

**DEPARTMENT OF DEFENSE REPORT TO THE DEFENSE BASE  
CLOSURE AND REALIGNMENT COMMISSION**

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**DEPARTMENT OF THE ARMY  
ANALYSIS AND RECOMMENDATIONS  
BRAC 2005**

**Volume III**

**May 2005**

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SECRETARY OF THE ARMY  
WASHINGTON

**Message of the Secretary of the Army**

**Army BRAC 2005 Program**

I am pleased to forward the Army BRAC 2005 Program as recommended by the Secretary of Defense. The Army has partnered with the Office of the Secretary of Defense, the Air Force, the Navy and Marine Corps, and the seven Joint Cross-Service Groups to produce BRAC recommendations that enhance Military Value and reduce Army cost of ownership. In so doing, we further transformation of the Active and Reserve Component fighting forces and jointness, and create more efficient and effective common business-oriented functions within the Department of Defense.

As required by Section 2903(c)(5) of the Defense Base Closure and Realignment Act of 1990, I certify that the data used in this BRAC analysis are accurate and complete to the best of my knowledge and belief.



James J. Shanley

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## PROLOGUE

*“BRAC 2005 [is] a capabilities-based analysis. The Department recognizes that the threats our Nation now faces are difficult or even impossible to forecast through conventional analysis. That realization compels us to review our facilities in BRAC within the context of the capabilities they offer instead of viewing our facilities against definitive requirements. Because it is critically important for the Department to retain the infrastructure necessary to accommodate its ability to “surge,” the Department is gauging its installations against the range of threats faced by our Nation so that it can differentiate among and capitalize on those that offer needed capabilities, and reconfigure, realign or close those that do not.” (Deputy Under Secretary of Defense for Installations and Environment, 25 March 2004)*

The global defense environment has changed significantly during the past decade. New threats have emerged. New enemies seek to eliminate our civilization and way of life. The United States remains a Nation at war against these threats. The Global War on Terrorism, and the Army’s sustained engagement around the world, define the current complex and uncertain operating environment.

Within this evolved environment, the Army continues its primary mission to provide necessary forces and capabilities to the Combatant Commanders in support of the National Security and Defense Strategies. To continue to excel in its mission and combat new threats, the Army must transform to become a more relevant and ready force.

*“A rapidly changing world deals ruthlessly with organizations that do not change.... We must constantly reshape ourselves to remain relevant and useful members of the Joint Team.” (Chief of Staff of the Army, 16 June 2004)*

The Army is transforming from a force designed for deterring a well-defined and understood adversary to an expeditionary force designed for continuous operations over a broad spectrum of threats in the dangerous and complex 21<sup>st</sup>-century security environment. Instead of focusing on a single, well-defined threat or region, the Army is developing a range of complementary and interdependent capabilities that can dominate a range of adversaries or situations. Transformation enables the Army to utilize advantages and mitigate vulnerabilities to sustain its strategic position in the world.

The Army Modular Force Initiative is reshaping the fighting force—transforming into modular brigade units to become a larger, more powerful, more flexible deployable force. The Army is relocating the fighting force—rebased its overseas units in the continental United States. It is rebalancing the fighting force—transforming the Reserve and Active force mix. The Army is creating a more Joint force—actively participating in Department of Defense efforts for greater Joint operations and increased focus on homeland defense missions. The Army is becoming a far better force—a campaign quality, Joint and Expeditionary Army with the capabilities to provide relevant and ready combat power to the Combatant Commanders from a portfolio of installations that trains, sustains, enhances the readiness and well-being of the Joint Team, and provides a platform for rapid deployment.

The Military Value criteria of BRAC 2005 provided the Army a proven technique to compare and select the best installations to accomplish the Army's many transformational initiatives. With BRAC, the Army Modular Force Initiative, return of forces from overseas, and transformation of the Reserve Components will occur within the timeframe necessary to satisfy operational needs.

The result of the Army's BRAC 2005 selection process will be a streamlined installation portfolio of predominantly multi-use installations that optimizes Military Value and reduces cost of ownership; facilitates transformation, Joint operations, and Joint business functions; accommodates rebasing of overseas units as part of the Integrated Global Presence and Basing Strategy; and divests of an accumulation of installations that are no longer relevant and are less effective in supporting a Joint and Expeditionary Army.

## EXECUTIVE SUMMARY

### *Background*

DOD conducted four BRAC rounds from 1988 to 1995, in which the Army created more efficiency and effectiveness within its installation infrastructure by closing 112 installations and realigning 26 others as well as numerous lab sites. The Army's prior BRAC rounds have cost \$5.6B but have produced \$9.8B in savings. The Army continues to enjoy annual recurring savings of \$945M.

The Secretary of Defense states that, while BRAC 2005 must continue to pursue the reduction of surplus, it "can make an even more profound contribution to transforming the Department by rationalizing our infrastructure with defense strategy. BRAC 2005 should be the means by which we reconfigure our current infrastructure into one in which operational capacity maximizes *both* warfighting capability and efficiency."<sup>1</sup>

The Secretary of the Army stated that the Army's full participation in BRAC 2005 would enable the Army to realign its infrastructure in a way that optimizes both efficiency and warfighting capability. The Secretary of the Army further emphasized the importance of adhering to BRAC law. He indicated that the Army would treat all of its installations fairly in the process and stressed that no binding decisions would be made prior to the submission of final recommendations to the BRAC Commission.<sup>2</sup>

The Secretary of the Army's strategy for BRAC 2005 is to establish a streamlined portfolio of installations with optimized Military Value and a significantly reduced cost of ownership that:

- Facilitates transformation, Joint operations, and Joint business functions;
- Accommodates rebasing of overseas units within the Integrated Global Presence and Basing Strategy; and
- Divests of an accumulation of installations that are no longer relevant and are less effective in supporting a Joint and Expeditionary Army.

BRAC 2005 is a critical component of Army transformation. The BRAC process enables the Army to reshape the infrastructure supporting the Current and Future forces, making them even more relevant and combat ready for the Combatant Commander. Through participation in BRAC 2005, the Army realigns its infrastructure to optimize its warfighting capability and efficiency.

### *Process and Organization*

The Defense Base Closure and Realignment Act of 1990, as amended, sets the legal requirement for BRAC, although several significant changes were made for BRAC 2005. The guidelines for the BRAC Selection Criteria were, for the first time, explicitly written

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<sup>1</sup> Secretary of Defense, *Transformation Through Base Realignment and Closure*, memorandum, 15 November 2002.

<sup>2</sup> Secretary of the Army, *Transformation Through Base Realignment and Closure*, memorandum, 12 December 2002.

into the law. Military Value was to comprise the primary consideration for BRAC 2005 actions.

The BRAC Selection Criteria are:

Military Value

1. The current and future mission capabilities and the impact on operational readiness of the total force of the Department of Defense, including the impacts on joint warfighting, training, and readiness.
2. The availability and condition of land, facilities and associated airspace (including training areas suitable for maneuver by ground, naval, or air forces throughout a diversity of climate and terrain areas and staging areas for the use of the Armed Forces in homeland defense missions) at both existing and potential receiving locations.
3. The ability to accommodate contingency, mobilization, surge, and future total force requirements at both existing and potential receiving locations to support operations and training.
4. The cost of operations and the manpower implications.

Other Considerations

5. The extent and timing of potential costs and savings, including the number of years, beginning with the date of completion of the closure or realignment, for the savings to exceed the costs.
6. The economic impact on existing communities in the vicinity of military installations.
7. The ability of the infrastructure of both the existing and potential receiving communities to support forces, missions and personnel.
8. The environmental impact, including the impact of costs related to potential environmental restoration, waste management, and environmental compliance activities.

To frame its process and begin to develop potential BRAC actions, the Army employed the selection criteria, along with the Force Structure Plan and Installation Inventory submitted to Congress. The law specifies that all BRAC recommendations must be based on the criteria, plan, and inventory; thus, these three requirements formed the analytical foundation for BRAC 2005 analysis.

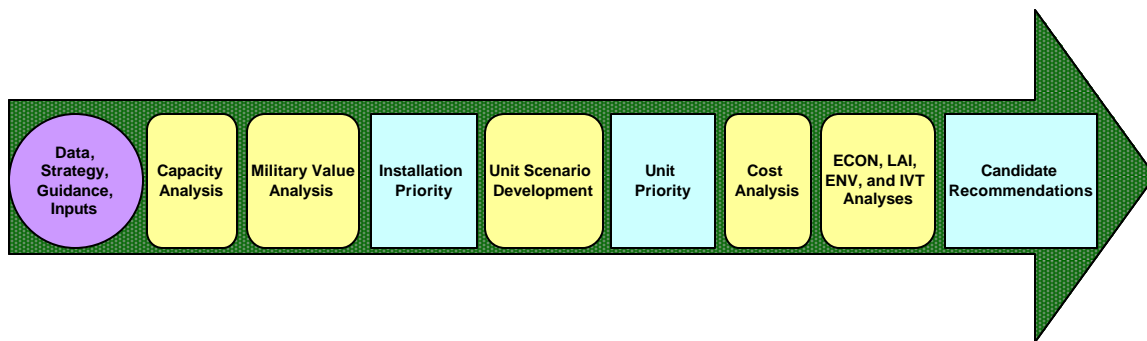
The Military Value criteria provided the Army a comprehensive, proven technique to compare and select installations to accomplish Army transformation. With BRAC, the Army Modular Force Initiative, return of forces from overseas, and transformation of the Reserve Components will occur within the timeframe necessary to satisfy operational needs. The Military Value criteria specifically directed attention to staging areas in support of homeland defense, maintenance of a diversity of climate and terrain in support of training, and surge capacity.

The Executive Office, Headquarters (EOH) was the senior-most deliberative group in the Army BRAC 2005 process. The EOH consisted of the Secretary of the Army, the Chief of Staff of the Army, the Under Secretary of the Army, and the Vice Chief of Staff of the Army, and it received the recommendations of the BRAC Senior Review Group (SRG).

The BRAC SRG was co-chaired by the Vice Chief of Staff of the Army and Under Secretary of the Army. The BRAC SRG consisted of Army seniors and operated as a deliberative and coordinating body for the Secretary of the Army. The SRG evaluated potential Army recommendations for the consideration of the EOH and supervised the efforts of the Army Joint Cross-Service Group (JCSG) representatives as they helped develop JCSG recommendations for the DOD Infrastructure Steering Group (ISG). The SRG provided guidance to The Army Basing Study (TABS) Group and reviewed its products.

The TABS Group, directed by the Deputy Assistant Secretary of the Army for Infrastructure Analysis (DASA(IA)), executed Army BRAC analysis and documentation and coordinated analyses and recommendations with other Service analytical teams and the JCSGs. The TABS mission was to conduct a comprehensive assessment of Army installations in compliance with the established BRAC law and criteria; evaluate alternatives; and develop, document, and publish candidate recommendations for submission to OSD. The TABS Group ensured the Army’s analytical and deliberative process was consistent with the DOD Force Structure Plan, the DOD installation inventory, BRAC selection criteria, and the requirements of Public Law 101-510, as amended.

To meet BRAC requirements, the Army developed an analytical process that was comprehensive, progressive, and auditable. Throughout the process the TABS Group coordinated with Army senior leadership and DOD components and mitigated risk through internal controls, sensitivity analysis, audits, and documentation processing.



**Figure EX-1. The Army BRAC 2005 Process**

The Army began its BRAC 2005 selection process by determining its installation study list, which included and considered all installations on its property list, except those excluded by BRAC law. Using these guidelines, the Army developed a study list of 97 installations (including 10 leased sites).

There are more than 4,000 Army Reserve and Guard facilities. Full transformation of the Army necessitated transformation of Reserve Component (RC) facilities, as well. Due to the sheer number of facilities and the difficulty of comparing RC capabilities to Active Component (AC) capabilities, the Army invited the Adjutants General from each state

and the Army Reserve Regional Readiness Command commanders to provide the necessary information to enable the Army to conduct analyses of RC facilities against Military Value criteria and Reserve operational requirements. The Military Value criteria were used to identify existing or new installations in the same demographic area that provide enhanced homeland defense, training, and mobilization capabilities. The Army sought to create multi-component facilities (Guard and Reserve) and multi-service, Joint facilities to further enhance mission accomplishment.

The Army collected and maintained data from the study-list installations, which became key inputs in selection process analyses. The BRAC process required that all information used to develop and make recommendations be certified as accurate and complete to the best of the certifier's knowledge and belief. In this data collection effort, the TABS Group received continuous support from installation administrators, Major Command trusted agents, and Installation Management Agency trusted agents.

While data collection provided the Army with an inventory of assets at its installations, capacity analysis determined the excesses and shortages that existed within this inventory. Using the Force Structure Plan, the Army assessed the requirements and determined excesses and shortages across various metrics. In addition, by studying surge, the Army assessed possible future requirements and determined how its capacity inventory accommodated uncertainty.

The Army then determined the Military Value (MV), the primary consideration for BRAC 2005 recommendations, for each installation. The Army assessed installations using a common set of 40 attributes which were linked to the BRAC selection criteria. The Army defined Military Value through attributes designed to capture current and future capability and not simply current use. This capabilities-based approach permitted the Army to assess relative installation capabilities to contribute to Army mission accomplishment now and in the future. The Military Value of each installation is the summed collective scores across weighted attributes, and the Army ranked its installations from 1 to 97.

These intermediate results were the starting point for scenario development. The Army developed strategy-based scenarios that sought to facilitate transformation, rebasing of overseas units, Joint operations, and Joint business functions. Potential stationing actions sought to move units and activities from installations with lower MV to installations with higher MV to take advantage of excess capacity and divest of less-relevant or less-effective installations.

Once a scenario had been developed, the Army considered the remaining four selection criteria to determine the impacts of these scenarios. For criteria 5-8, the Army evaluated scenarios by using the DOD-sanctioned models that, respectively, provided cost and savings information, economic impact assessment, the local area infrastructure's ability to support Army requirements, and environmental analysis to provide the minimum set of considerations required.

The Army developed and analyzed numerous scenarios and selected candidate recommendations for submission to OSD. From this list the Secretary of Defense determined the final BRAC 2005 recommendations for submission to the BRAC



Commission and Congress. Based on Military Value, the Secretary of Defense resolved to submit recommendations that include the following initiatives.

### *Recommendations*

**Realign the operational forces of the Active Army.** The Army's primary objective was to locate operational units at installations DOD-wide, capable of training modular formations, both mounted and dismounted, at home station with sufficient land and facilities to test, simulate, or fire all organic weapons. Military Value analysis permitted the Army to identify high Military Value installations to station its Modular Brigade Combat Teams (BCTs) and other forces. Army recommendations include realigning one Modular BCT each to Fort Bliss, TX, Fort Bragg, NC, Fort Carson, CO, Fort Knox, KY, and Fort Riley, KS. In addition, the Army validates previous temporary stationing of Modular BCTs at Fort Campbell, KY, Fort Drum, NY, Fort Polk, LA, Fort Richardson, AK, and Fort Stewart, GA. To enhance Joint training and deployment, the Army recommends realigning the 7<sup>th</sup> Special Forces Group from Fort Bragg, NC, to Eglin Air Force Base, FL, thus, freeing training and maneuver space for the activation of the Modular BCT at Fort Bragg. To enhance training and force stabilization, the Army also recommends realigning a Fires Brigade from Fort Sill, OK, to Fort Bliss and an Air Defense Artillery Brigade from Fort Bliss to Fort Sill. To support the formation of a Multi-Functional Aviation Brigade at Fort Riley, the Army recommends relocating an attack aviation battalion from Fort Campbell. Finally, BRAC analysis validated the FY05 relocation of the 2<sup>nd</sup> Armored Cavalry Regiment (ACR) at Fort Polk to Fort Lewis, WA.

**Realign overseas units back to the continental United States.** Military Value and capacity analysis also permitted the Army to identify high Military Value installations to station forces returning from overseas. The Army recommends stationing three Modular BCTs at Fort Bliss, TX. The Army also validates the temporary stationing of one Modular BCT from Korea to Fort Carson, CO. Military Value analysis combined with unit requirements, training capacity and compatibility, and command and control relationships led the Army to recommend stationing various returning support units, such as military police, engineers, personnel service, logistical and various other units at Forts Bragg, Carson and Knox.

**Realign or close Reserve Component facilities to consolidate headquarters and other activities in Joint or multi-functional installations.** The Army recommendations include closing 176 Army Reserve facilities and the construction of 125 new Armed Forces Reserve Centers distributed throughout the United States and Puerto Rico. The Department of the Army understands that State Governors will close 211 Army National Guard facilities with the intent of relocating their tenant units into these 125 new Armed Forces Reserve Centers. These new Armed Forces Reserve Centers will increase Military Value and improve the readiness and ability of Army Reserve and Army National Guard units, and Reserve Component units from other Services, to train, alert and deploy in support of current and future contingency operations. Twenty-seven of these new Armed Forces Reserve Centers will incorporate units from multiple services or be located on other-service installations, creating a Joint capability for homeland defense and other missions.

The Army will also reshape the command and control functions and force structure of the Army Reserve. The Army recommends disestablishing the ten Army Reserve Regional Readiness Commands in favor of establishing four Regional Readiness Sustainment Commands, and six new deployable warfighting units (two Maneuver Enhancement Brigades, and four Sustainment Brigades). These recommendations enhance Military Value and assist in the re-balancing of Active and Reserve force structure.

**Realign or close installations to consolidate headquarters and other activities in Joint or multi-functional installations.** The Army sought to collocate headquarters at installations that supported the missions overseen by those headquarters, or to establish Joint campuses by stationing the organizations with their counterparts from other Services. These principles enabled the closure of Fort McPherson, GA, and Fort Monroe, VA, by relocating Headquarters, Forces Command (FORSCOM) to Pope AFB, NC, and Headquarters, Training and Doctrine Command to Fort Eustis, VA. Pope AFB provides a Joint environment and close proximity to operational commanders at Fort Bragg, NC. Fort Eustis provides a continued Joint training relationship with the US Joint Forces Command at Norfolk Naval Base. A third major command, Army Materiel Command, is relocated to Redstone Arsenal, AL in order to enable a large restructuring of the National Capitol Region and to collocate it with one of its Major Subordinate Commands. Other recommendations collocate the US Army Reserve Command with FORSCOM at Pope AFB; collocate the Headquarters 3<sup>rd</sup> US Army with the Air Force component of US Forces Central Command, CENTAF (9<sup>th</sup> Air Force), at Shaw AFB, SC; realign Headquarters 1<sup>st</sup> US Army to the central United States at Rock Island Arsenal, IL (closing Fort Gillem, GA) to prepare for its transformation into the single Army Headquarters overseeing Reserve mobilization; and collocate the Army Criminal Investigative Division Headquarters with its Air Force and Navy counterparts at Quantico Marine Corps Base, VA.

An additional recommendation creates a new Walter Reed National Military Medical Center at Bethesda, MD, by relocating Walter Reed Army Medical Center's specialty care to Bethesda, and its primary and secondary care to Fort Belvoir, VA, to enhance Soldier and other patient quality of care.

Smaller headquarters are relocated to pursue efficiencies by consolidating geographically-split organizations and aligning the regional structures of multiple missions. The Army Test and Evaluation Command (ATEC) and the Army Evaluation Center are moved to Aberdeen Proving Ground, MD where they will consolidate with other portions of ATEC and other test and evaluation organizations. The Human Resources Command is moved to Fort Knox, KY, where it is consolidated with other personnel commands to form a personnel Center of Excellence. The Installation Management Agency (IMA), the Network Enterprise Technology Command and the Army Contracting Command collapse their regional headquarters structures into Eastern and Western Region Commands at Fort Eustis, VA, and Fort Sam Houston, TX. Headquarters, IMA is also relocated to Fort Sam Houston.

**Realign installations to create Joint and Army Training Centers of Excellence.** The Army recommendations include realigning installations by consolidating the Armor and Infantry Centers and Schools to create a Maneuver Center at Fort Benning, GA; consolidating the Air Defense and Field Artillery Centers and Schools to create a Net

Fires Center at Fort Sill, OK; and consolidating the Ordnance, Quartermaster, and Transportation Centers and Schools to create a Combat Service Support Center at Fort Lee, VA. The Army pursued these actions to enhance training coordination, doctrine development, training effectiveness, and efficiency. These consolidations improve on the Maneuver Support Center (MANSCEN) model, approved as part of BRAC 95 and currently in place at Fort Leonard Wood, which consolidated the Military Police, Engineer, and Chemical Centers and Schools. The United States Military Academy Preparatory School is realigned with the United States Military Academy at West Point, NY. This action consolidates all academy-related training from two locations (Fort Monmouth and West Point) to one location (West Point). Drill Sergeants Training is realigned from three locations (Fort Benning, GA; Fort Jackson, SC; and Fort Leonard Wood, MO) to one location (Fort Jackson). The Aviation Logistics School is realigned with the Aviation Center and School at Fort Rucker, AL. The Prime Power School is realigned with MANSCEN at Fort Lee. The Air Force and Army Transportation Management Schools are realigned at Fort Lee to create a Joint Center of Excellence. Air Force Culinary training is realigned with the Army's training at Fort Lee, and both the Air Force's and Navy's religious training is realigned at Fort Jackson creating Joint Centers of Excellence. These consolidations foster consistency, standardization and training proficiency, while reducing the total number of Military Occupational Skills (MOS) training locations. They also support Army Transformation by collocating institutional training, and other units in large numbers on single installations to promote force stabilization. In addition, they improve training capabilities while eliminating excess capacity at institutional training installations, enhancing Military Value by providing the same or better level of training at reduced costs.

**Realign or close installations to integrate critical munitions production and storage, manufacturing, Depot level maintenance, and materiel management capabilities to enhance Joint productivity and efficiency and reduce cost.** The Army recommends closing four Army Ammunition Plants, three Chemical Depots, and two Army Depots (one maintenance and one munitions storage) to reduce cost-of-ownership and increase efficiency. The Army recommends realigning workload among nine other Depots and Arsenals and five Army Ammunition Plants. These realignments will enhance four Army Depots as Joint Centers of Industrial and Technical Excellence for specific commodities, Army Arsenals into three Joint Manufacturing and Technology Centers, one Joint Logistics Expeditionary Center, and munitions production and storage installations into five Joint Munitions Centers of Excellence. These transformations will enhance Military Value eliminate single function and inefficient facilities and allow the Army Organic Industrial Base to partner with the civilian defense industry, using capacity from both the government and private industry, achieving the most favorable and economical efficiencies for all of DOD.

**Realign DOD RDAT&E organizations into Joint Centers of Excellence that enhance mission accomplishment at reduced cost.** The Army recommendations achieve a major transformation by collocating and integrating major RDAT&E elements currently scattered at many sites by assembling Human Systems, Information Systems, Sensors, Electronics, and Chemical-Biological RDA at Aberdeen Proving Ground, MD. The collocation of Communications-Electronics Research Development and Engineering Center, Night Vision Lab, Communications Electronics Command, Army Test and

Evaluation Command, several PEOs and PMs, Biological-Medical, and Chemical-Biological RDA at Aberdeen Proving Ground creates a powerful Center for Soldier-Focused Systems that permit integration and coordination at every step from R and D through T, A, & E. Other recommendations create similar Joint facilities at Detroit Arsenal, MI (Ground Vehicles), Redstone Arsenal, AL (Aviation), and Picatinny Arsenal, NJ (Guns and Ammunitions) to reduce cost and enhance effectiveness. The recommendations permit the closure of Fort Monmouth, NJ.

### *Conclusion*

The Army's BRAC 2005 strategy and process supported the development of recommendations that enhance Military Value, advance the Army Modular Force Initiative, accommodate the rebasing of overseas units, enable the transformation of both the Active and Reserve Components as well as rebalancing these forces, contribute to Joint operations and Joint business functions, and reduce facilities cost of ownership. These recommendations maintain necessary surge capabilities in both the operational force and the industrial base, enhance homeland defense missions, and continue the transformation to a more relevant and ready Joint and Expeditionary Army.

The BRAC 2005 recommendations of the Secretary of Defense close, realign, or add functions at 76 of the 97 installations on the Army's study list. The recommendations close 15 Army posts, 7 lease sites, 176 U.S. Army Reserve Readiness Centers, and enable State Governors to close 211 armories and readiness centers if they choose to move those units into one of the 125 local Armed Forces Readiness Centers which are also contained in the recommendations of the Secretary of Defense. In addition, 36 Army installations are realigned under these recommendations.

These recommendations create 20-year gross savings of \$20.4B for a one-time cost of \$12.8B and generate 20-year net savings of \$7.6B, which are 1.2 times the net savings of the first four BRAC rounds combined. Recurring savings after completion of BRAC implementation are expected to be \$1.5B annually, 1.7 times greater than the recurring savings of the four rounds combined. The return of forces from overseas, under BRAC law, generate significant BRAC costs but the substantial savings generated by these overseas actions are not reflected in BRAC saving. These related, but non-BRAC costs and savings, would add \$0.7B to cost but another \$20.4B to 20-year net savings for a total of \$28.0B and increase recurring savings by \$1B for a total of \$2.5B annually.

<b>CLOSING INSTALLATIONS</b>	
Army JAG Agency Lease Site, VA	Hoffman Lease Complex, VA
Army Research Office Lease Site, NC	Kansas Army Ammunition Plant, KS
Army Reserve Personnel Center Lease Site, MO	Lone Star Army Ammunition Plant, TX
Charles E. Kelly Support Center, PA	Mississippi Army Ammunition Plant, MS
Crystal City Lease Complex, VA	Newport Chemical Depot, IN
Deseret Chemical Depot, UT	Red River Army Depot, TX
Fort Gillem, GA	Riverbank Army Ammunition Plant, CA
Fort McPherson, GA	Rosslyn Lease Complex, VA
Fort Monmouth, NJ	Umatilla Chemical Depot, OR
Fort Monroe, VA	USAG Michigan (Selfridge), MI
Hawthorne Army Depot, NV	176 US Army Reserve Centers
HQ, Army Test and Evaluation Command Lease Site, VA	211 National Guard Armories and Centers upon agreement of the State Governors

<b>REALIGNING INSTALLATIONS</b>	
Aberdeen Proving Ground, MD	Fort Lee, VA
Adelphi Laboratory, MD	Fort Leonard Wood, MO
Anniston Army Depot, AL	Fort Lewis, WA
Bailey's Crossroads Lease Site, VA	Fort McCoy, WI
Corpus Christi Army Depot, TX	Fort Richardson, AK
Detroit Arsenal, MI	Fort Rucker, AL
Fort Belvoir, VA	Fort Sam Houston, TX
Fort Benning, GA	Fort Sill, OK
Fort Bliss, TX	Fort Wainwright, AK
Fort Bragg, NC	Lima Tank Plant, OH
Fort Buchanan, PR	Redstone Arsenal, AL
Fort Campbell, KY	Rock Island Arsenal, IL
Fort Dix, NJ	Sierra Army Depot, CA
Fort Eustis, VA	Soldier Systems Center, Natick, MA
Fort Hood, TX	Tobyhanna Army Depot, PA
Fort Huachuca, AZ	Walter Reed Army Medical Center, DC
Fort Jackson, SC	Watervliet Arsenal, NY
Fort Knox, KY	White Sands Missile Range, NM

Table EX-1. Army Installations Impacted by BRAC 2005 Recommendations

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## 1.0 INTRODUCTION

### 1.1 Purpose

BRAC is a means by which the Department of Defense reconfigures its infrastructure into one where operational and support capacity is optimized for both warfighting capability and efficiency, and Joint activity opportunities are aggressively pursued. BRAC furthers Defense Transformation, maximizes Joint utilization of defense resources, reallocates military personnel from supporting, operating, and securing unnecessary and underutilized infrastructure to the point of the warfighting spear. Thus, BRAC saves the taxpayers money. BRAC provides DOD a comprehensive review of its installation inventory, elimination of excess physical capacity, alignment of base structure with 21<sup>st</sup>-century force structure, and the ability to implement opportunities for greater Joint activity.

### 1.2 Previous BRAC Rounds

DOD conducted four BRAC rounds from 1988 to 1995. The Army closed 112 installations and realigned 26 others, using BRAC to create more efficiency and effectiveness within its installation infrastructure.

#### **BRAC 1988**

The first BRAC round occurred in 1988—under the Defense Secretary’s Commission on Base Realignment and Closure. DOD analyzed its infrastructure, developed recommendations, and eliminated unnecessary installations to make more efficient use of base operating dollars. The Army was an aggressive participant in the effort.

The Base Realignment and Closure Office (BRACO)—an Army organization—reported that the 1988 closures provide the Army annual recurring savings of \$260 million.<sup>3</sup>

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<sup>3</sup> Department of the Army, Office of the Assistant Chief of Staff for Installation Management (OACSIM), BRAC Division, *PB06 J Books*, Feb 2005. The BRAC Division Office of OACSIM provided the information regarding BRAC actions and finances from previous rounds.

<b>CLOSURES</b>	
53 Stand Alone Family Housing Areas	Indiana Army Ammunition Plant, IN
Alabama Army Ammunition Plant, AL	Jefferson Proving Ground, IN
Army Materiel Technology Laboratory, MA	Kapalama, HI
Bennett ARNG, CO	Lexington Army Depot, KY
Cameron Station, VA	Navajo Army Depot, AZ
Cape St. George, FL	New Orleans Military Ocean Terminal, LA
Coosa River Storage, AL	Nike Kansas City, MO
Defense Mapping Agency, Herndon, VA	Nike Site Aberdeen, MD
Fort Des Moines, IA	Pontiac Storage Facility, MI
Fort Douglas, UT	Presidio of San Francisco, CA
Fort Sheridan, IL	Tacony Warehouse, PA
Fort Wingate, NM	US Army Reserve Center Gaithersburg, MD
Hamilton Army Airfield, CA	
<b>REALIGNMENTS</b>	
Fort Devens, MA	Fort Meade, MD
Fort Dix, NJ	Pueblo Army Depot, CO
Fort Holabird, MD	Umatilla Army Depot, OR

**Table 1-1. BRAC 88 Actions**

**Secretary of Defense’s Candidate List, 1990**

In early 1990, the Secretary of Defense announced that DOD was considering a number of additional base closures and realignments. These candidate installations had been chosen by the Services and the Defense Logistics Agency in response to a Secretary of Defense request that they reevaluate their needs in the light of changed international conditions; detailed studies and evaluations were to be conducted during 1990. That year, however, Congress passed the Defense Base Closure and Realignment Act of 1990. Many of the proposed actions could subsequently take place only within the framework of a new, independent BRAC commission. The new thresholds did not affect the following initiatives, which proceeded.

<b>CLOSURES (Inactivation to caretaker status)</b>	
Detroit Tank Plant, MI (partial)	Louisiana Army Ammunition Plant, LA
Indiana Army Ammunition Plant, IN	Mississippi Army Ammunition Plant, MS
Kansas Army Ammunition Plant, KS	Scranton Army Ammunition Plant, PA
Lima Tank Plant, OH (partial)	Sunflower Army Ammunition Plant, OK
Longhorn Army Ammunition Plant, TX	

**Table 1-2. 1990 Defense Secretary Actions**



**BRAC 1991**

The Defense Base Closure and Realignment Act of 1990 authorized three additional BRAC rounds to occur biennially, the first occurring in 1991. The 1991 Commission approved the Army’s recommendation to close five installations and realign six more. Additionally, ten research, development, test and evaluation (RDT&E) laboratories were recommended for realignment. Seven medical laboratories were also realigned in conjunction with the other Services’ medical laboratory efforts.

