment, Storage, and Disposal		
U			
UACDA	Unit of Action Capabilities Development Activity		
UAEE	Unit of Action Experimentation Element		
U.S.	United States		
USACE	U.S. Army Corps of Engineers		
USAR	U.S. Army Reserves		
USEPA	U.S. Environmental Protection Agency		
USFWS	U.S. Fish and Wildlife Service		

APPENDIX A

ARCHAEOLOGICAL SITES

Archaeological Sites

County	OSA Site Number	USGS Quad Maps	Primary Report	Other Reports	NRHP Status	Site Type	Reporting Company	Curation Facility
Bullitt	15Bu0251	Pitts Point	Jerry Hoehler		Not Assessed	Prehistoric		UL
Bullitt	15Bu0292	Pitts Point	Jerry Hoehler		Not Assessed	Prehistoric		UL
Bullitt	15Bu0293	Pitts Point	Jerry Hoehler		Not Assessed	Prehistoric		UL
Bullitt	15Bu0295	Pitts Point	Boedy and Schenian, Aug. 1999	O'Malley et al. 1980	Potentially Eligible	Prehistoric	Daniel Boone National Forest	UK
Bullitt	15Bu0296	Pitts Point	O'Malley et al. 1980		Not Eligible	Historic	University of Kentucky	UK
Bullitt	15Bu0297	Pitts Point	O'Malley et al. 1980		Not Eligible	Historic	University of Kentucky	UK
Bullitt	15Bu0298	Pitts Point	Bodkin et al. 2000	O'Malley et al. 1980	Potentially Eligible	Historic	Daniel Boone National Forest	UK
Bullitt	15Bu0299	Pitts Point	Boedy and Schenian, Aug. 1999	O'Malley et al. 1980	Not Eligible	Historic	Daniel Boone National Forest	UK
Bullitt	15Bu0300	Pitts Point	Boedy and Schenian, Aug. 1999	O'Malley et al. 1980	Not Eligible	Historic	Daniel Boone National Forest	UK
Bullitt	15Bu0301	Pitts Point	Boedy and Schenian, Aug. 1999	O'Malley et al. 1980	Not Eligible	Historic	Daniel Boone National Forest	UK
Bullitt	15Bu0302	Pitts Point	O'Malley et al. 1980		Not Eligible	Historic	University of Kentucky	UK
Bullitt	15Bu0303	Pitts Point	Schenian, March 1991	O'Malley et al. 1980	Not Eligible	Both	Murray State University	UK
Bullitt	15Bu0304	Kosmosdale	O'Malley et al. 1980		Not Assessed	Historic	University of Kentucky	UK
Bullitt	15Bu0305	Pitts Point	O'Malley et al. 1980		Not Eligible	Prehistoric	University of Kentucky	UK
Bullitt	15Bu0306	Valley Station	O'Malley et al. 1980		Potentially Eligible	Historic	University of Kentucky	UK
Bullitt	15Bu0307	Pitts Point	O'Malley et al. 1980		Not Eligible	Historic	University of Kentucky	UK
Bullitt	15Bu0308	Pitts Point	O'Malley et al. 1980		Not Assessed	Undetermined	University of Kentucky	UK
Bullitt	15Bu0309	Pitts Point	Bodkin et al. 2000	O'Malley et al. 1980	Not Eligible	Prehistoric	Daniel Boone National Forest	UK

Bullitt	15Bu0310	Pitts Point	O'Malley et al. 1980		Not Eligible	Prehistoric	University of Kentucky	UK
Bullitt	15Bu0311	Pitts Point	Pritchard, Pritchard and Picklesimer 2004	O'Malley et al. 1980 and Bodkin et al. 2000	Not Eligible	Prehistoric	Gray & Pape, Inc.	UK/UL
Bullitt	15Bu0312	Pitts Point	O'Malley et al. 1980		Not Eligible	Historic	University of Kentucky	UK
Bullitt	15Bu0313	Fort Knox	O'Malley et al. 1980		Not Eligible	Both	University of Kentucky	UK
Bullitt	15Bu0314	Pitts Point	Myers, July 1990	O'Malley et al. 1980	Not Eligible	Prehistoric	Murray State University	UK
Bullitt	15Bu0315	Fort Knox	O'Malley et al. 1980		Not Eligible	Prehistoric	University of Kentucky	UK
Bullitt	15Bu0316	Pitts Point	Bodkin et al. 2000	O'Malley et al. 1980	Not Eligible	Historic	Daniel Boone National Forest	UK
Bullitt	15Bu0317	Pitts Point	Bodkin et al. 2000	O'Malley et al. 1980	Not Eligible	Prehistoric	Daniel Boone National Forest	UK
Bullitt	15Bu0318	Pitts Point	O'Malley et al. 1980		Not Assessed	Historic	University of Kentucky	UK
Bullitt	15Bu0319	Pitts Point	Bush et al. 1989	O'Malley et al. 1980	Not Eligible	Prehistoric	McGille and Associates, Inc.	UK
Bullitt	15Bu0320	Pitts Point	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Bullitt	15Bu0321	Pitts Point	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Bullitt	15Bu0322	Fort Knox	O'Malley et al. 1980		Not Eligible	Historic	University of Kentucky	UK
Bullitt	15Bu0323	Pitts Point	Bodkin et al. 2000	O'Malley et al. 1980	Not Eligible	Prehistoric	Daniel Boone National Forest	UK
Bullitt	15Bu0324	Pitts Point	Bodkin et al. 2000	O'Malley et al. 1980	Not Eligible	Both	Daniel Boone National Forest	UK
Bullitt	15Bu0325	Pitts Point	Boedy and Schenian, Aug. 1999	O'Malley et al. 1980	Not Eligible	Prehistoric	Daniel Boone National Forest	UK
Bullitt	15Bu0326	Pitts Point	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Bullitt	15Bu0327	Pitts Point	Boedy and Schenian, Aug. 1999	O'Malley et al. 1980	Not Eligible	Historic	Daniel Boone National Forest	UK
Bullitt	15Bu0328	Pitts Point	Boedy and Schenian,	O'Malley et al. 1980	Not Eligible	Historic	Daniel Boone	UK

			Aug. 1999				National Forest	
Bullitt	15Bu0329	Pitts Point	Boedy and Schenian, Aug. 1999	O'Malley et al. 1980	Not Eligible	Historic	Daniel Boone National Forest	UK
Bullitt	15Bu0330	Pitts Point	Boedy and Schenian, Aug. 1999	O'Malley et al. 1980	Not Eligible	Historic	Daniel Boone National Forest	UK
Bullitt	15Bu0331	Pitts Point	O'Malley et al. 1980		Not Eligible	Historic	University of Kentucky	UK
Bullitt	15Bu0332	Pitts Point	O'Malley et al. 1980		Not Assessed	Both	University of Kentucky	UK
Bullitt	15Bu0333	Pitts Point	O'Malley et al. 1980		Not Eligible	Historic	University of Kentucky	UK
Bullitt	15Bu0334	Pitts Point	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Bullitt	15Bu0335	Colesburg	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Bullitt	15Bu0336	Fort Knox	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Bullitt	15Bu0337	Fort Knox	O'Malley et al. 1980		Not Eligible	Historic	University of Kentucky	UK
Bullitt	15Bu0338	Fort Knox	O'Malley et al. 1980		Not Eligible	Historic	University of Kentucky	UK
Bullitt	15Bu0339	Fort Knox	O'Malley et al. 1980		Not Eligible	Historic	University of Kentucky	UK
Bullitt	15Bu0340	Pitts Point	O'Malley et al. 1980		Not Eligible	Prehistoric	University of Kentucky	UK
Bullitt	15Bu0341	Pitts Point	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Bullitt	15Bu0342	Pitts Point	O'Malley et al. 1980		Not Eligible	Prehistoric	University of Kentucky	UK
Bullitt	15Bu0343	Pitts Point	O'Malley et al. 1980		Not Eligible	Historic	University of Kentucky	UK
Bullitt	15Bu0344	Pitts Point	O'Malley et al. 1980		Not Eligible	Historic	University of Kentucky	UK
Bullitt	15Bu0345	Pitts Point	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Bullitt	15Bu0346	Pitts Point	O'Malley et al. 1980		Not Eligible	Prehistoric	University of Kentucky	UK
Bullitt	15Bu0347	Pitts Point	O'Malley et al. 1980		Not Eligible	Historic	University of Kentucky	UK
Bullitt	15Bu0348	Pitts Point	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Bullitt	15Bu0349	Pitts Point	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Bullitt	15Bu0350	Pitts Point	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Bullitt	15Bu0351	Pitts Point	O'Malley et al. 1980		Not Assessed	Historic	University of Kentucky	UK
Bullitt	15Bu0352	Pitts Point	O'Malley et al. 1980		Not Assessed	Historic	University of Kentucky	UK

Bullitt	15Bu0353	Pitts Point	O'Malley et al. 1980		Not Eligible	Historic	University of Kentucky	UK
Bullitt	15Bu0354	Pitts Point	O'Malley et al. 1980		Not Assessed	Both	University of Kentucky	UK
Bullitt	15Bu0355	Fort Knox	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Bullitt	15Bu0356	Fort Knox	O'Malley et al. 1980		Not Eligible	Historic	University of Kentucky	UK
Bullitt	15Bu0357	Fort Knox	O'Malley et al. 1980		Not Eligible	Historic	University of Kentucky	UK
Bullitt	15Bu0358	Fort Knox	O'Malley et al. 1980		Not Assessed	Both	University of Kentucky	UK
Bullitt	15Bu0359	Fort Knox	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Bullitt	15Bu0360	Fort Knox	O'Malley et al. 1980		Not Assessed	Both	University of Kentucky	UK
Bullitt	15Bu0361	Fort Knox	O'Malley et al. 1980		Not Eligible	Historic	University of Kentucky	UK
Bullitt	15Bu0362	Pitts Point	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Bullitt	15Bu0363	Pitts Point	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Bullitt	15Bu0364	Pitts Point	O'Malley et al. 1980		Not Eligible	Historic	University of Kentucky	UK
Bullitt	15Bu0365	Pitts Point	Myers, July 1990	O'Malley et al. 1980	Not Eligible	Historic	McGillem and Associates, Inc.	UK
Bullitt	15Bu0366	Pitts Point	Myers, July 1990	O'Malley et al. 1980	Potentially Eligible	Prehistoric	McGillem and Associates, Inc.	UK
Bullitt	15Bu0367	Pitts Point	Myers, July 1990	O'Malley et al. 1980	Not Eligible	Historic	McGillem and Associates, Inc.	UK
Bullitt	15Bu0368	Pitts Point	O'Malley et al. 1980		Not Eligible	Historic	University of Kentucky	UK
Bullitt	15Bu0369	Pitts Point	O'Malley et al. 1980		Not Eligible	Historic	University of Kentucky	UK
Bullitt	15Bu0370	Pitts Point	O'Malley et al. 1980		Not Assessed	Historic	University of Kentucky	UK
Bullitt	15Bu0371	Pitts Point	O'Malley et al. 1980		Not Assessed	Historic	University of Kentucky	UK
Bullitt	15Bu0372	Pitts Point	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Bullitt	15Bu0373	Pitts Point	O'Malley et al. 1980		Not Assessed	Historic	University of Kentucky	UK
Bullitt	15Bu0374	Pitts Point	O'Malley et al. 1980		Not Assessed	Both	University of Kentucky	UK
Bullitt	15Bu0375	Pitts Point	O'Malley et al. 1980		Not Assessed	Historic	University of Kentucky	UK

Bullitt	15Bu0376	Pitts Point	O'Malley et al. 1980		Not Assessed	Historic	University of Kentucky	UK
Bullitt	15Bu0377	Pitts Point	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Bullitt	15Bu0378	Pitts Point	O'Malley et al. 1980		Not Assessed	Historic	University of Kentucky	UK
Bullitt	15Bu0379	Pitts Point	O'Malley et al. 1980		Not Assessed	Historic	University of Kentucky	UK
Bullitt	15Bu0380	Pitts Point	O'Malley et al. 1980		Potentially Eligible	Both	University of Kentucky	UK
Bullitt	15Bu0381	Fort Knox	O'Malley et al. 1980		Not Assessed	Both	University of Kentucky	UK
Bullitt	15Bu0382	Fort Knox	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Bullitt	15Bu0383	Fort Knox	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Bullitt	15Bu0384	Fort Knox	O'Malley et al. 1980		Not Eligible	Historic	University of Kentucky	UK
Bullitt	15Bu0385	Pitts Point	Boedy and Schenian, Aug. 1999	O'Malley et al. 1980	Not Eligible	Historic	Daniel Boone National Forest	UK
Bullitt	15Bu0386	Pitts Point	Boedy and Schenian, Aug. 1999	O'Malley et al. 1980	Potentially Eligible	Historic	Daniel Boone National Forest	UK
Bullitt	15Bu0387	Pitts Point	O'Malley et al. 1980		Not Assessed	Historic	University of Kentucky	UK
Bullitt	15Bu0388	Pitts Point	O'Malley et al. 1980		Not Assessed	Undetermined	University of Kentucky	UK
Bullitt	15Bu0389	Pitts Point	O'Malley et al. 1980		Not Assessed	Undetermined	University of Kentucky	UK
Bullitt	15Bu0390	Pitts Point	Boedy and Schenian, Aug. 1999	O'Malley et al. 1980	Not Eligible	Historic	Daniel Boone National Forest	UK
Bullitt	15Bu0391	Pitts Point	O'Malley et al. 1980		Not Eligible	Historic	University of Kentucky	UK
Bullitt	15Bu0392	Pitts Point	O'Malley et al. 1980		Not Eligible	Historic	University of Kentucky	UK
Bullitt	15Bu0393	Pitts Point	O'Malley et al. 1980	Driskell and O'Malley 1979	Not Eligible	Prehistoric	University of Kentucky	UK
Bullitt	15Bu0394	Pitts Point	O'Malley et al. 1980		Not Eligible	Prehistoric	University of Kentucky	UK
Bullitt	15Bu0395	Pitts Point	O'Malley et al. 1980		Not Eligible	Prehistoric	University of Kentucky	UK
Bullitt	15Bu0396	Pitts Point	O'Malley et al. 1980		Not Eligible	Both	University of Kentucky	UK
Bullitt	15Bu0397	Pitts Point	O'Malley et al. 1980	Driskell and O'Malley 1979	Not Eligible	Historic	University of Kentucky	UK

Bullitt	15Bu0398	Pitts Point	O'Malley et al. 1980		Not Eligible	Historic	University of Kentucky	UK
Bullitt	15Bu0399	Pitts Point	O'Malley et al. 1980		Not Eligible	Historic	University of Kentucky	UK
Bullitt	15Bu0401	Pitts Point	O'Malley et al. 1980		Not Eligible	Historic	University of Kentucky	UK
Bullitt	15Bu0402	Pitts Point	O'Malley et al. 1980		Not Eligible	Historic	University of Kentucky	UK
Bullitt	15Bu0403	Pitts Point	O'Malley et al. 1980		Not Eligible	Historic	University of Kentucky	UK
Bullitt	15Bu0404	Pitts Point	O'Malley et al. 1980		Not Assessed	Historic	University of Kentucky	UK
Bullitt	15Bu0405	Pitts Point	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Bullitt	15Bu0406	Pitts Point	O'Malley et al. 1980		Not Assessed	Historic	University of Kentucky	UK
Bullitt	15Bu0407	Pitts Point	O'Malley et al. 1980		Not Eligible	Historic	University of Kentucky	UK
Bullitt	15Bu0408	Pitts Point	O'Malley et al. 1980		Not Eligible	Historic	University of Kentucky	UK
Bullitt	15Bu0409	Pitts Point	O'Malley et al. 1980		Not Eligible	Historic	University of Kentucky	UK
Bullitt	15Bu0410	Pitts Point	O'Malley et al. 1980		Not Eligible	Historic	University of Kentucky	UK
Bullitt	15Bu0471	Pitts Point	No report, site recorded by Hemberger and DiBlasi, 1984		Not Assessed	Prehistoric	USACE, Louisville	UL
Bullitt	15Bu0485	Pitts Point	Bush et al. 1989		Not Eligible	Historic	McGillem and Associates, Inc.	UL
Bullitt	15Bu0486	Pitts Point	Bush et al. 1989		Potentially Eligible	Historic	McGillem and Associates, Inc.	UL
Bullitt	15Bu0487	Pitts Point	Bush et al. 1989		Potentially Eligible	Historic	McGillem and Associates, Inc.	UL
Bullitt	15Bu0488	Pitts Point	Schenian and Mocas, Oct. 1994	Bush et al. 1989	Not Eligible	Historic	Fort Knox, DPW	UL
Bullitt	15Bu0489	Pitts Point	Schenian and Mocas, Oct. 1994	Bush et al. 1989	Not Assessed	Prehistoric	Fort Knox, DPW	UL
Bullitt	15Bu0490	Pitts Point	Bush et al. 1989		Not Eligible	Prehistoric	McGillem and Associates, Inc.	UL

Bullitt	15Bu0491	Pitts Point	Bush et al. 1989		Not Eligible	Historic	McGillem and Associates, Inc.	UL
Bullitt	15Bu0492	Pitts Point	Schenian, Mar. 1991		Not Eligible	Prehistoric	Fort Knox, DPW	UL
Bullitt	15Bu0495	Pitts Point	Myers, July 1990		Not Eligible	Prehistoric	Murray State University	UL
Bullitt	15Bu0496	Pitts Point	Myers, July 1990		Not Eligible	Prehistoric	Murray State University	UL
Bullitt	15Bu0497	Pitts Point	Myers, July 1990		Not Eligible	Prehistoric	Murray State University	UL
Bullitt	15Bu0498	Pitts Point	Myers, July 1990		Potentially Eligible	Prehistoric	Murray State University	UL
Bullitt	15Bu0499	Pitts Point	Myers, July 1990		Not Eligible	Prehistoric	Murray State University	UL
Bullitt	15Bu0500	Pitts Point	Myers, July 1990		Not Eligible	Both	Murray State University	UL
Bullitt	15Bu0501	Pitts Point	Myers, July 1990		Not Eligible	Both	Murray State University	UL
Bullitt	15Bu0502	Pitts Point	Myers, July 1990		Potentially Eligible	Prehistoric	Murray State University	UL
Bullitt	15Bu0504	Fort Knox	Hemberger, June 1991		Not Eligible	Prehistoric	USACE, Louisville	UL
Bullitt	15Bu0524	Colesburg	Mocas, May 1994		Not Eligible	Prehistoric	Fort Knox, DPW	UL
Bullitt	15Bu0525	Colesburg	Mocas, May 1994		Potentially Eligible	Prehistoric	Fort Knox, DPW	UL
Bullitt	15Bu0526	Colesburg	Mocas, May 1994		Potentially Eligible	Prehistoric	Fort Knox, DPW	UL
Bullitt	15Bu0527	Colesburg	Mocas, May 1994		Potentially Eligible	Prehistoric	Fort Knox, DPW	UL
Bullitt	15Bu0528	Pitts Point	Schenian and Mocas, Oct. 1994		Not Eligible	Historic	Fort Knox, DPW	UL
Bullitt	15Bu0529	Pitts Point	No report, recorded by Schenian and Mocas, May 1996		Not Assessed	Prehistoric	Fort Knox, DPW	UL
Bullitt	15Bu0530	Colesburg	Schenian, June 1997		Potentially Eligible	Prehistoric	Fort Knox, DPW	UL
Bullitt	15Bu0531	Pitts Point	Schenian, Aug. 1997		Potentially Eligible	Prehistoric	Fort Knox, DPW	UL
Bullitt	15Bu0532	Pitts Point	Boedy and Schenian, Aug. 1999	Schenian, Aug. 1997	Not Eligible	Both	Daniel Boone National Forest	UL

Bullitt	15Bu0533	Pitts Point	Schenian, Aug. 1997		Potentially Eligible	Historic	Fort Knox, DPW	UL
Bullitt	15Bu0534	Pitts Point	Boedy and Schenian, Aug. 1999	Schenian, Aug. 1997	Not Eligible	Both	Daniel Boone National Forest	UL
Bullitt	15Bu0535	Pitts Point	Schenian, Aug. 1997		Potentially Eligible	Historic	Fort Knox, DPW	UL
Bullitt	15Bu0539	Pitts Point	Boedy and Schenian, Aug. 1999		Not Eligible	Prehistoric	Daniel Boone National Forest	UK
Bullitt	15Bu0540	Pitts Point	Boedy and Schenian, Aug. 1999		Not Eligible	Both	Daniel Boone National Forest	UK
Bullitt	15Bu0541	Pitts Point	Boedy and Schenian, Aug. 1999		Not Eligible	Prehistoric	Daniel Boone National Forest	UK
Bullitt	15Bu0542	Pitts Point	Boedy and Schenian, Aug. 1999		Not Eligible	Historic	Daniel Boone National Forest	UK
Bullitt	15Bu0543	Pitts Point	Boedy and Schenian, Aug. 1999		Not Eligible	Both	Daniel Boone National Forest	UK
Bullitt	15Bu0544	Pitts Point	Pritchard, Pritchard and Picklesimer 2004	Boedy and Schenian, Aug. 1999	Not Eligible	Prehistoric	Gray & Pape, Inc.	UK/UL
Bullitt	15Bu0545	Pitts Point	Boedy and Schenian, Aug. 1999		Not Eligible	Prehistoric	Daniel Boone National Forest	UK
Bullitt	15Bu0546	Pitts Point	Boedy and Schenian, Aug. 1999		Not Eligible	Both	Daniel Boone National Forest	UK
Bullitt	15Bu0547	Pitts Point	Boedy and Schenian, Aug. 1999		Not Eligible	Historic	Daniel Boone National Forest	UK
Bullitt	15Bu0548	Pitts Point	Boedy and Schenian, Aug. 1999		Not Eligible	Prehistoric	Daniel Boone National Forest	UK
Bullitt	15Bu0549	Pitts Point	Boedy and Schenian, Aug. 1999		Not Eligible	Both	Daniel Boone National Forest	UK
Bullitt	15Bu0550	Pitts Point	Boedy and Schenian, Aug. 1999		Potentially Eligible	Prehistoric	Daniel Boone National Forest	UK
Bullitt	15Bu0551	Pitts Point	Pritchard, Pritchard and Picklesimer 2004	Boedy and Schenian, Aug. 1999	Not Assessed	Both	Gray & Pape, Inc.	UK/UL
Bullitt	15Bu0552	Pitts Point	Boedy and Schenian,		Not Eligible	Both	Daniel Boone	UK

			Aug. 1999				National Forest	
Bullitt	15Bu0553	Pitts Point	Boedy and Schenian, Aug. 1999		Not Eligible	Historic	Daniel Boone National Forest	UK
Bullitt	15Bu0554	Pitts Point	Boedy and Schenian, Aug. 1999		Not Eligible	Prehistoric	Daniel Boone National Forest	UK
Bullitt	15Bu0555	Pitts Point	Boedy and Schenian, Aug. 1999		Not Eligible	Prehistoric	Daniel Boone National Forest	UK
Bullitt	15Bu0556	Pitts Point	Boedy and Schenian, Aug. 1999		Not Eligible	Historic	Daniel Boone National Forest	UK
Bullitt	15Bu0557	Pitts Point	Boedy and Schenian, Aug. 1999		Not Eligible	Historic	Daniel Boone National Forest	UK
Bullitt	15Bu0558	Pitts Point	Boedy and Schenian, Aug. 1999		Not Eligible	Both	Daniel Boone National Forest	UK
Bullitt	15Bu0559	Pitts Point	Boedy and Schenian, Aug. 1999		Not Eligible	Both	Daniel Boone National Forest	UK
Bullitt	15Bu0560	Pitts Point	Pritchard, Pritchard and Picklesimer 2004	Boedy and Schenian, Aug. 1999	Not Assessed	Both	Gray & Pape, Inc.	UK/UL
Bullitt	15Bu0561	Pitts Point	Boedy and Schenian, Aug. 1999		Potentially Eligible	Prehistoric	Daniel Boone National Forest	UK
Bullitt	15Bu0562	Pitts Point	Boedy and Schenian, Aug. 1999		Not Eligible	Historic	Daniel Boone National Forest	UK
Bullitt	15Bu0563	Pitts Point	Bodkin et al. 2000	Boedy and Schenian, Aug. 1999	Potentially Eligible	Prehistoric	Daniel Boone National Forest	UK
Bullitt	15Bu0564	Pitts Point	Boedy and Schenian, Aug. 1999		Not Eligible	Historic	Daniel Boone National Forest	UK
Bullitt	15Bu0565	Pitts Point	Boedy and Schenian, Aug. 1999		Not Eligible	Both	Daniel Boone National Forest	UK
Bullitt	15Bu0566	Pitts Point	Bodkin et al. 2000	Boedy and Schenian, Aug. 1999	Not Eligible	Both	Daniel Boone National Forest	UK
Bullitt	15Bu0567	Pitts Point	Boedy and Schenian, Aug. 1999		Not Eligible	Both	Daniel Boone National Forest	UK

Bullitt	15Bu0568	Pitts Point	Boedy and Schenian, Aug. 1999		Not Eligible	Prehistoric	Daniel Boone National Forest	UK
Bullitt	15Bu0569	Pitts Point	Bodkin et al. 2000	Boedy and Schenian, Aug. 1999	Not Eligible	Both	Daniel Boone National Forest	UK
Bullitt	15Bu0570	Pitts Point	Boedy and Schenian, Aug. 1999		Not Eligible	Historic	Daniel Boone National Forest	UK
Bullitt	15Bu0571	Pitts Point	Boedy and Schenian, Aug. 1999		Not Eligible	Prehistoric	Daniel Boone National Forest	UK
Bullitt	15Bu0572	Pitts Point	Boedy and Schenian, Aug. 1999		Not Eligible	Both	Daniel Boone National Forest	UK
Bullitt	15Bu0573	Pitts Point	Boedy and Schenian, Aug. 1999		Not Eligible	Prehistoric	Daniel Boone National Forest	UK
Bullitt	15Bu0574	Pitts Point	Boedy and Schenian, Aug. 1999		Not Eligible	Historic	Daniel Boone National Forest	UK
Bullitt	15Bu0575	Pitts Point	Boedy and Schenian, Aug. 1999		Not Eligible	Both	Daniel Boone National Forest	UK
Bullitt	15Bu0576	Pitts Point	Boedy and Schenian, Aug. 1999		Not Eligible	Prehistoric	Daniel Boone National Forest	UK
Bullitt	15Bu0577	Pitts Point	Boedy and Schenian, Aug. 1999		Not Eligible	Both	Daniel Boone National Forest	UK
Bullitt	15Bu0578	Pitts Point	Boedy and Schenian, Aug. 1999		Not Eligible	Prehistoric	Daniel Boone National Forest	UK
Bullitt	15Bu0579	Pitts Point	Boedy and Schenian, Aug. 1999		Potentially Eligible	Prehistoric	Daniel Boone National Forest	UK
Bullitt	15Bu0580	Pitts Point	Boedy and Schenian, Aug. 1999		Not Eligible	Prehistoric	Daniel Boone National Forest	UK
Bullitt	15Bu0581	Pitts Point	Boedy and Schenian, Aug. 1999		Not Eligible	Both	Daniel Boone National Forest	UK
Bullitt	15Bu0582	Pitts Point	Boedy and Schenian, Aug. 1999		Not Eligible	Prehistoric	Daniel Boone National Forest	UK
Bullitt	15Bu0583	Pitts Point	Boedy and Schenian, Aug. 1999		Not Eligible	Prehistoric	Daniel Boone National Forest	UK

Bullitt	15Bu0584	Pitts Point	Boedy and Schenian, Aug. 1999		Not Eligible	Prehistoric	Daniel Boone National Forest	UK
Bullitt	15Bu0585	Pitts Point	Boedy and Schenian, Aug. 1999		Not Eligible	Historic	Daniel Boone National Forest	UK
Bullitt	15Bu0586	Pitts Point	Boedy and Schenian, Aug. 1999		Not Eligible	Historic	Daniel Boone National Forest	UK
Bullitt	15Bu0587	Pitts Point	Boedy and Schenian, Aug. 1999		Not Eligible	Prehistoric	Daniel Boone National Forest	UK
Bullitt	15Bu0588	Pitts Point	Boedy and Schenian, Aug. 1999		Not Eligible	Both	Daniel Boone National Forest	UK
Bullitt	15Bu0589	Pitts Point	Boedy and Schenian, Aug. 1999		Not Eligible	Prehistoric	Daniel Boone National Forest	UK
Bullitt	15Bu0590	Pitts Point	Boedy and Schenian, Aug. 1999		Not Eligible	Prehistoric	Daniel Boone National Forest	UK
Bullitt	15Bu0591	Pitts Point	Boedy and Schenian, Aug. 1999		Not Eligible	Prehistoric	Daniel Boone National Forest	UK
Bullitt	15Bu0601	Pitts Point	Bodkin et al. 2000		Not Eligible	Prehistoric	Daniel Boone National Forest	UK
Bullitt	15Bu0602	Pitts Point	Bodkin et al. 2000		Not Eligible	Both	Daniel Boone National Forest	UK
Bullitt	15Bu0603	Pitts Point	Bodkin et al. 2000		Not Eligible	Both	Daniel Boone National Forest	UK
Bullitt	15Bu0604	Pitts Point	Bodkin et al. 2000		Not Eligible	Prehistoric	Daniel Boone National Forest	UK
Bullitt	15Bu0605	Pitts Point	Bodkin et al. 2000		Not Eligible	Both	Daniel Boone National Forest	UK
Bullitt	15Bu0606	Pitts Point	Bodkin et al. 2000		Not Eligible	Both	Daniel Boone National Forest	UK

Bullitt	15Bu0607	Pitts Point	Bodkin et al. 2000		Not Eligible	Prehistoric	Daniel Boone National Forest	UK
Bullitt	15Bu0608	Pitts Point	Bodkin et al. 2000		Not Eligible	Prehistoric	Daniel Boone National Forest	UK
Bullitt	15Bu0609	Pitts Point	Bodkin et al. 2000		Not Eligible	Prehistoric	Daniel Boone National Forest	UK
Bullitt	15Bu0610	Pitts Point	Bodkin et al. 2000		Not Eligible	Prehistoric	Daniel Boone National Forest	UK
Bullitt	15Bu0611	Pitts Point	Bodkin et al. 2000		Not Eligible	Both	Daniel Boone National Forest	UK
Bullitt	15Bu0612	Pitts Point	Bodkin et al. 2000		Not Eligible	Prehistoric	Daniel Boone National Forest	UK
Bullitt	15Bu0613	Pitts Point	Bodkin et al. 2000		Not Eligible	Both	Daniel Boone National Forest	UK
Bullitt	15Bu0614	Pitts Point	Bodkin et al. 2000		Not Eligible	Prehistoric	Daniel Boone National Forest	UK
Bullitt	15Bu0615	Pitts Point	Bodkin et al. 2000		Not Eligible	Prehistoric	Daniel Boone National Forest	UK
Bullitt	15Bu0616	Pitts Point	Bodkin et al. 2000		Not Eligible	Prehistoric	Daniel Boone National Forest	UK
Bullitt	15Bu0617	Pitts Point	Bodkin et al. 2000		Not Eligible	Prehistoric	Daniel Boone National Forest	UK
Bullitt	15Bu0618	Pitts Point	Bodkin et al. 2000		Potentially Eligible	Prehistoric	Daniel Boone National Forest	UK
Bullitt	15Bu0619	Pitts Point	Bodkin et al. 2000		Not Eligible	Prehistoric	Daniel Boone National Forest	UK

Bullitt	15Bu0620	Pitts Point	Bodkin et al. 2000		Potentially Eligible	Historic	Daniel Boone National Forest	UK
Bullitt	15Bu0621	Pitts Point	Bodkin et al. 2000		Potentially Eligible	Historic	Daniel Boone National Forest	UK
Bullitt	15Bu0622	Pitts Point	Bodkin et al. 2000		Potentially Eligible	Prehistoric	Daniel Boone National Forest	UK
Bullitt	15Bu0623	Pitts Point	Bodkin et al. 2000		Not Eligible	Prehistoric	Daniel Boone National Forest	UK
Bullitt	15Bu0624	Pitts Point	Bodkin et al. 2000		Potentially Eligible	Prehistoric	Daniel Boone National Forest	UK
Bullitt	15Bu0625	Pitts Point	Bodkin et al. 2000		Not Eligible	Both	Daniel Boone National Forest	UK
Bullitt	15Bu0626	Pitts Point	Bodkin et al. 2000		Not Eligible	Prehistoric	Daniel Boone National Forest	UK
Bullitt	15Bu0627	Pitts Point	Bodkin et al. 2000		Potentially Eligible	Prehistoric	Daniel Boone National Forest	UK
Bullitt	15Bu0628	Pitts Point	Bodkin et al. 2000		Potentially Eligible	Historic	Daniel Boone National Forest	UK
Bullitt	15Bu0629	Pitts Point	Bodkin et al. 2000		Not Eligible	Both	Daniel Boone National Forest	UK
Bullitt	15Bu0630	Pitts Point	Bodkin et al. 2000		Not Eligible	Historic	Daniel Boone National Forest	UK
Bullitt	15Bu0633	Pitts Point	Pritchard and Pritchard 2004		Not Eligible	Both	Gray & Pape, Inc.	UL
Bullitt	15Bu0634	Pitts Point	Pritchard and Pritchard 2004		Not Eligible	Prehistoric	Gray & Pape, Inc.	UL
Bullitt	15Bu0635	Pitts Point	Pritchard and Pritchard 2004		Not Eligible	Prehistoric	Gray & Pape, Inc.	UL

Bullitt	15Bu0636	Pitts Point	Pritchard and Pritchard 2004		Not Eligible	Prehistoric	Gray & Pape, Inc.	UL
Bullitt	15Bu0637	Pitts Point	Pritchard and Pritchard 2004		Not Eligible	Prehistoric	Gray & Pape, Inc.	UL
Bullitt	15Bu0638	Pitts Point	Pritchard and Pritchard 2004		Not Eligible	Prehistoric	Gray & Pape, Inc.	UL
Bullitt	15Bu0639	Pitts Point	Pritchard and Pritchard 2004		Not Eligible	Prehistoric	Gray & Pape, Inc.	UL
Bullitt	15Bu0640	Pitts Point	Pritchard and Pritchard 2004		Not Eligible	Prehistoric	Gray & Pape, Inc.	UL
Bullitt	15Bu0641	Pitts Point	Pritchard and Pritchard 2004		Not Eligible	Prehistoric	Gray & Pape, Inc.	UL
Bullitt	15Bu0642	Pitts Point	Pritchard and Pritchard 2004		Not Eligible	Both	Gray & Pape, Inc.	UL
Bullitt	15Bu0643	Pitts Point	Pritchard and Pritchard 2004		Not Eligible	Prehistoric	Gray & Pape, Inc.	UL
Bullitt	15Bu0644	Pitts Point	Pritchard and Pritchard 2004		Not Eligible	Both	Gray & Pape, Inc.	UL
Bullitt	15Bu0645	Pitts Point	Pritchard and Pritchard 2004		Not Eligible	Both	Gray & Pape, Inc.	UL
Bullitt	15Bu0646	Pitts Point	Pritchard and Pritchard 2004		Not Eligible	Historic	Gray & Pape, Inc.	UL
Bullitt	15Bu0647	Pitts Point	Pritchard and Pritchard 2004		Not Eligible	Historic	Gray & Pape, Inc.	UL
Bullitt	15Bu0648	Pitts Point	Pritchard and Pritchard 2004		Not Eligible	Both	Gray & Pape, Inc.	UL
Bullitt	15Bu0649	Pitts Point	Pritchard and Pritchard 2004		Not Eligible	Historic	Gray & Pape, Inc.	UL
Bullitt	15Bu0650	Pitts Point	Pritchard and Pritchard 2004		Not Eligible	Historic	Gray & Pape, Inc.	UL
Bullitt	15Bu0652	Pitts Point	Pritchard, Meyers, and Bowden 2005		Not Eligible	Prehistoric	Gray & Pape, Inc.	UL

Bullitt	15Bu0653	Pitts Point	Pritchard, Meyers, and Bowden 2005		Not Eligible	Prehistoric	Gray & Pape, Inc.	UL
Bullitt	15Bu0654	Pitts Point	Pritchard, Meyers, and Bowden 2005		Not Eligible	Prehistoric	Gray & Pape, Inc.	UL
Bullitt	15Bu0655	Pitts Point	Pritchard, Meyers, and Bowden 2005		Potentially Eligible	Both	Gray & Pape, Inc.	UL
Bullitt	15Bu0656	Pitts Point	Pritchard, Meyers, and Bowden 2005		Potentially Eligible	Prehistoric	Gray & Pape, Inc.	UL
Bullitt	15Bu0657	Pitts Point	Pritchard, Meyers, and Bowden 2005		Not Eligible	Prehistoric	Gray & Pape, Inc.	UL
Bullitt	15Bu0658	Pitts Point	Pritchard, Meyers, and Bowden 2005		Potentially Eligible	Historic	Gray & Pape, Inc.	UL
Bullitt	15Bu0659	Pitts Point	Pritchard, Meyers, and Bowden 2005		Not Eligible	Prehistoric	Gray & Pape, Inc.	UL
Bullitt	15Bu0660	Pitts Point	Pritchard, Meyers, and Bowden 2005		Potentially Eligible	Historic	Gray & Pape, Inc.	UL
Bullitt	15Bu0661	Pitts Point	Pritchard, Meyers, and Bowden 2005		Not Eligible	Both	Gray & Pape, Inc.	UL
Bullitt	15Bu0662	Pitts Point	Pritchard, Meyers, and Bowden 2005		Potentially Eligible	Both	Gray & Pape, Inc.	UL
Hardin	15Hd0017	Vine Grove	Schenian and Mocas, Dec. 1993	No report, first recorded by Lee Hanson, 1961. Schenian and Mocas did not relocate, may have been destroyed.	Not Eligible	Prehistoric	Fort Knox, DPW	Unknown
Hardin	15Hd0018	Vine Grove	Schenian and Mocas, June 1992	No report, first recorded by Lee Hanson, 1961. Schenian and Mocas did not relocate, may have been destroyed.	Not Eligible	Both	Fort Knox, DPW	Unknown
Hardin	15Hd0109	Vine Grove	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK

Hardin	15Hd0113	Vine Grove	Schenian and Mocas, June 1992	O'Malley et al. 1980, Schenian and Mocas could not relocate. It may have been destroyed.	Not Eligible	Prehistoric	Fort Knox, DPW	UK
Hardin	15Hd0114	Colesburg	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Hardin	15Hd0115	Colesburg	O'Malley et al. 1980		Not Eligible	Historic	University of Kentucky	UK
Hardin	15Hd0116	Colesburg	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Hardin	15Hd0117	Colesburg	O'Malley et al. 1980		Not Eligible	Prehistoric	University of Kentucky	UK
Hardin	15Hd0119	Colesburg	O'Malley et al. 1980		Not Eligible	Prehistoric	University of Kentucky	UK
Hardin	15Hd0120	Colesburg	Mocas, April 1994	O'Malley et al. 1980	Not Eligible	Prehistoric	Fort Knox, DPW	UK/UL
Hardin	15Hd0121	Colesburg	Mocas, April 1994	O'Malley et al. 1980	Potentially Eligible	Prehistoric	Fort Knox, DPW	UK/UL
Hardin	15Hd0122	Colesburg	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Hardin	15Hd0123	Fort Knox	O'Malley et al. 1980		Not Eligible	Historic	University of Kentucky	UK
Hardin	15Hd0124	Fort Knox	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Hardin	15Hd0125	Fort Knox	O'Malley et al. 1980		Not Eligible	Historic	University of Kentucky	UK
Hardin	15Hd0126	Colesburg	O'Malley et al. 1980		Not Assessed	Undetermined	University of Kentucky	UK
Hardin	15Hd0127	Fort Knox	O'Malley et al. 1980		Not Eligible	Prehistoric	University of Kentucky	UK
Hardin	15Hd0128	Colesburg	O'Malley et al. 1980		Not Eligible	Historic	University of Kentucky	UK
Hardin	15Hd0129	Colesburg	O'Malley et al. 1980		Not Eligible	Prehistoric	University of Kentucky	UK
Hardin	15Hd0130	Colesburg	O'Malley et al. 1980		Not Eligible	Prehistoric	University of Kentucky	UK
Hardin	15Hd0131	Vine Grove	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Hardin	15Hd0132	Vine Grove	O'Malley et al. 1980		Not Eligible	Prehistoric	University of Kentucky	UK
Hardin	15Hd0133	Fort Knox	O'Malley et al. 1980		Not Eligible	Prehistoric	University of Kentucky	UK
Hardin	15Hd0134	Fort Knox	O'Malley et al. 1980		Not Eligible	Both	University of Kentucky	UK
Hardin	15Hd0135	Vine Grove	O'Malley et al. 1980		Potentially Eligible	Prehistoric	University of Kentucky	UK
Hardin	15Hd0136	Vine Grove	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Hardin	15Hd0137	Vine Grove	O'Malley et al. 1980		Not Eligible	Prehistoric	University of Kentucky	UK

Hardin	15Hd0138	Vine Grove	O'Malley et al. 1980		Not Eligible	Prehistoric	University of Kentucky	UK
Hardin	15Hd0139	Vine Grove	Schenian and Mocas, June 1992	O'Malley et al. 1980, Schenian and Mocas could not relocate. It may have been destroyed.	Not Eligible	Prehistoric	Fort Knox, DPW	UK
Hardin	15Hd0140	Vine Grove	Schenian and Mocas, June 1992	O'Malley et al. 1980	Potentially Eligible	Prehistoric	Fort Knox, DPW	UK
Hardin	15Hd0141	Vine Grove	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Hardin	15Hd0142	Vine Grove	O'Malley et al. 1980		Not Eligible	Historic	University of Kentucky	UK
Hardin	15Hd0144	Colesburg	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Hardin	15Hd0145	Colesburg	O'Malley et al. 1980		Not Eligible	Historic	University of Kentucky	UK
Hardin	15Hd0146	Colesburg	O'Malley et al. 1980		Not Eligible	Historic	University of Kentucky	UK
Hardin	15Hd0147	Colesburg	O'Malley et al. 1980		Not Eligible	Prehistoric	University of Kentucky	UK
Hardin	15Hd0157	Pitts Point	O'Malley et al. 1980		Not Eligible	Prehistoric	University of Kentucky	UK
Hardin	15Hd0158	Pitts Point	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Hardin	15Hd0159	Colesburg	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Hardin	15Hd0160	Pitts Point	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Hardin	15Hd0161	Vine Grove	O'Malley et al. 1980		Not Eligible	Prehistoric	University of Kentucky	UK
Hardin	15Hd0162	Pitts Point	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Hardin	15Hd0163	Pitts Point	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Hardin	15Hd0164	Pitts Point	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Hardin	15Hd0165	Pitts Point	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Hardin	15Hd0166	Pitts Point	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Hardin	15Hd0167	Vine Grove	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Hardin	15Hd0168	Vine Grove	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Hardin	15Hd0169	Fort Knox	O'Malley et al. 1980		Not Eligible	Historic	University of Kentucky	UK
Hardin	15Hd0170	Fort Knox	Schenian and Mocas, Oct. 1994	O'Malley et al. 1980	Not Eligible	Prehistoric	Fort Knox, DPW	UK/UL