As of FY05 the Army’s actions from BRAC 91 save \$304 million annually.

<b>CLOSURES</b>	
<b>Adelphi Woodbridge Research Facility, VA</b>	<b>Fort Ord, CA</b>
<b>Fort Benjamin Harrison, IN</b>	<b>Sacramento Army Depot, CA</b>
<b>Fort Devens, MA</b>	
<b>REALIGNMENTS</b>	
<b>Aviation Systems Command &amp; Troop Support Center, MO</b>	<b>Fort Polk, LA</b>
<b>Fort Chaffee, AR</b>	<b>Letterkenny Army Depot, PA</b>
<b>Fort Dix, NJ</b>	<b>LAB 21 Consolidation</b>

**Table 1-3. BRAC 91 Actions**

**BRAC 1993**

In 1993, the Army continued to tailor its infrastructure to meet the needs of a smaller force. The Commission supported the following recommendations but disapproved several other major reshaping efforts.

The realignments and closures approved for the Army through BRAC 93 provide a current annual recurring savings of \$68 million.

<b>CLOSURES</b>	
<b>Vint Hill Farms Station, VA</b>	
<b>REALIGNMENTS</b>	
<b>Fort Belvoir, VA</b>	<b>Presidio of Monterey Annex, CA</b>
<b>Fort Monmouth, NJ</b>	<b>Tooele Army Depot, UT</b>

**Table 1-4. BRAC 93 Actions**

**BRAC 1995**

In 1995, the Army continued reengineering its infrastructure. The recommendations from this round completed the Army’s reshaping efforts during the 1990s.

BRAC 95 actions save the Army \$313 million each year.

CLOSURES	
Bayonne Military Operations Terminal, NJ	Fort Pickett, VA
Bellmore Logistics Center, NY	Fort Ritchie, MD
Big Coppett Key, FL	Fort Totten, NY
Branch LOMPOC, CA	Hingham Cohasset, MA
Camp Bonneville, WA	HQ, ATCOM, MO
Camp Kilmer, NJ	Information Systems Software Command, VA
Camp Pedricktown, NJ	Oakland Army Base, CA
Concepts Analysis Agency, MD	Publications Distributions Center Baltimore, MD
East Fort Baker, CA	Recreation Center #2, Fayetteville, NC
Fitzsimons Army Medical Center, CO	Rio Vista Army Reserve Center, CA
Fort Chaffee, AR	Savanna Army Depot, IL
Fort Holabird, MD	Seneca Army Depot, NY
Fort Indiantown Gap, PA	Stratford Army Engine Plant, CT
Fort McClellan, AL	Sudbury Training Annex, MA
Fort Missoula, MT	
REALIGNMENTS	
Charles E. Kelly Support Center, PA	Fort Meade, MD
Detroit Tank Plant, MI	Letterkenny Army Depot, PA
Fort Dix, NJ	Red River Army Depot, TX
Fort Hunter Liggett, CA	Sierra Army Depot, CA
Fort Lee, VA	Tri-Service Project Reliance

**Table 1-5. BRAC 95 Actions**

**Conclusion**

The Army’s prior BRAC rounds cost \$5.6B and produced \$9.8B in savings. These BRAC rounds also produced installations that enabled the Army to successfully prosecute Operation Desert Shield/Desert Storm, Operation Iraqi Freedom, and Operation Enduring Freedom, and set the path toward Army Transformation. The Army continues to enjoy annual recurring savings of \$945 M.

**1.3 Law**

The Defense Base Closure and Realignment Act of 1990, as amended, sets the legal requirement for BRAC, although several significant changes were made for BRAC 2005. The purpose of the law is “to provide a fair process that will result in the timely closure and realignment of military installations inside the United States.”<sup>4</sup> With few exceptions, the law is “the exclusive authority for selecting for closure or realignment, or for carrying out any closure or realignment of, a military installation inside the United States.”<sup>5</sup>

The President resumes his role from previous rounds, and an independent Defense Base Closure and Realignment Commission is again established to review the

<sup>4</sup> Defense Base Closure and Realignment Act of 1990, Pub. L. 101-510, § 2901(b), as amended.

<sup>5</sup> Ibid, § 2909(a), as amended.

recommendations of the Secretary of Defense. However, an additional position has been added, bringing the total number of commissioners to nine. The process for justifying, developing, and documenting recommendations is also altered by the amendments for the 2005 round.

The changes to the BRAC law affected the procedures of the Department of Defense. The amended law calls for a broader Force Structure Plan (discussing threats over the next twenty years, not six) as well as an installation inventory. It states that the Secretary of Defense must then depict the relationship between the plan and the inventory in a capacity report. Finally, as part of the submission of plan and inventory, the Secretary of Defense is required to prepare a document that certifies the need to eliminate excess capacity and maximize efficiency.

The guidelines for the selection criteria were, for the first time, explicitly written into the law. Military Value, Criteria 1 through 4, is designated as the primary consideration for BRAC 2005 actions. These criteria include an emphasis on homeland defense and jointness – two themes not emphasized in previous BRAC rounds.

*1.3.1 Legislative Milestones*

Congress enacted a series of milestones to be met by BRAC Components. If any of the following milestones are missed, BRAC 2005 will end.

• <b>31 December 2003</b>	<b><i>Draft Selection Criteria Published</i></b>
• <b>~ February 2004</b>	<b><i>With Budget, Force Structure Plan and Infrastructure Inventory to Congress</i></b>
• <b>16 February 2004</b>	<b><i>Final Selection Criteria Published</i></b>
• <b>15 March 2005</b>	<b><i>With Budget, Revisions to Force Structure Plan and Infrastructure Inventory</i></b>
• <b>16 May 2005</b>	<b><i>SECDEF Recommendations Published</i></b>
• <b>8 September 2005</b>	<b><i>Commission’s Recommendations</i></b>
• <b>23 September 2005</b>	<b><i>President’s Approval or Disapproval</i></b>
• <b>20 October 2005</b>	<b><i>Commission’s Revised Recommendations</i></b>
• <b>7 November 2005</b>	<b><i>President’s Approval or Disapproval of Revised Recommendations</i></b>

**Table 1-6. BRAC 2005 Legislative Milestones**

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## 2.0 GUIDANCE

### 2.1 Office of the Secretary of Defense

The Office of the Secretary of Defense issued two memoranda to the BRAC components between the fall of 2002 and the spring of 2003. These messages provided the policy framework for the BRAC process.

The Secretary of Defense released the “Transformation Through Base Realignment and Closure” (“kickoff”) memorandum on 15 November 2002. The document laid out the authorities, organizational structure, goals, and objectives for the BRAC round.

Prior BRAC analyses focused on eliminating excess capacity. The kickoff memorandum states that while BRAC 2005 must continue to pursue the reduction of surplus, “BRAC 2005 can make an even more profound contribution to transforming the Department by rationalizing our infrastructure with defense strategy. BRAC 2005 should be the means by which we reconfigure our current infrastructure into one in which operational capacity maximizes *both* warfighting capability and efficiency.”

The memorandum emphasized examining and implementing opportunities for greater Joint activity among the Services. The organizational structure delineated in the memo mirrors this sentiment, with analysis divided into two categories: Military Departments (MILDEPs) studying their Service-unique functions, and Joint Cross-Service Groups (JCSGs) examining common business-oriented functions.

The emphasis on jointness continued in “Policy Memorandum One,” issued on 16 April 2003 by the Under Secretary of Defense for Acquisition, Technology & Logistics (USD(AT&L)). The memo outlined BRAC policies, procedures, and responsibilities, and tasked BRAC components to devise internal control plans, data certification systems, and measures for applying each of the selection criteria to their analyses. The USD(AT&L) explained how to develop and document recommendations and directed that BRAC data not be made public until after the Secretary of Defense submitted recommendations to the Commission (no later than 16 May 2005). The Government Accountability Office (GAO), however, was granted access to material throughout the process, which enabled GAO to produce a timely report detailing DOD’s development of recommendations for the Commission.

Additional OSD guidance was provided in the following memoranda:

- Policy Memorandum 2 – Military Value Principles
- Policy Memorandum 3 – Selection Criterion 5
- Policy Memorandum 4 – Selection Criteria 7 and 8
- Policy Memorandum 5 – Homeland Defense
- Policy Memorandum 6 – Selection Criterion 6
- Policy Memorandum 7 – Surge
- Policy Memorandum 8 – Environmental Summaries for Lease Sites

## **2.2 Department of the Army**

On 12 December 2002 the Secretary of the Army signed a memorandum entitled “Transformation Through Base Realignment and Closure.” The Secretary of the Army stated that the Army’s full participation in BRAC 2005 would enable the Service to realign its infrastructure in a way that maximizes both efficiency and warfighting capability.

In the memorandum, the Secretary outlined the organizational structure of the Army’s BRAC 2005 process. He established the Deputy Assistant Secretary of the Army (Infrastructure Analysis) as the focal point of the Army BRAC effort and Director of The Army Basing Study (TABS) Group. The TABS Group would provide comprehensive analysis to develop and support Army scenarios. In conducting analysis, the TABS Group would employ the support of the Headquarters, Department of the Army (HQDA) and Major Command (MACOM) staffs. The Army BRAC Senior Review Group (BRAC SRG) would provide guidance and review products.

The Secretary of the Army emphasized the importance of adhering to BRAC law and its milestones. He further indicated that the Army had to treat all of its installations fairly in the process.

## **2.3 Army Strategy**

The Secretary of the Army’s strategy for BRAC 2005 is to establish a streamlined portfolio of installations with optimized Military Value and a significantly reduced cost of ownership that:

- Facilitates transformation, Joint operations, and Joint business functions;
- Accommodates rebasing of overseas units within the Integrated Global Presence and Basing Strategy; and
- Divests of an accumulation of installations that are no longer relevant and are less effective in supporting a Joint and Expeditionary Army.

### **3.0 ARMY BRAC ORGANIZATION**

All levels of the Department of the Army participated during the BRAC 2005 process. The following sections describe the Army analytical and decision-making bodies during the process.

#### **3.1 Executive Office, Headquarters (EOH)**

The EOH is the senior body within the Department of the Army. The group consists of the Secretary of the Army, the Chief of Staff of the Army, the Under Secretary of the Army, and the Vice Chief of Staff of the Army.

The EOH was the senior-most deliberative group in the Army BRAC 2005 process. The EOH received the recommendations of the BRAC SRG and assisted the Secretary of the Army in developing and making final Army recommendations to forward to the Secretary of Defense.

#### **3.2 BRAC Senior Review Group (SRG)**

The BRAC SRG operated as a deliberative and coordinating body for the Secretary of the Army. Within the Army, it provided guidance to the TABS Group and reviewed its products. The BRAC SRG evaluated potential Army recommendations for the consideration of the EOH and Secretary of the Army.

The BRAC SRG supervised the efforts of the Army Joint Cross-Service Group (JCSG) representatives as they helped develop JCSG recommendations for the DOD Infrastructure Steering Group (ISG). This process ensured that Army-specific requirements were discussed by the Joint team.

The BRAC SRG was co-chaired by the Vice Chief of Staff of the Army and Under Secretary of the Army. In the absence of the Under Secretary, the Assistant Secretary of the Army (Installations and Environment) served as co-chair. In the absence of the Vice Chief of Staff of the Army, the Director of the Army Staff served as co-chair. The Deputy Assistant Secretary of the Army for Infrastructure Analysis (DASA(IA)) served as the Executive Secretary for the BRAC SRG. Members of the BRAC SRG are listed in the table below. NOTE: The Deputy Under Secretary of the Army attended several meetings but later changed assignments, and the position was not filled.

<b>BRAC SRG Members</b>	
Under Secretary of the Army (Co-Chair)	Vice Chief of Staff of the Army (Co-Chair)
Assistant Secretary of the Army (Acquisition, Logistics, and Technology)	Director of the Army Staff
Assistant Secretary of the Army (Installations and Environment)	Deputy Chief of Staff, G3
Assistant Secretary of the Army (Financial Management and Comptroller)	Deputy Chief of Staff, G4
General Counsel	Deputy Chief of Staff, G8
Deputy Under Secretary of the Army	Chief, Army Reserve
The Surgeon General	Director, Army National Guard
	Assistant Chief of Staff for Installation Management

**Table 3-1. BRAC SRG Members**

**3.3 The Army Basing Study (TABS) Group**

The TABS Group stood up on 15 January 2003. The TABS mission was to conduct a comprehensive assessment of Army installations in compliance with the established BRAC criteria; evaluate alternatives; and develop, document, and publish recommendations for submission to OSD. The TABS Group ensured its analytical process was consistent with DOD and Army force structure plans, the DOD installation inventory, BRAC selection criteria, and the requirements of Public Law 101-510, as amended. The TABS Group executed Army BRAC analysis and documentation and coordinated analyses and recommendations with other Service analytical teams and the JCSGs. Its charter expires 30 days after final approval or disapproval of the Commission report by the Congress, or sooner as directed.

**3.4 U.S. Army Audit Agency (USAAA)**

The USAAA served as the Department of the Army’s internal audit department during BRAC 2005. These services helped the Army make informed decisions, resolve issues, use resources effectively, and satisfy statutory and fiduciary responsibilities.

Because of the frequent coordination between USAAA and the TABS Group during BRAC 2005, the agency secured space at the analytical group’s office and worked collaboratively throughout the process.

USAAA also communicated regularly with the Government Accountability Office (GAO) and the DOD Inspector General (DOD IG) to ensure close coordination between Army and DOD BRAC audit efforts.



## 4.0 ARMY PRESENCE IN DOD-WIDE BRAC ORGANIZATIONS

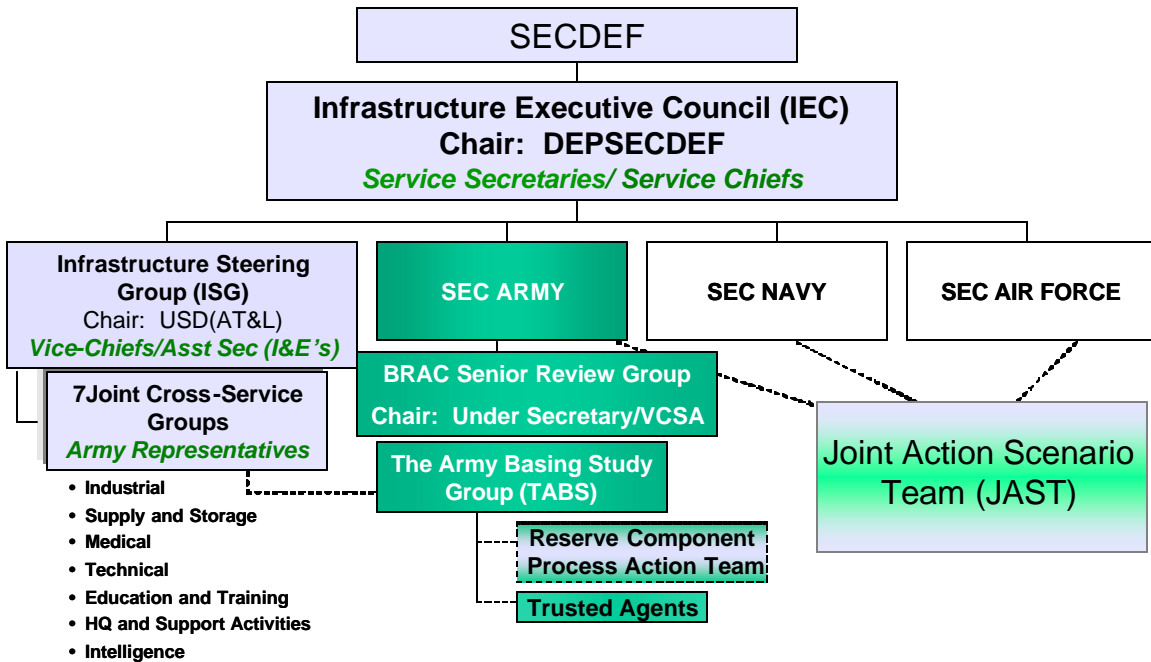


Figure 4-1. DOD BRAC Organization

### 4.1 Infrastructure Executive Council (IEC)

The IEC was the oversight body for the DOD BRAC 2005 process. The IEC met as needed to approve major strategic decisions. The IEC was chaired by the Deputy Secretary of Defense and consisted of the following members:

- Deputy Secretary of Defense (Chair)
- Under Secretary of Defense (Acquisition, Technology, and Logistics)
- Chairman of the Joint Chiefs of Staff
- Secretary of the Army
- Chief of Staff of the Army
- Secretary of the Navy
- Chief of Naval Operations
- Commandant of the Marine Corps
- Secretary of the Air Force
- Chief of Staff of the Air Force

### 4.2 Infrastructure Steering Group (ISG)

The ISG provided oversight to the JCSGs. The ISG ensured and enforced the coordination of analytical processes among the JCSGs, MILDEPS, and Defense

Agencies. As the Chair of the ISG, the Under Secretary of Defense (Acquisition, Technology, and Logistics) had the authority and responsibility to issue the operating policies and detailed direction necessary to conduct BRAC 2005 analyses. The ISG consisted of the following members:

- Under Secretary of Defense (Acquisition, Technology, and Logistics) (Chair)
- Deputy Under Secretary of Defense (Installations and Environment)
- Vice Chairman of the Joint Chiefs of Staff
- Assistant Secretary of the Army (Installations and Environment)
- Vice Chief of Staff of the Army
- Assistant Secretary of the Navy (Installations and Environment)
- Vice Chief of Naval Operations
- Assistant Commandant of the Marine Corps
- Assistant Secretary of the Air Force (Installations, Environment, and Logistics)
- Vice Chief of Staff of the Air Force

#### **4.3 Joint Cross-Service Groups (JCSGs)**

The JCSGs were created to analyze common business-oriented functions across the MILDEPs and Defense Agencies.

JCSGs participated in BRAC 95, but their role increased in BRAC 2005 as transformation and jointness received more emphasis. JCSG scenarios competed on an equal footing with MILDEP scenarios for DOD approval and funding rather than being forwarded through the MILDEPs for initial approval and submission to DOD. The ISG reviewed JCSG scenarios before they were proposed to the IEC in a manner similar to a MILDEP approval process for its scenarios.

Seven JCSGs participated in BRAC 2005: Education and Training, Headquarters and Support Activities, Industrial, Intelligence, Medical, Supply and Storage, and Technical. The JCSGs analyzed, coordinated, and developed scenarios that enhance jointness, effectiveness, and efficiency within their assigned functions.

Each JCSG consisted of senior leaders from OSD, the MILDEPs, the Joint Staff, and appropriate Defense Agencies. Because of the increased authority of JCSGs in BRAC 2005, the Army appointed senior SMEs to each JCSG:

JCSG	Army Senior SME
Education and Training	HQDA, Assistant Deputy Chief of Staff, G3
Headquarters and Support Activities	HQDA, Assistant Deputy Chief of Staff, G8 (HSA JCSG Chair)
Industrial	Army Materiel Command, G3
Intelligence	HQDA, Assistant Deputy Chief of Staff, G2
Medical	Deputy Surgeon General
Supply and Storage	HQDA, Deputy Chief of Staff, G4
Technical	Technical Director, U.S. Army Developmental Test Command

**Table 4-1. Army Senior Representatives to JCSGs**

The Army representatives to each JCSG were senior leaders from the Department of the Army. They ensured that Army capabilities and requirements were discussed and considered by the group so that the Army’s role as a vital member of the Joint team was reflected in final BRAC proposals of the JCSG.

The Army’s JCSG representatives were also invited attendees as advisors to the Army BRAC SRG – the body that guided the Army’s BRAC 2005 effort. Their status as senior Army leaders enabled them to work Army issues directly and effectively.

**4.4 Joint Action Scenario Team (JAST)**

The DOD made Joint basing of forces and support functions a priority consideration for BRAC 2005. Along with the JCSG analysis of common business-oriented functions, DOD mandated a study of Joint basing scenarios for operational forces. In compliance, the DASA(IA), the Deputy Assistant Secretary of the Air Force for Basing and Infrastructure Analysis, and the Deputy Assistant Secretary of the Navy for Infrastructure Strategy and Analysis – the BRAC Directors – established the JAST to coordinate, manage, and assist in the process of developing Joint operational basing scenarios. The Army was designated as the lead Service of the JAST.

The JAST consisted of members of the Services who represented, worked for, and reported to the BRAC Directors. OSD representatives also attended meetings, providing prior-BRAC experience, advice, and expertise.

The primary objective of the JAST was to help the MILDEPs efficiently examine and implement viable opportunities for greater Joint activity of operational forces. Although the JAST primarily concentrated on operational forces, other Joint options were considered.

The JAST complied with BRAC law and guidance, ensuring that the selection criteria were the basis for Joint operational base scenarios, and provided access to and open sharing of MILDEP information regarding JAST scenarios.

#### **4.5 Reserve Component Process Action Team (RC PAT)**

Reserve Component participation in previous BRAC rounds was limited to identifying enclave requirements at closing or realigning Active Component installations. Given the vital role that the Reserve Components continue to play in the Global War on Terrorism, the impacts of modularity on Reserve Component force structure, and the need to adjust the demographic orientation to meet these demands, the RC PAT was formed to evaluate closure and realignment opportunities for both the Army National Guard and the Army Reserve.

The Chief, Army Reserve, the Director, Army National Guard, and the Director, The Army Basing Study chartered an organization known as the Reserve Component Process Action Team (RC PAT) to seek opportunities to work together in BRAC 2005. The RC PAT addressed the critical facility requirements of the Reserve and Guard, and identified opportunities to divest infrastructure that no longer meets operational requirements. The ten Army Reserve Regional Readiness Commands and, as voluntary participants in the RC PAT, The State Adjutants General (TAGs) from 39 states, Puerto Rico, and the District of Columbia provided information on state-owned and sub-threshold Reserve Component facilities (i.e., those facilities that employed less than 300 civilians).

The RC PAT ensured that Reserve Component activities and facilities were incorporated in analyzing potential BRAC 2005 actions. It evaluated potential recommendations for Army considerations for realignments and closures of RC installations with civilian workforces below the BRAC thresholds established by 10 U.S.C. § 2687, as amended. The RC PAT also assessed BRAC 2005 decisions on Reserve mission readiness. Through the RC PAT, the Reserve Components took advantage of the opportunity BRAC 2005 provided to realign and consolidate RC activities and facilities in concert with Active and Joint Reserve Components and to generate efficiencies that make the Army Reserve and Army National Guard more powerful and capable components of the Army and Joint Team.

The RC PAT managed the process for conducting all RC-basing and Joint-use opportunities, developed realignment and closure proposals and coordinated them with the appropriate JCSGs, the JAST, and the TABS Group. The RC PAT process complied with BRAC 2005 legislation and guidance provided by OSD and TABS Group, while using Army Reserve and Army National Guard subject matter experts to conduct the analysis. The RC PAT's purpose reinforced the BRAC 2005 goals of achieving a more powerful military with enhanced readiness and an emphasis on Joint stationing opportunities.

The RC PAT process paralleled the TABS Group analytical process. The RC PAT solicited proposal ideas and data from each state and Regional Readiness Command (RRC), conducted cost analysis using COBRA, and then finalized RC proposals with each state and RRC. The RC PAT submitted the RC proposal packet to the TABS Group. RC proposals were subject to BRAC deliberative material management controls.

## 4.6 Joint Process Action Teams (JPATs)

The DOD created JPATs to discuss analysis of cost, economics, local area infrastructure, and environment – key factors addressed by BRAC Selection Criteria 5 through 8 (see Section 5.1). The JPATs convened throughout BRAC 2005, participating in development and facilitating analysis. Each JPAT dealt with all models, tools, processes, and policies regarding the study of its particular selection criterion during BRAC 2005.

### 4.6.1 Criterion 5: Cost of Base Realignment Actions (COBRA)

OSD directed the Army to establish the COBRA JPAT to review, refine, and verify COBRA algorithms, operations, and functionality. The Army led this effort to update and revise the model so that it captured new technologies, business practices, and Joint service requirements. Algorithms were improved to better predict TRICARE, sustainment, and base operating support costs. Standard factors were also reviewed, verified, and certified.

Specifically, the COBRA JPAT:

- Provided COBRA training to the Services and the JCSGs to ensure understanding of existing COBRA data, functionality, limitations, and possible updates;
- Verified and validated model inputs and outputs; and
- Reviewed, refined, and verified model algorithms, data elements, operations, and functionality

The JPAT consisted of representatives from each of the Services, the JCSGs, and OSD. USAAA, DOD Inspector General, and the GAO acted as JPAT observers. The JPAT continued to meet to complete necessary updates and corrections through May 2005.

### 4.6.2 Criterion 6: Economics (ECON)

The Criterion 6 JPAT developed a methodology in which DOD BRAC Components (Military Services, JCSGs, and Defense Agencies) measure the economic impact on communities involved in BRAC 2005 alternatives and recommendations.

JPAT 6 consisted of representatives from each of the Services, the JCSGs, and OSD (who led the JPAT). The DOD Inspector General was also present to observe the process.

The ECON JPAT members:

- Developed attributes, metrics, and questions to support Criterion 6
- Reviewed the BRAC 2005 public law, existing DOD policy and guidance, and ensured compliance
- Provided a report on the approach to address Criterion 6, to include recommended attributes and metrics, and a set of questions to obtain data
- Developed a template for displaying certified data for MILDEP and JCSG consideration as they assess various scenarios

### 4.6.3 Criterion 7: Local Area Infrastructure (LAI)

The OSD BRAC Director and the BRAC Deputy Assistant Secretaries established a JPAT for Criterion 7, and the Air Force was designated as the lead Service for the effort.

LAI JPAT members:

- Developed and executed an approach to define Criterion 7
- Identified attributes and questions to assess a community's ability to support missions, forces, and personnel
- Produced a report on the data, which was used by the BRAC Components

#### *4.6.4 Criterion 8: Environment (ENV)*

The environmental analysis process for BRAC 2005 was developed by a JPAT and was designed to satisfy, for each proposal, the analytical requirements for Criterion 8.

JPAT 8 was led by the Navy and included MILDEP and OSD representatives and the DOD Inspector General.

The ENV JPAT members:

- Generated 101 questions in 10 resource areas for Data Call #1
- Developed three products to assist environmental analysis: the Installation ENV profile, the Summary of Scenario Environmental Impacts, and the Cumulative Summary of Environmental Impacts

#### **4.7 Government Accountability Office (GAO)**

The GAO played a key role in BRAC 2005 by evaluating DOD's BRAC process. To facilitate the task, DOD provided GAO full access to the documents and processes of all BRAC Components. The Army coordinated with GAO and provided biweekly submissions of documents to enable continuous examination of the Army's BRAC process.

#### **4.8 Office of the General Counsel (OGC)**

OGC provided the Army with legal counsel in BRAC 2005. The Army coordinated with OGC during the selection process to ensure legal sufficiency of recommendations.

## 5.0 ANALYTICAL FOUNDATION

BRAC law specifies that all recommendations must be based on the DOD Selection Criteria, Force Structure Plan, and Installation Inventory submitted to Congress. These requirements formed the foundation for BRAC 2005 analysis.

### 5.1 Selection Criteria

BRAC law requires that DOD develop criteria that must be used for making closure and realignment recommendations to the BRAC Commission. The law also requires that those criteria must ensure that Military Value is the primary consideration.

The selection criteria were required to be submitted in draft form by 31 December 2003, and the final criteria published in the Federal Register by 16 February 2004. Both of these deadlines were met. On 15 March 2004 the selection criteria became law.

The BRAC 2005 Selection Criteria are:

#### Military Value

1. The current and future mission capabilities and the impact on operational readiness of the total force of the Department of Defense, including the impacts on joint warfighting, training, and readiness.
2. The availability and condition of land, facilities and associated airspace (including training areas suitable for maneuver by ground, naval, or air forces throughout a diversity of climate and terrain areas and staging areas for the use of the Armed Forces in homeland defense missions) at both existing and potential receiving locations.
3. The ability to accommodate contingency, mobilization, surge, and future total force requirements at both existing and potential receiving locations to support operations and training.
4. The cost of operations and the manpower implications.

#### Other Considerations

5. The extent and timing of potential costs and savings, including the number of years, beginning with the date of completion of the closure or realignment, for the savings to exceed the costs.
6. The economic impact on existing communities in the vicinity of military installations.
7. The ability of the infrastructure of both the existing and potential receiving communities to support forces, missions and personnel.
8. The environmental impact, including the impact of costs related to potential environmental restoration, waste management, and environmental compliance activities.

The legislation for BRAC 2005 states that the selection criteria must ensure that Military Value (Criteria 1-4) is the primary consideration in making recommendations. The law also requires BRAC components to address the special considerations of cost, economic impact, local area infrastructure, and environment (Criteria 5-8).

The Military Value criteria of BRAC 2005 provide the Army a comprehensive, proven technique to compare and select installations to accomplish these initiatives. With BRAC, transformation to a modular force, return of forces from overseas, and transformation of the Reserve Components will occur within the timeframe necessary to satisfy operational needs. The Military Value criteria specifically directed attention to staging areas in support of homeland defense, maintenance of a diversity of climate and terrain in support of training, and surge capacity.

## **5.2 Force Structure Plan**

In the BRAC kickoff memorandum, the Secretary of Defense stated that a “comprehensive infrastructure rationalization requires an analysis that examines a wide range of options for stationing and supporting forces and functions, rather than simply reducing capacity in a status-quo configuration.” BRAC law also required that the Services develop 20-Year Force Structure plans that depict the changes to the force over time. The Army Deputy Chief of Staff, G3 (DCS, G3) developed the Army’s plan, to include the impacts of Army Transformation, and submitted it to the Joint Chiefs of Staff for approval and submission to Congress. The Chairman, Joint Chiefs of Staff signed the final 20-Year Force Structure Plan on 14 March 2005. The 20-Year Force Structure Plan is described in detail in Volume II of the DOD BRAC 2005 Report, the Classified Force Structure Plan.

The Army 20-Year Force Structure Plan reflects two key Army decisions: Transformation and the return of Army forces from overseas as part of the Integrated Global Presence Basing Study (IGPBS).

*Transformation* - In broad terms, Army Transformation addresses three objectives: modular force design, rebalancing, and stabilization. Through the Army Modular Force Initiative, the Army will meet the demands of a global expeditionary Army by increasing from 67 Brigade Combat Teams (BCTs) to 77 Modular BCTs (43 in the Active Component and 34 in the Army National Guard), with the potential for 82 (48 in the Active Component and 34 in the Army National Guard); realigning its support forces into standard designs; and decreasing the number of headquarters. Rebalancing addresses the need to transfer selected capabilities from the Reserve Component to the Active Component and vice versa. Stabilization entails changes to personnel policies that encourage Soldiers and their families to remain on the same installation for longer periods of time, adding predictability to the Soldiers’ careers. The Army BRAC analysis addressed the impacts of these objectives individually and collectively through constant liaison with the HQDA DCS, G3 and the Offices of the Director, Army National Guard and the Chief of the Army Reserve, and the certified databases provided.