Hardin	15Hd0171	Fort Knox	O'Malley et al. 1980		Not Eligible	Historic	University of Kentucky	UK
Hardin	15Hd0172	Fort Knox	O'Malley et al. 1980		Not Eligible	Both	University of Kentucky	UK
Hardin	15Hd0173	Fort Knox	O'Malley et al. 1980		Not Eligible	Historic	University of Kentucky	UK
Hardin	15Hd0174	Fort Knox	O'Malley et al. 1980		Not Eligible	Historic	University of Kentucky	UK
Hardin	15Hd0175	Fort Knox	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Hardin	15Hd0176	Fort Knox	O'Malley et al. 1980		Not Eligible	Historic	University of Kentucky	UK
Hardin	15Hd0177	Fort Knox	Bush et al. 1989	O'Malley et al. 1980	Not Eligible	Undetermined	Daniel Boone National Forest	UK
Hardin	15Hd0178	Colesburg	Hemberger, May 1991	O'Malley et al. 1980	Not Eligible	Prehistoric	USACE, Louisville	UK/UL
Hardin	15Hd0179	Colesburg	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Hardin	15Hd0180	Colesburg	O'Malley et al. 1980		Not Eligible	Historic	University of Kentucky	UK
Hardin	15Hd0181	Vine Grove	O'Malley et al. 1980		Not Eligible	Prehistoric	University of Kentucky	UK
Hardin	15Hd0182	Colesburg	Hemberger, May 1991	O'Malley et al. 1980	Not Eligible	Both	USACE, Louisville	UK/UL
Hardin	15Hd0183	Fort Knox	O'Malley et al. 1980		Not Eligible	Historic	University of Kentucky	UK
Hardin	15Hd0184	Colesburg	Ruple, Sept. 1992	O'Malley et al. 1980 and Diblasi 1986	Potentially Eligible	Prehistoric	Fort Knox, DPW	UK
Hardin	15Hd0185	Colesburg	O'Malley et al. 1980		Not Eligible	Historic	University of Kentucky	UK
Hardin	15Hd0186	Colesburg	Ruple, Sept. 1992	O'Malley et al. 1980 and Diblasi 1986	Not Eligible	Historic	Fort Knox, DPW	UK
Hardin	15Hd0187	Fort Knox	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Hardin	15Hd0188	Colesburg	O'Malley et al. 1980		Not Eligible	Historic	University of Kentucky	UK
Hardin	15Hd0189	Pitts Point	O'Malley et al. 1980		Not Eligible	Historic	University of Kentucky	UK
Hardin	15Hd0190	Pitts Point	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Hardin	15Hd0191	Pitts Point	O'Malley et al. 1980		Not Assessed	Both	University of Kentucky	UK
Hardin	15Hd0192	Pitts Point	O'Malley et al. 1980		Not Eligible	Historic	University of Kentucky	UK
Hardin	15Hd0193	Pitts Point	O'Malley et al. 1980		Not Eligible	Historic	University of Kentucky	UK
Hardin	15Hd0194	Pitts Point	O'Malley et al. 1980		Not Eligible	Historic	University of Kentucky	UK

Hardin	15Hd0195	Fort Knox	O'Malley et al. 1980		Not Eligible	Historic	University of Kentucky	UK
Hardin	15Hd0196	Pitts Point	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Hardin	15Hd0197	Pitts Point	O'Malley et al. 1980		Not Assessed	Both	University of Kentucky	UK
Hardin	15Hd0198	Fort Knox	O'Malley et al. 1980		Not Eligible	Historic	University of Kentucky	UK
Hardin	15Hd0199	Pitts Point	O'Malley et al. 1980		Not Eligible	Historic	University of Kentucky	UK
Hardin	15Hd0201	Pitts Point	O'Malley et al. 1980		Not Eligible	Prehistoric	University of Kentucky	UK
Hardin	15Hd0202	Pitts Point	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Hardin	15Hd0203	Fort Knox	O'Malley et al. 1980		Not Eligible	Historic	University of Kentucky	UK
Hardin	15Hd0204	Pitts Point	O'Malley et al. 1980		Not Eligible	Historic	University of Kentucky	UK
Hardin	15Hd0205	Vine Grove	O'Malley et al. 1980		Not Eligible	Prehistoric	University of Kentucky	UK
Hardin	15Hd0206	Vine Grove	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Hardin	15Hd0207	Vine Grove	O'Malley et al. 1980		Not Assessed	Both	University of Kentucky	UK
Hardin	15Hd0208	Vine Grove	O'Malley et al. 1980		Not Eligible	Historic	University of Kentucky	UK
Hardin	15Hd0209	Vine Grove	Schenian and Mocas, Oct. 1994	O'Malley et al. 1980	Not Eligible	Prehistoric	Fort Knox, DPW	UK/UL
Hardin	15Hd0210	Vine Grove	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Hardin	15Hd0211	Vine Grove	O'Malley et al. 1980		Not Eligible	Historic	University of Kentucky	UK
Hardin	15Hd0212	Fort Knox	O'Malley et al. 1980		Not Eligible	Historic	University of Kentucky	UK
Hardin	15Hd0213	Pitts Point	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Hardin	15Hd0214	Vine Grove	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Hardin	15Hd0215	Vine Grove	O'Malley et al. 1980		Not Eligible	Prehistoric	University of Kentucky	UK
Hardin	15Hd0216	Colesburg	O'Malley et al. 1980		Not Eligible	Historic	University of Kentucky	UK
Hardin	15Hd0217	Colesburg	O'Malley et al. 1980		Potentially Eligible	Prehistoric	University of Kentucky	UK
Hardin	15Hd0218	Colesburg	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Hardin	15Hd0219	Colesburg	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Hardin	15Hd0220	Colesburg	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Hardin	15Hd0221	Colesburg	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK

Hardin	15Hd0222	Colesburg	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Hardin	15Hd0223	Colesburg	O'Malley et al. 1980		Not Eligible	Historic	University of Kentucky	UK
Hardin	15Hd0224	Colesburg	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Hardin	15Hd0225	Colesburg	O'Malley et al. 1980		Not Assessed	Historic	University of Kentucky	UK
Hardin	15Hd0226	Fort Knox	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Hardin	15Hd0227	Fort Knox	O'Malley et al. 1980		Not Eligible	Historic	University of Kentucky	UK
Hardin	15Hd0228	Fort Knox	O'Malley et al. 1980		Not Eligible	Prehistoric	University of Kentucky	UK
Hardin	15Hd0229	Colesburg	O'Malley et al. 1980		Potentially Eligible	Prehistoric	University of Kentucky	UK/UL
Hardin	15Hd0230	Colesburg	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Hardin	15Hd0231	Colesburg	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Hardin	15Hd0232	Pitts Point	O'Malley et al. 1980		Not Eligible	Historic	University of Kentucky	UK
Hardin	15Hd0233	Colesburg	O'Malley et al. 1980		Not Eligible	Historic	University of Kentucky	UK
Hardin	15Hd0234	Colesburg	No report - Schenian and Mocas, Feb. 1996	O'Malley et al. 1980, and Schenian and Mocas did not file report when reinvestigated.	Potentially Eligible	Prehistoric	Fort Knox, DPW	UK/UL
Hardin	15Hd0235	Colesburg	No report - Schenian and Mocas, Feb. 1996	O'Malley et al. 1980, and Schenian and Mocas did not file report when reinvestigated.	Potentially Eligible	Prehistoric	Fort Knox, DPW	UK/UL
Hardin	15Hd0236	Colesburg	No report - Schenian and Mocas, Feb. 1996	O'Malley et al. 1980, and Schenian and Mocas did not file report when reinvestigated.	Potentially Eligible	Prehistoric	Fort Knox, DPW	UK/UL
Hardin	15Hd0237	Colesburg	No report - Schenian and Mocas, April 1996	O'Malley et al. 1980, and Schenian and Mocas did not file report when reinvestigated.	Potentially Eligible	Prehistoric	Fort Knox, DPW	UK/UL
Hardin	15Hd0238	Colesburg	No report - Schenian and Mocas, April 1996	O'Malley et al. 1980, and Schenian and Mocas did not file report when reinvestigated.	Not Assessed	Both	Fort Knox, DPW	UK/UL

Hardin	15Hd0239	Colesburg	No report - Schenian and Mocas, April 1996	O'Malley et al. 1980, and Schenian and Mocas did not file report when reinvestigated.	Not Assessed	Prehistoric	Fort Knox, DPW	UK/UL
Hardin	15Hd0240	Colesburg	No report - Schenian and Mocas, Dec. 1995	O'Malley et al. 1980, and Schenian and Mocas did not file report when reinvestigated.	Potentially Eligible	Historic	Fort Knox, DPW	UK/UL
Hardin	15Hd0241	Colesburg	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Hardin	15Hd0242	Colesburg	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Hardin	15Hd0243	Colesburg	O'Malley et al. 1980		Not Eligible	Prehistoric	University of Kentucky	UK
Hardin	15Hd0244	Fort Knox	O'Malley et al. 1980		Not Eligible	Historic	University of Kentucky	UK
Hardin	15Hd0245	Colesburg	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Hardin	15Hd0246	Colesburg	Mocas, April 1994	O'Malley et al. 1980	Not Assessed	Undetermined	Fort Knox, DPW	UK
Hardin	15Hd0247	Fort Knox	O'Malley et al. 1980		Not Assessed	Undetermined	University of Kentucky	UK
Hardin	15Hd0248	Colesburg	Ruple, Sept. 1992	O'Malley et al. 1980, Diblasi in 1986, and not relocated by Ruple.	Not Eligible	Undetermined	Fort Knox, DPW	UK
Hardin	15Hd0249	Colesburg	Hermann et al. 1993	O'Malley et al. 1980, Diblasi 1986, Ruple 1992, and Fenton 1994. This site has been destroyed by 313 construction.	Not Eligible	Historic	Wilbur Smith Associates	UK/UL
Hardin	15Hd0250	Vine Grove	O'Malley et al. 1980		Not Assessed	Undetermined	University of Kentucky	UK
Hardin	15Hd0251	Vine Grove	O'Malley et al. 1980		Not Assessed	Undetermined	University of Kentucky	UK
Hardin	15Hd0252	Vine Grove	O'Malley et al. 1980		Not Assessed	Undetermined	University of Kentucky	UK
Hardin	15Hd0253	Vine Grove	Hermann et al. 1993	O'Malley et al. 1980 and DiBlasi 1986	Not Eligible	Historic	Wilbur Smith Associates	UK
Hardin	15Hd0254	Vine Grove	O'Malley et al. 1980		Not Eligible	Historic	University of Kentucky	UK
Hardin	15Hd0255	Colesburg	O'Malley et al. 1980		Not Assessed	Undetermined	University of Kentucky	UK
Hardin	15Hd0256	Vine Grove	O'Malley et al. 1980		Not Assessed	Undetermined	University of Kentucky	UK

Hardin	15Hd0257	Fort Knox	O'Malley et al. 1980		Not Eligible	Historic	University of Kentucky	UK
Hardin	15Hd0258	Vine Grove	O'Malley et al. 1980		Not Assessed	Undetermined	University of Kentucky	UK
Hardin	15Hd0259	Vine Grove	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Hardin	15Hd0261	Fort Knox	O'Malley et al. 1980		Not Eligible	Historic	University of Kentucky	UK
Hardin	15Hd0262	Fort Knox	O'Malley et al. 1980		Not Assessed	Undetermined	University of Kentucky	UK
Hardin	15Hd0263	Fort Knox	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Hardin	15Hd0264	Fort Knox	O'Malley et al. 1980		Not Eligible	Historic	University of Kentucky	UK
Hardin	15Hd0265	Fort Knox	O'Malley et al. 1980		Not Assessed	Undetermined	University of Kentucky	UK
Hardin	15Hd0266	Fort Knox	O'Malley et al. 1980		Not Eligible	Historic	University of Kentucky	UK
Hardin	15Hd0267	Fort Knox	O'Malley et al. 1980		Not Eligible	Historic	University of Kentucky	UK
Hardin	15Hd0268	Fort Knox	O'Malley et al. 1980		Not Eligible	Historic	University of Kentucky	UK
Hardin	15Hd0269	Pitts Point	O'Malley et al. 1980		Not Eligible	Historic	University of Kentucky	UK
Hardin	15Hd0270	Pitts Point	O'Malley et al. 1980		Not Eligible	Historic	University of Kentucky	UK
Hardin	15Hd0271	Fort Knox	O'Malley et al. 1980		Not Eligible	Historic	University of Kentucky	UK
Hardin	15Hd0272	Vine Grove	O'Malley et al. 1980		Not Eligible	Historic	University of Kentucky	UK
Hardin	15Hd0273	Fort Knox	O'Malley et al. 1980	Mound has been looted.	Not Assessed	Prehistoric	University of Kentucky	Private
Hardin	15Hd0274	Pitts Point	O'Malley et al. 1980		Not Eligible	Prehistoric	University of Kentucky	UK
Hardin	15Hd0276	Fort Knox	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Hardin	15Hd0277	Fort Knox	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Hardin	15Hd0278	Fort Knox	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Hardin	15Hd0279	Fort Knox	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Hardin	15Hd0280	Fort Knox	O'Malley et al. 1980		Not Eligible	Historic	University of Kentucky	UK
Hardin	15Hd0281	Fort Knox	O'Malley et al. 1980		Not Eligible	Historic	University of Kentucky	UK
Hardin	15Hd0282	Colesburg	Hemberger, May 1991	O'Malley et al. 1980	Not Eligible	Prehistoric	USACE, Louisville	UK/UL
Hardin	15Hd0283	Colesburg	Hemberger, May 1991	O'Malley et al. 1980, Hemberger did not relocate, may	Not Eligible	Historic	USACE, Louisville	UK

				have been destroyed.				
Hardin	15Hd0284	Pitts Point	O'Malley et al. 1980		Not Eligible	Historic	University of Kentucky	UK
Hardin	15Hd0285	Pitts Point	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Hardin	15Hd0286	Pitts Point	O'Malley et al. 1980		Not Eligible	Historic	University of Kentucky	UK
Hardin	15Hd0287	Pitts Point	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Hardin	15Hd0288	Pitts Point	O'Malley et al. 1980		Not Eligible	Historic	University of Kentucky	UK
Hardin	15Hd0289	Fort Knox	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Hardin	15Hd0290	Fort Knox	O'Malley et al. 1980		Not Eligible	Historic	University of Kentucky	UK
Hardin	15Hd0291	Pitts Point	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Hardin	15Hd0292	Pitts Point	O'Malley et al. 1980		Not Assessed	Undetermined	University of Kentucky	UK
Hardin	15Hd0293	Fort Knox	O'Malley et al. 1980		Not Assessed	Both	University of Kentucky	UK
Hardin	15Hd0294	Fort Knox	O'Malley et al. 1980		Not Eligible	Historic	University of Kentucky	UK
Hardin	15Hd0403	Vine Grove	University of Kentucky, July 1982	No report with site form	Not Assessed	Prehistoric	University of Kentucky	UK
Hardin	15Hd0431	Colesburg	DiBlasi 1986		Potentially Eligible	Prehistoric	University of Louisville	UL
Hardin	15Hd0432	Colesburg	DiBlasi 1986		Potentially Eligible	Prehistoric	University of Louisville	UL
Hardin	15Hd0438	Fort Knox	Bush et al. 1989		Not Eligible	Prehistoric	Daniel Boone National Forest	UL
Hardin	15Hd0439	Pitts Point	Bush et al. 1989		Potentially Eligible	Prehistoric	Daniel Boone National Forest	UL
Hardin	15Hd0440	Pitts Point	Bush et al. 1989		Potentially Eligible	Prehistoric	Daniel Boone National Forest	UL
Hardin	15Hd0441	Pitts Point	Bush et al. 1989		Potentially Eligible	Prehistoric	Daniel Boone National Forest	UL
Hardin	15Hd0442	Pitts Point	Bush et al. 1989		Potentially Eligible	Historic	Daniel Boone National Forest	UL

Hardin	15Hd0443	Pitts Point	Bush et al. 1989		Not Eligible	Prehistoric	Daniel Boone National Forest	UL
Hardin	15Hd0444	Fort Knox	Bush et al. 1989		Not Eligible	Historic	Daniel Boone National Forest	UL
Hardin	15Hd0445	Fort Knox	Bush et al. 1989		Not Eligible	Historic	Daniel Boone National Forest	UL
Hardin	15Hd0446	Fort Knox	Bush et al. 1989		Not Eligible	Historic	Daniel Boone National Forest	UL
Hardin	15Hd0459	Fort Knox	Schenian, Mar. 1991		Potentially Eligible	Historic	Murray State University	UL
Hardin	15Hd0460	Colesburg	Hemberger, May 1991		Not Eligible	Historic	USACE, Louisville	UL
Hardin	15Hd0461	Fort Knox	Hemberger, May 1991		Not Eligible	Prehistoric	USACE, Louisville	UL
Hardin	15Hd0462	Colesburg	Schenian and Mocas, June 1992		Not Assessed	Prehistoric	Murray State University	UL
Hardin	15Hd0463	Colesburg	Schenian and Mocas, June 1992		Not Eligible	Historic	Murray State University	UL
Hardin	15Hd0464	Colesburg	Schenian and Mocas, June 1992		Potentially Eligible	Historic	Murray State University	UL
Hardin	15Hd0479	Fort Knox	Ruple, May 1993		Not Assessed	Both	Fort Knox, DPW	UK
Hardin	15Hd0480	Fort Knox	Ruple, May 1993		Not Assessed	Prehistoric	Fort Knox, DPW	UK/UL
Hardin	15Hd0481	Fort Knox	Ruple, May 1993		Not Assessed	Historic	Fort Knox, DPW	UK
Hardin	15Hd0482	Colesburg	Schenian and Mocas, Dec. 1993		Not Eligible	Prehistoric	Fort Knox, DPW	UL
Hardin	15Hd0483	Colesburg	Schenian and Mocas, Dec. 1993		Not Eligible	Prehistoric	Fort Knox, DPW	UL
Hardin	15Hd0484	Colesburg	Schenian and Mocas, Dec. 1993		Not Eligible	Prehistoric	Fort Knox, DPW	UL
Hardin	15Hd0485	Vine Grove	Mocas and Schenian, Dec. 1996	Schenian and Mocas, Dec. 1993	Not Eligible	Prehistoric	Fort Knox, DPW	UL
Hardin	15Hd0486	Vine Grove	Mocas and Schenian, Dec. 1996	Schenian and Mocas, Dec. 1993	Not Eligible	Both	Fort Knox, DPW	UL
Hardin	15Hd0487	Vine Grove	Schenian and Mocas, Dec. 1993		Not Eligible	Both	Fort Knox, DPW	UL
Hardin	15Hd0488	Colesburg	Schenian, Sept. 1998	Schenian and Mocas, April 1994	Potentially Eligible	Both	Fort Knox, DPW	UL
Hardin	15Hd0489	Colesburg	Mocas, April		Not Eligible	Both	Fort Knox,	UL

			1994				DPW	
Hardin	15Hd0490	Colesburg	Mocas, April 1994		Not Eligible	Prehistoric	Fort Knox, DPW	UL
Hardin	15Hd0491	Fort Knox	Schenian, May 1994		Not Eligible	Historic	Fort Knox, DPW	UL
Hardin	15Hd0492	Vine Grove	Mocas and Schenian, Dec. 1996		Not Eligible	Prehistoric	Fort Knox, DPW	UL
Hardin	15Hd0493	Vine Grove	Mocas and Schenian, Dec. 1996		Not Eligible	Prehistoric	Fort Knox, DPW	UL
Hardin	15Hd0494	Colesburg	Schenian and Mocas, Dec. 1995		Potentially Eligible	Prehistoric	Fort Knox, DPW	UL
Hardin	15Hd0495	Vine Grove	Schenian and Mocas, Sept. 1994		Not Eligible	Both	Fort Knox, DPW	UL
Hardin	15Hd0496	Fort Knox	Schenian, June 1995		Not Eligible	Both	Fort Knox, DPW	UL
Hardin	15Hd0497	Vine Grove	Schenian and Mocas, Oct. 1994		Not Eligible	Both	Fort Knox, DPW	UL
Hardin	15Hd0498	Fort Knox	Schenian and Mocas, Oct. 1995		Potentially Eligible	Prehistoric	Fort Knox, DPW	UL
Hardin	15Hd0499	Fort Knox	No report, Ruple, Dec. 1992		Potentially Eligible	Both	Fort Knox, DPW	UL
Hardin	15Hd0500	Pitts Point	No report, Schenian and Mocas, April 1994		Not Assessed	Prehistoric	Fort Knox, DPW	UL
Hardin	15Hd0502	Fort Knox	Schenian and Mocas, Nov. 1995		Potentially Eligible	Historic	Fort Knox, DPW	UL
Hardin	15Hd0503	Fort Knox	Schenian and Mocas, Nov. 1995		Potentially Eligible	Historic	Fort Knox, DPW	UL
Hardin	15Hd0504	Fort Knox	Pritchard, Pritchard, Meyers, and Bowden 2004	Schenian and Mocas, Nov. 1995	Potentially Eligible	Historic	Gray & Pape, Inc.	UL
Hardin	15Hd0505	Colesburg	No report, Schenian, May 1994		Not Eligible	Prehistoric	Fort Knox, DPW	UL
Hardin	15Hd0506	Colesburg	No report, Schenian and Mocas, Oct. 1995		Potentially Eligible	Both	Fort Knox, DPW	UL
Hardin	15Hd0507	Colesburg	No report, Schenian, May 1995		Not Eligible	Prehistoric	Fort Knox, DPW	UL
Hardin	15Hd0508	Colesburg	No report, Schenian, Oct. 1995		Not Eligible	Prehistoric	Fort Knox, DPW	UL
Hardin	15Hd0509	Colesburg	Schenian and Mocas, Oct. 1995		Not Eligible	Prehistoric	Fort Knox, DPW	UL
Hardin	15Hd0510	Colesburg	No report, Schenian, June 1995		Not Eligible	Both	Fort Knox, DPW	UL
Hardin	15Hd0511	Colesburg	No report, Schenian,		Not Assessed	Historic	Fort Knox, DPW	UL