*IGPBS* - To meet the demands of the new Defense Strategy, DOD evaluated the global posture of the Armed Forces and their ability to meet uncertainty. The impact of the DOD analysis resulted in decisions to withdraw approximately 47,000 selected Army forces from both Europe and Korea and station these forces in the United States and to meet certain treaty obligations through force rotations.



The Army analysis used data provided by the Army DCS, G3 to show the impacts of IGPBS decisions.

The table below shows the impacts of both the Army Modular Force Initiative and IGPBS.

Brigade Type	Active Component	Reserve Component
Heavy Modular BCTs	19	10
Infantry Modular BCTs	18	23
Stryker BCTs	6	1
Aviation Brigades	11	14
Fires Brigades	6	6
Maneuver Enhancement Brigades	3	13
Battlefield Surveillance Brigades	3	2
Sustain Brigades	16	19

**Table 5-1. Impacts of Modularity Transformation and IGPBS**

The Army conducted a holistic analysis of restationing overseas units and validating the final location for all modular units within BRAC 2005. Based on an operational necessity to fully support the Global War on Terrorism, the Army obtained Secretary of Defense approval to temporarily station several units prior to formal approval of the Secretary’s BRAC recommendations. These units primarily included the activation of ten additional Modular BCTs and the relocation of one IGPBS-related Modular BCT. The initial basing of these modular units was temporary, pending BRAC 2005 review. As part of its analysis, the Army considered these 11 units and their locations.

BRAC law was a definitive factor in the analysis of the Army Modular Force Initiative and IGPBS. Actions such as the activation of a unit on a particular installation or relocating a unit from overseas to the US were not considered realignment actions as that term is defined in the National Defense Authorization Act for 1991, as amended, and as applied in previous rounds of BRAC. However, the Army was cognizant that if the selection of a location for an activating or returning unit was part of, and linked to, a BRAC realignment recommendation, then it could be accomplished through BRAC. In the case of the units that were approved as temporary stationing actions, the Army analyzed each unit and installation to determine, if, within the context of BRAC, there was a more optimal location. Chapter 7 lays out the results of Army BRAC 2005 analyses for both Modular Force and IGPBS-related units. If temporary sites were

confirmed, the results reported in Chapter 7 do not include a recommendation, because none was required.

### 5.3 Installation Inventory

The Army owns more than 4,000 installations worldwide. After applying BRAC law, the Army determined a resultant list of installations subject to BRAC analysis. In addition, installations located on Army property but controlled by a Defense agency were evaluated by JCSGs in accordance with OSD policy. The Army Installation Inventory included 87 Army posts and 10 lease facilities, which are identified below by Installation Management Agency (IMA) region.

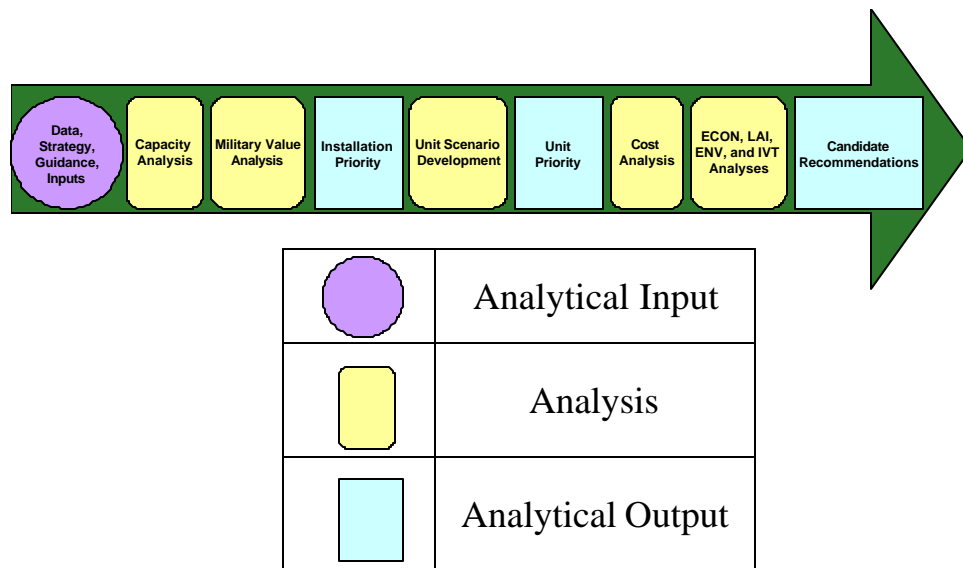
NORTHEAST	NORTHWEST	SOUTHEAST	SOUTHWEST
Ft McNair, DC	Ft Carson, CO	Anniston AD, AL	Ft Huachuca, AZ
Walter Reed AMC, DC	Pueblo CD, CO	Ft Rucker, AL	Yuma PG, AZ
Aberdeen PG, MD	Rock Island Arsenal, IL	Redstone Arsenal, AL	Pine Buff Arsenal, AR
Adelphi Lab, MD	Crane AAP, IN	Ft Benning, GA	Ft Irwin, CA
Ft Detrick, MD	Newport CD, IN	Ft Gillem, GA	Presidio of Monterey, CA
Ft Meade, MD	Iowa AAP, IA	Ft Gordon, GA	Riverbank AAP, CA
Soldier Systems Center, MA	Ft Leavenworth, KS	Ft McPherson, GA	Sierra AD, CA
Ft Dix, NJ	Ft Riley, KS	Ft Stewart/Hunter, GA	Ft Polk, LA
Ft Monmouth, NJ	Kansas AAP, KS	Bluegrass AD, KY	Hawthorne AD, NV
Picatinny Arsenal, NJ	Detroit Arsenal, MI	Ft Campbell, KY	White Sands MR, NM
Ft Drum, NY	USAG Selfridge, MI	Ft Knox, KY	Ft Sill, OK
Ft Hamilton, NY	Ft Leonard Wood, MO	Mississippi AAP, MS	McAlester AAP, OK
Watervliet Arsenal, NY	Lake City AAP, MO	Ft Bragg, NC	Corpus Christi AD, TX
West Point, NY	Lima Tank Plant, OH	MOT Sunny Point, NC	Ft Bliss, TX
Carlisle Barracks, PA	Umatilla CD, OR	Ft Jackson, SC	Ft Hood, TX
Charles E. Kelly Support Center, PA	Deseret CD, UT	Holston AAP, TN	Ft Sam Houston, TX
Letterkenny AD, PA	Dugway PG, UT	Milan AAP, TN	Lone Star AAP, TX
Scranton AAP, PA	Tooele AD, UT	Ft Buchanan, PR	Red River AD, TX
Tobyhanna AD, PA	Ft Lewis, WA		
Ft A. P. Hill, VA	Ft McCoy, WI		
Ft Belvoir, VA			
Ft Eustis, VA			<b>PACIFIC</b>
Ft Lee, VA			Ft Richardson, AK
Ft Monroe, VA			Ft Wainwright, AK
Ft Myer, VA			Ft Shafter, HI
Radford AAP, VA			Schofield Barracks, HI
			Tripler AMC, HI
<b>Leases</b>	<b>Lease</b>	<b>Leases</b>	
Army JAG Agency, VA	ARPERCEN, MO	PEO STRICOM, FL	
Army JAG School, VA		Army Research Office, NC	
Bailey's Crossroads, VA			
Crystal City Complex, VA			
Hoffman Complex, VA			
HQ, ATEC, VA			
Rosslyn Complex, VA			

Table 5-2. Army BRAC 2005 Active Component Installation Inventory

## 6.0 ARMY SELECTION PROCESS

The challenge for the Army was to develop recommendations to relocate units, functions, and activities to establish a streamlined portfolio of installations with optimized Military Value and a significantly reduced cost of ownership.

Figure 6-1 illustrates the selection process the Army followed in BRAC 2005. The process was based on legal, OSD, and Army guidance; Army strategy; required data; and additional inputs. The Army analyzed its installations and assets against the requirements of the 20-Year Force Structure Plan, employed Military Value as the primary consideration, and examined potential BRAC recommendations against all eight DOD Selection Criteria.



**Figure 6-1. Process Flow of Army BRAC 2005 Analysis**

### 6.1 Lessons Learned

GAO, the RAND Corporation, and the Center for Army Analysis (CAA) each studied specific aspects of previous BRAC rounds. GAO issued a report in 1997 declaring DOD BRAC analysis generally sound but citing several shortfalls, focusing on organization, Joint coordination, cost evaluation, data collection, and audit regulation.<sup>6</sup> In an additional report published in 2003, GAO evaluated RC participation and consequences during prior BRAC rounds.<sup>7</sup> RAND's study evaluated the Army's analysis in previous BRAC rounds.<sup>8</sup> And, in a CAA report, the Army also identified additional areas for

<sup>6</sup> United States General Accounting Office, *Military Bases: Lessons Learned from Prior Base Closure Rounds*, July 1997.

<sup>7</sup> United States General Accounting Office, *Military Base Closures: Better Planning Needed for Future Reserve Enclaves*, June 2003.

<sup>8</sup> RAND Corporation, *Taking Stock of the Army's Base Realignment and Closure Selection Process*, 2001.

improvement within its analytical process.<sup>9</sup> The results of these studies were compiled, and DOD and the Army addressed the lessons learned for BRAC 2005. Each of these reports informed the Army during development of its analytical process, enabling a more efficient and effective outcome.

### 6.1.1 GAO

#### 6.1.1.1 Joint Coordination

The GAO report stated that the outcome of any future BRAC round could be improved by resolving, in advance, key organizational and policy issues, such as the emphasis on jointness. The Joint effort during BRAC 95 lacked authoritative oversight and necessary influence. As a result, the Services did not reach a consensus on significant cross-Service consolidations. In response, OSD assumed a stronger leadership role during the development of BRAC 2005. The organization for BRAC 2005 included Service representatives at the executive and analytical levels of the cross-Service effort. The IEC and ISG were created to provide executive guidance to the cross-Service effort and to ensure that all BRAC components examined jointness. OSD assigned lead responsibilities for each JCSG to a particular agency in advance. Each JCSG scenario competed equally with MILDEP scenarios when reviewed by the IEC. [NOTE: The RAND study also mentioned the insufficient analysis of cross-Service collocation in BRAC 95.]

In addition to improving JCSG organization, process, and authority, OSD further enhanced the Joint theme in BRAC 2005 by creating the JAST. The JAST provided the MILDEPs an opportunity to pursue Joint stationing of operational units. Acting as a clearinghouse, the JAST enabled the MILDEPs to communicate and coordinate while developing Joint operational basing scenarios.

#### 6.1.1.2 Cost Evaluation

Much of GAO's recommended cost improvements will be concentrated in the implementation stage of BRAC 2005, when DOD components work on tracking savings and estimating environmental cleanup costs more effectively. During the analytical stage, however, BRAC components were able to use GAO's findings to improve the COBRA model. GAO stated that DOD and the Services should begin development of the model early in the process to "enhance completeness and consistency of COBRA cost factors and analyses within and among DOD's components, to the extent practical."<sup>10</sup> To accomplish this recommendation, DOD instituted a COBRA JPAT. The COBRA JPAT began meeting early in the BRAC analytical process, and it coordinated and discussed methods for improving the accuracy of the COBRA model. For example, it incorporated GAO's recommendation that net present value use a discount rate related to the Treasury's current borrowing rate.

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<sup>9</sup> Center for Army Analysis, *Optimal Stationing of Forces*, 2001.

<sup>10</sup> GAO, *Military Bases*, pg. 47.

#### 6.1.1.3 Data Collection

Commenting on the data calls from previous BRAC rounds, GAO stated that BRAC components should keep in mind, when developing data calls, that eliminating infrastructure would necessarily increase in difficulty for the next BRAC round. For BRAC 2005, the Army capitalized on the technological advancements since the last BRAC round and employed an automated, web-based data call system. This system improved efficiency, accuracy, and credibility throughout the analytical process, thus lessening the burden on installations and increasing the comprehensiveness of the results.

#### 6.1.1.4 Audit Regulation

GAO also recommended that DOD ensure full audit access to the entire BRAC analytical process. DOD addressed this, and the Army stated its full-access procedure in its internal control plan for BRAC 2005.<sup>11</sup>

#### 6.1.1.5 Reserve Component Synchronization

The RC participated in the planning during previous BRAC rounds but did not develop a significant number of proposals. Moreover, GAO found that the Army overstated savings and understated costs in cases where the Army recommended an AC closure that later included an RC enclave.

To address this in BRAC 2005, the Army analytical process included a specific review of potential realignments and closures to identify enclave requirements early in the analysis and testing. In BRAC 2005, the RC provided significant, transformational proposals for BRAC analysis. State and regional RC leaders developed proposals that were inputs to the Army's analytical process. In this manner, the RC was equally as active as the AC. Additionally, the BRAC 2005 COBRA model included an RC Enclave input. This enabled the Army to identify enclaves during analytical development and cost scenarios.

### 6.1.2 RAND

#### 6.1.2.1 Installation Categorization

In prior BRAC rounds, the Army divided its installations into 13 functional categories and created Military Value rankings within each category using different weights and attributes. This process precluded installations in one category being compared to installations in any other category, and it was impossible to assess which installations had the greatest ability (highest Military Value) to accept new missions and functions. This "stove-piping" did not fully capture the potential that an installation might have outside of its current category and mission. RAND suggested that the Army would better assess its installations if they were evaluated as one group against a universal set of Military Value weights and attributes. In BRAC 2005, the Army considered RAND's recommendation and determined that a Multi-Objective Decision Analysis approach for calculating the Military Value of installations was appropriate. The Army evaluated each installation using the same attributes and weights, and Military Value was assigned based on these attributes. There was one overall Military Value ranking among all installations,

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<sup>11</sup> The Army Basing Study (TABS) Group, *Army Base Realignment and Closure (BRAC) 2005 Internal Control Plan (ICP)*, 4 June 2003.

which measured potential across an array of missions rather than an installation's current mission. In this way, the Military Value analysis supported the Army's capabilities-based analysis.

#### 6.1.2.2 Military Value Assessment

RAND considered the Army's Military Value assessment in BRAC 95 to be too subjective. Selection criteria weights were calculated "top-down" without replicable analysis. Weights within each selection criterion were calculated after the selection criteria weights were determined. For BRAC 2005, the Army determined that a "bottom-up" approach, instead of the "top-down" approach, which was used in the previous round, was more appropriate. Subject matter experts determined the relative weights of each Military Value attribute and which selection criteria the attribute supported. The selection criteria weights were then calculated based on the analytically derived attribute weights.

#### 6.1.2.3 Baseline Projection

RAND concluded that the BRAC 95 process was shortsighted in that the authorizing legislation limited the requirements horizon to six years. The 2005 legislation now permits a 20-year requirements horizon. To take full advantage of the new provision, the Army projected a 20-year force structure that fully addressed Army transformation. A larger baseline projection engendered greater risk; the Army addressed these risks throughout its analysis, including uncertainty and surge analysis where feasible.

#### 6.1.2.4 Financial Investment

RAND contended that the financing of BRAC actions in previous rounds caused Services to refrain from recommending closures and realignments with promising long-term savings but large up-front costs. In BRAC 95, Services financed BRAC actions using their existing budgets. RAND recommended that OSD establish a common, DOD BRAC budget with the Services competing for funds. This recommendation came to fruition for BRAC 2005, offering an incentive for Services to examine more expensive and higher-payoff actions, and, thus, increasing the scope of BRAC analysis.

### 6.1.3 CAA

#### 6.1.3.1 Stationing Analysis

CAA examined stationing analysis at several levels, from a simplistic static analysis to a more sophisticated mixed integer programming approach (the Optimal Stationing of Army Forces Model (OSAF)), which was used in BRAC 2005.<sup>12</sup> CAA analysis examined GAO and RAND findings and confirmed through OSAF that "stove-piping" did reduce potential savings in past BRAC rounds and limited stationing opportunities. The OSAF model provided the Army with a greater number of stationing possibilities through optimization and built on capacity, Military Value, and portfolio analyses. OSAF was constrained by mission-related restrictions and examined all alternatives with respect to facility requirements, training requirements, and economics. OSAF provided a starting

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<sup>12</sup> CAA, *Optimal Stationing*.

point for the Army analysis during BRAC 2005, and should be used for examining future IGPBS and Modularity stationing options.

#### 6.1.3.2 Military Value Attributes

CAA determined that a subset of the BRAC 95 attributes drove the results in that analysis. The TABS Group built on CAA's work, examining each attribute's ability within the Military Value model to help compare Army installations. The resulting Military Value model provided the Army a set of well-defined and representative attributes that helped to rank installations.

## 6.2 Process Guidance

The Secretary of the Army's strategy for BRAC 2005 is to establish a streamlined portfolio of installations with optimized Military Value and a significantly reduced cost of ownership that:

- Facilitates transformation, Joint operations, and Joint business functions;
- Accommodates rebasing of overseas units within the Integrated Global Presence and Basing Strategy; and
- Divests of an accumulation of installations that are no longer relevant and are less effective in supporting a Joint and Expeditionary Army.

The specific objectives to support this capabilities-based analysis were developed as described in the following sections.

### 6.2.1 OSD BRAC 2005 Military Value Principles

The OSD BRAC 2005 Military Value Principles are strategic concepts that foster transformation and were employed while developing, analyzing, and producing scenarios. The Army's BRAC Principles, which were incorporated into the OSD Principles, were developed by the TABS Group after reviewing guidance, prioritizing Army transformational concepts, and interviewing Army senior leaders. The BRAC SRG approved the Army BRAC Principles on 4 May 2004. The Deputy Secretary of Defense established the OSD BRAC Principles in a 3 September 2004 memorandum, stating that the principles enumerate the essential elements of military judgment to be employed in the BRAC process. The principles were reinforced by the Acting USD(AT&L) the following month in OSD Policy Memorandum Number Two – BRAC 2005 Military Value Principles. The OSD BRAC Principles are:

**Recruit and Train:** The Department must attract, develop, and retain active, reserve, civilian, and contractor personnel who are highly skilled and educated and have access to effective, diverse, and sustainable training space in order to ensure current and future readiness, to support advances in technology, and to respond to anticipated developments in joint and service doctrine and tactics.

**Quality of Life:** The Department must provide a quality of life, including quality of work place that supports recruitment, learning, and training, and enhances retention

**Organize:** The Department needs force structure sized, composed, and located to match the demands of the National Military Strategy, effectively and efficiently supported by

the properly aligned headquarters and other DOD organizations, and that takes advantage of opportunities for joint basing.

**Equip:** The Department needs research, development, acquisition, test, and evaluation capabilities that efficiently and effectively place superior technology in the hands of the warfighter to meet current and future threats and facilitate knowledge-enabled and net-centric warfare.

**Supply, Service, and Maintain:** The Department needs access to logistical and industrial infrastructure capabilities optimally integrated into a skilled and cost efficient national industrial base that provides agile and responsive global support to operational forces.

**Deploy and Employ (Operational):** The Department needs secure installations that are optimally located for mission accomplishment (including homeland defense), that support power projection, rapid deployable capabilities, and expeditionary force needs for reach-back capability, that sustain the capability to mobilize and surge, and that ensure strategic redundancy.

**Intelligence:** The Department needs intelligence capabilities to support the National Military Strategy by delivering predictive analysis, warning of impending crises, providing persistent surveillance of our most critical targets, and achieving horizontal integration of networks and databases.

#### *6.2.2 OSD BRAC Considerations*

The OSD BRAC Considerations were also based on input from the Services. Considerations represent the ideas judged to be beneficial and recommended as appropriate to be considered within the BRAC analytical and decision-making processes. The Chairman of the ISG approved the considerations on 28 September 2004.

#### *6.2.3 Army BRAC Objectives*

Army BRAC Objectives were initiatives the Army pursued through BRAC 2005. The Objectives were designed to enable transformation of the current portfolio of Army installations into a portfolio that best supports the Joint Team. Objectives were linked to the BRAC Selection Criteria and derived from the key capabilities that installations provide to the Army. They were also linked to Military Value attributes, which were the installation characteristics that enabled the TABS Group to evaluate installations. The BRAC Objectives provided the Army with more specific parameters to guide analysis.

#### *6.2.4 Army Transformational Options*

Army Transformational Options (TOs) were stationing concepts considered during Scenario development. The Army TOs are based on the OSD BRAC Principles, the OSD and Army BRAC Considerations, and the Army BRAC Objectives.

#### *6.2.5 Army Design Constraints*

Army Design Constraints helped to further shape the parameters for analysis. The Design Constraints represented the minimum requirements the Army needed to ensure that the final portfolio of Army installations satisfied specific unit requirements. Each analyst had access to the Army design constraints and used them to help guide analysis.



The use of design constraints ensured that the necessary physical assets to support capabilities were met during Army BRAC decision-making.

### **6.3 Data Collection**

The BRAC process required that all information used to develop and make realignment and closure recommendations submitted to the BRAC Commission be certified as accurate and complete to the best of the certifiers' knowledge and belief. The TABS Group collected and maintained more than 1.2 gigabytes of data from 87 Army Installations, 10 leased complexes, and more than 50 agencies located in the National Capitol Region. The data for the 50 agencies was collected in support of the DOD Headquarters and Support Activities JCSG.

In this data collection effort, the TABS Group received the continuous support of installation administrators, MACOM trusted agents, and IMA trusted agents.

### **6.4 Capacity Analysis**

Capacity analysis was the first analytical step in the Army process. The analysis examined certified data regarding each Army installation and provided a means to accurately determine excesses and shortages in order to begin the assessment of potential efficiencies.

Capacity analysis was composed of physical, operational, and surge analysis. Physical capacity analysis measured an installation's capacity in terms of facilities to determine excess and shortage. Operational capacity analysis measured the Army's ability to support units and meet unit requirements with its installation infrastructure's physical capacity. Surge analysis determined the set of capacities that the Army needed to actively avoid reducing through BRAC based on the need to support mobilization requirements, meet National Defense contingency needs, and respond to other emergency or unforeseen requirements.

Additional detail is available in Appendix A, the Capacity Analysis Report.

#### *6.4.1 Surge*

To ensure surge requirements were included in BRAC analysis, Congress modified the previously published BRAC selection criteria by adding surge to Criterion 3. This modification tasked the MILDEPs and JCSGs to determine any surge capabilities necessary to meet probable threats and projected changes to the force structure. The Army's capacity analysis defines surge capability for selected requirements based on the needs of the 20-Year Force Structure. Throughout the capacity analysis, the Army highlighted surge implications and considered them during evaluation.

Since the BRAC focus is on installation facilities, surge capabilities refer to the retention of excess facilities that are difficult to reconstitute and not readily available to the Army by other means including the private sector.

### **6.5 Military Value Analysis**

Military Value (MV) was the primary consideration in making closure and realignment recommendations. Military Value Analysis (MVA) was the approach that the Army used

to examine MV. MV consisted of two components. The first component was an analytical foundation based on a decision-analysis approach. The analytics were then balanced with military judgment that was informed by BRAC Principles, Objectives, and Considerations.

Refer to Appendix B, the Military Value Analysis Report for more detail on the approach, analysis, and results.

#### *6.5.1 Military Value of Installations (MVI)*

The MVI model developed a 1-to-n ranking of all installations under consideration based on an analysis of 40 distinct attributes across all installations and each installation's overall MV (called the Installation Assessment in BRAC 95). Unlike BRAC 95, the BRAC 2005 MV used a capabilities-based approach instead of an installation-category approach. This allowed the Army to evaluate all installations using one model.

The Army also applied each attribute to the DOD criteria relating to MV; some attributes supported one criterion, but others supported multiple criteria. Based on the mapping to the criteria, the Army calculated the percentage of the total weight that applied to each MV criterion.

#### *6.5.2 Military Value Portfolio (MVP)*

While MVI provided the ranking of installations based on inherent MV without regard to Army capacity requirements, the MVP employed the MVI ranking and distinguished installations into those necessary to meet requirements and those whose attributes were beyond projected Army needs. Hence certain installations moved into the Army portfolio despite possessing a lower MVI rank, since the Army needed its capabilities to meet projected requirements. In other instances, installations that ranked higher in MVI moved out of the portfolio because their capabilities constituted an excess beyond projected Army requirements. The BRAC 95 team conducted similar analysis, but used a more qualitative approach. Both MVI and MVP were balanced with military judgment to determine final Military Value and the final Army portfolio.

#### *6.5.3 Climate and Terrain*

The Army addressed the climate and terrain requirements stated within Selection Criterion 2, identifying the availability and condition of land throughout a diversity of climate and terrain as a key Military Value criterion.

The Army identified current installation coverage across different climate and terrain for maneuver land capability. The Army considered maneuver land across the regimes because the capability to maneuver is the Army capability most influenced by climate and terrain. Other Army capabilities (e.g., industrial, admin, depot, etc.) are not restricted by regime. This comparison allowed the Army to determine which climate and terrain constraints needed to be included within MVP analysis.

#### *6.5.4 Staging Areas for Homeland Defense*

Selection Criterion 2 highlights the necessity for staging areas for the Armed Forces in homeland defense missions at both existing and potential receiving locations. The Army identified installation characteristics contributing to the ability of an installation to serve as a staging area.

Each potential closure of an Army installation was reviewed to assess whether the closure uncovered an exclusive coverage area. If so, then the potential closure was further reviewed for size, population, and critical infrastructure for the newly uncovered area as part of the Army's MV analysis.

#### *6.5.5 Option Value Model (OVM)*

The OVM calculated the overall scenario values with a common set of attributes based on MVI, MVP, and capacity analysis. Similar to the MVI functionality, OVM produced a ranking of scenarios from 1-to-n. The rankings were not deliberative in nature. The rankings provided insights to the BRAC SRG as it assessed relative gains in Military Value from each scenario.

#### *6.5.6 Option Portfolio Model (OPM)*

The OPM determined sets of scenarios that maximize value subject to a budget constraint and capacity constraints. The model used outputs from OVM to maximize the value of a set of scenarios subject to these sets of constraints, which provided a review of all scenarios within a broad context across all Army assets and requirements. Many different sets of scenarios were developed based on additional constraints applied to the model or different budget level. The results of OPM were not deliberative in nature. The rankings provided insights to the BRAC SRG as it assessed relative gains in Military Value from each scenario. Using OPM, the Army developed a set of options to use as a basis for candidate recommendations.

### **6.6 Unit Analysis**

The Army used the installation assessment results to begin unit analysis. Unit analysis determined the most effective and efficient means of stationing the Army's units throughout its infrastructure. Each unit on an installation with a lower MV was considered for stationing on an installation with a higher MV and at locations where the Army could take advantage of excess capacity.

The Army used several inputs during this analysis, including MVI results, Optimal Stationing of Army Forces model results, and internal team analysis, consisting of SMEs sharing information and approaches to create an integrated review of alternatives.

During Unit Analysis, various installation-unit combinations were evaluated, and stationing actions were then prioritized.

### **6.7 Active Forces**

While engaged in the Global War on Terrorism, the Army is transforming its Operational Forces to a modular design and improving its Global Force Posture by implementing Integrated Global Presence and Basing Strategy (IGPBS) decisions. The TABS Group analyzed these significant initiatives to ensure that the totality of the Army's operational force structure plan was evaluated comprehensively for potential stationing actions.

#### *6.7.1 Stationing for Modularity*

The Army Modular Force Initiative redesigns the Operational Army into a larger, more powerful, flexible and deployable force. This redesign centers on a Modular Brigade Combat Team (BCT). A Modular BCT is a stand-alone and standardized tactical force

that is organized the way it fights. It is a self-sustaining team of between 3,500 and 4,000 Soldiers included in infantry, armor, artillery, and additional support units comprising the necessary components to succeed in combat.

The Army Modular Force Initiative is significant to the BRAC process for several reasons. It is the back bone of the Army's Twenty-Year Force Structure Plan. It represents both an increase in the number of BCTs in the Active Army and an increase in the Active Army endstrength. The Twenty-Year Force Structure Plan documents the increase in the number of Modular BCTs from 39 at the end of 2005 to 43 by the end of 2006 and remaining at that level through 2025. Ten new Modular BCTs were temporarily stationed due to operational necessity pending BRAC review. For BRAC 2005 analysis purposes, the baseline was 33 Active Army BCTs in 2003 with 26 BCTs stationed in the United States. The authorized endstrength as a part of the 2003 baseline was 482,400 Soldiers. The FY05 National Defense Authorization Act (NDAA) increased Active Army endstrength by 20,000 in FY05. The Army will retain an additional 10,000 Soldier authorizations through 2009 under emergency authority. The Army is also converting a significant number of military positions to civilian and reducing the number of Soldiers assigned outside of Operational Army units. This will add approximately 30,000 Soldiers to the Operational Army. Combined, these actions will add more than 60,000 Soldiers to the Operational Army in the continental United States (CONUS).

#### *6.7.2 Stationing of IGPBS Forces*

The United States Army in Europe will reduce its current footprint from 236 individual installations and kasernes spread across Europe to 88. Korea will likely experience a similar consolidation, but the end state for Korea is not yet defined. The results of known IGPBS-related decisions indicate that the Army will return approximately 47,000 Soldiers from overseas locations to CONUS. Many of the units in which these Soldiers are assigned will inactivate in support of the Army Modular Force Initiative and the rebalancing of Active and Reserve force structures. The Soldiers will permanently change duty stations and report to either existing units or newly activating units in the United States. Approximately 22,000 of the estimated 47,000 Soldiers returning from overseas will return in this manner, and there are no direct BRAC-related actions associated with their moves.

The IGPBS-related decisions will result in the return of a significant number of overseas units and Soldiers to the United States between 2005 and 2011. This will include four Active Army Modular BCTs and numerous headquarters and support unit. One Modular BCT was temporarily stationed due to operational necessity pending BRAC review. Combined they represent over 47,000 Soldiers, approximately 10,000 Soldiers from Korea and 37,000 Soldiers from Europe. Under this plan, there will be no more than three Modular BCTs stationed outside the United States by 2011.

To summarize, the Army had 26 of 33 Modular BCTs stationed in the United States in 2003. With the activation of 10 Modular BCTs and the return of four from overseas, the Army will have 40 Modular BCTs permanently stationed in the United States by the end of 2011. During the same time period, the Army's authorized endstrength increased by 20,000 Soldiers with an additional 10,000 retained under emergency authority. Approximately 30,000 Soldiers will be reassigned to Operational Army units from non-deployable units, and over 47,000 Soldiers will return from overseas. Without BRAC,

implementing the number and complexity of actions required within a timeline that supports the operational requirements of the Combatant Commanders would have been very difficult. The BRAC 2005 process provided a comprehensive approach focused on the use of the Military Value criteria to fully consider the changes in force structure, return of forces from overseas, the temporary stationing locations already implemented, and the impact of other BRAC-related actions.