			July 1995					
Hardin	15Hd0512	Colesburg	No report, Schenian, Oct. 1995		Potentially Eligible	Both	Fort Knox, DPW	UL
Hardin	15Hd0513	Vine Grove	Schenian and Mocas, Oct. 1995		Potentially Eligible	Historic	Fort Knox, DPW	UL
Hardin	15Hd0514	Vine Grove	Schenian and Mocas, Oct. 1995		Not Assessed	Prehistoric	Fort Knox, DPW	UL
Hardin	15Hd0515	Colesburg	Schenian and Mocas, Oct. 1995		Not Assessed	Prehistoric	Fort Knox, DPW	UL
Hardin	15Hd0516	Colesburg	Schenian and Mocas, Oct. 1995		Not Assessed	Prehistoric	Fort Knox, DPW	UL
Hardin	15Hd0517	Colesburg	Schenian and Mocas, Oct. 1995		Potentially Eligible	Historic	Fort Knox, DPW	UL
Hardin	15Hd0518	Colesburg	Schenian and Mocas, Oct. 1995		Potentially Eligible	Both	Fort Knox, DPW	UL
Hardin	15Hd0519	Colesburg	Schenian and Mocas, Oct. 1995		Not Assessed	Prehistoric	Fort Knox, DPW	UL
Hardin	15Hd0520	Colesburg	No report, Schenian, Oct. 1995		Potentially Eligible	Historic	Fort Knox, DPW	UL
Hardin	15Hd0521	Fort Knox	Schenian and Mocas, Aug. 1996		Potentially Eligible	Both	Fort Knox, DPW	UL
Hardin	15Hd0522	Fort Knox	Schenian and Mocas, Aug. 1996		Not Eligible	Both	Fort Knox, DPW	UL
Hardin	15Hd0523	Colesburg	Schenian and Mocas, June 1996		Not Eligible	Prehistoric	Fort Knox, DPW	UL
Hardin	15Hd0524	Colesburg	Schenian and Mocas, June 1996		Potentially Eligible	Historic	Fort Knox, DPW	UL
Hardin	15Hd0525	Colesburg	Schenian and Mocas, June 1996		Not Eligible	Historic	Fort Knox, DPW	UL
Hardin	15Hd0526	Colesburg	No report, Schenian and Mocas, April 1996		Not Eligible	Prehistoric	Fort Knox, DPW	UL
Hardin	15Hd0527		Pritchard and Picklesimer 2004	No report with Schenian and Mocas, April 1996	Potentially Eligible	Both	Gray & Pape, Inc.	UL
Hardin	15Hd0528	Colesburg	Schenian and Mocas, Aug. 1996		Not Eligible	Prehistoric	Fort Knox, DPW	UL
Hardin	15Hd0529	Colesburg	Schenian and Mocas, Aug. 1996		Not Eligible	Prehistoric	Fort Knox, DPW	UL
Hardin	15Hd0530	Colesburg	Schenian and Mocas, Aug. 1996		Not Eligible	Prehistoric	Fort Knox, DPW	UL
Hardin	15Hd0531	Colesburg	Schenian and Mocas, Aug. 1996		Potentially Eligible	Prehistoric	Fort Knox, DPW	UL

Hardin	15Hd0532	Colesburg	Schenian and Mocas, Aug. 1996		Not Eligible	Prehistoric	Fort Knox, DPW	UL
Hardin	15Hd0533	Colesburg	Schenian and Mocas, Aug. 1996		Not Eligible	Prehistoric	Fort Knox, DPW	UL
Hardin	15Hd0534	Colesburg	Schenian and Mocas, Aug. 1996		Not Eligible	Prehistoric	Fort Knox, DPW	UL
Hardin	15Hd0535	Vine Grove	Schenian and Mocas, Aug. 1996		Not Eligible	Historic	Fort Knox, DPW	UL
Hardin	15Hd0536	Fort Knox	No report, Schenian and Mocas, Mar. 1996		Potentially Eligible	Historic	Fort Knox, DPW	UL
Hardin	15Hd0537	Fort Knox	Schenian, Sept. 1997		Potentially Eligible	Historic	Fort Knox, DPW	UL
Hardin	15Hd0538	Colesburg	No report, Schenian and Mocas, June 1996		Potentially Eligible	Prehistoric	Fort Knox, DPW	UL
Hardin	15Hd0539	Colesburg	No report, Schenian and Mocas, Aug. 1996		Not Eligible	Prehistoric	Fort Knox, DPW	UL
Hardin	15Hd0540	Colesburg	No report, Schenian and Mocas, July 1996		Not Assessed	Historic	Fort Knox, DPW	UL
Hardin	15Hd0541	Colesburg	No report, Mocas, July 1996		Not Assessed	Both	Fort Knox, DPW	UL
Hardin	15Hd0542	Vine Grove	Mocas and Schenian, Nov. 1996		Not Eligible	Prehistoric	Fort Knox, DPW	UL
Hardin	15Hd0543	Vine Grove	Mocas and Schenian, Nov. 1996		Potentially Eligible	Prehistoric	Fort Knox, DPW	UL
Hardin	15Hd0544	Colesburg	Mocas and Schenian, Nov. 1996		Potentially Eligible	Both	Fort Knox, DPW	UL
Hardin	15Hd0545	Colesburg	Mocas and Schenian, Nov. 1996		Potentially Eligible	Prehistoric	Fort Knox, DPW	UL
Hardin	15Hd0546	Colesburg	Mocas and Schenian, Nov. 1996		Potentially Eligible	Prehistoric	Fort Knox, DPW	UL
Hardin	15Hd0547	Colesburg	Mocas and Schenian, Nov. 1996		Potentially Eligible	Prehistoric	Fort Knox, DPW	UL
Hardin	15Hd0548	Colesburg	Mocas and Schenian, Nov. 1996		Potentially Eligible	Prehistoric	Fort Knox, DPW	UL
Hardin	15Hd0549	Colesburg	Mocas and Schenian, Nov. 1996		Potentially Eligible	Prehistoric	Fort Knox, DPW	UL
Hardin	15Hd0550	Colesburg	Mocas and Schenian, Nov. 1996		Potentially Eligible	Prehistoric	Fort Knox, DPW	UL
Hardin	15Hd0551	Colesburg	No report, Schenian and Mocas, Feb. 1996		Potentially Eligible	Prehistoric	Fort Knox, DPW	UL

Hardin	15Hd0552	Colesburg	No report, Schenian and Mocas, Dec. 1995		Potentially Eligible	Prehistoric	Fort Knox, DPW	UL
Hardin	15Hd0553	Colesburg	No report, Schenian and Mocas, Feb. 1996		Not Eligible	Prehistoric	Fort Knox, DPW	UL
Hardin	15Hd0554	Colesburg	No report, Schenian and Mocas, Feb. 1995		Potentially Eligible	Both	Fort Knox, DPW	UL
Hardin	15Hd0555	Colesburg	No report, Schenian and Mocas, Feb. 1996		Not Eligible	Prehistoric	Fort Knox, DPW	UL
Hardin	15Hd0556	Colesburg	No report, Schenian and Mocas, Mar. 1996		Potentially Eligible	Prehistoric	Fort Knox, DPW	UL
Hardin	15Hd0557	Colesburg	No report, Schenian and Mocas, Mar. 1996		Not Assessed	Both	Fort Knox, DPW	UL
Hardin	15Hd0558	Colesburg	No report, Schenian and Mocas, Mar. 1996		Potentially Eligible	Prehistoric	Fort Knox, DPW	UL
Hardin	15Hd0559	Colesburg	No report, Schenian and Mocas, Mar. 1996		Potentially Eligible	Prehistoric	Fort Knox, DPW	UL
Hardin	15Hd0560	Colesburg	No report, Schenian and Mocas, Mar. 1996		Potentially Eligible	Both	Fort Knox, DPW	UL
Hardin	15Hd0561	Colesburg	No report, Schenian and Mocas, April 1996		Potentially Eligible	Prehistoric	Fort Knox, DPW	UL
Hardin	15Hd0562	Colesburg	No report, Schenian and Mocas, Mar. 1996		Not Assessed	Historic	Fort Knox, DPW	UL
Hardin	15Hd0563	Colesburg	No report, Schenian and Mocas, April 1996		Potentially Eligible	Prehistoric	Fort Knox, DPW	UL
Hardin	15Hd0564	Colesburg	No report, Schenian and Mocas, April 1996		Potentially Eligible	Both	Fort Knox, DPW	UL
Hardin	15Hd0565	Colesburg	No report, Schenian and Mocas, May 1996		Potentially Eligible	Prehistoric	Fort Knox, DPW	UL
Hardin	15Hd0566	Colesburg	No report, Schenian and Mocas, April 1996		Not Eligible	Prehistoric	Fort Knox, DPW	UL
Hardin	15Hd0567	Colesburg	No report, Schenian and Mocas, April 1996		Not Eligible	Prehistoric	Fort Knox, DPW	UL

Hardin	15Hd0568	Colesburg	No report, Schenian and Mocas, April 1996		Potentially Eligible	Historic	Fort Knox, DPW	UL
Hardin	15Hd0569	Colesburg	No report, Schenian and Mocas, April 1996		Not Assessed	Prehistoric	Fort Knox, DPW	UL
Hardin	15Hd0570	Colesburg	No report, Schenian and Mocas, April 1996		Potentially Eligible	Prehistoric	Fort Knox, DPW	UL
Hardin	15Hd0571	Colesburg	No report, Schenian and Mocas, April 1996		Not Eligible	Both	Fort Knox, DPW	UL
Hardin	15Hd0572	Colesburg	No report, Schenian and Mocas, April 1996		Not Eligible	Both	Fort Knox, DPW	UL
Hardin	15Hd0573	Colesburg	No report, Schenian and Mocas, April 1996		Potentially Eligible	Both	Fort Knox, DPW	UL
Hardin	15Hd0574	Colesburg	No report, Schenian and Mocas, April 1996		Potentially Eligible	Historic	Fort Knox, DPW	UL
Hardin	15Hd0575	Colesburg	No report, Schenian and Mocas, April 1996		Not Assessed	Prehistoric	Fort Knox, DPW	UL
Hardin	15Hd0585	Fort Knox	Schenian, April 1997		Not Eligible	Both	Fort Knox, DPW	UL
Hardin	15Hd0586	Vine Grove	Schenian, April 1997		Not Eligible	Prehistoric	Fort Knox, DPW	UL
Hardin	15Hd0587	Vine Grove	Schenian, April 1997		Not Eligible	Prehistoric	Fort Knox, DPW	UL
Hardin	15Hd0588	Vine Grove	Schenian, April 1997		Not Eligible	Prehistoric	Fort Knox, DPW	UL
Hardin	15Hd0589	Colesburg	Schenian, Dec. 1999	Schenian, April 1997	Potentially Eligible	Prehistoric	Fort Knox, DPW	UL
Hardin	15Hd0590	Colesburg	Schenian, Dec. 1999	Schenian, April 1997	Potentially Eligible	Prehistoric	Fort Knox, DPW	UL
Hardin	15Hd0592	Fort Knox	Schenian, April 1997		Potentially Eligible	Historic	Fort Knox, DPW	UL
Hardin	15Hd0593	Fort Knox	Schenian, April 1997		Potentially Eligible	Historic	Fort Knox, DPW	UL
Hardin	15Hd0594	Colesburg	Schenian, April 1997		Potentially Eligible	Both	Fort Knox, DPW	UL
Hardin	15Hd0595	Colesburg	Schenian, April 1997		Potentially Eligible	Prehistoric	Fort Knox, DPW	UL
Hardin	15Hd0596	Colesburg	Schenian, April 1997		Potentially Eligible	Prehistoric	Fort Knox, DPW	UL
Hardin	15Hd0597	Colesburg	Schenian, April 1997		Potentially Eligible	Both	Fort Knox, DPW	UL
Hardin	15Hd0598	Colesburg	Schenian, April 1997		Not Eligible	Prehistoric	Fort Knox, DPW	UL
Hardin	15Hd0599	Colesburg	Schenian, April 1997		Not Eligible	Prehistoric	Fort Knox, DPW	UL

Hardin	15Hd0600	Fort Knox	Schenian, April 1997		Potentially Eligible	Prehistoric	Fort Knox, DPW	UL
Hardin	15Hd0601	Fort Knox	Schenian, April 1997		Not Eligible	Prehistoric	Fort Knox, DPW	UL
Hardin	15Hd0602	Fort Knox	Schenian, April 1997		Potentially Eligible	Prehistoric	Fort Knox, DPW	UL
Hardin	15Hd0604	Colesburg	Schenian, July 1998		Not Eligible	Prehistoric	Fort Knox, DPW	UL
Hardin	15Hd0605	Colesburg	Schenian, July 1998		Not Eligible	Prehistoric	Fort Knox, DPW	UL
Hardin	15Hd0606	Fort Knox	Schenian, July 1998		Potentially Eligible	Historic	Fort Knox, DPW	UL
Hardin	15Hd0607	Vine Grove	No report, Schenian, Sept. 1997		Potentially Eligible	Prehistoric	Fort Knox, DPW	UL
Hardin	15Hd0608	Vine Grove	No report, Schenian, Sept. 1997		Not Eligible	Prehistoric	Fort Knox, DPW	UL
Hardin	15Hd0609	Vine Grove	No report, Schenian, Sept. 1997		Not Eligible	Prehistoric	Fort Knox, DPW	UL
Hardin	15Hd0610	Vine Grove	No report, Schenian, Sept. 1997		Potentially Eligible	Prehistoric	Fort Knox, DPW	UL
Hardin	15Hd0611	Vine Grove	No report, Schenian, Sept. 1997		Potentially Eligible	Prehistoric	Fort Knox, DPW	UL
Hardin	15Hd0612	Vine Grove	No report, Schenian, Sept. 1997		Not Eligible	Prehistoric	Fort Knox, DPW	UL
Hardin	15Hd0613	Vine Grove	No report, Schenian, Sept. 1997		Potentially Eligible	Prehistoric	Fort Knox, DPW	UL
Hardin	15Hd0616	Vine Grove	Schenian, Dec. 1999		Potentially Eligible	Historic	Fort Knox, DPW	UL
Hardin	15Hd0617	Fort Knox	No report, Schenian, Feb. 1999		Potentially Eligible	Historic	Fort Knox, DPW	UL
Hardin	15Hd0618	Fort Knox	No report, Schenian, May 1999		Potentially Eligible	Both	Fort Knox, DPW	UL
Hardin	15Hd0622	Vine Grove	Richardson, Feb. 2001		Not Eligible	Historic	Fort Knox, DBOS	No artifacts
Hardin	15Hd0623	Vine Grove	Richardson, Feb. 2001		Not Eligible	Historic	Fort Knox, DBOS	No artifacts
Hardin	15Hd0629	Vine Grove	Pritchard and Picklesimer 2004		Potentially Eligible	Both	Gray & Pape, Inc.	UL
Hardin	15Hd0630	Vine Grove	Pritchard, Meyers, and Bowden 2005	Pritchard and Picklesimer 2004	Potentially Eligible	Prehistoric	Gray & Pape, Inc.	UL
Hardin	15Hd0641	Vine Grove	Pritchard, Pritchard, and Fugate, Oct. 2003		Not Eligible	Historic	Gray & Pape, Inc.	UL
Hardin	15Hd0642	Vine Grove	Pritchard, Pritchard, and Fugate, Oct. 2003		Not Eligible	Historic	Gray & Pape, Inc.	UL

Hardin	15Hd0643	Vine Grove	Pritchard, Pritchard, and Fugate, Oct. 2003		Potentially Eligible	Historic	Gray & Pape, Inc.	UL
Hardin	15Hd0644	Vine Grove	Pritchard, Pritchard, and Fugate, Oct. 2003		Not Eligible	Both	Gray & Pape, Inc.	UL
Hardin	15Hd0645	Vine Grove	Pritchard, Pritchard, and Fugate, Oct. 2003		Potentially Eligible	Historic	Gray & Pape, Inc.	UL
Hardin	15Hd0646	Vine Grove	Pritchard, Pritchard, and Fugate, Oct. 2003		Not Eligible	Historic	Gray & Pape, Inc.	UL
Hardin	15Hd0647	Vine Grove	Pritchard, Pritchard, and Fugate, Oct. 2003		Not Eligible	Historic	Gray & Pape, Inc.	UL
Hardin	15Hd0648	Vine Grove	Pritchard, Pritchard, and Fugate, Oct. 2003		Not Eligible	Historic	Gray & Pape, Inc.	UL
Hardin	15Hd0649	Vine Grove	Pritchard, Pritchard, and Fugate, Oct. 2003		Not Eligible	Historic	Gray & Pape, Inc.	UL
Hardin	15Hd0650	Vine Grove	Pritchard, Pritchard, and Fugate, Oct. 2003		Not Eligible	Prehistoric	Gray & Pape, Inc.	UL
Hardin	15Hd0651	Vine Grove	Pritchard, Pritchard, and Fugate, Oct. 2003		Not Eligible	Prehistoric	Gray & Pape, Inc.	UL
Hardin	15Hd0652	Fort Knox	Pritchard, Pritchard, and Fugate, Oct. 2003		Not Eligible	Both	Gray & Pape, Inc.	UL
Hardin	15Hd0653	Fort Knox	Pritchard, Pritchard, and Fugate, Oct. 2003		Not Eligible	Historic	Gray & Pape, Inc.	UL
Hardin	15Hd0654	Fort Knox	Pritchard, Pritchard, and Fugate, Oct. 2003		Not Eligible	Both	Gray & Pape, Inc.	UL
Hardin	15Hd0655	Vine Grove	Pritchard, Pritchard, and Fugate, Oct. 2003		Not Eligible	Both	Gray & Pape, Inc.	UL
Hardin	15Hd0656	Vine Grove	Pritchard, Pritchard, and Fugate, Oct. 2003		Not Eligible	Prehistoric	Gray & Pape, Inc.	UL
Hardin	15Hd0657	Fort Knox	Pritchard, Pritchard, and Fugate, Oct. 2003		Not Eligible	Both	Gray & Pape, Inc.	UL
Hardin	15Hd0659	Fort Knox	Pritchard, Meyers, and Bowden 2005		Not Eligible	Prehistoric	Gray & Pape, Inc.	UL

Hardin	15Hd0660	Colesburg	Pritchard, Meyers, and Bowden 2005		Not Eligible	Prehistoric	Gray & Pape, Inc.	UL
Hardin	15Hd0661	Fort Knox	Pritchard, Meyers, and Bowden 2005		Not Eligible	Both	Gray & Pape, Inc.	UL
Hardin	15Hd0662	Colesburg	Pritchard, Meyers, and Bowden 2005		Not Eligible	Historic	Gray & Pape, Inc.	UL
Hardin	15Hd0663	Colesburg	Pritchard, Meyers, and Bowden 2005		Not Eligible	Prehistoric	Gray & Pape, Inc.	UL
Hardin	15Hd0664	Fort Knox	Pritchard, Pritchard, Meyers, and Bowden 2004		Not Eligible	Historic	Gray & Pape, Inc.	UL
Hardin	15Hd0665	Fort Knox	Pritchard, Pritchard, Meyers, and Bowden 2004		Not Eligible	Historic	Gray & Pape, Inc.	UL
Hardin	15Hd0666	Fort Knox	Pritchard, Pritchard, Meyers, and Bowden 2004		Not Eligible	Historic	Gray & Pape, Inc.	UL
Hardin	15Hd0667	Fort Knox	Pritchard, Pritchard, Meyers, and Bowden 2004		Not Eligible	Historic	Gray & Pape, Inc.	UL
Hardin	15Hd0668	Fort Knox	Pritchard, Pritchard, Meyers, and Bowden 2004		Not Eligible	Historic	Gray & Pape, Inc.	UL
Hardin	15Hd0669	Fort Knox	Pritchard, Pritchard, Meyers, and Bowden 2004		Not Eligible	Historic	Gray & Pape, Inc.	UL
Hardin	15Hd0670	Fort Knox	Pritchard, Pritchard, Meyers, and Bowden 2004		Not Eligible	Historic	Gray & Pape, Inc.	UL
Hardin	15Hd0671	Fort Knox	Pritchard, Pritchard, Meyers, and Bowden 2004		Not Eligible	Historic	Gray & Pape, Inc.	UL
Hardin	15Hd0672	Fort Knox	Pritchard, Pritchard, Meyers, and Bowden 2004		Potentially Eligible	Historic	Gray & Pape, Inc.	UL
Hardin	15Hd0673	Fort Knox	Pritchard, Pritchard, Meyers, and		Not Eligible	Historic	Gray & Pape, Inc.	UL