## **6.8 Reserve Forces**

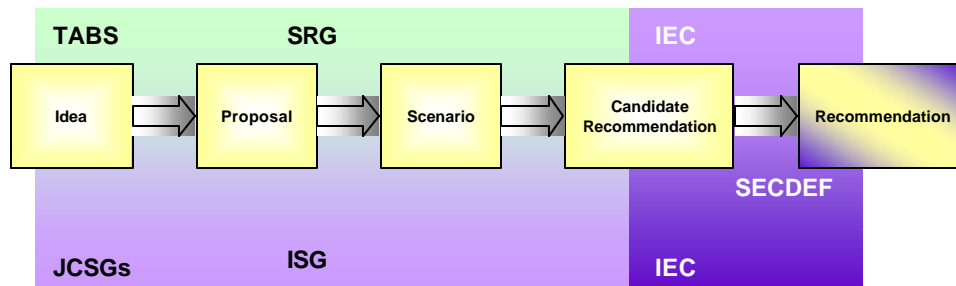
The Department of the Army has more than 4,000 Reserve Component facilities distributed across the United States. Because of the sheer number of Reserve Component facilities, the process the Army had developed for arriving at a quantitative Military Value score for its 97 facilities was not practical for the Reserve Components. Additionally, if measured within the Active process, which valued training lands and ranges among other things, Reserve Component facilities would not have compared favorably against Active installations, nor would there have been much discrimination among the RC facilities. Military Value scores for the RC facilities would have been useless. Therefore, the Army crafted a unique approach to ascertain the overall Military Value of Reserve Component facilities and afford an opportunity for the Reserve Components to actively participate in the BRAC 2005 process.

Reserve Component facilities were assessed, specifically against DOD Military Value criteria one through four, in their ability to support Joint stationing options that enhance Army and DOD Transformation; enhance Reserve Component training, operations, mobilization, and power projection capabilities; sustain recruiting and retention; consolidate functions wherever appropriate, to include schools, personnel, logistics and other management functions; relocate Reserve Component units and activities from leased and encroached properties that do not meet anti-terrorism/force protection requirements onto established military facilities; and ensure the future readiness of Army forces while reducing the long-term cost of sustaining the base structure. Facilities that did not meet these requirements were identified for further analysis and potential closure or realignment. Assessments were certified by the Office of the State Adjutant General and the Army RRC, validated by USAAA, analyzed by the Army TABS Group, and utilized in deliberations.

The voluntary participation of the States in the RC PAT process ensured that the resulting BRAC 2005 recommendations were based on Army analyses supported by the State Adjutants General and their staffs. This consultation was crucial to ensuring that the Army's recommendations will have the support and consent of the State Governors. Having consulted with the Governors' military staffs, the Army expects each State will support the Army's Reserve Component recommendations. The cooperation of the States through the RC PAT, with the Army Reserve and the other Services, produced results that improve Reserve Component infrastructure and facilities in a manner that enhances Military Value and improves readiness, homeland defense, and the operational reserve capabilities of their respective States.

## 6.9 Recommendation Development

As the Army identified potential stationing actions, the recommendation development process commenced. Analysts first studied BRAC process guidance, such as objectives and transformational options. Then, incorporating MVI and capacity results and using military judgment, they developed ideas of how to accomplish the BRAC strategy. Ideas—concepts for potential stationing actions—became proposals when several specific details were studied, and proposals became scenarios when they were declared for formal analysis by a MILDEP or JCSG deliberative body. Scenarios were formally analyzed against all eight selection criteria, with some becoming candidate recommendations and sent to the ISG (JCSG scenarios) or IEC (Army scenarios) seeking Secretary of Defense approval. The candidate recommendations selected by the Secretary of Defense became the final BRAC 2005 recommendations.



**Figure 6-2. Recommendation Development Process**

### 6.9.1 Cost Analysis

Cost analysis provided the economic story for each scenario. The Army evaluated each scenario in accordance with Criterion 5 by using the DOD-sanctioned cost model for BRAC 2005, the COBRA model. COBRA estimated the costs and savings associated with a proposed base closure or realignment action using data available to all analysts for the BRAC 2005 process. The model output was used to compare the relative cost benefits of BRAC alternatives. The model was not designed to produce budget estimates, but to provide a consistent and auditable method of comparing different courses of action in terms of the resulting costs and savings measured in the model.

The COBRA model evaluates costs and savings of potential BRAC actions by summing annual cash flows. The cash flows capture all one time costs (e.g., MILCON, transportation costs, unique costs, etc.), the recurring costs (e.g., base operating costs, sustainment, etc.), and the savings associated with the action for each year within the period. COBRA assumes that all actions (construction, moves, closures, realignments) occur during the first six years; thereafter, all annual costs and savings are assumed constant. The metrics for COBRA include the Net Present Value (NPV), the Payback Year, and the Payback Period. NPV is the discounted present value of costs and savings over 20 years. The Payback Year is the point in time when cumulative savings exceed cumulative costs; the Payback Period is the number of years between Payback Year and the year of the last BRAC action.

### *6.9.2 Economic Analysis*

The TABS Group used a web-based Economic Impact Tool (EIT) developed by the DOD JPAT on Economic Impact to address “the economic impact on existing communities in the vicinity of military installations.” The EIT measured the economic impact on potential Army BRAC 2005 communities by using (1) the total potential job change in the economic area, and (2) the total potential job change as a percentage of total employment in the local economic area. These measures highlighted the potential economic impact on economic areas, and also took into account the size of each economic area. The TABS Group analysts used the metrics for relative comparisons of the impacts of potential Army BRAC recommendations. The methodology focused on net job changes from an Army BRAC action, which included Direct, Indirect (e.g., base support), and Induced (e.g., private sector retailers) data. The methodology also displayed historical trends for context to include Employment, Unemployment rate, and Per-capita income.

### *6.9.3 Local Area Infrastructure Analysis*

The TABS Group used the Local Area Infrastructure (LAI) model to examine “the ability of existing and potential receiving communities’ infrastructure to support forces, missions, and personnel” in comparison to other installations. The LAI model allowed TABS Group analysts to conduct comparative analysis across 10 soldier-issues-based attributes at gaining and losing installations; to determine whether potential moves associated with a particular scenario improved or worsened the attribute level; and to make an overall risk assessment of the gaining community’s ability to absorb additional units relative to the losing community. The LAI analysis assumed that more of a metric was better and all metrics were compared equally. If a gaining installation had higher (better) values in all metrics, then the Army had little risk in relocating units as far as the local area’s ability to support it. The intent was to relocate units to installations that have the capacity to absorb additional unit missions and assess whether Army installations require additional support to attain a certain level of local-area infrastructure support.

### *6.9.4 Environmental Analysis*

Selection Criterion 8 required the consideration of “environmental impact, including the impact of costs related to potential environmental restoration, waste management, and environmental compliance activities.” TABS Group environmental analysts assessed each scenario proposal across ten resource areas to identify environmental impacts and costs. This assessment was called a Scenario Summary of Environmental Impacts (SSEI). The SSEI was produced by a rules-based approach using eleven checklists (ten for the ten resource areas, and one for closures). All assessments were based on certified data. The SSEI provided qualitative impacts of costs for potential environmental restoration, waste management and environmental compliance efforts, and the assessments identified which environmental costs would be entered into the COBRA model.

After individual recommendations were developed, TABS Group environmental analysts assessed the cumulative impact of all recommendations on a given Army receiving installation. This combined assessment was called the Summary of Cumulative

Scenarios' Environmental Impacts (CSEI), and was used to ensure that cumulative impacts on Army installations were supportable.

#### *6.9.5 Installation Visualization Tool (IVT)*

The DOD IVT capabilities were established to further the objectives set forth by the Secretary of Defense in the kickoff memo for BRAC 2005 by providing a complementary geospatial supplement to deliberative data. The IVT supported installation assessment and scenario development by providing the Army with a process and means for collecting, standardizing, documenting, delivering, and visualizing imagery and geospatial data in a consistent fashion for DOD installations.

IVT provided the ability to visualize: installation and associated range complexes using overhead (satellite) imagery of each installation or activity; installation/range boundaries, and significant “exclusion zone” criteria, depicting areas of the installation or range not available to accept realigned missions from closed installations. Each criterion is depicted on a map overlay. The IVT layers are overlaid on digital satellite imagery to provide a comprehensive picture of the situation at each site.

The Army used IVT to review installations with significant BRAC scenarios to visualize the installation’s capabilities to accept new missions.

### **6.10 Decision Process**

As a potential BRAC Recommendation evolved, it passed through several deliberative stages. The Army held panels and boards to review Proposals, Scenarios, and Candidate Recommendations. The Army also utilized an integration procedure to determine conflicting, enabling, and independent scenarios both within the Army and among the MILDEPs and JCSGs. The Army’s decision-making structure ensured BRAC scenarios were optimally and efficiently examined.

### **6.11 Coordination**

The success of the Army’s Proposal and Scenario development process depended on close coordination and communication, cooperation, and open sharing of essential information by analysts within the Army, OSD, the MILDEPs, and the JCSGs.

#### *6.11.1 Army Senior Leader Coordination*

During BRAC 2005, the TABS Group coordinated with Army senior leaders through numerous forums:

- Early in BRAC 2005, the TABS Group asked the MACOMs and HQDA staff principals for their ideas and goals for the process. The TABS Group conducted briefings throughout the process for the MACOMs. The briefings provided a means for the Commanders to highlight their concerns and priorities to the TABS Director – the DASA(IA). The TABS Director conducted three briefing rounds with the MACOMs throughout the BRAC process.
- MACOM leaders provided additional input during a senior leader interview process that was part of the development for MV analysis. The TABS Group conducted the interviews to gather the insights of Army senior leaders concerning



installation infrastructure. The Army used this input to craft its Military Value Analysis.

- The Army also used External Panels and Boards for staffing and proposal coordination. These non-deliberative bodies facilitated fact-finding, coordination, and clarification to ensure comprehensive briefings to deliberative bodies. External panels included senior personnel, usually at the colonel and GS-15 level, and vetted information to be provided to the BRAC SRG. External Boards consisted of the TABS Director and executive-level representatives of the BRAC SRG and others in HQDA. Boards helped synchronize analytical results with senior-leader expectations by enabling the flow of information to the Deputies of BRAC SRG members and other members of HQDA.
- The TABS Group received guidance and approval from the BRAC SRG – the senior deliberative body for the Army during BRAC 2005.

#### *6.11.2 Joint Coordination*

The Army coordinated with the other BRAC Components throughout the analytical process.

- BRAC Directors' Sessions were held weekly during BRAC 2005. The sessions fostered communication and coordination of analytical efforts among the leaders of the BRAC Components.
- The JCSG Quarterback Sessions provided the Army a forum to track and participate in the processes of the JCSGs. These meetings included the TABS Director and JCSG Senior Army representatives, and were ordinarily held following ISG sessions.
- The JCSG Senior Army representatives also provided monthly JCSG executive summaries to ensure TABS Group members were informed and updated.
- The Army coordinated analysis and data independently through the JAST Meetings, which were held regularly throughout BRAC 2005. The meetings provided access to and open sharing of MILDEP information regarding joint operational scenarios.
- The Army took advantage of the OSD BRAC 2005 Portal to communicate, coordinate, and integrate digital information with the other BRAC Components. The Portal was an intranet used throughout the process for information sharing and scenario cataloguing. Each BRAC Component had access to the Portal to post and view information.

### **6.12 Risk Management**

#### *6.12.1 Internal Control*

The Army enacted the BRAC 2005 Internal Control Plan (ICP) to ensure accuracy, completeness, and integration of BRAC actions as well as to prevent premature or improper disclosure of information and analytical results. The plan, signed on 4 June

2003 by the DASA(IA), offered a consistent set of management controls designed to provide an “unbroken chain” of accountability.

The ICP was applicable to military and civilian employees and contractors of all Army organizations associated with the information and analysis used by the Army in BRAC 2005. All data collected from Army sources in support of JCSGs was subject to the same control mechanisms.

Information used by the Army and the JCSGs was required to be certified as accurate and complete to the best of the certifier’s knowledge and belief. Information gathered from authoritative or official sources external to DOD needed to be certified only as to the source, and the audit community then determined the accuracy of that source.

Confidentiality was essential to the BRAC process. All files, data, and materials relating to the BRAC 2005 process were treated as sensitive and internal to the Army and stored electronically on a controlled-access file system. Information regarding Army BRAC scenarios was not transmitted by e-mail in accordance with the ICP.

Every person associated with the Army BRAC 2005 process signed a non-disclosure agreement (NDA); however, signing a NDA did not automatically entitle that person to full access of all BRAC data. Data was exchanged on a need-to-know basis.

The Office of the General Counsel provided legal briefings to all personnel involved with the Army’s BRAC 2005 process, including the TABS Group and the BRAC SRG.

Through strict adherence to the ICP, the Army protected the deliberative process and ensured that the Army spoke with one voice.

#### *6.12.2 TABS Group Management*

The TABS Group management plan derived from the Group’s mission to provide an analysis of the current installation portfolio and develop and document base closure and realignment recommendations. To that end, management was concerned with communication and coordination throughout the process.

##### *6.12.2.1 Communication*

All TABS team members attended orientation training to ensure they understood the TABS mission, analytical methods and their respective roles. The DASA(IA) held weekly meetings with TABS Group Team Chiefs, and a monthly update meeting with each team to ensure continuous communication flow. Additionally, the TABS Director made available to all TABS team members summaries from ISG, BRAC SRG, Army BRAC Quarterback Meetings, and other pertinent meetings.

TABS Group members shared a common, protected filing system for working documents, which gave all TABS Group analysts the ability to view, copy, and work with documents pertaining to the deliberative process. Historical documents concerning both policy and information were also included on this drive. Final documents were stored separately to preclude inadvertent changes to historical documentation.

#### 6.12.2.2 Coordination

Coordination of effort within the TABS Group was accomplished using a synchronization calendar, reviewed weekly by the Director, his staff and Team Chiefs. Ongoing actions, suspense items, and briefings were listed, so that Team Chiefs could coordinate their workload and flow. Team Chiefs also met independently with each other as required.

The TABS Executive Officer tracked external and internal suspense items, maintained a suspense file, and documented closed actions.

Tools used to facilitate management of the analytical process included:

ODIN (Online Data Interface): Used to collect and organize data used in analysis.

PIMS (Proposal Information Management System): Tracked proposals and scenarios, indicated how each installation was affected by multiple scenarios, and assisted in identifying and resolving conflicting scenarios.

#### 6.12.3 Audit

For BRAC 2005, USAAA had the following roles and responsibilities during the TABS process:

- Advise the Army on developing, documenting, and implementing effective internal control procedures
- Conduct audits addressing the accuracy and validity of processes, methodology, assumptions, calculations, and data used
- Help ensure that BRAC analysis was criteria-based, rigorous, and auditable

To fulfill its roles and responsibilities, the USAAA advised the TABS Group on internal controls and conducted audit work to answer the following overall objective: Was the Army's basing study for BRAC 2005 process effective? Three key areas were addressed:

- Were the procedures effective for identifying candidate installations, industrial base sites, and leased properties to study for possible closure or realignment?
- Were processes for collecting, certifying, changing, and storing data effective?
- Were the procedures effective for assessing Army installations in the Army review?

#### 6.12.4 Sensitivity Analysis

Any analysis has sources of uncertainty, which is inherent within models, data and processes, which are mainly due to unknown future events. Essential to the success of BRAC 2005 analysis was determining the primary sources of uncertainty and developing a plan to both explore and mitigate identified risks due to these uncertainties.

To avoid closing too many facilities and weakening military readiness, the Army considered surge requirements, which considered the size, composition, and number of units in the Army force structure and the Army's ability to meet unforeseen requirements. Surge analysis protected military readiness by eliminating otherwise attractive stationing options. It also forced the Army to keep installations specifically for future needs.

To prevent the Army from maintaining inefficient facilities, the Army examined alternatives for Army scenarios.

Lastly, to assess cost estimates, the Army conducted uncertainty analysis within COBRA.

#### *6.12.5 Documentation*

The Army developed a procedure to process documents for inclusion in its BRAC 2005 Report and supporting documentation. This procedure ensured that the proper versions of documents were provided.

### **6.13 Supporting Army Decisions**

The final phase of the BRAC 2005 process is the support phase, which is designed to facilitate the approval process. The support phase commences when the Secretary of Defense provides his recommendations to the BRAC Commission. At that point, copies of the Secretary's report and all pertinent backup data are delivered to the BRAC Commission and both Houses of Congress. The two primary objectives for the Army during the support phase are to educate all concerned parties on the recommendations and to help states, local communities, and installations prepare for implementation.

A series of proactive communication efforts begin with the submission of recommendations in order to educate the Army leadership – from the Garrison Commanders through the senior leadership – on the recommendations impacting the Army. A coordinated Joint effort will be implemented simultaneously to educate federal, state, and local elected officials about the recommendations and how they will be implemented pending Commission, Presidential, and Congressional approval.

## 7.0 ARMY RESULTS

The results of initial Army BRAC analyses provided a foundation for the development of potential BRAC recommendations.

### 7.1 Capacity Analysis

#### 7.1.1 Initial Analysis

The Army's BRAC 2005 capacity analysis was a "status quo" review (i.e., pre-Army Modular Force Initiative and pre-IGPBS) completed at the beginning of the BRAC 2005 process. This analysis yielded an inventory of physical capacity and a determination of excesses and shortages of all Facility Analysis Categories (FACs). From a macro perspective, the Army considered capacity Army-wide, which compares the total assets and shortages across 87 installations. From a micro perspective, the Army considered excess-shortage levels at the installation level. The analysis highlighted excess and shortages of a variety of assets throughout Army installations. This excess-short phenomenon was ideal for a BRAC analysis because it provided a "cross-leveling" opportunity to match units with specific requirements to installations with available assets. For example, 51 Army installations have excess administrative space, but 35 have shortages, this mismatch of requirements to assets presented BRAC opportunities.

The JCSGs also examined installations from a micro perspective for selected functional areas and completed a thorough capacity analysis. The Army did not duplicate the review of these functions. The Army focused on training, surge, and deployment assets which are essential to completing the current and future Army mission. The Army did complete other analysis on multiple assets and report those results in the Capacity Annex.

#### 7.1.2 Training

The Army has 38 installations with large maneuver land assets (26 AC, 9 RC, 3 AC test ranges). The maneuver area on these test ranges provides a yet untapped capability; 6 AC installations have excess maneuver lands.

Several installations have severe shortages of training lands, others have excess capacity that is restricted or being used heavily within BRAC. For example, Fort Wainwright has excess training lands that the Army can use, but the number of BCTs that we can place there is limited; Fort Bliss and Fort Knox are used heavily in Army BRAC 2005 analysis to absorb both Modular Force and IGPBS-related units; and Dugway Proving Ground, White Sands Missile Range, and Yuma Proving Ground are research, test, and evaluation facilities that are costly to facilitate, but have training lands available. Other facilities, such as Forts A.P. Hill and Hunter-Liggett are used in the Army BRAC 2005 analysis for non-BCT units, to train Reserve Component forces.

The training land analysis indicated that the Army should consider scenarios that realigned installations with the most severe shortages by relocating units to installations with excess capacity. The Army considered the following options during scenario development:

- Realign one or more installations with the greatest shortages by relocating units to an installation with excess capacity;

- Realign an institutional training or test range installation and transform it into a major maneuver installation; and
- Continue to explore joint stationing options for Operational Army units.

The Army has shortages and is facing increased requirements in the future for training land. Because of these insights, the Army concluded that it should not close any of its large maneuver or test-range installations that have excess capacity. The analysis illustrated that, in the aggregate, the Army is at capacity. Those installations with excess can support training for units stationed at other installations, be available to support any increase in Army force structure in the future, and are necessary to meet unforeseen requirements.

### *7.1.3 Surge*

If an asset was difficult to reconstitute, did not have adequate source alternatives, and was not under JCSG purview, the Army identified it as a surge candidate. The difficult-to-reconstitute Army surge capabilities are maneuver acres, buildable acres, and deployment infrastructure.

*Maneuver Acres* – The Army requirement is to maintain 43 Modular BCTs, with a surge capability of an additional 5 Modular BCTs. Test Centers and RC installations provide some capability, but the capacity analysis determined that the Army needs to maintain its maneuver lands to meet future known and unforeseen requirements.

Assuming the approval of all proposed closures, the Army will decrease its maneuver acres with proposed closures by approximately 1.5 percent, which includes small parcels at chemical-demil installations and a larger parcel at Hawthorne.

The Army has the maneuver land on current maneuver installations to surge for an additional 5 Modular BCTs and, if necessary, another 6-8 Modular BCTs on those installations traditionally considered test ranges. In all cases, these additional Modular BCTs would require MILCON and traditional test ranges would require significant investment.

*Buildable Acres* – Capacity analysis determined that the Army's remaining buildable acres provided the required surge capability to meet the 20-year force structure plan and unforeseen requirements.

The Army has over 3 million buildable acres; less training and range areas the Army has over 700,000. Assuming the approval of all proposed closures, the Army decreased these acres by only 3.3 percent, which includes small parcels at most of the installations proposed for closure and a larger parcel at Hawthorne.

*Deployment Infrastructure* – The Army did not decrease its deployment assets. Including all proposed closures, the Army retained all current primary deployment installations. Civilian airports, railheads, and supporting infrastructure do provide some additional deployment capability.

Because these surge capabilities are difficult to reconstitute, Army BRAC recommendations did not significantly reduce the quantity of these assets.

## 7.2 Military Value Assessment

Military Value analysis, as described in Section 6.6, provided a starting point for developing potential BRAC actions.

### 7.2.1 Military Value of Installations (MVI)

The MVI model ranked Army installations from 1-to-97, based on an analysis of 40 attributes across all installations. The MVI ranking was the first product of the MVA. The MVI results are listed below.

First Quartile			Second Quartile				
1	Ft Bliss	14	Ft Campbell	26	Ft Jackson	38	Ft Belvoir
2	Ft Lewis	15	Ft Drum	27	McAlester AAP	39	Letterkenny AD
3	Ft Hood	16	Ft Polk	28	Ft Rucker	40	Red River AD
4	Ft Stewart / HAAF	17	Ft Irwin	29	Ft Richardson	41	Sierra AD
5	Ft Bragg	18	Aberdeen PG	30	Redstone Arsenal	42	Tooele AD
6	Yuma PG	19	Ft Sill	31	Hawthorne AD	43	Ft Sam Houston
7	Ft Carson	20	Schofield Barracks	32	Crane AAP	44	Deseret Chem Depot
8	Dugway PG	21	Ft Huachuca	33	Ft Eustis	45	Bluegrass AD
9	Ft Benning	22	Ft AP Hill	34	Ft Gordon	46	Walter Reed AMC
10	White Sands MR	23	Ft Dix	35	Ft Leonard Wood	47	Picatiny Arsenal
11	Ft Wainwright	24	Ft McCoy	36	Ft Lee	48	Watervliet Arsenal
12	Ft Knox	25	Anniston AD	37	Tobyhanna AD	49	Ft Meade
13	Ft Riley					50	Ft Monmouth

Table 7-1. MVI Ranking, 1<sup>st</sup> and 2<sup>nd</sup> Quartiles

Third Quartile			Fourth Quartile				
51	Ft McPherson	64	Pine Bluff Arsenal	76	Lima Tank Plant	89	Riverbank AAP
52	Ft Gillem	65	Ft McNair	77	Corpus Christi AD	90	Lease - Bailey's Crossroads
53	Rock Island Arsenal	66	Ft Myer	78	Scranton AAP	91	Lease - ARO
54	MOT Sunny Point	67	Kansas AAP	79	USAG Michigan	92	Lease - Crystal City Complex
55	Pueblo Chem Depot	68	Ft Monroe	80	Radford AAP	93	Lease - Hoffman Complex
56	Ft Detrick	69	Lake City AAP	81	Ft Shafter	94	Lease - ARPERCEN
57	Soldier System Center	70	Iowa AAP	82	Ft Buchanan	95	Lease - PEO STRICOM
58	Charles E. Kelly Support	71	Lone Star AAP	83	Holston AAP	96	Lease - Army JAG Agency
59	Milan AAP	72	Adelphi Labs	84	Presidio Of Monterey	97	Lease - Army JAG School
60	Mississippi AAP	73	Ft Hamilton	85	Umatilla Chem Depot		
61	West Point	74	Detroit Arsenal	86	Lease - HQ, ATEC		
62	Ft Leavenworth	75	Carlisle Barracks	87	Tripler AMC		
63	Newport Chem Depot			88	Lease - Rosslyn Complex		

Table 7-2. MVI Ranking, 3<sup>rd</sup> and 4<sup>th</sup> Quartiles

7.2.2 Military Value Portfolio (MVP)

The MVP model provided the Army a starting point for developing stationing actions. Using the MVI results, Army requirements, and other inputs, the MVP produced a portfolio that maximized MV subject to a set of capacity constraints. It is important to remember that the MVP model did not produce deliberative decisions. MVP was the start point of the analysis. Being in the portfolio did not assure retention of an installation; being outside the portfolio did not assure closure. The model was instructive, but did not include unique capabilities of individual installations. Military judgment, as employed by the Army BRAC SRG, JCSGs, ISG, and IEC, was used to complete the Military Value analysis and selection of installations for closure or realignment.

The final Army Portfolio is listed in Table 7-3, and the installations not included are shown in Table 7-4.

Rank	Installation	Rank	Installation	Rank	Installation	Rank	Installation
1	Ft Bliss	17	Ft Irwin	33	Ft Eustis	50	Ft Monmouth
2	Ft Lewis	18	Aberdeen PG	34	Ft Gordon	51	Ft McPherson
3	Ft Hood	19	Ft Sill	35	Ft Leonard Wood	54	MOT Sunny Point
4	Ft Stewart / HAAF	20	Schofield Barracks	36	Ft Lee	56	Ft Detrick
5	Ft Bragg	21	Ft Huachuca	37	Tobyhanna AD	59	Milan AAP
6	Yuma PG	22	Ft AP Hill	38	Ft Belvoir	61	West Point
7	Ft Carson	23	Ft Dix	39	Letterkenny AD	64	Pine Buff Arsenal
8	Dugway PG	24	Ft McCoy	40	Red River AD	65	Ft Mc Nair
9	Ft Benning	25	Anniston AD	41	Sierra AD	66	Ft Myer
10	White Sands MR	26	Ft Jackson	42	Tooele AD	69	Lake City AAP
11	Ft Wainwright	27	McAlester AAP	43	Ft Sam Houston	77	Corpus Christi AD
12	Ft Knox	28	Ft Rucker	45	Bluegrass AD	78	Scranton AAP
13	Ft Riley	29	Ft Richardson	46	Walter Reed AMC	80	Radford AAP
14	Ft Campbell	30	Redstone Arsenal	47	Picatinny Arsenal	83	Holston AAP
15	Ft Drum	31	Hawthorne AD	48	Watervliet Arsenal	87	Tripler AMC
16	Ft Polk	32	Crane AAP	49	Ft Meade		

Table 7-3. Army Installation Portfolio

Rank	Installation	Rank	Installation	Rank	Installation
44	Deseret Chem Depot	70	Iowa AAP	86	Lease - HQ, ATEC
52	Ft Gillem	71	Lone Star AAP	88	Lease - Rosslyn Complex
53	Rock Island Arsenal	72	Adelphi Labs	89	Riverbank AAP
55	Pueblo Chem Depot	73	Ft Hamilton	90	Lease - Bailey's Crossroads
57	Soldier Systems Center	74	Detroit Arsenal	91	Lease - Army Research Office
58	Charles E. Kelly Support	75	Carlisle Barracks	92	Lease - Crystal City Complex
60	Mississippi AAP	76	Lima Tank Plant	93	Lease - Hoffman Complex
62	Ft Leavenworth	79	USAG Michigan	94	Lease - ARPERCEN
63	Newport Chem Depot	81	Ft Shafter	95	Lease - PEO STRICOM
67	Kansas AAP	82	Ft Buchanan	96	Lease - Army JAG Agency
68	Ft Monroe	84	Presidio Of Monterey	97	Lease - Army JAG School
		85	Umatilla Chem Depot		

Table 7-4. Army Installations Outside the Portfolio



After considering all of the current proposed closures, the Army has improved the average Military Value of its installations, and improved its overall MV by 11 percent. The Army BRAC 2005 program improves training capability MV by 23 percent, and Materiel and Logistics MV by 20 percent. In addition, the Army creates a net increase in square footage on its higher-ranked installations. The top gaining installations within the Army have an average MV rank of 20, and the average MV rank of all Army closing installations is 70 of 97 installations.

### *7.2.3 Climate and Terrain*

The Army conducted a climate and terrain analysis to address Department of Defense Selection Criterion #2, which identifies the availability and condition of land throughout a diversity of climate and terrain as a key Military Value criterion.

There are six habitats in which the Army currently has installations that support maneuver training; after implementation of BRAC 2005 recommendations, the Army retains coverage across all of these habitats. Specifically, the Army ensures that the final installation portfolio includes an installation with maneuver training capability within each climate-terrain habitat that supports maneuver training. For example, the Army retains 9 installations in the Temperate Broadleaf & Mixed Forest Habitat that support maneuver training.

### *7.2.4 Staging Areas for Homeland Defense*

The Army identified three key characteristics a staging area requires to support homeland defense missions: the ability to provide primary medical care, the presence or proximity of an airfield capable of supporting C-17-scale operations, and a sufficient military population to provide support.

The proposed Army closures will lessen the Army's staging area coverage in nine locations, however, other Service installations provide coverage for seven of these areas. The Army had provided exclusive coverage in the last two areas. They will now be uncovered but have a very small population and no critical infrastructure. Thus, staging area support for homeland defense is maintained in the Army recommendations.

## **7.3 Active Forces**

The Army analyzed the Army Modular Force Initiative and the impact of IGPBS-related decisions that return overseas units to the United States between 2003 and 2011 to ensure that the totality of the Army's operational force structure plan was evaluated comprehensively for potential stationing actions. This holistic approach enabled the Army to select installations with high Military Value to enhance the operational Army.

The Army sought to balance its expanding force structure across its primary training and maneuver installations, minimizing training capacity and facilities shortages. The Army's primary objective was to locate operational units at installations DOD-wide, capable of training modular formations, both mounted and dismounted, at home station with sufficient land and facilities to test, simulate, or fire all organic weapons.

Military Value analysis permitted the Army to identify high Military Value installations to station its Modular BCTs and other forces. To begin the implementation of modular transformation, the Army obtained approval from the Secretary of Defense to activate

and temporarily station 10 additional Modular BCTs and relocate an IGPBS-related Modular BCT in the United States between 2003 and 2006 while the BRAC 2005 analysis was ongoing based on an operational necessity to fully support the Global War on Terrorism. However, as part of BRAC 2005, the Army analyzed each of these temporary stationing actions and either validated the temporary locations for modular brigades or recommended new locations for the brigades. Using the BRAC Military Value criteria, Army BRAC 2005 analysis considered the temporary locations, unit requirements, installation capacity, and the impact of other BRAC-related actions. Capacity analysis indicated if there existed the potential need to move from temporary locations. The BRAC SRG provided military judgment and assessed the locations using the four MV criteria; other potential receiving installations were also judged against the MV criteria. Unused sites were retained for other current missions and as surge for additional future training requirements.

### *7.3.1 Army Modular Force Initiative*

The Army analyzed the temporary stationing of the 10 additional Modular BCTs and the relocation of one IGPBS-related BCT (the IGPBS-related BCT is discussed in 7.3.2). Five of the 10 locations for activating Modular BCTs were specifically addressed in four Army recommendations related to Operational Army Active Forces. The first recommendation relocates a Modular BCT, a Unit of Employment (UEX) Headquarters and support units from Fort Hood, TX, to Fort Carson, CO. A second recommendation relocates two maneuver battalions and support units from Fort Hood to Fort Bliss, TX, to support the activation of a Modular BCT at Fort Bliss. This recommendation also includes the stationing of a Modular BCT at Fort Riley, KS. A third recommendation realigns a Modular BCT at Fort Knox, KY. Initially, the Army had announced it would temporarily activate this unit at Fort Benning, GA. The BRAC 2005 Military Value analysis did not support this recommendation based on the relocation of the Armor Center and School to Fort Benning to consolidate with the Infantry School and Center. The fourth recommendation relocates the 7<sup>th</sup> Special Forces Group from Fort Bragg, NC, to Eglin Air Force Base, FL, to enhance Joint training and deployment, and this action frees up the necessary facilities and training capacity to activate the Modular BCT at Fort Bragg. The locations for five additional new Modular Force units were validated by BRAC Military Value analysis and approved by the BRAC SRG at Fort Campbell, KY; Fort Drum, NY; Fort Polk, LA; Fort Richardson, AK; and Fort Stewart, GA. Finally, BRAC analysis validated the FY05 relocation of the 2<sup>nd</sup> ACR at Fort Polk to Fort Lewis, WA.

To enhance training and force stabilization, the Army also recommends realigning an Artillery or Fires Brigade from Fort Sill, OK, to Fort Bliss and an Air Defense Artillery Brigade from Fort Bliss to Fort Sill. To support the formation of a Multi-Functional Aviation Brigade at Fort Riley, the Army recommends relocating an attack aviation battalion from Fort Campbell.

### *7.3.2 IGPBS*

The Army analyzed the Twenty-Year Force Structure Plan to determine which units needed to return from overseas as units, how they contributed to the Army Modular Force Initiative, and the optimal location using BRAC Military Value criteria and operational requirements and installation capacity. As a result of the BRAC 2005 analysis, IGPBS-

related units were included in four recommendations and relocated to seven different installations. The largest of these moves includes the stationing of three IGPBS-related BCTs at Fort Bliss, TX to take advantage of excess training capacity. The Army also validates the IGPBS-related temporary stationing action of a BCT to Fort Carson, CO, in 2005. Military Value analysis combined with unit requirements, training capacity and compatibility, and command and control relationships led the Army to recommend stationing various returning support units, such as military police, engineers, personnel service, logistical and various other units at Forts Bragg, Carson, and Knox.

Table 7-6 depicts the results of the Army BRAC 2005 analysis and shows the FY03 baseline of 33 BCTs, the annual changes in the number of BCTs at each location (FY04-06), the recommended changes that will occur under BRAC in FY07 through FY11, and the final recommended endstate of 43 Modular BCTs. The table reflects the impact of activating 10 new Modular BCTs and realigning 4 Modular BCTs under IGPBS. The table also includes the relocation of the 2d Armored Cavalry Regiment from Fort Polk to Fort Lewis to support the activation of the 4<sup>th</sup> BCT of the 10<sup>th</sup> Mountain Division at Fort Polk.

Installation	FY03	FY04	FY05	FY06	FY07-11	Endstate
Fort Stewart, GA	2	+1	0	0	0	3
Fort Drum, NY	2	+1	0	0	0	3
Fort Wainwright, AK	1	0	0	0	0	1
Fort Campbell, KY	3	+1	0	0	0	4
Fort Hood, TX	5	0	+1	0	-1	5
Fort Carson, CO	2	0	+1	0	+1	4
Fort Polk, LA	1	0	+1 / -1	0	0	1
Fort Lewis, WA	2	0	+1	0	0	3
Schofield Barracks, HI	2	0	0	0	0	2
Fort Richardson, AK	0	0	+1	0	0	1
Fort Knox, KY	0	0	0	+1	0	1
Fort Benning, GA	1	0	0	0	0	1
Fort Bragg, NC	3	0	0	+1	0	4
Fort Riley, KS	2	0	0	+1	0	3
Fort Bliss, TX	0	0	0	+1	+3	4
Korea	2	0	-1	0	0	1
USAREUR	5	0	0	0	-3	2
<b>Total</b>	<b>33</b>	<b>36</b>	<b>39</b>	<b>43</b>	<b>43</b>	<b>43</b>

Table 7-5. Endstate BCT Locations

7.4 Reserve Forces

The Army recommendations include closing 176 Army Reserve facilities and the construction of 125 new Armed Forces Reserve Centers distributed throughout the United States and Puerto Rico. The Department of the Army worked very closely with the State Adjutants General throughout the BRAC 2005 process, and understands the

State Governors will close 211 Army National Guard facilities with the intent of relocating their tenant units into these 125 new Armed Forces Reserve Centers. These new Armed Forces Reserve Centers will increase Military Value and improve the readiness and ability of Army Reserve and Army National Guard units, and Reserve Component units from other Services, to train, alert and deploy in support of current and future contingency operations. Twenty-seven of these new Armed Forces Reserve Centers will incorporate units from multiple services or be located on other-service installations, creating a Joint capability for homeland defense and other missions.

The Army will also reshape the command and control functions and force structure of the Army Reserve. The Army recommends disestablishing the ten Army Reserve Regional Readiness Commands in favor of establishing four Regional Readiness Sustainment Commands, and six new deployable warfighting units (two Maneuver Enhancement Brigades, and four Sustainment Brigades). The recommendations enhance Military Value and assist in the re-balancing of Active and Reserve forces structure. The Regional Readiness Sustainment Commands will be located at Fort Dix, New Jersey, Fort Jackson, SC, Fort McCoy, WI, and Moffett Field, CA. The Maneuver Enhancement Brigades will be stationed at Westover Air Reserve Base, MA and Fort Lewis, WA. The Sustainment Brigades will be stationed at Fort Dix, NJ, Little Rock, AR, Wichita, KS, and Salt Lake City, UT.

### **7.5 Major Headquarters and Support Activities**

Through coordination with and the leadership of the Headquarters and Support Activities, Medical, and Intel JCSGs, the Army developed recommendations to collocate headquarters at installations that supported the missions overseen by those headquarters, or to establish joint campuses by stationing the organizations with their counterparts from other Services. These principles enabled the closure of Fort McPherson, GA and Fort Monroe, VA, by relocating the Headquarters, Forces Command (FORSCOM) to Pope AFB, NC, and Headquarters, Training and Doctrine Command to Fort Eustis, VA. Pope AFB provides a joint environment and close proximity to operational commanders at Fort Bragg, NC. Fort Eustis provides a continued joint training relationship with the US Joint Forces Command at Norfolk Naval Base, VA. A third major command, Army Materiel Command, is relocated to Redstone Arsenal, AL, in order to enable a large restructuring of the National Capitol Region and to collocate it with one of its Major Subordinate Commands. Other recommendations collocate the US Army Reserve Command with FORSCOM at Pope AFB; collocate Headquarters, 3<sup>rd</sup> US Army with the Air Force component of US Forces Central Command, CENTAF (9<sup>th</sup> Air Force), at Shaw AFB, SC; realign Headquarters, 1<sup>st</sup> US Army to the central United States at Rock Island Arsenal, IL (closing Fort Gillem, GA) to prepare for its transformation into the single Army Headquarters overseeing Reserve mobilization; and collocate the Army Criminal Investigative Division Headquarters with its Air Force and Navy counterparts at Quantico Marine Corps Base, VA.

An additional recommendation creates a new Walter Reed National Military Medical Center at Bethesda, MD, by relocating Walter Reed Army Medical Center's specialty care to Bethesda, and its primary and secondary care to Fort Belvoir, VA, to enhance Soldier and other patient quality of care.

Smaller headquarters are relocated to pursue efficiencies by consolidating geographically-split organizations and aligning the regional structures of multiple missions. The Army Test and Evaluation Command (ATEC) and the Army Evaluation Center are moved to Aberdeen Proving Ground, MD where they will consolidate with other portions of ATEC and other test and evaluation organizations. The Human Resources Command is moved to Fort Knox, KY, where it is consolidated with other personnel commands to form a personnel Center of Excellence. The Installation Management Agency (IMA), the Network Enterprise Technology Command and the Army Contracting Command collapse their regional headquarters structures into Eastern and Western Region Commands at Fort Eustis, VA, and Fort Sam Houston, TX. Headquarters, IMA is also relocated to Fort Sam Houston.

### **7.6 Institutional Training**

The Education and Training JCSG led the effort to evaluate institutional training across the Department of Defense. Through coordination with the JCSG, the Army developed recommendations to realign installations by consolidating the Armor and Infantry Centers and Schools to create a Maneuver Center at Fort Benning, GA; consolidating the Air Defense and Field Artillery Centers and Schools to create a Net Fires Center at Fort Sill, OK; and consolidating the Ordnance, Quartermaster, and Transportation Centers and Schools to create a Combat Service Support Center at Fort Lee, VA. The Army pursued these actions to enhance training coordination, doctrine development, training effectiveness, and efficiency. These consolidations improve on the Maneuver Support Center (MANSCEN) model, approved as part of BRAC 95 and currently in place at Fort Leonard Wood, which consolidated the Military Police, Engineer, and Chemical Centers and Schools. The United States Military Academy Preparatory School is realigned with the United States Military Academy at West Point, NY. This action consolidates all academy-related training from two locations (Fort Monmouth and West Point) to one location (West Point). Drill Sergeants Training is realigned from three locations (Fort Benning, GA; Fort Jackson, SC; and Fort Leonard Wood, MO) to one location (Fort Jackson). The Aviation Logistics School is realigned with the Aviation Center and School at Fort Rucker, AL. The Prime Power School is realigned with MANSCEN at Fort Lee. The Air Force and Army Transportation Management Schools are realigned at Fort Lee to create a Joint Center of Excellence. Air Force Culinary training is realigned with the Army's training at Fort Lee, and both the Air Force's and Navy's religious training is realigned at Fort Jackson creating Joint Centers of Excellence. These consolidations foster consistency, standardization and training proficiency, while reducing the total number of Military Occupational Skills (MOS) training locations. They also support Army Transformation by collocating institutional training, and other units in large numbers on single installations to promote force stabilization. In addition, they improve training capabilities while eliminating excess capacity at institutional training installations, enhancing Military Value by providing the same or better level of training at reduced costs.

## **7.7 Materiel and Logistics**

The Army developed recommendations through the leadership of the Supply and Storage and Industrial JCSGs to close four Army Ammunition Plants, three Chemical Depots, and two Army Depots (one maintenance and one munitions storage) to reduce cost-of-ownership and increase efficiency. The Army recommends realigning workload among nine other Depots and Arsenals and five Army Ammunition Plants. These realignments will enhance four Army Depots as Joint Centers of Industrial and Technical Excellence for specific commodities, Army Arsenals into three Joint Manufacturing and Technology Centers, one Joint Logistics Expeditionary Center, and munitions production and storage installations into five Joint Munitions Centers of Excellence. These transformations will enhance Military Value eliminate single function and inefficient facilities and allow the Army Organic Industrial Base to partner with the civilian defense industry, using capacity from both the government and private industry, achieving the most favorable and economical efficiencies for all of DOD.

## **7.8 RDAT&E**

The Army coordinated with the Technical JCSG to develop recommendations that achieve a major transformation by collocating and integrating major RDAT&E elements currently scattered at many sites by assembling Human Systems, Information Systems, Sensors, Electronics, and Chemical-Biological RDA at Aberdeen Proving Ground, MD. The collocation of Communications-Electronics Research Development and Engineering Center, Night Vision Lab, Communications Electronics Command, Army Test and Evaluation Command, several PEOs and PMs, Biological-Medical, and Chemical-Biological RDA at Aberdeen Proving Ground creates a powerful Center for Soldier-Focused Systems that permit integration and coordination at every step from R and D through T, A, & E. Other recommendations create similar Joint facilities at Detroit Arsenal, MI (Ground Vehicles), Redstone Arsenal, AL (Aviation), and Picatinny Arsenal, NJ (Guns and Ammunitions) to reduce cost and enhance effectiveness. The recommendations permit the closure of Fort Monmouth, NJ.

## **7.9 Local Government and Community Requests**

The Army received three requests from local governments and communities to close an installation on the BRAC 2005 study list. In accordance with BRAC law, Section 2914(b)(2), which requires the Secretary of Defense to consider such notices, the Army considered these requests, incorporated them into the decision process, and came to the following conclusions:

- Louisiana Army Ammunition Plant – This installation was removed from the Army BRAC 2005 study list when special legislation authorized the transfer of 14,995 acres and nearly 500 buildings to the State of Louisiana. The State will use 1,200 acres of the property for commercial and industrial economic use. The Army retains the right to conduct training on 13,500 acres of the property, which will be managed by the Louisiana Army National Guard.
- Mississippi Army Ammunition Plant – The Army evaluated the capacity and Military Value of Mississippi AAP and determined that it could be closed in the effort to consolidate munitions manufacturing sites. The Army's recommendation

complies with the request, which will enable local-community economic redevelopment.

- Watervliet Arsenal— The Army realigned the installation, maintaining necessary capabilities and capacities to meet requirements, but also facilitating the Watervliet Arsenal Site Master Plan, which recommends the development of a high technology park conveyed to a non-government entity.

### **7.10 Auditing**

USAAA concluded that, overall, the Army’s basing study process was effective. The TABS charter, internal control plan, and analytical framework effectively explained the TABS Group’s authority, mission, and responsibilities; established key controls within its process; and established its framework for developing Army scenarios for BRAC 2005. Also, the Army employed:

- Effective procedures for identifying candidate installations and leased facilities to study for possible closure and realignment. The Group used reliable data and appropriate methodology based on BRAC law to identify Army sites for study and also used two models that appropriately rank-ordered installations based on Military Value and identified potential stationing alternatives for Army units.
- Effective processes to collect, certify, and change data received from installations and leased facilities, corporate databases, and open sources. Although the data collected was generally adequately supported and accurate, responses to certain questions were frequently unsupported and/or inaccurate. However, the TABS Group and six Joint Cross-Service Groups using the data acted to mitigate the potential risk of using data that may have been systemically problematic.
- Effective procedures for assessing Army installations and leased facilities. The TABS Group had a charter, an analytical framework, a system that tracked proposals to ensure analysts followed the framework, and the COBRA model that calculated costs and savings as prescribed in the operator’s manual.
- Key management controls and operations throughout the Army’s BRAC process. This included controls at the TABS Group relative to access and communication, certification requirements, record keeping and data collection; controls at selected installations and leased sites relative to certification of data and use of government e-mail for requests and responses, and controls in their online data interface collection tool relative to access, data entry and submission, and review and certification.

Throughout the BRAC 2005 process, USAAA also advised the Army on its internal controls, inventory of installations and leased facilities, and Military Value attributes as well as answered any other requests for audit advice and support.

### **7.11 Conclusion**

The Army’s BRAC 2005 strategy and process supported the development of recommendations that enhance Military Value, advance the Army Modular Force Initiative, accommodate the rebasing of overseas units, enable the transformation of both

the Active and Reserve Components as well as rebalancing these forces, contribute to Joint operations and Joint business functions, and reduce facilities cost of ownership. These recommendations maintain necessary surge capabilities in both the operational force and the industrial base, enhance homeland defense missions, and continue the transformation to a more relevant and ready Joint and Expeditionary Army.



## 8.0 BUDGET IMPACT

This chapter describes the financial impacts associated with the Secretary of Defense recommendations affecting the Army. These recommendations close 15 installations, terminate 8 lease sites, realign 35 installations, and add functions to 34 installations (including 16 of the realigning installations). Seventy-eight percent (76 of 97) of the installations on the Army's study list will be affected by BRAC. In addition, the recommendations will close 176 US Army Reserve Centers, and, upon agreement of State Governors, 211 National Guard armories and centers. These actions are described more fully in Chapter 9.

### 8.1 Financial Strategy

BRAC authorities provide the most efficient and effective way to analyze and implement actions to return significant numbers of forces from overseas, stand up new modular BCTs, adjust the balance between Active Component and Reserve Component force structure, and common business-oriented functions of DOD. The Army BRAC financial strategy, therefore, was to employ BRAC to the fullest to seek Military Value that supports transformation, jointness, and efficiencies within expected available resources for the period FY06 to FY11.

### 8.2 Financials

The Army employed a comprehensive analysis to evaluate options for returning forces from overseas, the Army Modular Force Initiative, and other BRAC activities. Several aspects of the Army BRAC financial position are relevant:

- Common business-oriented functions were the purview of the JCSGs. The Army was an active player in the JCSGs to ensure that these functions participated in Army transformation as powerfully as the operational Army.
- Therefore, it is instructive to review the costs and savings embedded in Army recommendations and the Army portion of costs and savings from the JCSG recommendations. We present estimates of these in the tables below.
- Official BRAC costs and savings do not include overseas costs of returning forces from overseas (which are relatively small) or the savings that accrue overseas thereafter (which are relatively large).
- Nonetheless, overseas costs and savings are a key component of the complete economic story associated with the Army's BRAC 2005 recommendations.

#### 8.2.1 Army BRAC Financials

Table 8.1 reports the BRAC costs and savings for the Army. The table does not reflect the overseas costs and savings of the recommendations of the Secretary of Defense; however, it does include the costs incurred within the continental US to return forces from overseas. These recommendations create 20-year gross savings of \$20.4B for a 1-time cost of \$12.8B and generate 20-year net savings of \$7.6B. Recurring savings after completion of BRAC implementation are expected to be \$1.5B annually.

\$B	20-Year Gross Savings*	1-Time Costs	20-Year Net Savings	Annual Recurring Steady State Savings	6-Yr Net Cost
Army	6.9	10.0	(3.1)	0.5	8.2
JCSG	13.5	2.8	10.7	1.0	(0.9)
Army Total	20.4	12.8	7.6	1.5	7.3
DOD Total	73.3	25.0	48.4	5.5	4.9

\* The 20-Year Gross Savings are calculated by summing the 1-Time Costs and 20-Year Net Savings.

**Table 8-1. BRAC 2005 Financials, including Only CONUS IGPBS Effects**

*8.2.2 Impact of Related non-BRAC Actions*

BRAC actions also enable the creation of significant overseas savings as units and personnel are returned to the US and 148 European installations are closed. These overseas savings are not included in official BRAC costs and savings (like Table 8-1) but they are real and substantial. Including costs and savings of the related non-BRAC actions would add \$0.7B to the Army’s 1-time costs for a total of \$13.5B, but would add \$21.1B to gross savings for a total of \$41.5B. Net savings over 20 years grow by \$20.4B for a total of \$28.0B. Annual recurring savings grow by \$1B to a total of \$2.5B.

**8.3 Assessment of Financials**

The Army BRAC program recommended by the Secretary of Defense may be assessed against previous Army BRAC rounds and as a percentage of this year’s DOD BRAC program.

*8.3.1 Assessment of Army BRAC Financials*

The Army BRAC program recommended by the Secretary of Defense yields gross savings 1.9 times larger than the Army’s gross savings from the previous BRAC rounds combined, 1-time costs that are 2.8 times larger, net savings that are 1.2 times larger, and recurring savings that are 1.7 times as large.

The Army BRAC program is 28 percent of DOD gross savings, 51 percent of DOD 1-time costs, 16 percent of DOD net savings, and 28 percent of recurring savings.

	20-Year Gross Savings*	1-Time Costs	20-Year Net Savings	Annual Recurring Steady-State Savings
Previous 4 Army BRAC Rounds (\$B)	11.0	4.6	6.5	0.95
Army BRAC 2005 w/ JCSG savings (\$B)	20.4	12.8	7.6	1.5
Ratio of Army BRAC 2005 to Previous 4 Rounds	1.9:1	2.8:1	1.2:1	1.7:1
DOD Total (\$B)	73.3	25.0	48.4	5.5
Percentage of DOD BRAC 2005	27.8%	51.3%	15.8%	27.9%

\* The 20-Year Gross Savings are calculated by summing the 1-Time Costs and 20-Year Net Savings.

**Table 8-2. BRAC 2005 Financials vs. Previous Rounds**

In Table 8-2, the Army financial figures for the previous 4 BRAC rounds are not equivalent to the numbers in the Army BRAC Report to Congress for two reasons. First, the Army extends the data in the report for a full 20 years to compare the 20-year savings estimates for BRAC 2005. Second, to ensure comparability of the data, the Army estimated and deleted environmental remediation costs because environmental remediation is not included in the COBRA model. Environmental remediation is a pre-existing liability, and, therefore, not a new cost caused by a BRAC decision. In implementation, environmental remediation is paid through the BRAC account, and is thus included in the Army BRAC Report to Congress.

*8.3.2 Impact of Related non-BRAC Actions*

The Army’s BRAC 2005 results, when combined with overseas costs and savings, compare even more favorably to previous rounds. The Army BRAC program recommended by the Secretary of Defense, when non-BRAC actions are included, yields gross savings 3.8 times larger than the last 4 Army BRAC rounds combined, one-time costs that are 2.9 times larger, net savings that are 4.3 times larger, and recurring savings that are 2.6 times larger.

The Army BRAC program including IGPBS is 44 percent of DOD gross savings, 53 percent of DOD 1-time costs, 41 percent of DOD net savings, and 39 percent of recurring savings.

### 8.4 Implementation Period Financials

Table 8-3 provides the financial information of the Army BRAC program during the implementation period and beyond. Costs, Savings, and Net Costs/Savings are presented by fiscal year, and categorized by type of action (e.g., JCSG Army Only).

(\$B)	Net of Cost & Savings						
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Beyond
Army Net	\$2.3	\$4.4	\$2.2	\$0.15	(\$0.4)	(\$0.3)	(\$0.5)
JCSG Army Only Net	\$0.2	\$1.1	\$0.3	(\$0.3)	(\$0.4)	(\$0.5)	(\$0.5)
JCSG Impacting Army Net*	\$0.4	\$1.2	\$1.3	(\$0.1)	(\$0.8)	(\$1.9)	(\$1.9)
<b>Total</b>	<b>\$2.9</b>	<b>\$6.7</b>	<b>\$3.9</b>	<b>(\$0.2)</b>	<b>(\$1.6)</b>	<b>(\$2.7)</b>	<b>(\$2.9)</b>

\* This is the total costs, savings, and net for the recommendation and is shared with other Services and/or agencies.

**Table 8-3. Recommendation Costs**

### 8.5 Summary

The Army recommendations of the Secretary of Defense are larger than the Army actions of all four previous BRAC rounds combined. The Army leveraged BRAC 2005 to establish a streamlined portfolio of installations that optimizes Military Value with significantly reduced cost of ownership that facilitates transformation, Joint operations and Joint business functions; divests an accumulation of installations that are no longer relevant and less effective in supporting a Joint and Expeditionary Army; and accommodates rebasing of overseas units to CONUS. While projected implementation costs are larger than previous Army BRAC rounds, the savings are also greater.

The Army’s cost of ownership will be reduced by \$1.5B annually, and 20-year net savings will be 1.2 times larger than those of the Army actions of the four previous BRAC rounds. But the total economic story (including savings generated by overseas moves) is a steady-state annual savings of \$2.5B with a 20-year net savings 4.3 times larger than those of Army actions of the four previous BRAC rounds.

## 9.0 FINAL RECOMMENDATIONS

Army BRAC recommendations are presented in this chapter. Section 9.1 provides information and guidance for examining the actions by the Air Force, Navy, and JCSGs that affect Army installations. Section 9.2 presents explanatory material of the 56 Army recommendations of the Secretary of Defense. Listed first in Table 9-1 are the closing and realigning Army installations.

CLOSING INSTALLATIONS	
Army JAG Agency Lease Site, VA	Hoffman Lease Complex, VA
Army Research Office Lease Site, NC	Kansas Army Ammunition Plant, KS
Army Reserve Personnel Center Lease Site, MO	Lone Star Army Ammunition Plant, TX
Charles E. Kelly Support Center, PA	Mississippi Army Ammunition Plant, MS
Crystal City Lease Complex, VA	Newport Chemical Depot, IN
Deseret Chemical Depot, UT	Red River Army Depot, TX
Fort Gillem, GA	Riverbank Army Ammunition Plant, CA
Fort McPherson, GA	Rosslyn Lease Complex, VA
Fort Monmouth, NJ	Umatilla Chemical Depot, OR
Fort Monroe, VA	USAG Michigan (Selfridge), MI
Hawthorne Army Depot, NV	176 US Army Reserve Centers
HQ, Army Test and Evaluation Command Lease Site, VA	211 National Guard Armories and Centers upon agreement of the State Governors

REALIGNING INSTALLATIONS	
Aberdeen Proving Ground, MD	Fort Lee, VA
Adelphi Laboratory, MD	Fort Leonard Wood, MO
Anniston Army Depot, AL	Fort Lewis, WA
Bailey's Crossroads Lease Site, VA	Fort McCoy, WI
Corpus Christi Army Depot, TX	Fort Richardson, AK
Detroit Arsenal, MI	Fort Rucker, AL
Fort Belvoir, VA	Fort Sam Houston, TX
Fort Benning, GA	Fort Sill, OK
Fort Bliss, TX	Fort Wainwright, AK
Fort Bragg, NC	Lima Tank Plant, OH
Fort Buchanan, PR	Redstone Arsenal, AL
Fort Campbell, KY	Rock Island Arsenal, IL
Fort Dix, NJ	Sierra Army Depot, CA
Fort Eustis, VA	Soldier Systems Center, Natick, MA
Fort Hood, TX	Tobyhanna Army Depot, PA
Fort Huachuca, AZ	Walter Reed Army Medical Center, DC
Fort Jackson, SC	Watervliet Arsenal, NY
Fort Knox, KY	White Sands Missile Range, NM

**Table 9-1. Army Installations Impacted by BRAC 2005 Recommendations**

### 9.1 Navy, Air Force, and JCSG Recommendations Affecting Army Installations

Army installations were affected by 1 Air Force, 5 Navy, and 57 JCSG recommendations. These recommendations are contained in the individual reports of these components (Volumes IV-XII of the DOD BRAC 2005 Report) and can be reviewed in detail in those volumes.

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## 9.2 Army Recommendations

The Army recommendations approved by the Secretary of Defense follow:

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Fort Gillem, GA.....	73
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Operational Army (IGPBS) .....	79
Maneuver Training .....	82
U.S. Army Garrison Michigan (Selfridge).....	84
Fort Monmouth, NJ .....	86
Fort Bragg, NC.....	90
Single Drill Sergeant School.....	92
Fort Hood, TX.....	94
Red River Army Depot, TX .....	96
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USAR Command and Control - Southwest.....	101
USAR Command and Control - Southeast.....	104
USAR Command and Control New England.....	107
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USAR Command and Control - Northwest.....	113
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## Fort Wainwright, AK

**Recommendation:** Realign Fort Wainwright, AK, by relocating the Cold Regions Test Center (CRTC) headquarters from Fort Wainwright, AK, to Fort Greely, AK.

**Justification:** This recommendation relocates CRTC headquarters to Fort Greely to improve efficiency of operations and enhance personnel safety. Sufficient capacity exists at Fort Greely. There would be no impact on Force Structure. This recommendation relocates headquarters closer to the CRTC's test mission execution on the Bolio Lake Range Complex. This complex, although realigned under Ft. Wainwright in BRAC 95, is only 10 miles south of Fort Greely but 100 miles from Ft. Wainwright's cantonment area. This action would enhance interoperability and reduce costs by permitting personnel to live closer to their primary work site, thus, avoiding a 200 mile round trip between quarters and work sites. Decreases the risks associated with the required year-round travel in extreme weather conditions. Results in more efficient and cost effective monitoring & control of arctic testing of transformational systems. This recommendation did not consider other locations since the CRTC headquarters only manages testing at one site.

**Payback:** The total estimated one-time cost to the Department of Defense to implement this recommendation is \$0.05M. The net of all costs and savings to the Department of Defense during the implementation period is a saving of \$0.2M. Annual recurring savings to the Department after implementation are \$0.05M with a payback expected in 2 years. The net present value of the costs and savings to the Department over 20 years is a savings of \$0.7M.

**Economic Impact on Communities:** This recommendation will not result in any job reductions (direct or indirect) over the 2006-2011 period in the Fairbanks metropolitan area since Fort Wainwright and Fort Greely are in the same metropolitan area. The aggregate economic impact of all recommended actions on this economic region of influence was considered and is at Appendix B of Volume I.

**Community Infrastructure Assessment:** The local area infrastructure is sufficient to support this recommendation. A review of community attributes (Child Care, Cost of Living, Education, Employment, Housing, Medical Health, Population Center, Safety, Transportation, and Utilities) revealed no significant issues regarding the ability of the local community's infrastructure to support forces, missions, and personnel. Ft Greely is in the same MSA and MHA as Ft Wainwright; therefore, the Army uses the same information for Local Area for both installations. There are no known community infrastructure impediments to implementation of all recommendations affecting the installations in this recommendation.

**Environmental Impact:** This recommendation has no impact on air quality; cultural, archeological, or tribal resources; dredging; noise; threatened and endangered species or critical habitat; waste management; water resources; or wetlands. This recommendation does not impact the costs of environmental restoration, waste management, and environmental compliance activities. The aggregate environmental impact of all

recommended BRAC actions affecting the installations in this recommendation has been reviewed. There are no known environmental impediments to implementation of this recommendation.

## Fort Gillem, GA

**Recommendation:** Close Ft. Gillem, GA. Relocate the Headquarters, 1st US Army to Rock Island Arsenal, IL. Relocate the 2nd Recruiting Brigade to Redstone Arsenal, AL. Relocate the 52<sup>nd</sup> Explosive Ordnance Disposal (EOD) Group to Ft. Campbell, KY. Relocate the 81<sup>st</sup> RRC Equipment Concentration Site to Ft. Benning, GA. Relocate the 3rd US Army Headquarters support office to Shaw Air Force Base, SC. Relocate the Headquarters US Forces Command (FORSCOM) VIP Explosive Ordnance Support to Pope Air Force Base, NC. Close the Army-Air Force Exchange System (AAFES) Atlanta Distribution Center and establish an enclave for the Georgia Army National Guard, the remainder of the 81st RRC units and the Criminal Investigation Division (CID) Forensics Laboratory.

**Justification:** This recommendation closes Ft. Gillem, an Army administrative installation and an AAFES distribution center. The recommendation moves the major tenant organizations to Rock Island Arsenal, Redstone Arsenal, Ft. Benning, and Ft. Campbell. It also moves small components of the Headquarters 3rd US Army and US Army Forces Command to Pope AFB and Shaw AFB. It enhances the Army's military value, is consistent with the Army's Force Structure Plan, and maintains adequate surge capabilities to address future unforeseen requirements. This closure allows the Army to employ excess capacities at installations that can accomplish more than administrative missions.

The closure of Ft. Gillem also enables the stationing of its tenant units at locations that will increase their ability to associate with like units and promote coordination of efforts. Both the 52nd EOD Group and the 2nd Recruiting Brigade have regional missions in the Southeastern United States. The 52nd EOD Group was co-located with operational forces at Ft. Campbell to provide training opportunities. The 2nd Recruiting Brigade is recommended to relocate to Redstone Arsenal because of its central location in the Southeast and its access to a transportation center in Huntsville, AL. The Army is converting the 1st US Army Headquarters into the single Headquarters for oversight of Reserve and National Guard mobilization and demobilization. To support this conversion the Army decided to relocate 1st Army to Rock Island Arsenal, a central location in the United States. The 81st RRC Equipment concentration Site is relocated to Ft. Benning where there are improved training opportunities with operational forces.