			Bowden 2004					
Hardin	15Hd0674	Fort Knox	Pritchard, Pritchard, Meyers, and Bowden 2004		Not Eligible	Prehistoric	Gray & Pape, Inc.	UL
Hardin	15Hd0675	Fort Knox	Pritchard, Pritchard, Meyers, and Bowden 2004		Not Eligible	Both	Gray & Pape, Inc.	UL
Hardin	15Hd0676	Fort Knox	Pritchard, Pritchard, Meyers, and Bowden 2004		Not Eligible	Prehistoric	Gray & Pape, Inc.	UL
Hardin	15Hd0677	Fort Knox	Pritchard, Pritchard, Meyers, and Bowden 2004		Not Eligible	Prehistoric	Gray & Pape, Inc.	UL
Hardin	15Hd0678	Fort Knox	Pritchard, Pritchard, Meyers, and Bowden 2004		Not Eligible	Prehistoric	Gray & Pape, Inc.	UL
Hardin	15Hd0679	Fort Knox	Pritchard, Pritchard, Meyers, and Bowden 2004		Not Eligible	Prehistoric	Gray & Pape, Inc.	UL
Hardin	15Hd0680	Fort Knox	Pritchard, Pritchard, Meyers, and Bowden 2004		Not Eligible	Prehistoric	Gray & Pape, Inc.	UL
Hardin	15Hd0681	Fort Knox	Pritchard, Pritchard, Meyers, and Bowden 2004		Not Eligible	Prehistoric	Gray & Pape, Inc.	UL
Hardin	15Hd0682	Fort Knox	Pritchard, Pritchard, Meyers, and Bowden 2004		Not Eligible	Both	Gray & Pape, Inc.	UL
Hardin	15Hd0683	Fort Knox	Pritchard, Pritchard, Meyers, and Bowden 2004		Not Eligible	Both	Gray & Pape, Inc.	UL
Hardin	15Hd0684	Fort Knox	Pritchard, Pritchard, Meyers, and Bowden 2004		Not Eligible	Historic	Gray & Pape, Inc.	UL
Hardin	15Hd0685	Fort Knox	Pritchard 2005		Not Eligible	Prehistoric	Brockington and Associates, Inc.	UK

Hardin	15Hd0687	Fort Knox	Cruciotti, Saatkamp, and Kaplan 2006		Not Eligible	Both	Panamerican Consultants, Inc.	UK
Hardin	15Hd0688	Fort Knox	Cruciotti, Saatkamp, and Kaplan 2006		Not Eligible	Historic	Panamerican Consultants, Inc.	UK
Meade	15Md0010	Rock Haven	Schenian, Aug. 1997	Funkhouser and Webb 1932	Potentially Eligible	Prehistoric	Fort Knox, DPW	UL
Meade	15Md0011	Rock Haven	Mueller, April 1991	Funkhouser and Webb 1932?	Potentially Eligible	Both	Murray State University	UL
Meade	15Md0130	Rock Haven	O'Malley et al. 1980		Not Assessed	Both	University of Kentucky	UK/UL
Meade	15Md0131	Rock Haven	O'Malley et al. 1980		Not Eligible	Historic	University of Kentucky	UK
Meade	15Md0132	Rock Haven	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Meade	15Md0133	Rock Haven	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Meade	15Md0134	Rock Haven	O'Malley et al. 1980		Not Eligible	Historic	University of Kentucky	UK
Meade	15Md0135	Rock Haven	O'Malley et al. 1980		Not Eligible	Historic	University of Kentucky	UK
Meade	15Md0136	Rock Haven	O'Malley et al. 1980		Not Eligible	Historic	University of Kentucky	UK
Meade	15Md0137	Rock Haven	O'Malley et al. 1980		Not Eligible	Prehistoric	University of Kentucky	UK
Meade	15Md0138	Flahery	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Meade	15Md0139	Flahery	O'Malley et al. 1980		Not Eligible	Prehistoric	University of Kentucky	UK
Meade	15Md0140	Vine Grove	Schenian and Mocas, June 1992	O'Malley et al. 1980	Not Eligible	Prehistoric	Murray State University	UK
Meade	15Md0141	Flahery	O'Malley et al. 1980		Not Eligible	Prehistoric	University of Kentucky	UK
Meade	15Md0142	Fort Knox	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Meade	15Md0143	Vine Grove	Schenian and Mocas, Dec. 1993	O'Malley et al. 1980	Not Eligible	Both	Fort Knox, DPW	UK/UL
Meade	15Md0144	Rock Haven	O'Malley et al. 1980		Not Eligible	Prehistoric	University of Kentucky	UK
Meade	15Md0145	Rock Haven	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Meade	15Md0146	Flahery	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Meade	15Md0147	Rock Haven	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Meade	15Md0148	Flahery	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Meade	15Md0149	Fort Knox	O'Malley et al. 1980		Not Eligible	Prehistoric	University of Kentucky	UK

Meade	15Md0150	Fort Knox	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Meade	15Md0151	Rock Haven	O'Malley et al. 1980		Not Assessed	Historic	University of Kentucky	UK
Meade	15Md0152	Rock Haven	Ruple 1992	O'Malley et al. 1980 and Mueller 1991	Not Eligible	Both	Fort Knox, DPW	UK/UL
Meade	15Md0153	Rock Haven	Mocas and Schenian, Nov. 1996	O'Malley et al. 1980 and Ruple 1992	Potentially Eligible	Prehistoric	Fort Knox, DPW	UK/UL
Meade	15Md0154	Rock Haven	Schenian and Mocas, Dec. 1993	O'Malley et al. 1980	Not Eligible	Both	Fort Knox, DPW	UK/UL
Meade	15Md0155	Rock Haven	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Meade	15Md0156	Fort Knox	O'Malley et al. 1980		Not Eligible	Prehistoric	University of Kentucky	UK
Meade	15Md0157	Rock Haven	O'Malley et al. 1980		Not Eligible	Prehistoric	University of Kentucky	UK
Meade	15Md0158	Rock Haven	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Meade	15Md0159	Rock Haven	Mueller, April 1991	O'Malley et al. 1980	Not Eligible	Prehistoric	Murray State University	UK/UL
Meade	15Md0160	Rock Haven	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Meade	15Md0161	Fort Knox	O'Malley et al. 1980		Not Eligible	Prehistoric	University of Kentucky	UK
Meade	15Md0162	Fort Knox	O'Malley et al. 1980		Not Assessed	Both	University of Kentucky	UK
Meade	15Md0163	Vine Grove	Schenian and Mocas, Dec. 1993	O'Malley et al. 1980	Not Eligible	Prehistoric	Fort Knox, DPW	UK/UL
Meade	15Md0164	Rock Haven	O'Malley et al. 1980		Potentially Eligible	Historic	University of Kentucky	UK
Meade	15Md0165	Rock Haven	O'Malley et al. 1980		Not Eligible	Historic	University of Kentucky	UK
Meade	15Md0166	Fort Knox	O'Malley et al. 1980		Not Eligible	Prehistoric	University of Kentucky	UK
Meade	15Md0167	Rock Haven	Pritchard 2005	O'Malley et al. 1980	Not Eligible	Prehistoric	University of Kentucky	UK
Meade	15Md0168	Fort Knox	O'Malley et al. 1980		Not Assessed	Both	University of Kentucky	UK
Meade	15Md0169	Fort Knox	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Meade	15Md0170	Fort Knox	O'Malley et al. 1980		Not Assessed	Historic	University of Kentucky	UK
Meade	15Md0171	Rock Haven	O'Malley et al. 1980		Not Eligible	Prehistoric	University of Kentucky	UK

Meade	15Md0172	Rock Haven	O'Malley et al. 1980		Not Assessed	Both	University of Kentucky	UK
Meade	15Md0173	Rock Haven	O'Malley et al. 1980		Not Eligible	Prehistoric	University of Kentucky	UK
Meade	15Md0174	Rock Haven	O'Malley et al. 1980		Not Eligible	Prehistoric	University of Kentucky	UK
Meade	15Md0175	Rock Haven	Schenian and Mocas, Dec. 1993	O'Malley et al. 1980	Not Eligible	Prehistoric	Fort Knox, DPW	UK/UL
Meade	15Md0176	Rock Haven	Webb and Brockington, Nov. 1986	O'Malley et al. 1980	Potentially Eligible	Historic	Garrow and Associates, Inc.	UK
Meade	15Md0177	Rock Haven	O'Malley et al. 1980		Not Eligible	Historic	University of Kentucky	UK
Meade	15Md0178	Rock Haven	Schenian and Mocas, July 1996	O'Malley et al. 1980	Not Eligible	Prehistoric	Fort Knox, DPW	UK
Meade	15Md0179	Rock Haven	Schenian and Mocas, July 1996	O'Malley et al. 1980	Not Eligible	Prehistoric	Fort Knox, DPW	UK
Meade	15Md0180	Rock Haven	Schenian and Mocas, July 1996	O'Malley et al. 1980	Not Eligible	Prehistoric	Fort Knox, DPW	UK
Meade	15Md0181	Rock Haven	O'Malley et al. 1980		Not Eligible	Both	University of Kentucky	UK
Meade	15Md0182	Rock Haven	Wheaton 1987	O'Malley et al. 1980 and Webb and Brockington 1989	Not Eligible	Both	Garrow and Associates, Inc.	UK
Meade	15Md0183	Rock Haven	Wheaton 1987	O'Malley et al. 1980 and Webb and Brockington 1989	Not Eligible	Prehistoric	Garrow and Associates, Inc.	UK
Meade	15Md0184	Rock Haven	Schenian and Mocas, July 1996	O'Malley et al. 1980	Potentially Eligible	Historic	Fort Knox, DPW	UK
Meade	15Md0185	Rock Haven	O'Malley et al. 1980		Potentially Eligible	Historic	University of Kentucky	UK
Meade	15Md0186	Rock Haven	O'Malley et al. 1980		Not Eligible	Prehistoric	University of Kentucky	UK
Meade	15Md0187	Rock Haven	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Meade	15Md0188	Rock Haven	Schenian and Mocas, Sept. 1996	O'Malley et al. 1980	Not Assessed	Prehistoric	Fort Knox, DPW	UK
Meade	15Md0189	Rock Haven	Schenian and Mocas, Sept. 1996	O'Malley et al. 1980	Not Eligible	Prehistoric	Fort Knox, DPW	UK
Meade	15Md0190	Rock Haven	Schenian and Mocas, Sept. 1996	O'Malley et al. 1980	Not Eligible	Prehistoric	Fort Knox, DPW	UK/UL
Meade	15Md0191	Rock Haven	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK

Meade	15Md0192	Rock Haven	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Meade	15Md0193	Rock Haven	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Meade	15Md0194	Rock Haven	Schenian and Mocas, Sept. 1996	O'Malley et al. 1980	Potentially Eligible	Prehistoric	Fort Knox, DPW	UK
Meade	15Md0195	Rock Haven	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Meade	15Md0196	Rock Haven	Schenian and Mocas, Sept. 1996	O'Malley et al. 1980	Potentially Eligible	Prehistoric	Fort Knox, DPW	UK/UL
Meade	15Md0197	Rock Haven	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Meade	15Md0198	Rock Haven	Schenian and Mocas, Sept. 1996	O'Malley et al. 1980	Not Eligible	Both	Fort Knox, DPW	UK/UL
Meade	15Md0199	Rock Haven	Schenian and Mocas, Sept. 1996	O'Malley et al. 1980	Not Assessed	Prehistoric	Fort Knox, DPW	UK
Meade	15Md0216	Rock Haven	Schenian and Mocas, Sept. 1996	O'Malley et al. 1980	Not Assessed	Prehistoric	Fort Knox, DPW	UK
Meade	15Md0217	Rock Haven	Schenian and Mocas, Sept. 1996	O'Malley et al. 1980	Not Eligible	Prehistoric	Fort Knox, DPW	UK/UL
Meade	15Md0218	Rock Haven	Schenian and Mocas, Sept. 1996	O'Malley et al. 1980	Not Eligible	Both	Fort Knox, DPW	UK/UL
Meade	15Md0219	Rock Haven	O'Malley et al. 1980		Not Eligible	Historic	Fort Knox, DPW	UK
Meade	15Md0220	Rock Haven	Schenian and Mocas, Sept. 1996	O'Malley et al. 1980	Not Eligible	Historic	Fort Knox, DPW	UK
Meade	15Md0221	Rock Haven	Schenian and Mocas, Sept. 1996	O'Malley et al. 1980	Potentially Eligible	Prehistoric	Fort Knox, DPW	UK/UL
Meade	15Md0222	Rock Haven	Schenian and Mocas, Sept. 1996	O'Malley et al. 1980	Potentially Eligible	Prehistoric	Fort Knox, DPW	UK/UL
Meade	15Md0223	Rock Haven	O'Malley et al. 1980		Not Assessed	Both	University of Kentucky	UK
Meade	15Md0224	Rock Haven	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Meade	15Md0225	Rock Haven	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Meade	15Md0226	Rock Haven	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Meade	15Md0227	Rock Haven	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Meade	15Md0228	Rock Haven	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Meade	15Md0229	Rock Haven	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Meade	15Md0230	Rock Haven	O'Malley et al. 1980		Not Eligible	Prehistoric	University of Kentucky	UK

Meade	15Md0231	Rock Haven	Schenian and Mocas, Sept. 1996	O'Malley et al. 1980	Potentially Eligible	Prehistoric	Fort Knox, DPW	UK/UL
Meade	15Md0232	Rock Haven	O'Malley et al. 1980		Not Eligible	Prehistoric	University of Kentucky	UK
Meade	15Md0233	Rock Haven	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Meade	15Md0234	Fort Knox	O'Malley et al. 1980		Not Eligible	Historic	University of Kentucky	UK
Meade	15Md0235	Rock Haven	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Meade	15Md0236	Rock Haven	O'Malley et al. 1980		Not Assessed	Both	University of Kentucky	UK
Meade	15Md0237	Rock Haven	Schenian and Mocas, Sept. 1996	O'Malley et al. 1980	Potentially Eligible	Prehistoric	Fort Knox, DPW	UK/UL
Meade	15Md0238	Rock Haven	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Meade	15Md0239	Rock Haven	O'Malley et al. 1980		Not Eligible	Historic	University of Kentucky	UK
Meade	15Md0240	Rock Haven	O'Malley et al. 1980		Not Assessed	Undetermined	University of Kentucky	UK
Meade	15Md0241	Rock Haven	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Meade	15Md0242	Rock Haven	O'Malley et al. 1980		Not Assessed	Prehistoric	University of Kentucky	UK
Meade	15Md0306	Fort Knox	Webb and Brockington, Nov. 1986		Not Eligible	Historic	Garrow and Associates, Inc.	UK
Meade	15Md0307	Rock Haven	Wheaton 1987	Webb and Brockington, Nov. 1986	Potentially Eligible	Historic	Garrow and Associates, Inc.	UK
Meade	15Md0309	Rock Haven	Webb and Brockington, Nov. 1986		Not Eligible	Prehistoric	Garrow and Associates, Inc.	UK
Meade	15Md0322	Rock Haven	Ruple, Spet. 1992	Mueller 1991	Not Eligible	Prehistoric	Fort Knox, DPW	UL
Meade	15Md0323	Rock Haven	Mueller 1991		Not Eligible	Historic	Murray State University	UL
Meade	15Md0324	Rock Haven	Mueller 1991		Not Eligible	Prehistoric	Murray State University	UL
Meade	15Md0325	Rock Haven	Mueller 1991		Potentially Eligible	Historic	Murray State University	UL
Meade	15Md0326	Rock Haven	Schenian and Mocas, June 1992		Potentially Eligible	Historic	Murray State University	UL
Meade	15Md0335	Fort Knox	Ruple, May 1993		Not Eligible	Historic	Fort Knox, DPW	UK
Meade	15Md0336	Rock Haven	Schenian and Mocas, Dec. 1993		Not Eligible	Both	Fort Knox, DPW	UL

Meade	15Md0337	Rock Haven	Schenian and Mocas, Dec. 1993		Not Eligible	Historic	Fort Knox, DPW	UL
Meade	15Md0338	Rock Haven	Schenian and Mocas, Nov. 1996	Schenian and Mocas, Dec. 1993	Potentially Eligible	Prehistoric	Fort Knox, DPW	UL
Meade	15Md0339	Rock Haven	Schenian and Mocas, Nov. 1996	Schenian and Mocas, Dec. 1993	Potentially Eligible	Prehistoric	Fort Knox, DPW	UL
Meade	15Md0340	Vine Grove	Schenian and Mocas, Dec. 1993		Not Eligible	Prehistoric	Fort Knox, DPW	UL
Meade	15Md0341	Flahery	Schenian and Mocas, Dec. 1993		Not Eligible	Both	Fort Knox, DPW	UL
Meade	15Md0342	Rock Haven	Schenian and Mocas, Dec. 1993		Not Eligible	Both	Fort Knox, DPW	UL
Meade	15Md0345	Rock Haven	No report, Schenian and Mocas, June 1994		Not Assessed	Prehistoric	Fort Knox, DPW	UL
Meade	15Md0346	Rock Haven	No report, Schenian and Mocas, June 1994		Not Assessed	Prehistoric	Fort Knox, DPW	UL
Meade	15Md0347	Rock Haven	Schenian and Mocas, Aug. 1994		Not Eligible	Prehistoric	Fort Knox, DPW	UL
Meade	15Md0348	Rock Haven	Schenian and Mocas, Aug. 1994		Not Eligible	Prehistoric	Fort Knox, DPW	UL
Meade	15Md0349	Rock Haven	Schenian and Mocas, Dec. 1996	Schenian and Mocas, Aug. 1994	Potentially Eligible	Prehistoric	Fort Knox, DPW	UL
Meade	15Md0350	Rock Haven	Schenian and Mocas, Aug. 1994		Not Eligible	Prehistoric	Fort Knox, DPW	UL
Meade	15Md0351	Fort Knox	Schenian and Mocas, Dec. 1996	Schenian and Mocas, Aug. 1994	Potentially Eligible	Prehistoric	Fort Knox, DPW	UL
Meade	15Md0352	Rock Haven	Schenian and Mocas, Aug. 1994		Not Eligible	Prehistoric	Fort Knox, DPW	UL
Meade	15Md0353	Rock Haven	Schenian and Mocas, Aug. 1994		Not Eligible	Prehistoric	Fort Knox, DPW	UL
Meade	15Md0354	Fort Knox	Schenian and Mocas, Aug. 1994		Not Eligible	Prehistoric	Fort Knox, DPW	UL
Meade	15Md0355	Rock Haven	Schenian and Mocas, Aug. 1994		Not Eligible	Prehistoric	Fort Knox, DPW	UL
Meade	15Md0356	Rock Haven	Schenian and Mocas, Aug. 1994		Not Eligible	Historic	Fort Knox, DPW	UL
Meade	15Md0357	Rock Haven	Schenian and Mocas, Aug. 1994		Not Eligible	Prehistoric	Fort Knox, DPW	UL
Meade	15Md0358	Rock Haven	Schenian and Mocas, Aug. 1994		Not Eligible	Prehistoric	Fort Knox, DPW	UL
Meade	15Md0359	Rock Haven	Schenian and Mocas, Aug. 1994		Not Eligible	Prehistoric	Fort Knox, DPW	UL

Meade	15Md0360	Rock Haven	Schenian and Mocas, Aug. 1994		Not Eligible	Prehistoric	Fort Knox, DPW	UL
Meade	15Md0361	Rock Haven	Schenian and Mocas, Aug. 1994		Not Eligible	Prehistoric	Fort Knox, DPW	UL
Meade	15Md0362	Rock Haven	Schenian and Mocas, July 1996	Schenian and Mocas, Aug. 1994	Not Eligible	Both	Fort Knox, DPW	UL
Meade	15Md0363	Rock Haven	Schenian and Mocas, Aug. 1994		Not Eligible	Prehistoric	Fort Knox, DPW	UL
Meade	15Md0364	Rock Haven	Schenian and Mocas, Aug. 1994		Not Eligible	Historic	Fort Knox, DPW	UL
Meade	15Md0365	Rock Haven	Schenian and Mocas, Aug. 1994		Not Eligible	Prehistoric	Fort Knox, DPW	UL
Meade	15Md0366	Rock Haven	Schenian and Mocas, Aug. 1994		Not Eligible	Prehistoric	Fort Knox, DPW	UL
Meade	15Md0367	Rock Haven	Schenian and Mocas, Aug. 1994		Not Eligible	Historic	Fort Knox, DPW	UL
Meade	15Md0368	Rock Haven	Schenian and Mocas, Aug. 1994		Not Eligible	Prehistoric	Fort Knox, DPW	UL
Meade	15Md0369	Rock Haven	Schenian and Mocas, Aug. 1994		Not Eligible	Prehistoric	Fort Knox, DPW	UL
Meade	15Md0370	Rock Haven	Schenian and Mocas, Aug. 1994		Not Eligible	Historic	Fort Knox, DPW	UL
Meade	15Md0371	Rock Haven	Schenian and Mocas, Aug. 1994		Not Eligible	Both	Fort Knox, DPW	UL
Meade	15Md0372	Rock Haven	Schenian and Mocas, Aug. 1994		Not Eligible	Both	Fort Knox, DPW	UL
Meade	15Md0373	Rock Haven	Schenian and Mocas, Aug. 1994		Not Eligible	Prehistoric	Fort Knox, DPW	UL
Meade	15Md0374	Rock Haven	Schenian and Mocas, Aug. 1994		Not Eligible	Historic	Fort Knox, DPW	UL
Meade	15Md0375	Rock Haven	Schenian and Mocas, Dec. 1996	Schenian and Mocas, Aug. 1994	Potentially Eligible	Prehistoric	Fort Knox, DPW	UL
Meade	15Md0376	Rock Haven	Schenian and Mocas, Aug. 1994		Not Eligible	Prehistoric	Fort Knox, DPW	UL
Meade	15Md0377	Fort Knox	Schenian and Mocas, Nov. 1994		Not Eligible	Both	Fort Knox, DPW	UL
Meade	15Md0378	Rock Haven	Picklesimer and Baltz, Aug. 2003	Schenian and Mocas, Feb. 1996 and Schenian Dec. 1999. Some areas are not potentially eligible. Refer to reports.	Potentially Eligible	Historic	Gray & Pape, Inc.	UL