**Payback:** The total estimated one-time cost to the Department of Defense to implement this recommendation is \$56.8M. The net of all costs and savings to the Department of Defense during the implementation period is a savings of \$85.5M. Annual recurring savings to the Department after implementation are \$35.3M with a payback expected in 1 year. The net present value of the costs and savings to the Department over 20 years is a savings of \$421.5M.

This recommendation affects: the U.S. Post Office, FEMA, FAA, GSA and the Civil Air Patrol, non-DoD Federal agencies. In the absence of access to credible cost and savings information for these agencies or knowledge regarding whether these agencies will remain on the installation, the Department assumed that the non-DoD Federal agencies

will be required to assume new base operating responsibilities on the affected installation. The Department further assumed that because of these new base operating responsibilities, the effect of the recommendation on the non-DoD agencies would be an increase in their costs. As required by Section 2913(d) of the BRAC statute, the Department has taken the effect on the costs of these agencies into account when making this recommendation.

**Economic Impact on Communities:** Assuming no economic recovery, this recommendation could result in a maximum potential reduction of 1,824 jobs (1,067 direct and 737 indirect jobs) over the 2006 – 2011 period in the Atlanta-Sandy Springs-Marietta, GA metropolitan statistical area, which is less than 0.1 percent of economic area employment. The aggregate economic impact of all recommended actions on this economic region of influence was considered and is at Appendix B of Volume I.

**Community Infrastructure Assessment:** A review of community attributes revealed no significant issues regarding the ability of the infrastructures of the local communities to support missions, forces, and personnel. When moving from Ft. Gillem to Rock Island Arsenal, the following local area capability improved: Cost of Living and Population. The following capabilities are less robust: Housing, Education, Employment, and Medical. When moving from Ft. Gillem to Ft. Campbell, the following local attributes are improved: Cost of Living and Population. The following capabilities are not as robust: Housing, Education, Employment, Medical, Safety and Transportation. When moving from Ft. Gillem to Redstone Arsenal, the following local attributes are improved: Cost of Living and Population. The following capabilities are not as robust: Child Care, Housing, Medical, and Transportation. When moving from Ft. Gillem to Ft. Benning, the following local capability is improved: Population. The following capabilities are not as robust: Housing, Employment, Medical, and Safety. When moving from Ft. Gillem to Pope AFB, the following capabilities are improved: Cost of Living and Population. The following capabilities are not as robust: Housing, Employment, Medical, Safety and Transportation. When moving from Ft. Gillem to Shaw AFB, the following local capabilities are improved: Cost of Living and Population. The following capabilities are not as robust: Housing, Education, Medical, Transportation and Safety. There are no known community infrastructure impediments to implementation of all recommendations affecting the installations in this recommendation.

**Environmental Impact:** Closure of Fort Gillem will necessitate consultations with the State Historic Preservation Office to ensure that historic properties are continued to be protected. The closure of ranges at Fort Gillem will require clearance of munitions and remediation of any munition constituents. The remediation costs for these ranges may be significant and the time required for completing remediation is uncertain. Groundwater and surface water resources will require restoration and/or monitoring to prevent further environmental impacts. Significant mitigation measures to limit releases to impaired waterways may be required at Rock Island, Fort Campbell, and Fort Benning to reduce impacts to water quality and achieve USEPA Water Quality Standards. Air Conformity determination and New Source Review and permitting effort and consultations with tribes regarding cultural resources will be required at Fort Campbell. This recommendation has the potential to impact noise and threatened and endangered species

or critical habitat at Fort Campbell. An Air Conformity Analysis will be required at Fort Benning. Construction at Pope AFB may have to occur on acreage already constrained by TES. This recommendation has the potential to impact wetlands at Pope AFB and Shaw AFB. This recommendation has no impact on dredging; marine mammals, resources, or sanctuaries; or waste management. This recommendation will require spending approximately \$1.3M for environmental compliance costs. These costs were included in the payback calculation. Fort Gillem reports \$18M in environmental restoration costs. Because the Department has a legal obligation to perform environmental restoration regardless of whether an installation is closed, realigned, or remains open, these costs were not included in the payback calculation. This recommendation does not otherwise impact the costs of environmental restoration, waste management, and environmental compliance activities. The aggregate environmental impact of all recommended BRAC actions affecting the installations in this recommendation has been reviewed. There are no known environmental impediments to implementation of this recommendation.

## Fort McPherson, GA

**Recommendation:** Close Ft. McPherson, GA. Relocate the Headquarters US Army Forces Command (FORSCOM), and the Headquarters US Army Reserve Command (USARC) to Pope Air Force Base, NC. Relocate the Headquarters 3rd US Army to Shaw Air Force Base, SC. Relocate the Installation Management Agency Southeastern Region Headquarters and the US Army Network Enterprise Technology Command (NETCOM) Southeastern Region Headquarters to Ft. Eustis, VA. Relocate the Army Contracting Agency Southern Region Headquarters to Ft. Sam Houston.

**Justification:** This recommendation closes Ft. McPherson, an administrative installation, and moves the tenant headquarters organizations to Ft. Sam Houston, Ft. Eustis, Pope AFB and Shaw AFB. It enhances the Army's military value, is consistent with the Army's Force Structure Plan, and maintains adequate surge capabilities to address future unforeseen requirements. This closure allows the Army to employ excess capacities at installations that can accomplish more than administrative missions. The organization relocations in this recommendation also create multifunctional, multi-component and multi-Service installations that provide a better level of service at a reduced cost.

The recommended relocations also retain or enhance vital linkages between the relocating organizations and other headquarters activities. FORSCOM HQs is relocated to Pope AFB where it will be co-located with a large concentration of operational forces. The USARC HQs has a mission relationship with FORSCOM that is enhanced by leaving the two co-located. 3rd Army is relocated to Shaw AFB where it will be collocated with the Air Force component command of CENTCOM. The IMA and NETCOM HQs are moved to Ft. Eustis because of recommendations to consolidate the Northeastern and Southeastern regions of these two commands into one Eastern Region at Ft. Eustis. The ACA Southern Region HQs is moved to Ft. Sam Houston where it is recommended to consolidate with the ACA Southern Hemisphere Region HQs, and where it will co-locate with other Army service providing organizations.

**Payback:** The total estimated one-time cost to the Department of Defense to implement this recommendation is \$197.8M. The net of all costs and savings to the Department of Defense during the implementation period is a saving of \$111.4M. Annual recurring savings to the Department after implementation are \$82.1M with a payback expected in 2 years. The net present value of the costs and savings to the Department over 20 years is a savings of \$895.2M.

This recommendation affects the U.S. Post Office, a non-DoD Federal agency. In the absence of access to credible cost and savings information for that agency or knowledge regarding whether that agency will remain on the installation, the Department assumed that the non-DoD Federal agency will be required to assume new base operating responsibilities on the affected installation. The Department further assumed that because of these new base operating responsibilities, the effect of the recommendation on the non-DoD agency would be an increase in its costs. As required by Section 2913(d) of the

BRAC statute, the Department has taken the effect on the costs of this agency into account when making this recommendation.

**Economic Impact on Communities:** Assuming no economic recovery, this recommendation could result in a maximum potential reduction of 7,123 jobs (4,303 direct and 2,820 indirect jobs) over the 2006 – 2011 period in the Atlanta-Sandy Springs-Marietta, GA metropolitan statistical area, which is 0.26 percent of economic area employment. The aggregate economic impact of all recommended actions on this economic region of influence was considered and is at Appendix B of Volume I.

**Community Infrastructure Assessment:** A review of community attributes revealed no significant issues regarding the ability of the infrastructures of the local communities to support missions, forces, and personnel. When moving from Ft. McPherson to Pope AFB, the following local capability is improved: Cost of Living. The following local area capabilities are not as robust: Housing, Employment, Medical and Safety. When moving from Ft. McPherson to Ft. Eustis, the following local capabilities are improved: Cost of Living and Transportation. The following local area capabilities are not as robust: Housing, Education, and Medical Health. When moving from Ft. McPherson to Ft. Sam Houston, the following local capability is improved: Cost of Living. The following local area capabilities are not as robust: Employment, Medical and Safety. When moving from Ft. McPherson to Shaw AFB, the following local capability is improved: Cost of Living. The following local area capabilities are not as robust: Housing, Education, Medical and Safety. There are no known community infrastructure impediments to implementation of all recommendations affecting the installations in this recommendation.

**Environmental Impact:** Closure of Fort McPherson will necessitate consultations with the State Historic Preservation Office. Closure of operational ranges will likely necessitate clearance of munitions and remediation of any munition constituents. The remediation costs for these ranges may be significant and the time required for completing remediation is uncertain. Fort McPherson has contaminated water resources that will require restoration and/or monitoring. A new source review will be required at Fort Sam Houston. An Air Conformity determination and New Source Review and permitting effort will be required at Fort Eustis. A minor air permit revision may be necessary at Pope AFB. Significant mitigation measures to limit releases to impaired waterways may be required at Fort Sam Houston and Fort Eustis to reduce impacts to water quality and achieve US EPA water quality standards. Construction at Pope AFB may have to occur on acreage already constrained by TES. This recommendation has the potential to impact wetlands at Pope AFB and Shaw AFB. This recommendation has no impact on dredging; marine mammals, resources, or sanctuaries; noise; threatened and endangered species or critical habitat; or waste management. This recommendation will require spending approximately \$2.5M for environmental compliance activities. These costs were included in the payback calculation. Fort McPherson reports \$129.7M in environmental restoration costs. Because the Department has a legal obligation to perform environmental restoration regardless of whether an installation is closed, realigned, or remains open, these costs were not included in the payback calculation. This recommendation does not otherwise impact the costs of environmental restoration, waste management, and environmental compliance activities. The aggregate environmental

impact of all recommended BRAC actions affecting the installations in this recommendation has been reviewed. There are no known environmental impediments to implementation of this recommendation.



### Operational Army (IGPBS)

**Recommendation:** Realign Fort Bliss, TX by relocating air defense artillery units to Fort Sill and relocating 1st Armored Division and various echelon above division units from Germany and Korea to Fort Bliss, TX. Realign Fort Sill by relocating an artillery (Fires) brigade to Fort Bliss. Realign Fort Hood, TX by relocating maneuver battalions, a support battalion, and aviation units to Fort Bliss, Texas. Realign Fort Riley, KS by inactivating various units, activating a Brigade Combat Team (BCT) and relocating 1st Infantry Division units and various echelons above division units from Germany and Korea to Fort Riley, KS. Realign Fort Campbell, KY, by relocating an attack aviation battalion to Fort Riley, KS.

**Justification:** This proposal ensures the Army has sufficient infrastructure, training land and ranges to meet the requirements to transform the Operational Army as identified in the Twenty Year Force Structure Plan. It also ensures the Army maintains adequate surge capacity. As part of the modular force transformation, the Army is activating 10 new combat arms brigades for a total of 43 active component brigade combat teams (BCTs). Including the results of the Integrated Global Presence and Basing Strategy (IGPBS), the number of BCTs stationed in the United States will rise from twenty-six to forty. Relocating the units listed in this recommendation to Fort Bliss, Fort Riley, and Fort Sill takes advantage of available infrastructure and training land. Fort Bliss and Fort Riley are installations capable of training modular formations, both mounted and dismounted, at home station with sufficient land and facilities to test, simulate, or fire all organic weapon systems. This recommendation enhances home station training and readiness of the units at all installations.

Relocating 1st Armored Division units and echelons above division (EAD) units to Fort Bliss will transform it from an institutional training installation into a major mounted maneuver training installation. This avoids overcrowding and overuse at other installations by stationing them at one of the installations with the greatest capacity. It also creates a potential opportunity for enhanced Operational Testing due to the close proximity of Fort Bliss to White Sands Missile Range.

Relocating an Air Defense Artillery (ADA) unit to Fort Sill supports the establishment of the Net Fires Center, combining the Artillery and ADA schools at Fort Sill and provides a force stabilization opportunity for soldiers in this unit. Relocating the Artillery (Fires) Brigade to Fort Bliss collocates the artillery with the maneuver units at Fort Bliss and vacates space at Fort Sill for the ADA unit.

Realigning Fort Riley by inactivating an Engineer Brigade Headquarters, two other engineer units, two maneuver battalions and other smaller units beginning in FY 06 directly supports the Army's modular force transformation. It also facilitates activating a BCT in FY 06, and relocating 1st Infantry Division Headquarters, the Division Support Command Headquarters, Aviation Brigade units and other units returning from overseas to Fort Riley. The relocation of an attack aviation battalion from Fort Campbell to Fort Riley supports the formation of a multi-functional aviation brigade at Fort Riley.

The Army obtained approval to temporarily station a BCT at Fort Hood in 2005 and another BCT at Fort Bliss in 2006. This recommendation validates the stationing of that BCT at Fort Bliss and relocates two maneuver battalions, an armored reconnaissance squadron and a support battalion from Fort Hood to support the activation at Fort Bliss. Relocating these battalions will provide the assets necessary to accomplish the activation. Relocating aviation units from Fort Hood supports the activation of a multi-functional aviation brigade.

While this recommendation does not in BRAC terms save money, the costs are mitigated by the non-BRAC savings that will accrue to the Department from the closure or realignment of the overseas locations from which these units come. Those non-BRAC savings amount to \$4.4B during the 6 year period, and approximately \$20.0B of 20 year net present value savings.

**Payback:** The total estimated one-time cost to the Department of Defense to implement this recommendation is \$3,946M. The net of all costs and savings to the Department of Defense during the implementation period is a cost of \$5,229M. Annual recurring costs to the Department after implementation are \$294.7M, with no payback expected. The net present value of the costs and savings to the Department over 20 years is a cost of \$7,826.7M.

**Economic Impact on Communities:** Assuming no economic recovery, this recommendation could result in a maximum potential reduction of 748 jobs (434 direct and 314 indirect jobs) over the 2006 – 2011 period in the Clarksville, TN-KY Metropolitan Statistical Area, which is 0.58 percent of economic region of influence employment.

Assuming no economic recovery, this recommendation could result in a maximum potential reduction of 8,522 jobs (5,136 direct and 3,386 indirect jobs) over the 2006 – 2011 period in the Killeen-Temple-Fort Hood Metropolitan Statistical Area, which is 4.5 percent of economic region of influence employment. The aggregate economic impact of all recommended actions on this economic region of influence was considered and is at Appendix B of Volume I.

The aggregate economic impact of all recommended actions on these economic regions of influence was considered and is at Appendix B of Volume I.

**Community Infrastructure Assessment:** A review of community infrastructure attributes revealed some issues regarding the ability of the communities to support forces, missions, and personnel. The City of El Paso, TX (Fort Bliss) and the City of Manhattan, KS (Fort Riley) must cooperate fully and quickly to assess requirements and implement them, especially in the areas of housing and schools. When moving activities from Fort Hood to Fort Bliss, four attributes improved (Housing, Medical Health, Safety, and Population Center) and one (Employment) is not as robust. When moving activities from Fort Campbell to Fort Riley, three attributes improved (Housing, Employment, and Safety) and two (Child Care and Population Center) are not as robust. When moving activities from Fort Bliss to Fort Sill, two attributes improved (Cost of Living, and

Employment) and six (Housing, Education, Medical Health, Safety Population Center and Utilities) are not as robust. There are no known community infrastructure impediments to implementation of all recommendations affecting the installations in this recommendation.

**Environmental Impact:** An Air Conformity determination and New Source Review and permitting effort will be required at Fort Bliss. To preserve cultural and archeological resources, training restrictions may be imposed and increased operational delays and costs are possible at Fort Bliss and tribal consultations may be required. Tribal negotiations may be required at Fort Riley to expand use near listed areas. Added operations at Riley and Sill may impact threatened and endangered species and result in further restrictions. Development of a Programmatic Agreement, tribal consultations, and evaluations to determine significance of cultural and historical resources will be required at Fort Sill. Further analysis will be required to determine the extent of new noise impacts at Bliss, Riley, and Sill. This recommendation results in significant additional water demands for the Ft Bliss region and therefore the installation will likely have to purchase or develop new potable water sources if groundwater sources are not sufficient. Further analysis will be required to assess long-term regional water impacts. Significant mitigation measures to limit releases may be required at Fort Sill to reduce impacts to water quality and achieve USEPA Water Quality Standards. This recommendation has no impact on dredging; land use constraints or sensitive resource areas; marine mammals, resources, or sanctuaries; waste management; or wetlands. This recommendation will require spending approximately \$2.6M for environmental compliance costs. These costs were included in the payback calculation. This recommendation does not otherwise impact the costs of environmental restoration, waste management, and environmental compliance activities. The aggregate environmental impact of all recommended BRAC actions affecting the installations in this recommendation has been reviewed. There are no known environmental impediments to implementation of this recommendation.

## Maneuver Training

**Recommendation:** Realign Fort Knox, KY, by relocating the Armor Center and School to Fort Benning, GA, to accommodate the activation of an Infantry Brigade Combat Team (BCT) at Fort Knox, KY, and the relocation of engineer, military police, and combat service support units from Europe and Korea. Realign Fort McCoy, WI, by relocating the 84th Army Reserve Regional Training Center to Fort Knox, KY.

**Justification:** This recommendation enhances military value, improves training and deployment capabilities, better utilizes training resources, and creates significant efficiencies and cost savings while maintaining sufficient surge capability to address future unforeseen requirements. It properly locates Operational Army units in support of the Army's force structure plans and modular force transformation.

This recommendation supports the consolidation of the Armor and Infantry Centers and Schools at Fort Benning and creates a Maneuver Center of Excellence for ground forces training and doctrine development. It consolidates both Infantry and Armor One Station Unit Training (OSUT), which allows the Army to reduce the total number of Basic Combat Training locations from five to four.

This recommendation also relocates the 84th ARRTC to Fort Knox and supports another recommendation which relocates Army Reserve Command and Control units to Fort McCoy. These relocations enhance command and control within the Army Reserve, and promote interaction between the Active and Reserve Components.

This recommendation directly supports the Army's operational unit stationing and training requirements by using available facilities, ranges, training land at Fort Knox, KY (vacated by the Armor Center and School) to effectively and efficiently relocate various Combat Support and Combat Service Support units returning from overseas, and as the installation platform for the activation of a new Infantry BCT. These units are a combination of the relocation of Integrated Global Presence and Basing Strategy (IGPBS) – related units returning from overseas and the activation of units as part of the Army's modular force transformation.

**Payback:** The total estimated one-time cost to the Department of Defense to implement this recommendation is \$773.1M. The net of all costs and savings to the Department of Defense during the implementation period is a cost of \$244.1M. Annual recurring savings to the Department after implementation are \$123.3M with a payback expected in 5 years. The net present value of the costs and savings to the Department over 20 years is a savings of \$948.1M.

**Economic Impact on Communities:** This recommendation could result in a maximum potential reduction of 8,521 jobs (6,100 direct and 2,421 indirect jobs) over the 2006 – 2011 period in the Elizabethtown, KY Metropolitan Statistical Area, which is 12.93 percent of economic area employment.

Assuming no economic recovery, this recommendation could result in a maximum potential reduction of 834 jobs (497 direct and 337 indirect jobs) over the 2006 – 2011 period in the Monroe County, WI area, which is 3.5 percent of economic area employment.

The aggregate economic impact of all recommended actions on these economic regions of influence was considered and is at Appendix B of Volume I.

**Community Infrastructure Assessment:** A review of community infrastructure attributes revealed no significant issues regarding the ability of the infrastructure of the communities to support missions, forces, and personnel. When moving activities from Fort McCoy to Fort Knox, five improved (Child Care, Cost of Living, Education, Population Center and Transportation) and one (Employment) was not as robust. When moving from Fort Knox to Fort Benning, the following local area capabilities improved: Employment, Population Center, and Transportation; and the following local area capabilities are not as robust: Cost of Living, Education, and Safety. There are no known community infrastructure impediments to implementation of all recommendations affecting the installations in this recommendation.

**Environmental Impact:** Tribal consultations may be necessary at Fort Knox and Fort Benning. An Air Conformity Analysis and New Source Review will be required at Fort Benning. Noise analysis and monitoring is required at Fort Knox and Fort Benning to determine the extent of new noise impacts.. Additional operations may impact TES at Fort Benning, leading to additional restrictions on operations. Fort Knox range is located over the recharge zone of a sole-source aquifer, which may result in future regulatory limitations on training activities. Significant mitigation measures to limit releases may be required to reduce impacts to water quality and achieve US EPA water quality standards at Fort Benning. This recommendation has no impact on dredging; land use constraints or sensitive resource areas; marine mammals, resources, or sanctuaries; waste management; or wetlands. This recommendation will require spending approximately \$1.3M for environmental compliance costs. These costs were included in the payback calculation. This recommendation does not otherwise impact the costs of environmental restoration, waste management, and environmental compliance activities. The aggregate environmental impact of all recommended BRAC actions affecting the installations in this recommendation has been reviewed. There are no known environmental impediments to implementation of this recommendation.

### U.S. Army Garrison Michigan (Selfridge)

**Recommendation:** Close United States Army Garrison Michigan at Selfridge, which is located on Selfridge Air National Guard Base. Retain an enclave to support the Dynamic Structural Load Simulator (Bridging) Laboratory and the Water Purification Laboratory on Selfridge.

**Justification:** This recommendation closes the US Army Garrison Michigan (USAG-M) at Selfridge, which is located at Selfridge Air National Guard Base. The USAG-M at Selfridge is federally owned property located on Selfridge Air National Guard Base. USAG-M at Selfridge is the primary provider of housing and other support and services to certain military personnel and their dependents located in the Detroit area. There is sufficient housing in the Detroit Metropolitan area to support military personnel stationed in the area. Closing USAG-Michigan at Selfridge avoids the cost of continued operation and maintenance of other unnecessary support facilities. A Bridging Lab and Water Purification Lab located on Selfridge, which are part of the Tank Automotive Army Research and Development Center at Detroit Arsenal will be retained and enclaved. Six garrison personnel (Garrison Commander and staff) will be relocated to Detroit Arsenal. This recommendation enhances military value, supports the Army's force structure plan, and maintains sufficient surge capability to address future unforeseen requirements.

**Payback:** The total estimated one-time cost to the Department of Defense to implement this recommendation is \$9.5M. The net of all costs and savings to the Department during the implementation period is a savings of \$91.4M. Annual recurring savings to the Department after implementation are \$18.1M with a payback expected in 0 years. The net present value of the costs and savings to the Department over 20 years is a savings of \$260.9M.

**Economic Impact on Communities:** Assuming no economic recovery, this recommendation could result in a maximum potential reduction of 601 jobs (376 direct and 225 indirect) over the 2006-2011 period in the Warren-Farmington Hills-Troy, MI Metropolitan Division which is 0.04% of the economic area employment. The aggregate economic impact of all recommended actions on this economic region of influence was considered and is at Appendix B of Volume I.

**Community Infrastructure Assessment:** A review of community attributes revealed no significant issues regarding the ability of the local community's infrastructure to support forces, missions and personnel. There are no known community infrastructure impediments to implementation of all recommendations affecting the installations in this recommendation.

**Environmental Impact:** Closure will require consultations with the State Historic Preservation Office to ensure that the historic sites are protected. Restoration and/or monitoring of contaminated groundwater will likely be required after closure in order to prevent significant long-term impacts to the environment. This recommendation has no impact on air quality; dredging; land use constraints or sensitive resource areas; marine mammals, resources, or sanctuaries; noise; threatened and endangered species or critical

habitat; waste management; or wetlands. This recommendation will require spending approximately \$0.65M for environmental compliance costs. These costs were included in the payback calculation. USAG Michigan at Selfridge reports \$13.3M in environmental restoration costs. Because the Department has a legal obligation to perform environmental restoration regardless of whether an installation is closed, realigned, or remains open, these costs were not included in the payback calculation. This recommendation does not otherwise impact the costs of environmental restoration, waste management, and environmental compliance activities. The aggregate environmental impact of all recommended BRAC actions affecting the installations in this recommendation has been reviewed. There are no known environmental impediments to implementation of this recommendation.

**Fort Monmouth, NJ**

**Recommendation:** Close Ft. Monmouth, NJ. Relocate the US Army Military Academy Preparatory School to West Point, NY. Relocate the Joint Network Management System Program Office to Fort Meade, MD. Relocate the Budget/Funding, Contracting, Cataloging, Requisition Processing, Customer Services, Item Management, Stock Control, Weapon System Secondary Item Support, Requirements Determination, Integrated Materiel Management Technical Support Inventory Control Point functions for Consumable Items to Defense Supply Center Columbus, OH, and reestablish them as Defense Logistics Agency Inventory Control Point functions; relocate the procurement management and related support functions for Depot Level Repairables to Aberdeen Proving Ground, MD, and designate them as Inventory Control Point functions, detachment of Defense Supply Center Columbus, OH, and relocate the remaining integrated materiel management, user, and related support functions to Aberdeen Proving Ground, MD. Relocate Information Systems, Sensors, Electronic Warfare, and Electronics Research and Development & Acquisition (RDA) to Aberdeen Proving Ground, MD. Relocate the elements of the Program Executive Office for Enterprise Information Systems and consolidate into the Program Executive Office, Enterprise Information Systems at Fort Belvoir, VA.

Realign Ft. Belvoir, VA by relocating and consolidating Sensors, Electronics, and Electronic Warfare Research, Development and Acquisition activities to Aberdeen Proving Ground, MD, and by relocating and consolidating Information Systems Research and Development and Acquisition (except for the Program Executive Office, Enterprise Information Systems) to Aberdeen Proving Ground, MD.

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

Realign Redstone Arsenal, AL, by relocating and consolidating Information Systems Development and Acquisition to Aberdeen Proving Ground, MD.

Realign the PM Acquisition, Logistics and Technology Enterprise Systems and Services (ALTESS) facility at 2511 Jefferson Davis Hwy, Arlington, VA, a leased installation, by relocating and consolidating into the Program Executive Office, Enterprise Information Systems at Fort Belvoir, VA.

**Justification:** The closure of Ft. Monmouth allows the Army to pursue several transformational and BRAC objectives. These include: Consolidating training to enhance coordination, doctrine development, training effectiveness and improve operational and functional efficiencies, and consolidating RDA and T&E functions on fewer installations. Retain DoD installations with the most flexible capability to accept new missions. Consolidate or co-locate common business functions with other agencies to provide better level of services at a reduced cost.



The recommendation relocates the US Army Military Academy Preparatory School to West Point, NY and increases training to enhance coordination, doctrine development, training effectiveness and improve operational and functional efficiencies.

The recommendation establishes a Land C4ISR Lifecycle Management Command (LCMC) to focus technical activity and accelerate transition. This recommendation addresses the transformational objective of Network Centric Warfare. The solution of the significant challenges of realizing the potential of Network Centric Warfare for land combat forces requires integrated research in C4ISR technologies (engineered networks of sensors, communications, information processing), and individual and networked human behavior. The recommendation increases efficiency through consolidation. Research, Development and Acquisition (RDA), Test and Evaluation (T&E) of Army Land C4ISR technologies and systems is currently split among three major sites – Ft Monmouth, NJ, Ft Dix, NJ, Adelphi, MD and Ft Belvoir, VA and several smaller sites, including Redstone Arsenal and Fort Knox. Consolidation of RDA at fewer sites achieves efficiency and synergy at a lower cost than would be required for multiple sites. This action preserves the Army's "commodity" business model by near collocation of Research, Development, Acquisition, and Logistics functions. Further, combining RDA and T&E requires test ranges – which cannot be created at Ft Monmouth.

The closure of Ft. Monmouth and relocation of functions which enhance the Army's military value, is consistent with the Army's Force Structure Plan, and maintains adequate surge capabilities. Ft. Monmouth is an acquisition and research installation with little capacity to be utilized for other purposes. Military value is enhanced by relocating the research functions to under-utilized and better equipped facilities; by relocating the administrative functions to multi-purpose installations with higher military and administrative value; and by co-locating education activities with the schools they support. Utilizing existing space and facilities at the gaining installations, maintains both support to the Army Force Structure Plan, and capabilities for meeting surge requirements.

**Payback:** The total estimated one-time cost to the Department of Defense to implement this recommendation is \$822.3M. The net of all costs and savings to the Department of Defense during the implementation period is a cost of \$395.6M. Annual recurring savings to the Department after implementation are \$143.7M with a payback expected in 6 years. The net present value of the costs and savings to the Department over 20 years is a savings of \$1,025.8M.

This recommendation affects non-DoD Federal agencies. These include, the U.S. Post Office, the Department of Justice and the General Services Administration. In the absence of access to credible cost and savings information for those agencies or knowledge regarding whether those agencies will remain on the installation, the Department assumed that the non-DoD Federal Agencies will be required to assume new base operating responsibilities on the affected installation. The Department further assumed that because of these new base operating responsibilities, the affect of the recommendations on the non-DoD agencies would be an increase in cost. As required by

Section 2913 (d) of the BRAC statute, the Department has taken the effect on the cost of these agencies into account when making this recommendation.

**Economic Impact on Communities:** Assuming no economic recovery, this recommendation could result in a maximum potential reduction of 9,737 jobs (5,272 direct and 4,465 indirect jobs) over the 2006 – 2011 periods in the Edison, NJ Metropolitan Division, which is 0.8 percent of economic area employment.

Assuming no economic recovery, this recommendation could result in a maximum potential reduction of 20 jobs (11 direct and 9 indirect jobs) over the 2006 – 2011 periods in the Elizabethtown, KY Metropolitan Division, which is 0.03 percent of economic area employment.

Assuming no economic recovery, this recommendation could result in a maximum potential reduction of 1,218 jobs (694 direct and 524 indirect jobs) over the 2006 – 2011 periods in the Washington-Arlington-Alexandria, DC-VA-MD-WV Metropolitan Division, which is 0.04 percent of economic area employment.

Assuming no economic recovery, this recommendation could result in a maximum potential reduction of 63 jobs (37 direct and 26 indirect jobs) over the 2006 – 2011 periods in the Huntsville, AL Metropolitan Division, which is 0.03 percent of economic area employment.

Assuming no economic recovery, this recommendation could result in a maximum potential increase of 9,834 jobs (5,042 direct and 4,792 indirect jobs) over the 2006 – 2011 periods in the Baltimore-Towson, MD Metropolitan Division, which is 0.63 percent of economic area employment.

Assuming no economic recovery, this recommendation could result in a maximum potential increase of 422 jobs (264 direct and 158 indirect jobs) over the 2006 – 2011 periods in the Poughkeepsie-Newburgh-Middletown, NY Metropolitan Division, which is 0.1 percent of economic area employment.

Assuming no economic recovery, this recommendation could result in a maximum potential increase of 89 jobs (49 direct and 40 indirect jobs) over the 2006 – 2011 periods in the Columbus, OH Metropolitan Division, which is 0.01 percent of economic area employment.

The aggregate economic impact of all recommended actions on these economic regions of influence was considered and is at Appendix B of Volume I.

**Community Infrastructure Assessment:** A review of community attributes revealed no significant issues regarding the ability of the infrastructure of communities to support forces, missions, and personnel. When moving from Ft. Monmouth to Aberdeen, MD, the following local area capabilities improve: Cost of Living and Medical Health. The following attributes decline: Safety and Transportation. When moving from Ft.

Monmouth to West Point, the following local area capabilities improve: Education and Employment. The following attribute declines: Housing. When moving from Ft. Monmouth to Ft. Belvoir, the following local area capabilities improve: Employment and Medical Health. The following attributes decline: Education and Safety. When moving from Ft. Monmouth to Ft. Meade, the following local area capabilities improve: Cost of Living and Medical Health. The following attributes decline: Education and Safety. When moving from Ft. Monmouth to Columbus, OH, the following local area capabilities improved: Cost of living, Employment, and Medical Health. The following attribute declines: Safety. When moving from Ft. Belvoir to Aberdeen, MD, the following local area capabilities improve: Cost of living and Education. The following attributes decline: Employment, Safety and Transportation. When moving from Ft. Knox to Aberdeen, MD, the following local area capabilities improve: Housing, Employment, and Medical Health. The following attributes decline: Cost of Living, Safety, and Transportation. When moving from Redstone Arsenal to Aberdeen, MD, the following local area capabilities improve: Child Care, Housing, and Medical Health. The following attributes decline: Employment, Safety, Population Center, and Transportation. When moving from Arlington, VA to Aberdeen, MD, the following attributes decline: Population Center, and Transportation.

**Environmental Impact:** Closure of Fort Monmouth will necessitate consultations with the State Historic Preservation Office to ensure that sites are continued to be protected. Fort Monmouth's previous mission-related activities will result in land use constraints/sensitive resource area impacts. An Air Conformity Analysis and a New Source Review and permitting effort is required at Aberdeen, West Point, and Fort Belvoir. The extent of the cultural resources on Aberdeen, West Point, and Fort Belvoir are uncertain. Potential impacts may occur as result of increased times delays and negotiated restrictions. Additional operations at Aberdeen, West Point, and Fort Belvoir may further impact threatened/endangered species leading to additional restrictions on training or operations. Significant mitigation measures to limit releases may be required to reduce impacts to water quality and achieve US EPA water quality standards. Due to the increase in personnel there would be a minimal impact on waste production and water consumption at Defense Supply Center Columbus (DSCC), OH. This recommendation has no impact on dredging; land use constraints or sensitive resource areas; marine mammals, resources, or sanctuaries; noise; or wetlands. This recommendation will require spending approximately \$2.95 million for environmental compliance activities. These costs were included in the payback calculation. Fort Monmouth reports \$2.9 million in environmental restoration costs. Because the Department has a legal obligation to perform environmental restoration regardless of whether an installation is closed, realigned, or remains open, these costs were not included in the payback calculation. This recommendation does not impact the costs of environmental restoration, waste management, and environmental compliance activities. The aggregate environmental impact of all recommended BRAC actions affecting the installations in this recommendation has been reviewed. There are no known environmental impediments to implementation of this recommendation.

## Fort Bragg, NC

**Recommendation:** Realign Fort Bragg, NC, by relocating the 7th Special Forces Group (SFG) to Eglin AFB, FL, and by activating the 4th Brigade Combat Team (BCT), 82d Airborne Division and relocating European-based forces to Fort Bragg, NC.

**Justification:** This recommendation co-locates Army Special Operation Forces with Air Force Special Operations Forces at Eglin AFB, activates the 4th BCT of the 82nd Airborne Division and relocates Combat Service Support units to Fort Bragg from Europe to support the Army modular force transformation. This realignment and activation of forces enhances military value and training capabilities by locating Special Operations Forces (SOF) in locations that best support Joint specialized training needs, and by creating needed space for the additional brigade at Fort Bragg. This recommendation is consistent with and supports the Army's Force Structure Plan submitted with the FY 06 budget, and provides the necessary capacity and capability, including surge, to support the units affected by this action.

This recommendation never pays back. However, the benefits of enhancing Joint training opportunities coupled with the positive impact of freeing up needed training space and reducing cost of the new BCT by approximately \$54-\$148M (with family housing) at Fort Bragg for the Army's Modular Force transformation, justify the additional costs to the Department.

**Payback:** The total estimated one-time cost to the Department of Defense to implement this recommendation is \$334.8M. The net of all costs and savings to the Department during the implementation period is a savings of \$446.1M. Annual recurring costs to the Department after implementation is \$23.8M, with no payback expected. The net present value of the costs and savings to the Department over 20 years is a cost of \$639.2M.

**Economic Impact on Communities:** This recommendation will not result in any job reductions (direct or indirect) over the 2006-2011 period in the Fayetteville, NC and Fort Walton Beach-Crestview-Destin, FL metropolitan statistical areas. The aggregate economic impact of all recommended actions on this economic region of influence was considered and is at Appendix B of Volume I.

**Community Infrastructure Assessment:** A review of community attributes revealed no significant issues regarding the ability of the local community's infrastructure to support missions, forces, and personnel. Of the ten attributes evaluated (Child Care, Cost of Living, Education, Employment, Housing, Medical Health, Population Center, Safety, Transportation, and Utilities) two levels of support declined (Cost of Living, Education) when moving activities from Fort Bragg to Eglin AFB. There are no known community infrastructure impediments to implementation of all recommendations affecting the installations in this recommendation.

**Environmental Impact:** This recommendation may result in operational restrictions to protect cultural or archeological resources at Eglin AFB and Fort Bragg. Tribal consultations may also be required at both locations. Operations are currently restricted

by electromagnetic radiation and/or emissions and additional operations/training may result in operational restrictions at Eglin AFB. Further analysis may be necessary to determine the extent of new noise impacts at Eglin and Bragg. Additional waste production at Eglin may necessitate modifications of hazardous waste program. Increased water demand at Fort Bragg may lead to further controls and restrictions and water infrastructure may need upgrades due to incoming population. Additional operations at Eglin may impact wetlands, resulting in operational restrictions. An evaluation of operational restrictions for jurisdictional wetlands will likely have to be conducted at Fort Bragg. Added operations may impact threatened and endangered species at Fort Bragg and result in further operational and training restrictions. This recommendation has no impact on air quality; dredging; land use constraints or sensitive resource areas; or marine mammals, resources, or sanctuaries. This recommendation will require spending approximately \$1.0M for environmental compliance costs. These costs were included in the payback calculation. This recommendation does not otherwise impact the costs of environmental restoration, waste management, and environmental compliance activities. The aggregate environmental impact of all recommended BRAC actions affecting the installations in this recommendation has been reviewed. There are no known environmental impediments to implementation of this recommendation.

## Single Drill Sergeant School

**Recommendation:** Realign Fort Benning, GA, and Fort Leonard Wood, MO, by relocating the Drill Sergeant School at each location to Fort Jackson, SC.

**Justification:** This recommendation consolidates Drill Sergeant's Training from three locations (Fort Benning, Fort Jackson, and Fort Leonard Wood) to one location (Fort Jackson), which fosters consistency, standardization and training proficiency. It enhances military value, supports the Army's force structure plan, and maintains sufficient surge capability to address future unforeseen requirements. This recommendation supports Army Transformation by collocating institutional training, MTOE units, RDTE organizations and other TDA units in large numbers on single installations to support force stabilization and engage training. It improves training capabilities while eliminating excess capacity at institutional training installations, and provides the same or better level of service at a reduced cost.

**Payback:** The total estimated one-time cost to the Department of Defense to implement this recommendation is \$1.8M. The net of all costs and savings to the Department of Defense during the implementation period is a saving of \$7.6M. Annual recurring savings to the Department after implementation are \$2.5M with a payback expected within one year. The net present value of the costs and savings to the Department over 20 years is a savings of \$31.3M.

**Economic Impact on Communities:** Assuming no economic recover, this recommendation could result in a maximum potential reduction of 171 jobs (121 direct and 50 indirect jobs) over the 2006 – 2011 period in the Columbus GA-AL Metropolitan area, which is 0.1 percent of economic area employment.

Assuming no economic recovery, this recommendation could result in a maximum potential reduction of 237 jobs (183 direct and 54 indirect jobs) over the 2006 – 2011 period in the Ft. Leonard Wood, MO Metropolitan area, which is 0.9 percent of economic area employment.

The aggregate economic impact of all recommended actions on these economic regions of influence was considered and is at Appendix B of Volume I.

**Community Infrastructure Assessment:** A review of community attributes revealed no significant issues regarding the ability of the local community's infrastructure to support missions, forces, and personnel. There are no known community infrastructure impediments to implementation of all recommendations affecting the installations in this recommendation.

**Environmental Impact:** An Air Conformity determination and New Source Review and permitting effort will be required at Fort Jackson. This recommendation has no impact on cultural, archeological, or tribal resources; dredging; land use constraints or sensitive resource areas; marine mammals, resources, or sanctuaries; noise; threatened and endangered species or critical habitat; waste management; water resources; or wetlands.

This recommendation will require spending approximately \$0.3M for environmental compliance costs. These costs were included in the payback calculation. This recommendation does not otherwise impact the costs of environmental restoration, waste management, and environmental compliance activities. The aggregate environmental impact of all recommended BRAC actions affecting the installations in this recommendation has been reviewed. There are no known environmental impediments to implementation of this recommendation.

## Fort Hood, TX

**Recommendation:** Realign Fort Hood, TX, by relocating a Brigade Combat Team (BCT) and Unit of Employment (UEX) Headquarters to Fort Carson, CO.

**Justification:** This recommendation ensures Army BCTs and support units are located at installations capable of training modular formations, both mounted and dismounted, at home station with sufficient land and facilities to test, simulate, or fire all organic weapon systems. This recommendation enhances the military value of the installations and the home station training and readiness of the units at the installations by relocating units to installations that can best support the training and maneuver requirements associated with the Army's transformation.

This recommendation relocates to Fort Carson, CO, a Heavy BCT that will be temporarily stationed at Fort Hood in FY06, and a Unit of Employment Headquarters. The Army is temporarily stationing this BCT to Fort Hood in FY06 due to operational necessity and to support current operational deployments in support of the Global War on Terrorism (GWOT). However, based on the BRAC analysis, Fort Hood does not have sufficient facilities and available maneuver training acreage and ranges to support six permanent heavy BCTs and numerous other operational units stationed there. Fort Carson has sufficient capacity to support these units. The Army previously obtained approval from the Secretary of Defense to temporarily station a third BCT at Fort Carson in FY05. Due to Fort Carson's capacity, the BRAC analysis indicates that the Army should permanently station this third BCT at Fort Carson.

This relocation never pays back because it involves the relocation of a newly activated unit. No permanent facilities exist to support the unit.

**Payback:** The total estimated one-time cost to the Department of Defense to implement this recommendation is \$435.8M. The net of all costs and savings to the Department of Defense during the implementation period is a cost of \$579.5M. Annual recurring costs to the Department after implementation are \$45.3M. This recommendation never pays back. The net present value of the costs and savings to the Department over 20 years is a cost of \$980.4M.

**Economic Impact on Communities:** Assuming no economic recovery, this recommendation could result in a maximum potential increase of 8,167 jobs (4,945 direct and 3,222 indirect jobs) over the 2006 – 2011 period in the Killeen-Temple-Fort Hood, TX metropolitan area, which is 4.37 percent of economic area employment. The aggregate economic impact of all recommended actions on this economic region of influence was considered and is at Appendix B of Volume I.

**Community Infrastructure Assessment:** A review of community infrastructure attributes revealed no significant issues regarding the ability of the community to support forces, missions, and personnel. When moving activities from Fort Hood to Fort Carson, one attribute improved (Population Center) and one (Education) was not as robust. There



are no known community infrastructure impediments to implementation of all recommendations affecting the installations in this recommendation.

**Environmental Impact:** A New Source Review and permitting effort will be required at Fort Carson. To preserve archeological/cultural resources at Fort Carson, training restrictions may be imposed and increased operational delays and costs are possible. Tribal consultations may be required. Further analysis will be required to determine the extent of new noise impacts at Fort Carson. Added operations may impact threatened and endangered species at Fort Carson and result in further training restrictions. Distribution of potable water is severely restricted at Fort Carson. Increased missions at the installation may result in additional restrictions or mitigation requirements. Significant mitigation measures to limit releases may be required to reduce impacts to water quality and achieve US EPA water quality standards. This recommendation will require spending approximately \$1.1M for environmental compliance costs. These costs were included in the payback calculation. This recommendation does not otherwise impact the costs of environmental restoration, waste management, and environmental compliance activities. The aggregate environmental impact of all recommended BRAC actions affecting the installations in this recommendation has been reviewed. There are no known environmental impediments to implementation of this recommendation.

## Red River Army Depot, TX

**Recommendation:** Close Red River Army Depot, TX. Relocate the storage and demilitarization functions of the Munitions Center to McAlester Army Ammunition Plant, OK. Relocate the munitions maintenance functions of the Munitions Center to McAlester Army Ammunition Plant, OK, and Blue Grass Army Depot, KY. Relocate the depot maintenance of Armament and Structural Components, Combat Vehicles, Depot Fleet/Field Support, Engines and Transmissions, Fabrication and Manufacturing, Fire Control Systems and Components, and Other to Anniston Army Depot, AL. Relocate the depot maintenance of Powertrain Components, and Starters/Generators to Marine Corps Logistics Base Albany, GA. Relocate the depot maintenance of Construction Equipment to Anniston Army Depot, AL, and Marine Corps Logistics Base Albany, GA. Relocate the depot maintenance of Tactical Vehicles to Tobyhanna Army Depot, PA and Letterkenny Depot, PA. Relocate the depot maintenance of Tactical Missiles to Letterkenny Army Depot, PA. Disestablish the supply, storage, and distribution functions for tires, packaged Petroleum, Oil, and Lubricants, and compressed gases. Relocate the storage and distribution functions and associated inventories of the Defense Distribution Depot to the Defense Distribution Depot, Oklahoma City, OK.

**Justification:** This recommendation supports the strategy of minimizing the number of industrial base sites performing depot maintenance for ground and missile systems. The receiving depots have greater maintenance capability, higher facility utilization and greater opportunities for inter-service workloading. This recommendation reinforces Anniston's and Letterkenny's roles as Centers of Industrial and Technical Excellence for Combat Vehicles (Anniston) and Missile Systems (Letterkenny).

This recommendation decreases the cost of depot maintenance operations by consolidation and elimination of 30 percent of duplicate overhead structures required to operate multiple depot maintenance activities. This recommendation also increases opportunities for inter-service workloading by transferring maintenance workload to the Marine Corps.

This recommendation relocates storage, demilitarization, and munitions maintenance functions to McAlester Army Ammunition Plant, and thereby reduces redundancy and removes excess from Red River Munitions Center.

This recommendation allows DoD to create centers of excellence, generate efficiencies, and create deployment networks servicing all Services.

This recommendation relocates the storage and distribution functions and associated inventories to the Defense Distribution Depot Oklahoma City at Tinker Air Force Base. It also contributes to the elimination of unnecessary redundancies and duplication, and streamlines supply and storage processes.

The disestablishment of the wholesale supply, storage, and distribution functions for all packaged POL, tires, and compressed gas products supports transformation by privatizing these functions. Privatization of packaged POL, tires, and compressed gas products will

eliminate inventories, infrastructure and personnel associated with these functions and products.

**Payback:** The total estimated one-time cost to the Department of Defense to implement this recommendation is \$456.2M. The net present value of all costs and savings to the Department of Defense during the implementation period is a cost of \$216.6M. Annual recurring savings to the Department after implementation are \$76.5M with a payback expected in 4 years. The net present value of the costs and savings to the Department over 20 years is a savings of \$539.0M.

**Economic Impact on Communities:** Assuming no economic recovery, this recommendation could result in a maximum potential reduction of 4,176 jobs (2,500 direct and 1,676 indirect) over the 2006 -2011 period in the Texarkana, TX - Texarkana, AR Metropolitan Statistical area, which is 6.15 percent of the economic area employment. The aggregate economic impact of all recommended actions on this economic region of influence was considered and is at Appendix B of Volume I.

**Community Infrastructure Assessment:** A review of community attributes indicates no significant issues regarding the ability of the infrastructure of the communities to support missions, forces and personnel. When moving from Red River Army Depot to Tobyhanna, 5 attributes improve (child care, medical health, safety, population center, and transportation) and 1 declines (employment). When moving from Red River to Letterkenny Army Depot, 2 attributes decline (child care and housing) and one improves (safety). When moving from Red River to Anniston Army Depot, 3 attributes improve (child care, cost of living and population center) and 1 declines (housing). When moving from Red River to Tinker, seven attributes improve (population, child care, education, employment, housing, medical and transportation) and one attribute declines (crime). There are no known community infrastructure impediments to implementation of all recommendations affecting the installations in this recommendation.

**Environmental Impact:** Closure of Red River Army Depot may require consultations with the State Historic Preservation Office to ensure that cultural sites are continued to be protected. Closure of operational ranges at Red River will necessitate clearance of munitions and remediation of any munitions constituents. The remediation costs for these ranges may be significant and the time required for completing remediation is uncertain. Contaminated areas at Red River will require restoration and/or monitoring. An Air Conformity Analysis is required at Anniston, Tobyhanna, and Letterkenny. Anniston is located over a sole-source aquifer, which may require additional mitigation measures/pollution prevention to protect the aquifer from increased depot maintenance activities. The industrial wastewater treatment plant at Anniston may require up grades. Additional operations at Tinker may impact wetlands, which may lead to operational restrictions. This recommendation has no impact on dredging; marine mammals, resources, or sanctuaries; noise; or threatened and endangered species or critical habitat. This recommendation will require spending approximately \$4.8M for environmental compliance costs. These costs were included in the payback calculation. Red River reports \$49.1M in environmental restoration costs. Because the Department has a legal obligation to perform environmental restoration regardless of whether an installation is

closed, realigned, or remains open, these costs were not included in the payback calculation. This recommendation does not otherwise impact the costs of environmental restoration, waste management, and environmental compliance activities. The aggregate environmental impact of all recommended BRAC actions affecting the installations in this recommendation has been reviewed. There are no known environmental impediments to implementation of this recommendation.

## Fort Monroe, VA

**Recommendation:** Close Fort Monroe, VA. Relocate the US Army Training & Doctrine Command (TRADOC) Headquarters, the Installation Management Agency (IMA) Northeast Region Headquarters, the US Army Network Enterprise Technology Command (NETCOM) Northeast Region Headquarters and the Army Contracting Agency Northern Region Office to Fort Eustis, VA. Relocate the US Army Accessions Command and US Army Cadet Command to Fort Knox, KY.

**Justification:** This recommendation closes Fort Monroe, an administrative installation, and moves the tenant Headquarters organizations to Fort Eustis and Fort Knox. It enhances the Army's military value, is consistent with the Army's Force Structure Plan, and maintains adequate surge capabilities to address future unforeseen requirements. The closure allows the Army to move administrative headquarters to multi-purpose installations that provide the Army more flexibility to accept new missions. Both Fort Eustis and Fort Knox have operational and training capabilities that Fort Monroe lacks and both have excess capacity that can be used to accept the organizations relocating from Fort Monroe.

The recommended relocations also retain or enhance vital linkages between the relocating organizations and other headquarters activities. TRADOC HQs is moved to Ft. Eustis in order to remain within commuting distance of the Joint Forces Command (JFCOM) HQs in Norfolk, VA. JFCOM oversees all joint training across the military. IMA and NETCOM HQs are moved to Ft. Eustis because of recommendations to consolidate the Northeastern and Southeastern regions of these two commands into one Eastern Region at Ft. Eustis. The ACA Northern Region is relocated to Ft. Eustis because its two largest customers are TRADOC and IMA. The Accessions and Cadet Commands are relocated to Ft. Knox because of recommendations to locate the Army's Human Resources Command at Ft. Knox. The HRC recommendation includes the collocation of the Accessions and Cadet Commands with the Recruiting Command, already at Ft. Knox and creates a Center of Excellence for military personnel and recruiting functions by improving personnel life-cycle management.

**Payback:** The total estimated one-time cost to the Department of Defense to implement this recommendation is \$72.4M. The net of all costs and savings to the Department of Defense during the implementation period is a saving of \$146.9M. Annual recurring savings to the Department after implementation are \$56.9M with a payback expected in 1 year. The net present value of the costs and savings to the Department over 20 years is a savings of \$686.6M.

This recommendation affects the U.S. Post Office, a non-DoD Federal agency. In the absence of access to credible cost and savings information for that agency or knowledge regarding whether that agency will remain on the installation, the Department assumed that the non-DoD Federal agency will be required to assume new base operating responsibilities on the affected installation. The Department further assumed that because of these new base operating responsibilities, the effect of the recommendation on the non-DoD agency would be an increase in its costs. As required by Section 2913(d) of the

BRAC statute, the Department has taken the effect on the costs of this agency into account when making this recommendation.

**Economic Impact on Communities:** Assuming no economic recovery, this recommendation could result in a maximum potential reduction of 2,275 jobs (1,013 direct and 1,262 indirect jobs) over the 2006 – 2011 period in the Virginia Beach-Norfolk-Newport News, VA-NC metropolitan statistical area, which is 0.23 percent of economic area employment. The aggregate economic impact of all recommended actions on this economic region of influence was considered and is at Appendix B of Volume I.

**Community Infrastructure Assessment:** A review of community attributes revealed no significant issues regarding the ability of the infrastructure of the communities to support missions, forces, and personnel. When moving from Ft. Monroe to Ft. Eustis, the following local area capabilities improved: Child Care, Population and Transportation. When moving from Ft. Monroe to Ft. Knox, the following local area capabilities improved: Child Care, Cost of Living, Education and Safety. The following capabilities are not as robust: Employment and Medical. There are no known community infrastructure impediments to implementation of all recommendations affecting the installations in this recommendation.

**Environmental Impact:** Closure of Fort Monroe will necessitate consultations with the State Historic Preservation Office to ensure that historic properties are continued to be protected. Increased operational delays and costs are likely at Fort Knox in order to preserve cultural resources and tribal consultations may be necessary. An Air Conformity determination and New Source Review and permitting effort will be required at Fort Eustis. Significant mitigation measures to limit releases may be required at Fort Eustis to reduce impacts to water quality and achieve US EPA water quality standards. This recommendation will require spending approximately \$1.95M for environmental compliance activities. These costs were included in the payback calculation. Although no restoration costs were reported, Fort Monroe has a probable Military Munitions Response Program site that may require some combination of UXO sweeps, clearance, munition constituent cleanup, remediation, and land use controls. Because the Department has a legal obligation to perform environmental restoration regardless of whether an installation is closed, realigned, or remains open no cost for environmental remediate was included in the payback calculation. This recommendation does not otherwise impact the costs of environmental restoration, waste management, and environmental compliance activities. The aggregate environmental impact of all recommended BRAC actions affecting the installations in this recommendation has been reviewed. There are no known environmental impediments to implementation of this recommendation.

## USAR Command and Control - Southwest

**Recommendation:** Realign the Joint Force Training Base Los Alamitos, CA by disestablishing the 63<sup>rd</sup> Regional Readiness Command (RRC) Headquarters, Robinson Hall, USARC and activating a Southwest Regional Readiness Command headquarters at Moffett Field, CA in a new AFRC. Realign Camp Pike Reserve Complex, Little Rock, AR by disestablishing the 90th RRC and activating a Sustainment Brigade. Close the Major General Harry Twaddle United States Armed Forces Reserve Center, Oklahoma City, OK, and relocate the 95th DIV (IT) to Fort Sill, OK. Realign Camp Parks Reserve Forces Training Area, CA, by relocating the 91st Div (TSD) to Fort Hunter Liggett, CA.

**Justification:** This recommendation transforms Reserve Component facilities and command and control structure throughout the Southeast Region of the United States. The implementation of this recommendation will enhance military value, improve homeland defense capability, greatly improve training and deployment capability, create significant efficiencies and cost savings, and is consistent with the Army's force structure plans and Army transformational objectives.

This recommendation is the result of a nation-wide analysis of Reserve Component installations and facilities conducted by a team of functional experts from Headquarters, Department of the Army, the Office of the State Adjutant General, and the Army Reserve Regional Readiness Command.

This recommendation supports the Army Reserve's Command and Control restructuring initiative to reduce Regional Readiness Commands from ten to four. This recommendation transforms Army Reserve command and control by eliminating nondeployable command and control headquarters, transforming excess spaces into deployable units and moving institutional training units onto major training areas. It supports the Army Reserve's Command and Control restructuring initiative to reduce Regional Readiness Commands from ten to four by disestablishing two major peacetime administrative headquarters, the 63d Regional Readiness Command in Los Angeles, CA and the 90th Regional Readiness Command in Little Rock, AR and creating a new consolidated headquarters in their place at Moffett Field, CA. It supports the transformation of Army Reserve Operational Force Structure by activating a sustainment brigade in Little Rock, AR in the place of the 90th RRC, which will increase the deployable capability of the Army Reserve to support the Active Army. The Sustainment brigade is a new operational capability for the Army Reserve. This proposal transforms the Army's training support to the Reserve Component by re-locating the 95th DIV (Institutional Training) from the Major General Harry Twaddle United States Army Reserve Center, Oklahoma City, OK to Fort Sill, OK, and relocating the 91st Div (Training Support) from Camp Parks Reserve Forces Training Area, CA, to Fort Hunter Liggett, CA which improves operational effectiveness by putting these Training Divisions at major training sites in their regions.

This recommendation considered feasible locations within the demographic and geographic areas of the closing facilities and affected units. The sites selected were determined as the best locations because they optimize the Reserve Components ability to

recruit and retain Reserve Component soldiers and to train and mobilize units impacted by this recommendation.

Although not captured in the COBRA analysis, this recommendation avoids an estimated \$16,768,000 in mission facility renovation costs and procurement avoidances associated with meeting AT/FP construction standards and altering existing facilities to meet unit training and communications requirements. Consideration of these avoided costs would reduce costs and increase the net savings to the Department of Defense in the 6-year BRAC implementation period, and in the 20-year period used to calculate NPV.

This recommendation provides the opportunity for other Local, State, or Federal organizations to partner with the Reserve Components to enhance Homeland Security and Homeland Defense at a reduced cost to those agencies.

**Payback:** The total estimated one-time cost to the Department of Defense to implement this recommendation is \$55.5M. The net of all costs and savings to the Department of Defense during the implementation period is a cost of \$44.1M. Annual recurring savings to the Department after implementation are \$3.4M with a payback expected in 23 years. The net present value of the costs and savings to the Department over 20 years is a savings of \$9.8M.

**Economic Impact on Communities:** Assuming no economic recovery, this recommendation could result in a maximum potential reduction of 270 jobs (170 direct and 100 indirect jobs) over the 2006 – 2011 period in the Santa Ana-Anaheim-Irvine, CA Metropolitan Division, which is less than 0.1 percent of economic area employment.

Assuming no economic recovery, this recommendation could result in a maximum potential reduction of 335 jobs (177 direct and 158 indirect jobs) over the 2006 – 2011 period in the Little Rock-North Little Rock, AR Metropolitan Statistical Area, which is less than 0.1 percent of economic area employment.

Assuming no economic recovery, this recommendation could result in a maximum potential reduction of 69 jobs (43 direct and 26 indirect jobs) over the 2006 – 2011 period in the Oakland-Fremont-Hayward Metropolitan Statistical Area, which is less than 0.1 percent of economic area employment.

Assuming no economic recovery, this recommendation could result in a maximum potential reduction of 109 jobs (53 direct and 56 indirect jobs) over the 2006 – 2011 period in the Oklahoma City, OK Metropolitan Statistical Area, which is less than 0.1 percent of economic area employment.

The aggregate economic impact of all recommended actions on these economic regions of influence was considered and is at Appendix B of Volume I.

**Community Infrastructure Assessment:** A review of the community attributes revealed no significant issues regarding the ability of the infrastructure of the communities to support missions, forces, and personnel. There are no known community



infrastructure impediments to implementation of all recommendations affecting the installations in this recommendation.

**Environmental Impact:** Numerous archeological and historic resources, coupled with regional tribal interest, existing restrictions and a lack of a Programmatic Agreement, may result in increased time delays and negotiated restrictions at Fort Sill. Significant mitigation measures to limit releases may be required at Fort Sill to reduce impacts to water quality. Fort Hunter Liggett is over or in the recharge zone of a sole source aquifer, which may result in future regulatory limitations on training activities. This recommendation has no impact on air quality, dredging; land use constraints or sensitive resource areas; marine mammals, resources, or sanctuaries; noise; threatened and endangered species or critical habitat; waste management; or wetlands. This recommendation will require spending approximately \$0.02M for waste management and/or environmental compliance activities. These costs were included in the payback calculation. This recommendation does not otherwise impact the costs of environmental restoration, waste management, and environmental compliance activities. The aggregate environmental impact of all recommended BRAC actions affecting the installations in this recommendation has been reviewed. There are no known environmental impediments to implementation of this recommendation.

## USAR Command and Control – Southeast

**Recommendation:** Realign Birmingham Armed Forces Reserve Center Alabama by disestablishing the 81<sup>st</sup> Regional Readiness Command, and establishing the Army Reserve Southeast Regional Readiness Command in a new Armed Forces Reserve Center on Ft. Jackson, SC. Close Louisville United States Army Reserve Center and relocate the 100th DIV(IT) headquarters to Ft. Knox, Kentucky.

**Justification:** This recommendation transforms Reserve Component facilities and command and control structure throughout the Southeast Region of the United States. The implementation of this recommendation will enhance military value, improve homeland defense capability, greatly improve training and deployment capability, create significant efficiencies and cost savings, and is consistent with the Army's force structure plans and Army transformational objectives.

This recommendation is the result of a nation-wide analysis of Reserve Component installations and facilities conducted by a team of functional experts from Headquarters, Department of the Army, the Office of the State Adjutant General, and the Army Reserve Regional Readiness Command.

This recommendation supports the Army Reserve's Command and Control restructuring initiative to reduce Regional Readiness Commands from ten to four. This recommendation transforms Army Reserve command and control by relocating one major headquarters from inadequate facilities in Birmingham, Alabama to Ft. Jackson, South Carolina. This supports the initiative to consolidate command structure and responsibilities on Active Army installations, which will in turn increase the support capabilities of the Army Reserve to the Active Army while establishing a new operational capability for the Army Reserve. The relocation of the 100th Division (Institutional Training) to Ft. Knox, Kentucky supports the re-engineering and streamlining of support delivered by Army Reserve training base units in order to significantly enhance training in support of mobilization and deployment.

This recommendation reduces military manpower and associated costs for maintaining existing facilities by closing one Armed Forces Reserve Center, and moving two major commands onto Active Army installations thus significantly reducing operating costs and creating improved business processes. The implementation of this recommendation and creation of these new command structures will enhance military value, improve homeland defense capability, greatly improve training and deployment capability, create significant efficiencies and cost savings, and is consistent with the Army's force structure plans and Army transformational objectives.

This recommendation considered feasible locations within the demographic and geographic areas of the closing facilities and affected units. The sites selected were determined as the best locations because they optimize the Reserve Components ability to recruit and retain Reserve Component soldiers and to train and mobilize units impacted by this recommendation.

This recommendation provides the opportunity for other Local, State, or Federal organizations to partner with the Reserve Components to enhance Homeland Security and Homeland Defense at a reduced cost to those agencies.

Although not captured in the COBRA analysis, this recommendation avoids an estimated \$13.1M in mission facility renovation costs and procurement avoidances associated with meeting AT/FP construction standards and altering existing facilities to meet unit training and communications requirements. Consideration of these avoided costs would reduce costs and increase the net savings to the Department of Defense in the 6-year BRAC implementation period, and in the 20-year period used to calculate NPV.