Meade	15Md0379	Rock Haven	Picklesimer and Baltz, Aug. 2003	Schenian and Mocas, Feb. 1996 and Schenian Dec. 1999.	Potentially Eligible	Prehistoric	Gray & Pape, Inc.	UL
Meade	15Md0380	Rock Haven	No report, Mocas, Siefring, and Schenian, July 1994		Not Assessed	Both	Fort Knox, DPW	UL
Meade	15Md0381	Rock Haven	No report, Mocas, Siefring, and Schenian, July 1994		Not Assessed	Prehistoric	Fort Knox, DPW	UL
Meade	15Md0382	Rock Haven	Schenian and Mocas, Oct. 1994		Not Eligible	Prehistoric	Fort Knox, DPW	UL
Meade	15Md0383	Rock Haven	Schenian and Mocas, July 1996		Not Eligible	Prehistoric	Fort Knox, DPW	UL
Meade	15Md0384	Rock Haven	Schenian and Mocas, July 1996		Not Eligible	Historic	Fort Knox, DPW	UL
Meade	15Md0385	Rock Haven	Schenian and Mocas, July 1996		Not Eligible	Prehistoric	Fort Knox, DPW	UL
Meade	15Md0386	Rock Haven	Schenian and Mocas, July 1996		Potentially Eligible	Both	Fort Knox, DPW	UL
Meade	15Md0387	Rock Haven	Schenian and Mocas, Sept. 1996		Not Eligible	Both	Fort Knox, DPW	UL
Meade	15Md0388	Rock Haven	Schenian and Mocas, Sept. 1996		Not Eligible	Prehistoric	Fort Knox, DPW	UL
Meade	15Md0389	Rock Haven	Schenian and Mocas, Sept. 1996		Not Eligible	Historic	Fort Knox, DPW	UL
Meade	15Md0390	Rock Haven	Schenian and Mocas, Sept. 1996		Not Eligible	Both	Fort Knox, DPW	UL
Meade	15Md0391	Rock Haven	Schenian and Mocas, Sept. 1996		Not Eligible	Both	Fort Knox, DPW	UL
Meade	15Md0392	Rock Haven	Schenian and Mocas, Sept. 1996		Potentially Eligible	Prehistoric	Fort Knox, DPW	UL
Meade	15Md0393	Rock Haven	Schenian and Mocas, Sept. 1996		Not Eligible	Prehistoric	Fort Knox, DPW	UL
Meade	15Md0394	Rock Haven	Schenian and Mocas, Sept. 1996		Not Eligible	Prehistoric	Fort Knox, DPW	UL
Meade	15Md0395	Rock Haven	Schenian and Mocas, Sept. 1996		Not Eligible	Prehistoric	Fort Knox, DPW	UL
Meade	15Md0396	Rock Haven	Schenian and Mocas, Sept. 1996		Not Eligible	Prehistoric	Fort Knox, DPW	UL

Meade	15Md0397	Rock Haven	Schenian and Mocas, Sept. 1996		Potentially Eligible	Both	Fort Knox, DPW	UL
Meade	15Md0398	Rock Haven	Schenian and Mocas, Sept. 1996		Not Eligible	Prehistoric	Fort Knox, DPW	UL
Meade	15Md0399	Rock Haven	Schenian and Mocas, Sept. 1996		Not Eligible	Both	Fort Knox, DPW	UL
Meade	15Md0400	Rock Haven	Schenian and Mocas, Sept. 1996		Not Eligible	Both	Fort Knox, DPW	UL
Meade	15Md0401	Rock Haven	Schenian and Mocas, Sept. 1996		Not Eligible	Prehistoric	Fort Knox, DPW	UL
Meade	15Md0402	Rock Haven	Schenian and Mocas, Sept. 1996		Potentially Eligible	Prehistoric	Fort Knox, DPW	UL
Meade	15Md0403	Rock Haven	Schenian and Mocas, Sept. 1996		Not Eligible	Prehistoric	Fort Knox, DPW	UL
Meade	15Md0404	Vine Grove	Schenian and Mocas, Sept. 1996		Not Eligible	Prehistoric	Fort Knox, DPW	UL
Meade	15Md0405	Vine Grove	Schenian and Mocas, Sept. 1996		Not Eligible	Prehistoric	Fort Knox, DPW	UL
Meade	15Md0406	Rock Haven	Schenian and Mocas, Sept. 1996		Not Eligible	Prehistoric	Fort Knox, DPW	UL
Meade	15Md0407	Rock Haven	Schenian and Mocas, Sept. 1996		Not Eligible	Prehistoric	Fort Knox, DPW	UL
Meade	15Md0408	Rock Haven	Schenian, Aug. 1997		Potentially Eligible	Historic	Fort Knox, DPW	UL
Meade	15Md0409	Rock Haven	Schenian and Mocas, Nov. 1996		Not Eligible	Prehistoric	Fort Knox, DPW	UL
Meade	15Md0410	Rock Haven	Schenian and Mocas, Nov. 1996		Potentially Eligible	Prehistoric	Fort Knox, DPW	UL
Meade	15Md0411	Rock Haven	Pritchard 2005	Schenian and Mocas, Nov. 1996	Not Eligible	Prehistoric	Fort Knox, DPW	UL
Meade	15Md0412	Rock Haven	Schenian and Mocas, Nov. 1996		Potentially Eligible	Prehistoric	Fort Knox, DPW	UL
Meade	15Md0413	Rock Haven	Pritchard 2005	Schenian and Mocas, Nov. 1996	Not Eligible	Prehistoric	Fort Knox, DPW	UL
Meade	15Md0414	Rock Haven	Schenian and Mocas, Nov. 1996		Potentially Eligible	Prehistoric	Fort Knox, DPW	UL
Meade	15Md0415	Rock Haven	Schenian and Mocas, Nov. 1996		Potentially Eligible	Prehistoric	Fort Knox, DPW	UL
Meade	15Md0416	Fort Knox	Schenian and Mocas, Nov. 1996		Not Eligible	Prehistoric	Fort Knox, DPW	UL
Meade	15Md0417	Fort Knox	Schenian and Mocas, Nov. 1996		Potentially Eligible	Prehistoric	Fort Knox, DPW	UL
Meade	15Md0418	Vine Grove	Schenian and Mocas, Nov. 1996		Potentially Eligible	Prehistoric	Fort Knox, DPW	UL

Meade	15Md0419	Vine Grove	Schenian and Mocas, Nov. 1996		Potentially Eligible	Both	Fort Knox, DPW	UL
Meade	15Md0420	Vine Grove	Schenian and Mocas, Nov. 1996		Potentially Eligible	Prehistoric	Fort Knox, DPW	UL
Meade	15Md0424	Rock Haven	Schenian, July 1998		Not Eligible	Historic	Fort Knox, DPW	UL
Meade	15Md0429	Rock Haven	Pritchard 2005	Schenian, Dec. 1999	Potentially Eligible	Historic	Fort Knox, DPW	UL
Meade	15Md0430	Fort Knox	Schenian, Dec. 1999		Potentially Eligible	Historic	Fort Knox, DPW	UL
Meade	15Md0453	Rock Haven	Pritchard and Picklesimer 2004		Not Eligible	Prehistoric	Gray & Pape, Inc.	UL
Meade	15Md0454	Rock Haven	Pritchard and Picklesimer 2004		Not Eligible	Prehistoric	Gray & Pape, Inc.	UL
Meade	15Md0455	Fort Knox	Pritchard and Picklesimer 2004		Potentially Eligible	Prehistoric	Gray & Pape, Inc.	UL
Meade	15Md0460	Rock Haven	Pritchard, Meyers, and Bowden 2005		Not Eligible	Prehistoric	Gray & Pape, Inc.	UL
Meade	15Md0464	Rock Haven	Pritchard 2005		Not Eligible	Historic	Brockington and Associates, Inc.	UK
Meade	15Md0465	Rock Haven	Pritchard 2005		Not Eligible	Prehistoric	Brockington and Associates, Inc.	UK

APPENDIX B CEMETERIES LIST

Cemetery Number	Cemetery Name	UTM NAD83 Northing	UTM NAD83 Easting	Number of Known Burials	Possible Total Burials	Cemetery Size (Acres)	Death Date Range	Comments
1	Wilkerson	4199884	590622	12		<1	1878-1905	
2	Muth	4198796	589246	5		<1	1895-1918	
3	Ray	4198487	590598	7		<1	1853-1899	
4	Davis	4198461	592503	3		<1	1854-1884	
5	Montgomery	4197588	589919	15	16	<0.5	1836-1880	Potentially Eligible
6	Bleakley/Hart	4196920	590029	35	41	<0.5	1851-1941	
7	Johnson	4196477	592931	5	25	<0.5	1873-1902	
8	Straney	4196620	594417	12	22	<0.5	1836-1922	
9	Zwicker	4197080	595826	1		<1	1886	
10	Burcham	4196721	598646	92		1~2	1829-1941	
11	Howlett	4195093	593740	1		<0.5	1904	
12	Calvin/Preston	4195227	594508	20		<1	1849-1917	
13	Calvin	4194501	595782	27		<1	1873-1918	
14	Cedar Grove	4194971	598487	7		1.6	1916-1941	
15	Brady	4194210	593439	17	28	<0.5	1865-1941	
16	Sutherland	4194157	592653	7	17	<0.5	1868-1906	
17	Jones	4194705	591400	41	46	<0.5	1860-present	
18	St. Patrick	4194482	590703	676	685	2.4	1816-present	Potentially Eligible
18	Post	4194419	590771	887		1.8		
19	Davis	4193667	593649	7	12	<0.5	1881-1936	
20	Gentry	4193597	597488	36		<1	1864-1902	
21	Phillips	4192882	598583	36		<1	1914-1941	
22	Cowley/Hays	4190977	594920	6		<1	1852-1882	
23	Long/Ritchie	4204127	594272	38		<1	1833-1909	
24	Douglas	4186799	600423	2		<1	1877-1885	

25	Thomas/ McCullum	4185436	600510	1		<1	1899	
26	Crandall	4197183	600318	22		0.3	1851- 1941	
27	Patterson/ Chapel	4191718	599990	43		1.36	1840- 1940	
28	Streible	4205000	585865	2		<1	1859- 1894	
29	Atcher	4187873	600235	18		<1	1815- 1877	
30	Sycamore	4192169	603277	9		<1		
31	Daugherty	4190463	605778	3		<1	1893- 1902	
32	Dawson/ Bolton	4190384	609426	31		<1	1863- 1928	
33	Howlett	4189569	607193	5		<1	1863- 1904	
34	Cedar Creek	4189116	602365	120		0.8	1857- 1967	
35	Williams	4188214	602347	3		<1	1820- 1826	
36	Hargan	4188636	604129	11		<1	1852- 1935	
37	Cedar Creek/ Wright	4186091	601333	6		1	?-1902	
38	Tarpley/ Stithon	4191594	592763	64	65	<0.5	1813- present	
39	Lincoln Memorial	4189598	596227	21		1	1830- 1899	
40	Bird	4187900	598911	Unknown		<1		Possibly destroyed
41	Shelton	4185585	596185	8		0.5	1864- 1881	
42	Gunning	4184621	596791	8		<1	1833- 1878	
43	Skinner							Moved off Post
44	Anderson	4204615	600366	2		<1	1869- 1899	
45	George Key							Moved off Post
46	Myers	4204547	603280	13		<1	1844- 1912	
47	Ridgeway	4203436	600919	27		0.5	1853- 1943	
48	Johnson	4203452	605728	3		<1	1862- 1881	
49	Froman	4202734	603726	37		<1	1856- 1917	

50	Chappell/ Allen	4202078	598992	76		1~2	1836- 1915	
51	Troutman	4201072	604957	8		<1	1856- 1899	
52	Joyce	4200582	606857	1		<1	1877	
53	Holsclaw	4199882	603374	2		<1	1871	
54	Congrove	4199444	602858	6		<1	1872- 1884	
55	Hardy	4197702	602738	6		<1	1869- 1904	
56	Pitts Point Catholic	4197421	603243	95		1~2	1872- 1938	
57	Froman	4197086	602832	3		<1	1861- 1892	
58	Pitts Point Protestant	4197046	603222	45		1~2	1858- 1943	
59	Wooldridge	4195909	600840	20		<1	1839- 1931	
60	Carr	4196056	601537	2		<1	1802- 1809	
61	Snellen	4196187	603864	12		<1	1865- 1921	
62	Suellen/ Snellen	4195982	604520	11		<1	1853- 1908	
63	Hays	4194648	602483	3		<1	1826- 1886	
64	Lee	4195068	604598	40		1	1842- 1912	
65	Glenn	4194897	605406	5		<1	1881- 1901	
66	Viers	4194745	607041	26		<1	1846- 1938	
67	Withers	4203058	587705	55		1~2	1843- 1997	
68	New Grahamton/ Peak	4195342	586122	239		2	1911- present	
69	Old Grahamton	4195334	585427	99		0.96	1846- 1935	
70	Fort Hill	4205194	593109	29		<1	1850- 1904	
71	Boone	4202494	588690	28		<1	1809- 1945	
72	McIntire/ Fletcher	4202091	589668	11		<1	1884- 1916	
73	Field	4202851	592993	17		<1	1828- 1897	
74	Pleasant View	4200568	592317	292		4	1852- 1924	

75	Withers	4199394	588061	6		<1	1837-1862	
76	Owens	4185373	597868	46		0.2	1818-1948	
77	Bogard	4192142	592878	91	94	<0.5	1820-1900	Potentially Eligible
78	Canby Hill/ Samuels	4196273	595826	25		<1	1863-1916	
79	Lee	4193437	609502	1		<1	1879	
80	Unnamed	4197654	590771	4		<1	1886-1888	
81	Villers	4197647	605670	1		<1	1860	
82	Unnamed	4198289	607209	Unknown		<1		Not Located
83	Unnamed	4190552	595606	8		<1		No headstones
84	Bowling	4190232	600916	Unknown		<1		Not Located
85	Lee	4189975	604719	7		<1	1839-1858	
86	Slack	4189365	605799	Unknown		<1		Not Located
87	French	4188717	600549	2		<1	1930	Destroyed?
88	French	4189289	599577	Unknown		<1		Destroyed?
89	Unnamed	4197219	585739	14		<1		No fence, fieldstones
90	Johnson	4206190	595426	6		<1	1892-1916	
91	Burbridge/ Unnamed			4		<1	1900-1906	Not on Fort Knox
92	Anderson	4198981	598188	3		<1	1873-1909	
93	Hays	4199258	599915	11		<1	1862-1907	
94	Pruitt	4193864	586659	2		<1	1870-1871	
95	Ormes	4205559	596482	1		<1	1904	
96	Higbee/ Peters	4199022	587526	3		<1		
97	Long/ Goldsmith	4203328	594529	22		<1	1895-1916	
98	Jones/ Pearson			20			1852-1917	Moved to Post Cemetery
99	Dorsey	4200241	594959	6		<1	1883-1892	Possibly destroyed
100	Unnamed	4192918	590546					Destroyed?
101	Unnamed	4192601	590679					Destroyed?

102	Unnamed	4202057	585799	8		<1		No headstones
103	Stewart	4204080	585472	2		<1	1940-1941	No headstones
104	Unnamed	4202439	585286	1		<1		No headstones
105	Smith	4198991	595129	6		<1	1856-1905	
106	Hiram Withers			11			1833-1903	Not on Fort Knox
107	Fort Hill			36		0.5	1861-1862	Not on Fort Knox
108	Davis	4200414	597464	4		<1	1888-1892	Not Located
109	Hern-Stone	4197767	597698	6		<1	1862-1901	
110	Stovall	4185512	603988	3		<1	1866-1879	
111	Harris	4199829	592996	6		<1	1895-1904	Not Located
112	Bishop	4201318	595362	4		<1	1885-1906	Not Located
113	Cook/Masters	4204195	586462	1		<1	1864	
114	Rawlings	4202437	597082	2		<1	1903-1904	
115	Stark	4189517	608047	1		<1	1885	
116	Lee/Giles	4194224	608165	11		<1	1875-1912	
117	Unnamed	4192082	589576	1		<1		No fence, fieldstones
118	Bryant	4195111	586622	2		<1	1870-1877	
119	Davis	4198354	594833	11		<1	1859-1914	Not Located
120	Garnettsville			Unknown		6		Not on Fort Knox
121	Unnamed			Unknown				Not Located
122	Grimes	4201034	589009	2		<1		

APPENDIX C ARCHAEOLOGICAL AND ARCHITECTURAL RESOURCES REPORTS OF INVESTIGATIONS

Archaeological and Architectural Resource Reports of Investigations

Date	Authors	Title	Company	Phase Type
28-Sep-85	Robert Toole and Helen Powell	Historic Resource Assessment Vine Grove and Radcliff Connector to I-65, Hardin County, Kentucky	Vaughn & Melton Consulting Engineers	Evaluation
29-May-92	Margo Waminski	Historical Assessment: Wilson Hall, Building 1338. Fort Knox, Kentucky	PEER Consultants, P.C.	Phase I
May. 1995	Katherine Grandine, Leo Hirrel, Deborah Cannan and Hampton Tucker	Inventory, Evaluation and Nomination of Military Installations: Fort Knox, Kentucky	R. Christopher Goodwin and Associates, Inc.	Phase I
18-Oct-02	Leah J. Konicki	Civilian Context for Blakely Hall 4248 Bullion Boulevard, US Army Armor Center and Fort Knox, Fort Knox, Kentucky	Gray & Pape, Inc.	Phase I
Jun. 2003	R. Criss Helmkamp and Matthew Rector	Hardin County, Resource No. 433, Swimming Pool Bath House, 1308 12th Armored Division Avenue, Fort Knox, Kentucky	Fort Knox Cultural Resources Staff	HABS/HAER Level 1
30-Sep-03	Leah J. Konicki	Phase I Architectural Investigations at the US Army Armor Center and Fort Knox, in Hardin and Meade Counties, Kentucky	Gray & Pape, Inc.	Phase I
Jan. 2004	R. Criss Helmkamp, Matthew D. Rector, and Jessica R. Evans	Architectural Survey of Buildings 5254, 5255, 9252, 9260, 9277, 9278, 9280, 9281, 9285, 9289, 9296, and 9272 at the U.S. Army Armor Center and Fort Knox, Kentucky	Fort Knox Cultural Resources Staff	Phase I
Feb. 2004	R. Criss Helmkamp, Matthew D. Rector, and Jessica R. Evans	Architectural Survey of Buildings 1320, 1391, 1392, 1393, and 1394 at the U.S. Army Armor Center and Fort Knox, Kentucky	Fort Knox Cultural Resources Staff	Phase I
April 2004	R. Criss Helmkamp, Matthew D. Rector, and Jessica R. Evans	Architectural Survey of Buildings 1487 and 2758 at the U.S. Army Armor Center and Fort Knox, Kentucky	Fort Knox Cultural Resources Staff	Phase I
June 2004	R. Criss Helmkamp, Matthew D. Rector, and Jessica R. Evans	Historic Library No. 2 Building 6648 Fort Knox, Kentucky	Fort Knox Cultural Resources Staff	HABS/HAER Level 1
June 2004	R. Criss Helmkamp, Matthew D. Rector, and Jessica R. Evans	Architectural Survey of Building 850 Gammon Field House	Fort Knox Cultural Resources Staff	Phase I

Sept. 2004	R. Criss Helmkamp, Matthew D. Rector, and Jessica R. Evans	Architectural Survey of Buildings 82, 130, 205, 430, 1124, 1137, 1414, and 9212 at the U.S. Army Armor Center and Fort Knox, Kentucky	Fort Knox Cultural Resources Staff	Phase I
Oct. 2004	R. Criss Helmkamp, Matthew D. Rector, and Jessica R. Evans	Architectural Survey of Buildings 1113, 5103, and 6099 at the U.S. Army Armor Center and Fort Knox, Kentucky	Fort Knox Cultural Resources Staff	Phase I
Nov. 2004	R. Criss Helmkamp, Matthew D. Rector, and Jessica R. Evans	Architectural Survey of Buildings 1049 and 6098	Fort Knox Cultural Resources Staff	Phase I
Dec. 2004	R. Criss Helmkamp, Matthew D. Rector, and Jessica R. Evans	Architectural Survey of Building 95 at the U.S. Army Armor Center and Fort Knox, Kentucky	Fort Knox Cultural Resources Staff	HABS/HAER Level 1
Jan. 2005	R. Criss Helmkamp, Jessica R. Evans, and Matthew D. Rector	NHPA Section 106 Documentation: Construction of Basic Training Barracks Complex and Demolition of Building 6763 (Hd545)	Fort Knox Cultural Resources Staff	Evaluation
Feb. 2005	R. Criss Helmkamp, Matthew D. Rector, and Jessica R. Evans	Architectural Survey of Buildings 6568, 6569, and 6570 at the U.S. Army Armor Center and Fort Knox in Hardin County, Kentucky	Fort Knox Cultural Resources Staff	Evaluation
Mar-05	R. Criss Helmkamp, Matthew D. Rector, and Jessica R. Evans	Architectural Survey of Building 4019	Fort Knox Cultural Resources Staff	Evaluation
Apr-05	R. Criss Helmkamp, Matthew D. Rector, and Jessica R. Evans	Window Replacement in Clarke and Johnson Housing Areas	Fort Knox Cultural Resources Staff	Reporting
Apr-05	R. Criss Helmkamp, Matthew D. Rector, and Jessica R. Evans	Repairs to Building 203	Fort Knox Cultural Resources Staff	Reporting
Sep-05	Sunny Stone and Adam Smith	Fort Knox Hammerhead Barracks Architectural Survey	US Army Corps of Engineers, Engineer Research and Development Center	Evaluation
Sep-05	R. Criss Helmkamp, Matthew D. Rector, and Jessica R. Evans	Architectural Survey of Buildings 6576 and 6577	Fort Knox Cultural Resources Staff	Evaluation
Sep-05	R. Criss Helmkamp, Matthew D. Rector, and Jessica R. Evans	Window Replacement in Chaffee Hall, Building 1101	Fort Knox Cultural Resources Staff	Reporting

Nov. 2005	R. Criss Helmkamp, Matthew D. Rector, and Jessica R. Evans	Project: Interior Modifications in Fire Station No. 1, Building 469 Creation of a 911 Dispatch Room.	Fort Knox Cultural Resources Staff	Reporting
Jan-06	Kelly Nolte and Stacey L. Griffin	Architectural Survey of 64 Buildings including National Register of Historic Places Determinations at U.S. Army Garrison Fort Knox, Fort Knox, Kentucky	Panamerican Consultants, Inc.	Evaluation
6-Feb	R. Criss Helmkamp, Matthew D. Rector, and Jessica R. Evans	Project: Cingular Wireless Lease to Water Tank 1191	Fort Knox Cultural Resources Staff	Reporting
6-Feb	R. Criss Helmkamp, Matthew D. Rector, and Jessica R. Evans	Project: Commanding General's Outdoor Fireplace and Grill	Fort Knox Cultural Resources Staff	Reporting
6-Feb	R. Criss Helmkamp, Matthew D. Rector, and Jessica R. Evans	Project: Handicap Accessible Ramp to Building 1001	Fort Knox Cultural Resources Staff	Reporting
6-Feb	R. Criss Helmkamp, Matthew D. Rector, and Jessica R. Evans	Architectural Survey of Building 469	Fort Knox Cultural Resources Staff	Reporting
12-Feb-06	Maurie Van Buren	Report of No Adverse Effect on Historic Resources Proposed Electric Utility Easement Fort Knox, Kentucky	Historic Preservation Consulting	Evaluation
6-Apr	R. Criss Helmkamp, Matthew D. Rector, and Jessica R. Evans	Renovations of Building 204	Fort Knox Cultural Resources Staff	Reporting
6-May	R. Criss Helmkamp, Matthew D. Rector, and Jessica R. Evans	Project: Smokestack Removal from Building 93	Fort Knox Cultural Resources Staff	Reporting
	Sunny Stone and Adam Smith	Fort Knox Architectural Survey: Miscellaneous Buildings	US Army Corps of Engineers, Engineer Research and Development Center	Evaluation
6-May 6-Jun	R. Criss Helmkamp, Matthew D. Rector, and Jessica R. Evans	Project: NRHP Determination Review for Building 1227	Fort Knox Cultural Resources Staff	Reporting
Archaeological Survey Reports				
Date	Authors	Title	Company	Project Type
1932	William Webb and William Funkhouser	Archaeological Survey of Kentucky.	University of Kentucky	N/A

Aug. 1976	Betty J. McGraw	An Archaeological Survey of the Proposed Meade County US 60 Bridge and Approaches at Otter Creek Project.	USACE	Phase I
Nov. 1977	Richard A. Boisvert	A Reconnaissance and Evaluation of Archaeological Sites in Hardin County, Kentucky.	Kentucky Heritage Commission	Site Evaluation
1978	John D. Warnock	An Initial Report: The Gilead Site, Hardin County, Kentucky.		
1978	Michael B. Collins, John van Willigen and Frederick B. Mesler	Archaeological Sampling Survey at Fort Knox, Kentucky	University of Kentucky	Proposal
11-Jun-79	Boyce Driskell and Nancy O'Malley	An Archaeological Survey and Assessment of Areas to be Modified at the Wilcox Gunnery Range, Fort Knox, Kentucky	University of Kentucky	Phase I
3-Jul-79	Jerrel H. Sorensen and Cecil R. Ison	A Cultural Resource Reconnaissance of the Proposed South Central Bell Building Expansion and Access Road Construction, Fort Knox, KY	University of Kentucky	Phase I
Mar. 1980	Sandra Kryst and Marcia K. Weinland	A Reconnaissance and Evaluation of Archaeological Sites in Bullitt County, Kentucky.	Kentucky Heritage Commission	Site Evaluation
15-Aug-80	Nancy O'Malley, Boyce N. Driskell, Julie Riesenweber, Richard S. Levy and Michael B. Collins	Stage I Archaeological Investigations at Fort Knox, Kentucky	University of Kentucky	Phase I
1981	John R. Hale, Joseph E. Granger, John S. Otto and Geryl D. Gilbert	Toward a Research and Management Design: Cultural Resources Studies in the Falls Region of Kentucky Volume II, A Survey of Archaeological Sites in Otter Creek Park, Meade County, Kentucky		Site Evaluation
Sept. 1982	Kurt H. Fiegel	An Archaeological Survey of the Radcliffe Industrial Park Access Road, Radcliffe, Kentucky.	KY Transportation Cabinet	Phase I
1986	Jack M. Schock	A Cultural Reconnaissance of Approximately 2 Acres for the Proposed Fort Knox Substation near Radcliffe in Hardin County, Kentucky.	Arrow Enterprises, Bowling Green.	Phase I
Feb. 1986	Philip DiBlasi	A Cultural Resource Management Reconnaissance of the Vine Grove/Radcliff to Interstate 65 Connector in Hardin County, KY	U of Louisville	Phase I

24-Nov-86	Paul Webb and Paul E. Brockington	An Archaeological Survey of Areas Potentially Impacted by Reconstruction of State Highway 1638, Meade County, Kentucky	Garrow and Associates, Inc.	Phase I
Jun. 1987	Donald Ball	A Cultural Resources Reconnaissance of 195.53 Acres of Excess Property at Fort Knox, Bullitt County, Kentucky.	U.S. Army Corps of Eng., Louisville District	Phase I
28-Apr-87	Thomas R. Wheaton	Archaeological Testing at Garnettsville, Kentucky: Kentucky Highway 1638 Realignment	Garrow and Associates, Inc.	Phase II
17-Mar-89	David R. Bush, Mark A. Kollecker, Jare Cardinal, and Renea Martello	A Cultural Resource Investigation of Timber Areas 41, 42, and 52 within the Fort Knox Military Reservation in Bullitt and Hardin Counties, Kentucky.	D. E. McGillem and Associates, Inc.	Phase I
16-Jul-90	Jeffery A. Myers	A Cultural Resources Reconnaissance of 287 Acres in the Central Portion of Hunting Area 95, Fort Knox, Bullitt County, Kentucky.	Murray State University	Phase I
8-Aug-90	Tom Sussenbach	Weather Radar Installation, Hardin County, Kentucky	University of Kentucky	Phase I
Mar. 1991	Pamela Schenian	A Phase I Archaeological Survey of Hunting Areas 17, 30 and 41, Fort Knox Military Reservation, Bullitt and Hardin Counties, KY	Murray State University	Phase I
22-Apr-91	Bradley M. Mueller	A Phase I Cultural Resource Survey of ca. 270 Acres in the Western Portion of Hunting Area 1, Fort Knox Military Reservation, Meade County, Kentucky	Murray State University	Phase I
May. 1991	Jan Marie Hemberger	An Archaeological Reconnaissance of Proposed Construction Sites on Yano Tank Range, Fort Knox Military Reservation, Hardin County, Kentucky	U.S. Army Corps of Eng., Louisville District	Phase I
Jun. 1991	Jan Marie Hemberger	An Archaeological Reconnaissance and Assessment of Proposed Construction Sites For Fort Dix Realignment at Fort Knox Military Reservation, Bullitt and Hardin Counties, Kentucky	U.S. Army Corps of Eng., Louisville District	Phase I
Sept. 1991	Donald Ball	Archaeological Reconnaissance of a Proposed 19 Acre Disposal Tract at Fort Knox, Hardin County, Kentucky	U.S. Army Corps of Eng., Louisville District	Phase I

Mar. 1992	Jan Marie Hemberger	An Archaeological Reconnaissance of Proposed 7.5 Acre Borrow Area Adjacent to the Morgan/Dripping Springs Ranges, Fort Knox Military Reservation, Hardin County, Kentucky	U.S. Army Corps of Eng., Louisville District	Phase I
12-Jun-92	Pamela Schenian and Stephen T. Mocas	A Phase I Archaeological Survey of ca. 600 Acres and Site Flagging in ca. 300 Acres in Various Timber Areas, Fort Knox Military Reservation, Hardin and Meade Counties, KY	Murray State University	Phase I
Sept. 1992	Steven D. Ruple	Report of a Surface Examination of Four Archaeological Sites in Hunting Area 90, Fort Knox, Hardin County, Kentucky	Fort Knox Staff Archaeologist	Relocation of Sites
1992	Steven D. Ruple	Report of an Examination of Three Archaeological Sites in Hunting Area 1, Fort Knox, Kentucky	Fort Knox Staff Archaeologist	Phase II
Feb. 1993	Steven D. Ruple	Report of an Archaeological Survey of a Proposed Shoreline Maintenance Project at Dickerson Lake, Fort Knox, Kentucky	Fort Knox Staff Archaeologist	Phase I
May. 1993	Steven D. Ruple	An Archaeological Survey of Hunting Area 4, Fort Knox, Hardin and Meade Counties, Kentucky	Fort Knox Staff Archaeologist	Phase I
Nov. 1993	Pamela Schenian	A Phase I Archaeological Survey of Six Proposed Spoil Areas for the Highway 313 Road Construction on the Fort Knox Military Reservation, Hardin County, Kentucky	Fort Knox Staff Archaeologist	Phase I
Dec. 1993	Pamela Schenian and Stephen T. Mocas	A Phase I Archaeological Survey of ca. 330 Acres in Various Rehab Areas on the Fort Knox Military Reservation, Hardin and Meade Counties, Kentucky	Fort Knox Staff Archaeologist	Phase I
Dec. 1993	Stephen T. Mocas	A Phase I Archaeological Survey of a Proposed Construction/Demolition Debris Landfill and Borrow Pit on the Fort Knox Military Reservation, Hardin County, Kentucky	Fort Knox Staff Archaeologist	Phase I
1993	Nicholas P. Herrmann, William A. Huser, Jr. and James P. Fenton	Phase II Testing at Sites 15Hd249, 15Hd253 and 15Hd420 in the Right-of-Way of KY Rte 313, Hardin County, KY	Wilbur Smith Associates	Phase II
Mar. 1994	Stephen T. Mocas	A Phase I Archaeological Survey of a Proposed Sports Complex Area on the Fort Knox Military Reservation, Hardin County, Kentucky	Fort Knox Staff Archaeologist	Phase I

Apr. 1994	Stephen T. Mocas	A Phase I Archaeological Survey of Proposed Borrow Areas for the Yano to Cedar Creek Road on the Fort Knox Military Reservation, Hardin County, Kentucky	Fort Knox Staff Archaeologist	Phase I
Apr. 1994	Pamela Schenian and Stephen T. Mocas	A Phase I Archaeological Survey of the Proposed Cedar Creek Airstrip Borrow Area on the Fort Knox Military Reservation, Hardin County, Kentucky	Fort Knox Staff Archaeologist	Phase I
Apr. 1994	Pamela Schenian	A Phase I Archaeological Survey of a Proposed Borrow Pit at Target 10-Alpha on the Yano Range on the Fort Knox Military Reservation, Hardin County, Kentucky	Fort Knox Staff Archaeologist	Phase I
May. 1994	Pamela Schenian	A Phase I Archaeological Survey of a Proposed Wetlands Replacement Tract on the Yano Range on the Fort Knox Military Reservation, Hardin County, Kentucky	Fort Knox Staff Archaeologist	Phase I
May. 1994	Stephen T. Mocas	A Phase I Archaeological Survey of Two Proposed Borrow Areas on the Yano Range, Fort Knox Military Reservation, Bullitt County, Kentucky	Fort Knox Staff Archaeologist	Phase I
May. 1994	Stephen T. Mocas	A Phase I Archaeological Survey of a Proposed Water Tower and Pipeline on the Fort Knox Military Reservation, Hardin County, Kentucky	Fort Knox Staff Archaeologist	Phase I
May. 1994	Pamela Schenian	A Phase I Archaeological Survey of the Proposed Hunting Area 57 Rehab Tract on the Fort Knox Military Reservation, Hardin County, Kentucky	Fort Knox Staff Archaeologist	Phase I
May. 1994	Pamela Schenian and Stephen T. Mocas	A Phase I Cultural Resource Survey of the Proposed Pritchard Place Replacement Project on the Fort Knox Military Reservation, Hardin and Meade Counties, Kentucky	Fort Knox Staff Archaeologist	Phase I
May. 1994	Stephen T. Mocas	A Phase I Archaeological Survey of Proposed Borrow Areas for Culvert Replacement on the Fort Knox Military Reservation, Bullitt County, Kentucky	Fort Knox Staff Archaeologist	Phase I
Aug. 1994	Pamela Schenian and Stephen T. Mocas	A Phase I Archaeological Survey of the Fall 1994 Rehab Areas in Training Areas 9 and 10 on the Fort Knox Military Reservation, Meade County, Kentucky	Fort Knox Staff Archaeologist	Phase I

Aug. 1994	Stephen T. Mocas	A Phase I Archaeological Survey of Proposed Borrow Areas at Tow Dragon Range on the Fort Knox Military Reservation, Hardin County, Kentucky	Fort Knox Staff Archaeologist	Phase I
Sept. 1994	Pamela Schenian and Stephen T. Mocas	A Phase I Archaeological Survey of a Proposed Water Pipeline to the Anderson Golf Course Facilities on the Fort Knox Military Reservation, Hardin County, Kentucky	Fort Knox Staff Archaeologist	Phase I
Oct. 1994	Pamela Schenian and Stephen T. Mocas	A Phase I Archaeological Survey of Three Proposed Bridge Replacement Project Areas on the Fort Knox Military Reservation, Hardin and Meade Counties, Kentucky	Fort Knox Staff Archaeologist	Phase I
Oct. 1994	Pamela Schenian and Stephen T. Mocas	A Phase I Archaeological Survey of the Proposed Wilcox Range Urban Area, Observation Tower, and Access Road on the Fort Knox Military Reservation, Bullitt County, Kentucky	Fort Knox Staff Archaeologist	Phase I
Nov. 1994	Daniel B. Davis	Phase I Cultural Resource Assessment of a Proposed Waste Area on the Fort Knox Military Reservation in Hardin County, KY	University of Kentucky	Phase I
Nov. 1994	Pamela Schenian and Stephen T. Mocas	A Phase I Cultural Resources Survey of Five Proposed School Gymnasium Project Areas on the Fort Knox Military Reservation, Hardin and Meade Counties, Kentucky	Fort Knox Staff Archaeologist	Phase I
1994	James P. Fenton	Proposal to Mitigate the Adverse Effects on Site 15Hd249 of Rte 313, Hardin County, Kentucky	Wilbur Smith Associates	Site Evaluation
Jun. 1995	Pamela Schenian	A Phase I Archaeological Survey of the Proposed Timber Harvest Areas in the Longstreet Range Road Powerline Easement on the Fort Knox Military Reservation, Hardin County, Kentucky	Fort Knox Staff Archaeologist	Phase I
Jun. 1995	Pamela Schenian	A Phase I Archaeological Survey of the Proposed Kentucky National Guard MATES Facility and Adjoining Areas on the Fort Knox Military Reservation, Hardin County, Kentucky	Fort Knox Staff Archaeologist	Phase I
Jul. 1995	Pamela Schenian	A Phase I Archaeological Survey of the Proposed Timber Harvest Area in Hunting Area 54 on the Fort Knox Military Reservation, Hardin County, Kentucky	Fort Knox Staff Archaeologist	Phase I

Jul. 1995	Pamela Schenian	A Phase I Archaeological Survey of the Proposed Timber Harvest Areas in Training Areas 8, 13 and 14 on the Fort Knox Military Reservation, Hardin and Meade Counties, Kentucky	Fort Knox Staff Archaeologist	Phase I
Oct. 1995	Pamela Schenian and Stephen T. Mocas	A Phase I Archaeological Survey of the Proposed Timber Harvest Areas near the Regional Correctional Facility on the Fort Knox Military Reservation, Hardin County, Kentucky	Fort Knox Staff Archaeologist	Phase I
Nov. 1995	Pamela Schenian and Stephen T. Mocas	A Phase I Archaeological Survey of Two Trail Alternates Between Burke Tank Motor Park and Wilson Road on the Fort Knox Military Reservation, Hardin County, Kentucky	Fort Knox Staff Archaeologist	Phase I
Nov. 1995	Pamela Schenian and Stephen T. Mocas	A Phase I Archaeological Survey of the Proposed Training Area 11 Timber Harvest and Adjacent Areas on the Fort Knox Military Reservation, Hardin and Meade Counties, Kentucky	Fort Knox Staff Archaeologist	Phase I
Dec. 1995	Pamela Schenian and Stephen T. Mocas	A Phase I Archaeological Survey of the Proposed Timber Harvest Area along 745th Battlion Road and an Adjacent Food Plot Area on the Fort Knox Military Reservation, Hardin County, Kentucky	Fort Knox Staff Archaeologist	Phase I
Jan. 1996	Pamela Schenian and Stephen T. Mocas	A Phase I Archaeological Survey of a Proposed Timber Tract and Highway Safety Improvement Project, Fort Knox Military Reservation, Hardin County, Kentucky	Fort Knox Staff Archaeologist	Phase I
Feb. 1996	Pamela Schenian and Stephen T. Mocas	A Phase I Archaeological Survey of Two Proposed Septic Drain Fields at Camp Carlson, and Phase II Testing of 15Md378 and 15Md379, Fort Knox Military Reservation, Meade County, Kentucky	Fort Knox Staff Archaeologist	Phase I and II
Mar. 1996	Stephen T. Mocas	A Phase I Archaeological Survey of the Proposed Expansion and Improvement of Mendick Tollgate Range, Fort Knox Military Reservation, Hardin County, Kentucky	Fort Knox Staff Archaeologist	Phase I
Jun. 1996	Pamela Schenian and Stephen T. Mocas	A Phase I Archaeological Survey of Three Proposed Borrow Pits for Cedar Creek Range on the Fort Knox Military Reservation, Hardin County, Kentucky	Fort Knox Staff Archaeologist	Phase I

Jul. 1996	Pamela Schenian and Stephen T. Mocas	A Phase I Archaeological Survey of 1996 Rehab Areas 6, 7 and 8 in Training Area 10, Fort Knox, Meade County, Kentucky	Fort Knox Staff Archaeologist	Phase I
Aug. 1996	Pamela Schenian and Stephen T. Mocas	A Phase I Archaeological Survey of Portions of Godman Airfield on the Fort Knox Military Reservation, Hardin and Meade Counties, Kentucky	Fort Knox Staff Archaeologist	Phase I
Aug. 1996	Pamela Schenian and Stephen T. Mocas	A Phase I Archaeological Survey of 1996 Rehab Areas 12-17 in Training Areas 3 and 6, Fort Knox, Hardin County, Kentucky	Fort Knox Staff Archaeologist	Phase I
Sept. 1996	Pamela Schenian and Stephen T. Mocas	A Phase I Archaeological Survey of 1996 Rehab Areas 1-5 and 9-11 in Training Areas 8, 9 and 10, Fort Knox, Meade County, Kentucky	Fort Knox Staff Archaeologist	Phase I
Sept. 1996	Pamela Schenian	A Phase I Archaeological Survey of the Proposed Heins Range Bivouac Area on the Fort Knox Military Reservation, Hardin County, KY	Fort Knox Staff Archaeologist	Phase I
Nov. 1996	Stephen T. Mocas and Pamela Schenian	A Phase I Archaeological Survey of the Plowed Field Sites on the Fort Knox, Hardin and Meade Counties, Kentucky	Fort Knox Staff Archaeologist	Phase I
Nov. 1996	Pamela Schenian and Stephen T. Mocas	The Phase II Testing of 15Md339 and Accidental Discovery Reevaluation of 15Md338 in Training Area 9, Fort Knox, Meade County, Kentucky	Fort Knox Staff Archaeologist	Phase II
Dec. 1996	Stephen T. Mocas and Pamela Schenian	The Phase II Surface Collection of 15Md349, 15Md351 and 15Md375 in Rehab Areas in Training Areas 9 and 10, Fort Knox, Meade County, Kentucky	Fort Knox Staff Archaeologist	Phase II
Dec. 1996	Stephen T. Mocas and Pamela Schenian	Phase II Archaeological Testing of 15Hd486, Fort Knox, Hardin County, Kentucky	Fort Knox Staff Archaeologist	Phase II
Apr. 1997	Pamela Schenian	A Phase I Archaeological Survey of the Hunting Area 72 Land Rehabilitation Tract near Poorman Range Road, Fort Knox, Hardin County, Kentucky	Fort Knox Staff Archaeologist	Phase I
Jun. 1997	Pamela Schenian	A Phase I Archaeological Survey of the Yano Range Bank and Bridge Repair Areas, Fort Knox, Bullitt and Hardin Counties, Kentucky	Fort Knox Staff Archaeologist	Phase I
Jul. 1997	Pamela Schenian	A Phase I Archaeological Survey of the Hackett Range Perimeter Rehab Area, Fort Knox, Hardin County, Kentucky	Fort Knox Staff Archaeologist	Phase I

Aug. 1997	Pamela Schenian	A Phase I Archaeological Survey of the Wilcox Urban Site Expansion Area, Hunting Area 44, Fort Knox, Bullitt County, Kentucky	Fort Knox Staff Archaeologist	Phase I
Aug. 1997	Pamela Schenian	A Phase I Archaeological Survey of Proposed Timber Harvest Tracts Adjacent to a Utility Easement on Snow Mountain and in Training Areas 8 and 9, Fort Knox, Meade County, Kentucky	Fort Knox Staff Archaeologist	Phase I
Aug. 1997	Pamela Schenian	A Phase I Archaeological Survey of Crane Range, Fort Knox, Hardin County, Kentucky	Fort Knox Staff Archaeologist	Phase I
Sept. 1997	Pamela Schenian	A Phase I Archaeological Survey of the Mill Creek Tributaries Channel Separation Project, Fort Knox, Hardin County, Kentucky	Fort Knox Staff Archaeologist	Phase I
Oct. 1997	Pamela Schenian	A Phase I Archaeological Survey of the FBI Range Timber Clearing Area, Fort Knox, Hardin County, Kentucky	Fort Knox Staff Archaeologist	Phase I
Jun. 1998	Pamela Schenian	A Phase I Archaeological Survey of the Proposed Hackett Range Firing Line and Bleacher Area, Fort Knox, Hardin County, Kentucky	Fort Knox Staff Archaeologist	Phase I
Jul. 1998	Pamela Schenian	A Phase I Archaeological Survey of Proposed Pine Pulpwood Harvest Tracts in Training Areas 3, 4, 8, 10 and 14, Fort Knox, Hardin and Meade Counties, Kentucky	Fort Knox Staff Archaeologist	Phase I
Sept. 1998	Pamela Schenian	A Phase I Archaeological Survey of the Proposed Cedar Creek Helipads Project Area, Fort Knox, Hardin County, Kentucky	Fort Knox Staff Archaeologist	Phase I
Nov. 1998	Pamela Schenian	A Phase I Archaeological Survey of Three Proposed Bivouac Areas in Training Area 12, Fort Knox, Meade County, Kentucky	Fort Knox Staff Archaeologist	Phase I
Aug. 1999	Randall D. Boedy and Pamela Schenian	A Phase I Archaeological Survey of the Wilcox Urban Site Expansion Area, Training Areas 16, 17 and 18, Bullitt County, Kentucky	Daniel Boone National Forest	Phase I
Oct. 1999	Pamela Schenian	A Phase I Archaeological Survey of the Proposed ROTC Training Course in Training Area 7, Fort Knox, Hardin County, Kentucky	Fort Knox Staff Archaeologist	Phase I

Dec. 1999	Pamela Schenian	The Monitoring of Stream Bank Repair on the Rolling Fork River near 15Hd589 and 15Hd590 on Yano Range, Fort Knox, Hardin County, Kentucky	Fort Knox Staff Archaeologist	Monitoring
Dec. 1999	Pamela Schenian	A Phase I Archaeological Survey of the Proposed Camp Carlson Cabin and Septic System Improvements, Fort Knox, Meade County, Kentucky	Fort Knox Staff Archaeologist	Phase I
1999	Nancy O'Malley	The Civil War in Kentucky: Archaeological Investigations at Fort Duffield, West Point, Hardin County, Kentucky	University of Kentucky	Phase I
Oct. 2000	Rick R. Richardson	A Phase I Archaeological Survey of the Proposed Ground Mobility Division Tactical Vehicle Wash Rack Replacement, Fort Knox, Meade County, Kentucky	Fort Knox Staff Archaeologist	Phase I
Nov. 2000	Frank M. Bodkin, Cecil R. Ison, Randall D. Boedy and William E. Sharp	A 1999 Phase I Archaeological Survey of Proposed Range Construction and Road/Utility Corridor Improvements, Bullitt County, Kentucky	Daniel Boone National Forest	Phase I
Nov. 2000	Randall D. Boedy	Phase II Testing of Archaeological Sites 15Bu532 and 15Bu534 in the Wilcox Urban Expansion Area, Hunting Area 44, Bullitt County, Kentucky	Daniel Boone National Forest	Phase II
Feb. 2001	Rick R. Richardson	A Phase I Archaeological Survey of the Proposed Veterans Cemetery, Fort Knox, Hardin County, Kentucky	Fort Knox Staff Archaeologist	Phase I
31-Jul-01	David W. Schatz and Michael W. French	Phase I Archaeological Survey for a Proposed LG&E Natural Gas Drilling Station at the US Army Armor Center and Fort Knox Military Reservation, Meade County, Kentucky	AMEC Earth & Environmental, Inc.	Phase I
29-Nov-01	James Lee Hixon	A Phase I Archaeological Assessment of the Muldraugh Hill Rockfall Mitigation, US31W in Hardin and Meade Counties, Kentucky	Kentucky Transportation Cabinet	Phase I
8-Jan-02	R. Criss Helmkamp	A Phase I Archaeological Survey of Four Proposed Gate Improvements Projects at the US Army Armor Center and Fort Knox, Fort Knox, Hardin County, Kentucky	Fort Knox Cultural Resources Staff	Phase I
17-Jan-02	R. Criss Helmkamp	A Phase I Archaeological Survey of the Rodgers Hollow Testing Facility Constuction Project Area at the US Army Armor Center and Fort Knox, Fort Knox, Bullitt County, Kentucky	Fort Knox Cultural Resources Staff	Phase I

4-Feb-02	R. Criss Helmkamp	A Phase I Archaeological Survey of the Bell South Cell Tower Project Area at the US Army Armor Center and Fort Knox, Fort Knox, Meade County, Kentucky	Fort Knox Cultural Resources Staff	Phase I
11-Feb-02	R. Criss Helmkamp	A Phase I Archaeological Survey of the Forest Hill Climbing Complex Project Area at the US Army Armor Center and Fort Knox, Fort Knox, Hardin County, Kentucky	Fort Knox Cultural Resources Staff	Phase I
21-Aug-03	R. Criss Helmkamp	A Phase I Archaeological Survey: Improvements to the Camp Carlson Army Travel Camp at the US Army Armor Center and Fort Knox, Fort Knox, Meade County, Kentucky	Fort Knox Cultural Resources Staff	Phase I
28-Aug-03	John W. Picklesimer II and Christopher Baltz	Phase II Investigations at Site 15Md378/379 at Camp Carlson Army Travel Camp within the U.S. Army Armor Center and Fort Knox, Meade County, Kentucky	Gray & Pape, Inc.	Phase II
28-Oct-03	James C. Pritchard, Christy W. Pritchard and Thomas I. Fugate	Phase I Archaeological Investigations of the Proposed Whole Neighborhood Renewal at the Anderson Golf Course, the U.S. Army Armor Center and Fort Knox, in Hardin County, Kentucky	Gray & Pape, Inc.	Phase I
Sept. 2004	R. Criss Helmkamp and Jessica Evans	A Phase I Archaeological Survey: Transfer of 1.28 acres to the U.S. Department of the Treasury from the U.S. Army Garrison, Fort Knox, Hardin County, Kentucky	Fort Knox Cultural Resources Staff	Phase I
5-Oct-04	James C. Pritchard and Christy W. Pritchard	Phase I Investigations in Training Area 18 and the Wilcox Range at the US Army Armor Center and Fort Knox, in Bullitt County, Kentucky	Gray & Pape, Inc.	Phase I
Oct. 2004	Maureen Meyers, Michele Williams, and Janet Lisch	Curation Facility Assessment for U.S. Army Garrison, Fort Knox, KY	Gray & Pape, Inc.	Evaluation
Nov. 29, 2004	James C. Pritchard and John W. Picklesimer II	Phase I Archaeological Investigations at the US Army Armor Center and Fort Knox, in Hardin and Meade Counties, Kentucky	Gray & Pape, Inc.	Phase I
Jan. 21, 2005	John W. Picklesimer II, James C. Pritchard and Christy Wood Pritchard	Phase II Investigations of Four Sites (15Bu311, 15Bu544, 15Bu551 and 15Bu560) within the US Army Armor Center and Fort Knox, Bullitt County, Kentucky	Gray & Pape, Inc.	Phase II

Jan. 12, 2005	Jim Pritchard, Maureen Meyers, and Bradley Bowden	Phase I Archaeological Survey of Training Areas 2-10, 12-14, 16, and 17, U.S. Army Garrison, Fort Knox, Kentucky	Gray & Pape, Inc.	Phase I
Jan. 4, 2005	Jim Pritchard, Christy Pritchard, Maureen Meyers, and Bradley Bowden	Phase I Archaeological Survey of 506 Acres and Phase II Testing of Site 15Hd684 within the Cantonment Area, U.S. Army Garrison, Fort Knox, Kentucky	Gray & Pape, Inc.	Phase I and II
Feb-05	R. Criss Helmkamp and Jessica Evans	A Phase I Archaeological Survey: Proposed Borrow Pit for Construction of Additional Classrooms at Mudge Elementary School at the U.S. Army Garrison, Fort Knox, Meade County, Kentucky	Fort Knox Cultural Resources Staff	Phase I
Mar. 23, 2005	R. Criss Helmkamp and Jessica Evans	A Phase I Archaeological Survey: Proposed Urban Assault Course at the U.S. Army Garrison, Fort Knox, Hardin County, Kentucky	Fort Knox Cultural Resources Staff	Phase I
Apr-05	R. Criss Helmkamp and Jessica Evans	A Phase I Archaeological Survey: Proposed Trail Improvements by the Reserve Officer Training Corps at the U.S. Army Garrison, Fort Knox, Meade County, Kentucky	Fort Knox Cultural Resources Staff	Phase I
Sept. 2005	Jim Pritcahrd	Phase I Archaeological Survey of A Proposed Electric Utility Easement within the U.S. Army Garrison Fort Knox, Hardin, Meade, and Bullitt Counties, Kentucky.	Brockington and Associates, Inc.	Phase I
Nov. 3, 2005	R. Criss Helmkamp and Jessica Evans	A Phase I Archaeological Survey: Proposed Range Tower and Classroom Construction for BOLC III Training at Yano MPTR, U.S. Army Garrison, Fort Knox, Hardin County, Kentucky	Fort Knox Cultural Resources Staff	Phase I
Jan. 2006	Eric Cruciotti, Andrew Saatkamp, and N.C. Kaplan	Phase I Intensive Archaeological Survey of 500 Acres in the Fort Knox Cantonment Area, Hardin County, KY	Panamerican Consultants, Inc.	Phase I
1-Mar-06	John W. Picklesimer II, James C. Pritchard and Christy Wood Pritchard	Phase II Investigations of Four Sites (15Bu311, 15Bu544, 15Bu551 and 15Bu560) within the US Army Armor Center and Fort Knox, Bullitt County, Kentucky	Gray & Pape, Inc.	Phase II
6-Apr	Mike Striker	Phase I Archaeological Investigations of 249.55 Hectares (616.65 Acres) at U.S. Army Garrison Fort Knox, Bullitt and Hardin Counties	Gray & Pape, Inc.	Phase I

6-May	David Klinge	Phase II Site Evaluations for 15Bu531, 15Bu386, 15Bu551, 15Bu560, 15Bu655, and 15Bu660 Fort Knox Training Ranges 16 and 17 U.S.Army Garrison and Fort Knox, Bullitt County, Kentucky	ASC Group, Inc.	Phase II
6-Jul	Andrew Saatkamp and Eric Cruciotti	Phase I Archaeological Survey of approximately 1900 acres on the Fort Knox Military Reservation, Bullit, Hardin, and Meade Counties	Panamerican Consultants, Inc.	Phase I
6-Jul	Eric M. Cruciotti	Phase II Testing of 11 Sites on the Cedar Creek Range of Fort Knox Hardin County, Kentucky	Panamerican Consultants, Inc.	Phase II
6-Jul	R. Criss Helmkamp and Jessica Evans	A Phase I Archaeological Survey: Proposed Training Facilities for the 19th Engineers Battalion on MacFarland Oliver Range, U.S. Army Garrison, Fort Knox, Hardin County, Kentucky	Fort Knox Cultural Resources Staff	Phase I

1 **APPENDIX D**
2 **ECONOMIC IMPACT FORECASTING SYSTEM**
3 **MODEL OUTPUT**

EIFS REPORT

PROJECT NAME

Fort Knox BRAC EA, Construction, Alternative 1

STUDY AREA

21029 Bullitt, KY
21093 Hardin, KY
21163 Meade, KY

FORECAST INPUT

Change In Local Expenditures	\$66,400,000
Change In Civilian Employment	275
Average Income of Affected Civilian	\$36,500
Percent Expected to Relocate	0
Change In Military Employment	0
Average Income of Affected Military	\$0
Percent of Military Living On-post	0

FORECAST OUTPUT

Employment Multiplier	2.35
Income Multiplier	2.35
Sales Volume - Direct	\$74,470,150
Sales Volume - Induced	\$100,534,700
Sales Volume - Total	\$175,004,800 5.36%
Income - Direct	\$23,431,080
Income - Induced)	\$20,278,910
Income - Total(place of work)	\$43,709,990 1.31%
Employment - Direct	709
Employment - Induced	586
Employment - Total	1296 1.62%
Local Population	0
Local Off-base Population	0 0%

RTV SUMMARY

	Sales Volume	Income	Employment	Population
Positive RTV	9.21 %	8.9 %	6.49 %	5.63 %
Negative RTV	-7.28 %	-6.2 %	-6.99 %	-3.44 %

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EIFS REPORT

PROJECT NAME

Fort Knox BRAC EA, Construction, Alternative 2

STUDY AREA

21029 Bullitt, KY
21093 Hardin, KY
21163 Meade, KY

FORECAST INPUT

Change In Local Expenditures	\$86,500,000
Change In Civilian Employment	275
Average Income of Affected Civilian	\$36,500
Percent Expected to Relocate	0
Change In Military Employment	0
Average Income of Affected Military	\$0
Percent of Military Living On-post	0

FORECAST OUTPUT

Employment Multiplier	2.35
Income Multiplier	2.35
Sales Volume - Direct	\$94,570,150
Sales Volume - Induced	\$127,669,700
Sales Volume - Total	\$222,239,800 6.8%
Income - Direct	\$27,485,460
Income - Induced)	\$25,752,330
Income - Total(place of work)	\$53,237,790 1.59%
Employment - Direct	827
Employment - Induced	745
Employment - Total	1571 1.97%
Local Population	0
Local Off-base Population	0 0%

RTV SUMMARY

	Sales Volume	Income	Employment	Population
Positive RTV	9.21 %	8.9 %	6.49 %	5.63 %
Negative RTV	-7.28 %	-6.2 %	-6.99 %	-3.44 %

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EIFS REPORT

PROJECT NAME**Fort Knox BRAC EA, Construction, Alternative 3****STUDY AREA**

21029 Bullitt, KY
 21093 Hardin, KY
 21163 Meade, KY

FORECAST INPUT

Change In Local Expenditures	\$76,400,000
Change In Civilian Employment	275
Average Income of Affected Civilian	\$36,500
Percent Expected to Relocate	0
Change In Military Employment	0
Average Income of Affected Military	\$0
Percent of Military Living On-post	0

FORECAST OUTPUT

Employment Multiplier	2.35
Income Multiplier	2.35
Sales Volume - Direct	\$84,470,150
Sales Volume - Induced	\$114,034,700
Sales Volume - Total	\$198,504,800 6.08%
Income - Direct	\$25,448,190
Income - Induced)	\$23,002,000
Income - Total(place of work)	\$48,450,190 1.45%
Employment - Direct	768
Employment - Induced	665
Employment - Total	1433 1.79%
Local Population	0
Local Off-base Population	0 0%

RTV SUMMARY

	Sales Volume	Income	Employment	Population
Positive RTV	9.21 %	8.9 %	6.49 %	5.63 %
Negative RTV	-7.28 %	-6.2 %	-6.99 %	-3.44 %

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EIFS REPORT**PROJECT NAME****Fort Knox BRAC EA, Operations, (Net Change, All Alternatives: After Subtracting Trainee/Student Loss from Military PP and Civilian Gain)****STUDY AREA**Implementation of BRAC Recommendations and Other Army Transformation Related Actions at Fort Knox, Kentucky
Environmental AssessmentAppendix C
EIFS Report

21029 Bullitt, KY
 21093 Hardin, KY
 21163 Meade, KY

FORECAST INPUT

Change In Local Expenditures	\$(Unknown)
Change In Civilian Employment	1,479
Average Income of Affected Civilian	\$45,000
Percent Expected to Relocate	100
Change In Military Employment	-3,756
Average Income of Affected Military	\$22,000
Percent of Military Living On-post	80

FORECAST OUTPUT

Employment Multiplier	2.35	
Income Multiplier	2.35	
Sales Volume - Direct	\$55,493,320	
Sales Volume - Induced	\$74,916,000	
Sales Volume - Total	\$130,409,320	3.99%
Income - Direct	\$44,235,000	
Income - Induced)	\$15,112,000	
Income - Total(place of work)	\$59,347,000	1.77%
Employment - Direct	-1,953	
Employment - Induced	437	
Employment - Total	-1,516	-1.89%
Local Total Population	3,091	
Local Off-Base Population	6,327	5.14%

RTV SUMMARY

	Sales Volume	Income	Employment	Population
Positive RTV	9.21 %	8.9 %	6.49 %	5.63 %
Negative RTV	-7.28 %	-6.2 %	-6.99 %	-3.44 %

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EIFS REPORT

PROJECT NAME

Fort Knox BRAC EA, PP Military and Civilian Gain

STUDY AREA

21029 Bullitt, KY
 21093 Hardin, KY
 21163 Meade, KY

FORECAST INPUT

Change In Local Expenditures	\$0
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Change In Civilian Employment	1479
Average Income of Affected Civilian	\$45,000
Percent Expected to Relocate	100
Change In Military Employment	2124
Average Income of Affected Military	\$36,000
Percent of Military Living On-post	50

FORECAST OUTPUT

Employment Multiplier	2.35
Income Multiplier	2.35
Sales Volume - Direct	\$82,757,700
Sales Volume - Induced	\$111,722,900
Sales Volume - Total	\$194,480,600 5.95%
Income - Direct	\$143,019,000
Income - Induced)	\$22,535,690
Income - Total(place of work)	\$165,554,700 4.95%
Employment - Direct	4086
Employment - Induced	652
Employment - Total	4738 5.93%
Local Total Population	8971
Local Off-base Population	6327 5.14%

RTV SUMMARY

	Sales Volume	Income	Employment	Population
Positive RTV	9.21 %	8.9 %	6.49 %	5.63 %
Negative RTV	-7.28 %	-6.2 %	-6.99 %	-3.44 %

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EIFS REPORT

PROJECT NAME

Fort Knox BRAC EA, Student/Trainee Loss

STUDY AREA

21029 Bullitt, KY
21093 Hardin, KY
21163 Meade, KY

FORECAST INPUT

Change In Local Expenditures	\$0
Change In Civilian Employment	0
Average Income of Affected Civilian	\$0
Percent Expected to Relocate	0
Change In Military Employment	-5880
Average Income of Affected Military	\$16,800
Percent of Military Living On-post	100

FORECAST OUTPUT

Employment Multiplier	2.35
Income Multiplier	2.35
Sales Volume - Direct	(\$27,264,380)
Sales Volume - Induced	(\$36,806,920)
Sales Volume - Total	(\$64,071,300) -1.96%
Income - Direct	(\$98,783,990)
Income - Induced)	(\$7,424,344)
Income - Total(place of work)	(\$106,208,300) -3.18%
Employment - Direct	-6,039
Employment - Induced	-215
Employment - Total	-6,254 -7.82%
Local Population	-5,880
Local Off-base Population	0 -8.39%

RTV SUMMARY

	Sales Volume	Income	Employment	Population
Positive RTV	9.21 %	8.9 %	6.49 %	5.63 %
Negative RTV	-7.28 %	-6.2 %	-6.99 %	-3.44 %

3