**Payback:** The total estimated one-time cost to the Department of Defense to implement this recommendation is \$29.9M. The net of all costs and savings to the Department of Defense during the implementation period is a cost of \$22.5M. Annual recurring savings to the Department after implementation are \$2.4M with a payback expected in 16 years. The net present value of the costs and savings to the Department over 20 years is a savings of \$1.5M.

**Economic Impact on Communities:** Assuming no economic recovery, this recommendation could result in a maximum potential reduction of 499 jobs (305 direct and 194 indirect jobs) over the 2006 – 2011 period in the Birmingham-Hoover, AL Metropolitan Statistical Area, which is .08 percent of economic area employment.

Assuming no economic recovery, this recommendation could result in a maximum potential reduction of 65 jobs (43 direct and 22 indirect jobs) over the 2006 – 2011 period in the Louisville, KY Metropolitan Statistical Area, which is less than 0.1 percent of economic area employment.

The aggregate economic impact of all recommended actions on these economic regions of influence was considered and is at Appendix B of Volume I.

**Community Infrastructure Assessment:** A review of the community attributes revealed no significant issues regarding the ability of the infrastructure of the communities to support missions, forces, and personnel. There are no known community infrastructure impediments to implementation of all recommendations affecting the installations in this recommendation.

**Environmental Impact:** An Air Conformity determination and New Source Review and permitting effort will be required at Fort Jackson. To preserve historic and archeological resources at Fort Jackson and Fort Knox, additional training restrictions may be imposed and increased construction delays and costs are possible. Tribal consultations may be required at Fort Knox and Fort Jackson. Construction and added operations at Fort Jackson may impact threatened and endangered species at Fort Jackson and result in further training restrictions. This recommendation has no impact on dredging; land use constraints or sensitive resource areas; marine mammals, resources, or sanctuaries; noise; waste management; water resources; or wetlands. This recommendation will require spending approximately \$0.2M for waste management and/or environmental compliance

activities. These costs were included in the payback calculation. This recommendation does not otherwise impact the costs of environmental restoration, waste management, and environmental compliance activities. The aggregate environmental impact of all recommended BRAC actions affecting the installations in this recommendation has been reviewed. There are no known environmental impediments to implementation of this recommendation.

## USAR Command and Control New England

**Recommendation:** Close the Westover Armed Forces Reserve Center, Chicopee, Massachusetts, the MacArthur United States Army Reserve Center, Springfield, Massachusetts, the United States Army Reserve Area Maintenance Support Activity, Windsor Locks, Connecticut, and realign the Malony United States Army Reserve Center on Devens Reserve Forces Training Area by disestablishing the 94th Regional Readiness Command, and relocate all units from the closed facilities to a new Armed Forces Reserve Center on Westover Air Reserve Base. Establish an Army Reserve Sustainment Brigade headquarters in the new Armed Forces Reserve Center on Westover Air Reserve Base. Realign Devens Reserve Forces Training Area by relocating the 5th JTF, 654th ASG and the 382nd MP Battalion to the new Armed Forces Reserve Center on Westover Air Reserve Base. The new Armed Forces Reserve Center shall have the capability to accommodate Massachusetts Army National Guard units from the Massachusetts Army National Guard Armory in Agawam Massachusetts, if the state decides to relocate those National Guard units.

**Justification:** This recommendation transforms Reserve Component facilities and command and control structure throughout the Southeast Region of the United States. The implementation of this recommendation will enhance military value, improve homeland defense capability, greatly improve training and deployment capability, create significant efficiencies and cost savings, and is consistent with the Army's force structure plans and Army transformational objectives.

This recommendation is the result of a nation-wide analysis of Reserve Component installations and facilities conducted by a team of functional experts from Headquarters, Department of the Army, the Office of the State Adjutant General, and the Army Reserve Regional Readiness Command.

This recommendation supports the Army Reserve's Command and Control restructuring initiative to reduce Regional Readiness Commands from ten to four by disestablishing one major peacetime administrative headquarters, the 94th Regional Readiness Command and creating a new deployable headquarters on Westover Air Reserve Base.

This recommendation closes one Armed Forces Reserve Center in Chicopee, one United States Army Reserve Center in Springfield, Massachusetts; one United States Army Reserve Area Maintenance Support Activity in Windsor Locks, Connecticut and constructs a multi-component, multi-functional Armed Forces Reserve Center on Westover Air Reserve Base. The Marine Corps Reserve units located in the Armed Forces Reserve Center in Chicopee will relocate to the new AFRC on Westover Air Reserve Base. The Department understands that the State of Massachusetts will close one Massachusetts Army National Guard Armory in Agawam, Massachusetts. The Armed Forces Reserve Center will have the capability to accommodate these units if the State decides to relocate the units from the closed facilities into the new AFRC.

Although not captured in the COBRA analysis, this recommendation avoids an estimated \$21,640,584 in mission facility renovation costs and procurement avoidances associated

with meeting AT/FP construction standards and altering existing facilities to meet unit training and communications requirements. Consideration of these avoided costs reduce costs and increase the net savings to the Department of Defense in the 6-year BRAC implementation period, and in the 20-year period used to calculate NPV.

This recommendation provides the opportunity for other Local, State, or Federal organizations to partner with the Reserve Components to enhance Homeland Security and Homeland Defense at a reduced cost to those agencies.

**Payback:** The total estimated one-time cost to the Department of Defense to implement this recommendation is \$96.1M. The net of all costs and savings to the Department of Defense during the implementation period is a cost of \$61.2M. Annual recurring savings to the Department after implementation are \$8.4M with a payback expected in 13 years. The net present value of the costs and savings to the Department over 20 years is a savings of \$21.8M.

**Economic Impact on Communities:** Cambridge: Assuming no economic recovery, this recommendation could result in a maximum potential reduction of 243 jobs (155 direct and 88 indirect jobs) over the 2006 – 2011 period in the Cambridge-Newton-Framingham Massachusetts Metropolitan Division, which is less than 0.1 percent of economic area employment. The aggregate economic impact of all recommended actions on this economic region of influence was considered and is at Appendix B of Volume I.

**Community Infrastructure Assessment:** A review of the community attributes revealed no significant issues regarding the ability of the infrastructure of the communities to support missions, forces, and personnel. There are no known community infrastructure impediments to implementation of all recommendations affecting the installations in this recommendation.

**Environmental Impact:** A minor air permit revision may be needed at Westover. Additional operations may impact historic sites and sensitive resource areas and constrain operations at Westover. The hazardous waste program at Westover may need to be modified. Additional operations may impact wetlands, which may restrict operations. This recommendation will require spending approximately \$0.6M for waste management and/or environmental compliance activities. These costs were included in the payback calculation. This recommendation does not otherwise impact the costs of environmental restoration, waste management, and environmental compliance activities. The aggregate environmental impact of all recommended BRAC actions affecting the installations in this recommendation has been reviewed. There are no known environmental impediments to implementation of this recommendation.

## USAR Command and Control – Northeast

**Recommendation:** Realign Pitt USARC, Coraopolis, PA by disestablishing the HQ 99th Regional Readiness Command and establishing a Northeast Regional Readiness Command Headquarters at Ft. Dix, NJ. Close Camp Kilmer, NJ and relocate the HQ 78th Division at Ft. Dix, NJ. Realign Ft. Totten, NY by disestablishing the HQ 77th Regional Readiness Command and establishing a Maneuver Enhancement Brigade at Ft. Dix, NJ. Realign Ft. Sheridan IL by relocating the 244th Aviation Brigade to Ft. Dix, NJ. Realign Ft. Dix, NJ by relocating Equipment Concentration Site 27 to the New Jersey Army National Guard Mobilization and Training Equipment Site joint facility at Lakehurst, NJ. Close Charles Kelly Support Center and relocate units to Pitt US Army Reserve Center, PA. Close Carpenter USARC, Poughkeepsie, NY, close McDonald USARC, Jamaica, NY, close Ft. Tilden USARC, Far Rockaway, NY, close Muller USARC, Bronx, NY, and relocate units to a new Armed Forces Reserve Center at Ft. Totten, NY. Close the United States Army Reserve Center on Ft. Hamilton, NY and relocate the New York Recruiting Battalion Headquarters and Army Reserve units into a new Armed Forces Reserve Center on Ft. Hamilton, NY. The new AFRC shall have the capacity to accommodate units from the NYARNG 47th Regiment Marcy Armory, Brooklyn and the Brooklyn Bedford Armory/OMS, Brooklyn NY if the state decides to relocate those National Guard units.

**Justification:** This recommendation transforms Reserve Component facilities and command and control structure throughout the Northeast Region of the United States. The implementation of this recommendation will enhance military value, improve homeland defense capability, greatly improve training and deployment capability, create significant efficiencies and cost savings, and is consistent with the Army's force structure plans and Army transformational objectives.

This recommendation is the result of a nation-wide analysis of Reserve Component installations and facilities conducted by a team of functional experts from Headquarters, Department of the Army, the Office of the State Adjutant General, and the Army Reserve Regional Readiness Command.

This recommendation transforms Army Reserve command and control by consolidating four major headquarters onto Ft. Dix, NJ; this recommendation supports the Army Reserve's nationwide Command and Control restructuring initiative to reduce Regional Readiness Commands from ten to four. The realignment of Pitt USARC, Coraopolis, PA by the disestablishment of the 99th Regional Readiness Command allows for the establishment of the Northeast Regional Readiness Command Headquarters at Ft. Dix, New Jersey which will further support the re-engineering and streamlining of the Command and Control structure of the Army Reserves throughout the United States. This restructuring will allow for the closure of Camp Kilmer, NJ and the relocation of the HQ 78th Division to Ft. Dix and establishment of one of the new Army Reserve Sustainment Units of Action which establishes a new capability for the Army Reserve while increasing the support capabilities of the Army Reserve to the Active Army. To further support restructuring; the realignment of Ft. Totten and the disestablishment of the HQ 77th RRC will enable the establishment of a Maneuver Enhancement Brigade at Ft. Dix

resulting in a new operational capability for the Army Reserve. The realignment of Ft. Sheridan, IL by relocating the 244th Aviation Brigade to Ft. Dix coupled with the Department of the Navy recommendation to close NAS Willow Grove, PA and relocate Co A/228th Aviation to Ft. Dix; consolidates Army aviation assets in one location. Other actions supporting restructuring include realigning maintenance functions on Ft. Dix, the closure of Charles Kelly Support Center, PA and relocation of multiple subordinate units to Pitt USARC, PA; and the closure of five US Army Reserve Centers in the greater New York City area with relocation of those units to Ft. Totten. These actions will significantly enhance training, mobilization, equipment readiness and deployment.

This recommendation reduces military manpower and associated costs for maintaining existing facilities by closing one Camp, five Army Reserve Centers, realigning five facilities and relocating forces to multiple installations throughout the Northeast Region of the United States. These actions will also improve business processes. The implementation of this recommendation and creation of these new command structures will enhance military value, improve homeland defense capability, greatly improve training and deployment capability, create significant efficiencies and cost savings, and is consistent with the Army's force structure plans and Army transformational objectives. The Department understands that the State of New York will close NYARNG Armories: 47th Regiment Marcy Armory, Brooklyn and Brooklyn Bedford Armory/OMS 12. The Armed Forces Reserve Centers will have the capability to accommodate these units if the State decides to relocate the units from these closed facilities into a new AFRC on Ft. Hamilton, NY.

This recommendation provides the opportunity for other Local, State, or Federal organizations to partner with the Reserve Components to enhance Homeland Security and Homeland Defense at a reduced cost to those agencies.

This recommendation considered feasible locations within the demographic and geographic areas of the closing facilities and affected units. The sites selected were determined as the best locations because they optimize the Reserve Components ability to recruit and retain Reserve Component soldiers and to train and mobilize units impacted by this recommendation.

Although not captured in the COBRA analysis, this recommendation avoids an estimated \$168,335,000 in mission facility renovation costs and procurement avoidance associated with meeting Anti Terror / Force Protection construction standards and altering existing facilities to meet unit training and communication requirements. Consideration of these avoided costs, would reduce costs and increase the net savings to the Department of Defense in the 6-year BRAC implementation period, and in the 20-year period used to calculate NPV.

**Payback:** The total estimated one-time cost to the Department of Defense to implement this recommendation is \$171.2M. The net of all costs and savings to the Department of Defense during the implementation period is a cost of \$44.3M. Annual recurring savings to the Department after implementation are \$35.9M with a payback expected in 5 years. The net present value of the costs and savings to the Department over 20 years is a savings of \$302.1M.



**Economic Impact on Communities:** Assuming no economic recovery, this recommendation could result in the maximum potential job reductions (direct and indirect) over the 2006-2011 period, as follows:

<u>Economic Area</u>	<u>Direct Job Reductions</u>	<u>Indirect Job Reductions</u>	<u>Total Job Reductions</u>	<u>% of Economic Area Employment</u>
Edison, NJ Metropolitan Division	44	32	76	Less than 0.1%
New York-White Plains, NY-NJ Metropolitan Statistical Area	149	72	221	Less than 0.1%
Lake County-Kenosha County, IL-WI Metropolitan Division	34	53	87	Less than 0.1%
Pittsburgh Metropolitan Statistical Area	530	317	847	Less than 0.1%
Poughkeepsie-Newburgh-Middletown Metropolitan Statistical Area	9	5	14	Less than 0.1%

The aggregate economic impact of all recommended actions on these economic regions of influence was considered and is at Appendix B of Volume I.

**Community Infrastructure Assessment:** A review of the community attributes revealed no significant issues regarding the ability of the infrastructure of the communities to support missions, forces, and personnel. There are no known community infrastructure impediments to implementation of all recommendations affecting the installations in this recommendation.

**Environmental Impact:** This recommendation will require Air Conformity determination and New Source Review analysis and permitting at Fort Hamilton, Fort Totten, and Fort Dix. If facility demolition is required to enable new construction at Fort Hamilton, this may impact historic resources, causing construction delays and increased costs. Historic resources at Fort Dix and Fort Totten must be evaluated on a case-by-case basis, possibly causing construction delays and increased costs. Closure of Kelly Support Center will require consultations with the State Historic Preservation Office to ensure that historic properties are continued to be protected. Significant mitigation measures to limit releases may be required at Fort Hamilton and Fort Totten to reduce impacts to water quality and achieve US EPA water quality standards. Restoration and or monitoring of groundwater is required at Charles Kelly Support Center. This recommendation has no impact on dredging; land use constraints or sensitive resource areas; marine mammals, resources, or sanctuaries; noise; threatened and endangered species or critical habitat; waste management; or wetlands. This recommendation will require spending approximately \$1.3M for waste management and/or environmental compliance activities.

These costs were included in the payback calculation. Although no restoration costs were reported for Charles Kelly Support Center, future costs are likely. This recommendation does not otherwise impact the costs of environmental restoration, waste management, and environmental compliance activities. The aggregate environmental impact of all recommended BRAC actions affecting the installations in this recommendation has been reviewed. There are no known environmental impediments to implementation of this recommendation.

## USAR Command and Control – Northwest

**Recommendation:** Close Vancouver Barracks and relocate the 104th Division (IT) to Ft. Lewis, WA. Relocate all other units to a new Armed Forces Reserve Center in Vancouver, WA. Close Ft. Lawton by disestablishing the 70th Regional Readiness Command, relocate all other units to a new Armed Forces Reserve Center on Ft. Lewis, WA and establish a Maneuver Enhancement Brigade. Realign Fort Snelling, MN by disestablishing the 88<sup>th</sup> Regional Readiness Command and establish the Northwest Regional Readiness Command Headquarters at Ft. McCoy, WI. Realign the Wichita US Army Reserve Center by disestablishing the 89th Regional Readiness Command and establishing a Sustainment Unit of Action at the Wichita Army Reserve Center in support of the Northwest Regional Readiness Command at Ft. McCoy, WI. Realign Ft. Douglas, UT by disestablishing the 96th Regional Readiness Command and establishing a Sustainment Unit of Action in support of the Northwest Regional Readiness Command at Ft. McCoy, WI.

**Justification:** This recommendation transforms Reserve Component facilities and command and control structure throughout the Northwest Region of the United States. The implementation of this recommendation will enhance military value, improve homeland defense capability, greatly improve training and deployment capability, create significant efficiencies and cost savings, and is consistent with the Army's force structure plans and Army transformational objectives.

This recommendation is the result of a nation-wide analysis of Reserve Component installations and facilities conducted by a team of functional experts from Headquarters, Department of the Army, the Office of the State Adjutant General, and the Army Reserve Regional Readiness Command.

This recommendation supports the Army Reserve's Command and Control restructuring initiative to reduce Regional Readiness Commands from ten to four. This recommendation transforms Army Reserve command and control by consolidating two major headquarters onto Ft. Lewis, Washington. This sets the conditions for establishing one of three new operationally capable Army Reserve Maneuver Enhancement Brigades which will increase the support capabilities of the Army Reserve to the Active Army and is a new operational capability for the Army Reserve. The realignment of Ft. Snelling, Minnesota by the disestablishment of the 88th Regional Readiness Command allows for the establishment of the Northwest Regional Readiness Command Headquarters at Ft. McCoy, Wisconsin which will support the re-engineering and streamlining of the Command and Control structure of the Army Reserves throughout the United States.

This recommendation also realigns Ft. Douglas Utah and the Wichita Army Reserve Center, establishing Sustainment Units of Action in those locations in support of the Northwest Regional Readiness Command Headquarters. Relocation of multiple subordinate units from Vancouver Barracks and Ft. Lawton, Washington to new Armed Forces Reserve Centers contributes significantly to enhanced training, mobilization and deployment.

This recommendation reduces military manpower and associated costs for maintaining existing facilities by closing two Reserve facilities and relocating the units onto an Active component installation and thereby significantly reducing operating costs and creating improved business processes. The implementation of this recommendation and creation of these new command structures will enhance military value, improve homeland defense capability, greatly improve training and deployment capability, create significant efficiencies and cost savings, and is consistent with the Army's force structure plans and Army transformational objectives.

This recommendation considered feasible locations within the demographic and geographic areas of the closing facilities and affected units. The sites selected were determined as the best locations because they optimize the Reserve Components ability to recruit and retain Reserve Component soldiers and to train and mobilize units impacted by this recommendation.

Although not captured in the COBRA analysis, this recommendation avoids an estimated \$70,740,000 in mission facility renovation costs and procurement avoidances associated with meeting AT/FP construction standards and altering existing facilities to meet unit training and communications requirements. Consideration of these avoided costs would reduce costs and increase the net savings to the Department of Defense in the 6-year BRAC implementation period, and in the 20-year period used to calculate NPV.

This recommendation provides the opportunity for other Local, State, or Federal organizations to partner with the Reserve Components to enhance Homeland Security and Homeland Defense at a reduced cost to those agencies.

**Payback:** The total estimated one-time cost to the Department of Defense to implement this recommendation is \$80.4M. The net of all costs and savings to the Department of Defense during the implementation period is a cost of \$43.4M. Annual recurring savings to the Department after implementation are \$11.1M with a payback expected in 9 years. The net present value of the costs and savings to the Department over 20 years is a savings of \$65.0M.

**Economic Impact on Communities:** Assuming no economic recovery, this recommendation could result in a maximum potential reduction of 184 jobs (107 direct and 77 indirect jobs) over the 2006 – 2011 period in the Seattle-Bellevue-Everett, WA Metropolitan Statistical Area, which is less than 0.1 percent of economic area employment.

Assuming no economic recovery, this recommendation could result in a maximum potential reduction of 409 jobs (254 direct and 155 indirect jobs) over the 2006 – 2011 period in the Minneapolis-St. Paul MN-WI Metropolitan Statistical Area, which is less than 0.1 percent of economic area employment.

Assuming no economic recovery, this recommendation could result in a maximum potential reduction of 95 jobs (51 direct and 44 indirect jobs) over the 2006-2011 period

in the Tacoma, WA Metropolitan Division, which is less than 0.1 percent of the economic area employment.

Assuming no economic recovery, this recommendation could result in a maximum potential reduction of 154 jobs (78 direct and 76 indirect jobs) over the 2006 – 2011 period in the Wichita, KS Metropolitan Statistical Area, which is less than 0.1 percent of economic area employment.

Assuming no economic recovery, this recommendation could result in a maximum potential reduction of 95 jobs (53 direct and 42 indirect jobs) over the 2006 – 2011 period in the Salt Lake City, UT Metropolitan Statistical Area, which is less than 0.1 percent of economic area employment.

The aggregate economic impact of all recommended actions on these economic regions of influence was considered and is at Appendix B of Volume I.

**Community Infrastructure Assessment:** A review of the community attributes revealed no significant issues regarding the ability of the infrastructure of the communities to support missions, forces, and personnel. There are no known community infrastructure impediments to implementation of all recommendations affecting the installations in this recommendation.

**Environmental Impact:** The existence of archeological and historic resources, coupled with regional tribal interest, existing restrictions and a lack of a Programmatic Agreement, may result in increased time delays and negotiated restrictions at Fort Lewis and Fort McCoy. Consultation with U.S. Fish and Wildlife Service may be required regarding threatened and endangered species at Fort Lewis.. This recommendation has no impact on air quality; dredging; land use constraints or sensitive resource areas; marine mammals, resources, or sanctuaries; noise; waste management; water resources; or wetlands. This recommendation will require spending approximately \$0.1M for waste management and/or environmental compliance activities. These costs were included in the payback calculation. Fort Lawton reports \$2.7M in environmental restoration costs. Vancouver Barracks reports \$18.4M in environmental restoration costs. Because the Department has a legal obligation to perform environmental restoration regardless of whether an installation is closed, realigned, or remains open, these costs were not included in the payback calculation. This recommendation does not otherwise impact the costs of environmental restoration, waste management, and environmental compliance activities. The aggregate environmental impact of all recommended BRAC actions affecting the installations in this recommendation has been reviewed. There are no known environmental impediments to implementation of this recommendation.

## RC Transformation in Alabama

**Recommendation:** Realign Birmingham Armed Forces Reserve Center, Birmingham, Alabama, by relocating Detachment 1, 450th Military Police Company into a new Armed Forces Reserve Center(AFRC) on or near Birmingham Air National Guard Base, Birmingham, Alabama, if the Army is able to acquire land suitable for the construction of the facility. The new AFRC shall have the capability to accommodate the Alabama National Guard units from the following Alabama ARNG Readiness Centers: Fort Graham, Fort Hanna and Fort Terhune, Birmingham, Alabama, if the state decides to relocate those National Guard units.

Close the Wright United States Army Reserve Center, Mobile, Alabama and relocate units into a new Armed Forces Reserve Center in Mobile, Alabama, if the Army is able to acquire land suitable for the construction of the facility. The new AFRC shall have the capability to accommodate Alabama National Guard units from the following Alabama ARNG Readiness Centers: Fort Ganey, and Fort Hardeman, Mobile, Alabama, if the state decides to relocate those National Guard units.

Close the Faith Wing United States Army Reserve Center on Fort McClellan, Alabama and relocate units into a new Armed Forces Reserve Center on Pelham Range in Anniston, Alabama.

Close the Finnell United States Army Reserve Center and the Area Maintenance Support Activity, Tuscaloosa, Alabama, and the Vicksburg United States Army Reserve Center, Vicksburg, Mississippi, and relocate units into a new Armed Forces Reserve Center and Area Maintenance Support Activity (AMSA) in Tuscaloosa, Alabama, if the Army is able to acquire land suitable for the construction of the facilities. The new AFRC and AMSA shall have the capability to accommodate the 31st Chemical Brigade from the Northport Alabama Army National Guard Readiness Center, and units from the Fort Powell-Shamblin Alabama Army National Guard Readiness Center, Tuscaloosa, Alabama, if the state decides to relocate those National Guard units.

Close the Screws Army Reserve Center in Montgomery, Alabama; close the Cleveland Abbot Army Reserve Center, Tuskegee, Alabama; close the Harry Gary, Jr. Army Reserve Center, in Enterprise, Alabama; close the Quarles-Flowers Army Reserve Center in Decatur, Alabama; close the Grady Anderson Army Reserve Center, Troy, Alabama; and relocate all units to a new Armed Forces Reserve Center (AFRC) at the Alabama Army National Guard Joint Forces Headquarters Complex in Montgomery, AL, if the Army is able to acquire suitable property for the construction of the facilities. The new AFRC shall have the capability to accommodate ARNG units currently located on the Alabama Army National Guard Joint Forces Headquarters Complex in Montgomery, Alabama, if the state decides to relocate those National Guard units.

**Justification:** This recommendation transforms Reserve Component facilities throughout the State of Alabama. The implementation of this recommendation will enhance military value, improve homeland defense capability, greatly improve training and deployment

capability, create significant efficiencies and cost savings, and is consistent with the Army's force structure plans and Army transformational objectives.

This recommendation is the result of a state-wide analysis of Reserve Component installations and facilities conducted by a team of functional experts from Headquarters, Department of the Army, the Office of the State Adjutant General, and the Army Reserve Regional Readiness Command.

This recommendation closes nine Army Reserve Centers and one Area Maintenance Support Activity throughout the state of Alabama and constructs five multi component/service, multi functional Armed Forces Reserve Centers, and one Area Maintenance Support Facility capable of accommodating National Guard and Reserve units. This recommendation reduces military manpower and associated costs for maintaining existing facilities by collapsing fifteen geographically separated facilities into five modern Armed Forces Reserve Centers. The Department understands that the State of Alabama will close ALARNG Readiness Centers: Fort Graham, Fort Hanna, Fort Terhune, Fort Ganey, Fort Hardeman and Fort Powell-Shamblin and realign the Northport Alabama Army National Guard Readiness Center by relocating the 31<sup>st</sup> Chemical Brigade to the new AFRC. The Armed Forces Reserve Centers will have the capability to accommodate these units if the State decides to relocate the units from these closed facilities into the new AFRCs.

The implementation of this recommendation will enhance military value, improve homeland defense capability, greatly improve training and deployment capability, create significant efficiencies and cost savings, and is consistent with the Army's force structure plans and Army transformational objectives.

This recommendation considered feasible locations within the demographic and geographic areas of the closing facilities and affected units. The site selected was determined as the best location because it optimizes the Reserve Components ability to recruit and retain Reserve Component soldiers and to train and mobilize units impacted by this recommendation.

This recommendation provides the opportunity for other Local, State, or Federal organizations to partner with the Reserve Components to enhance Homeland Security and Homeland Defense at a reduced cost to those agencies.

Although not captured in the COBRA analysis, this recommendation avoids an estimated \$72,832,467 in mission facility renovation costs and procurement avoidances associated with meeting AT/FP construction standards and altering existing facilities to meet unit training and communications requirements. Consideration of these avoided costs would reduce costs and increase the net savings to the Department of Defense in the 6-year BRAC implementation period, and in the 20-year period used to calculate NPV.

**Payback:** The total estimated one-time cost to the Department of Defense to implement this recommendation is \$109.2M. The net of all costs and savings to the Department of Defense during the implementation period is a cost of \$31.1M. Annual recurring savings

to the Department after implementation are \$17.8M with a payback expected in 6 years. The net present value of the costs and savings to the Department over 20 years is a savings of \$140.3M.

**Economic Impact on Communities:** Assuming no economic recovery, this recommendation could result in a maximum potential reduction of 40 jobs (28 direct and 12 indirect jobs) over the 2006 – 2011 period in the Birmingham-Hoover Alabama metropolitan area, which is less than 0.1 percent of economic area employment.

Assuming no economic recovery, this recommendation could result in a maximum potential reduction of 44 jobs (28 direct and 16 indirect jobs) over the 2006 – 2011 period in the Vicksburg, MS Micropolitan Statistical Area, which is 0.15 percent of economic area employment.

Assuming no economic recovery, this recommendation could result in a maximum potential reduction of 32 jobs (22 direct and 10 indirect jobs) over the 2006 – 2011 period in the Mobile, Alabama Metropolitan Statistical Area, which is less than 0.1 percent of economic area employment.

Assuming no economic recovery, this recommendation could result in a maximum potential reduction of 171 jobs (103 direct and 68 indirect jobs) over the 2006 – 2011 period in the Montgomery, Alabama Metropolitan Statistical Area, which is less than 0.1 percent of economic area employment.

Assuming no economic recovery, this recommendation could result in a maximum potential reduction of 19 jobs (10 direct and 9 indirect jobs) over the 2006 – 2011 period in the Enterprise-Ozark, Alabama Micropolitan Statistical Area, which is less than 0.1 percent of economic area employment.

Assuming no economic recovery, this recommendation could result in a maximum potential reduction of 23 jobs (15 direct and 8 indirect jobs) over the 2006 – 2011 period in the Troy, Alabama Micropolitan Statistical Area, which is less than 0.15 percent of economic area employment.

Assuming no economic recovery, this recommendation could result in a maximum potential reduction of 5 jobs (3 direct and 2 indirect jobs) over the 2006 – 2011 period in the Tuskegee, Alabama Micropolitan Statistical Area, which is less than 0.1 percent of economic area employment.

The aggregate economic impact of all recommended actions on these economic regions of influence was considered and is at Appendix B of Volume I.

**Community Infrastructure Assessment:** A review of the community attributes revealed no significant issues regarding the ability of the infrastructure of the communities to support missions, forces, and personnel. There are no known community infrastructure impediments to implementation of all recommendations affecting the installations in this recommendation.



**Environmental Impact:** Wetlands Survey may need to be conducted at Birmingham IAP to determine impact. This recommendation has no impact on air quality, cultural, archeological, or tribal resources; dredging; land use constraints or sensitive resource areas; marine mammals, resources, or sanctuaries; noise; threatened and endangered species or critical habitat; waste management; or water resources. This recommendation will require spending approximately \$0.4M for waste management and/or environmental compliance activities. These costs were included in the payback calculation. This recommendation does not otherwise impact the costs of environmental restoration, waste management, and environmental compliance activities. The aggregate environmental impact of all recommended BRAC actions affecting the installations in this recommendation has been reviewed. There are no known environmental impediments to implementation of this recommendation.

## RC Transformation in Arizona

**Recommendation:** Close the United States Army Reserve Center, Allen Hall near Tucson Arizona and the Area Maintenance Support Activity 18 on Fort Huachuca, Arizona by relocating all units from the closed facilities to an Armed Forces Reserve Center and maintenance facility on the Arizona Army National Guard Silverbell Army Heliport/Pinal Air Park in Marana, Arizona, if the Army is able to acquire suitable land for the construction of the facilities. The new AFRC shall have the capability to accommodate the Arizona National Guard 860th MP Company and the 98th Troop Command from Papago Park Readiness Center, if the State of Arizona decides to relocate those units.

Close the Deer Valley United States Army Reserve Center (#2) in Phoenix and re-locate units to a new Armed Forces Reserve Center on the Arizona Army National Guard Buckeye Training Site. The new AFRC shall have the capability to accommodate units from the Army National Guard Phoenix Readiness Center, if the State of Arizona decides to relocate those units.

**Justification:** This recommendation transforms Reserve Component facilities throughout the State of Arizona. The implementation of this recommendation will enhance military value, improve homeland defense capability, greatly improve training and deployment capability, create significant efficiencies and cost savings, and is consistent with the Army's force structure plans and Army transformational objectives.

This recommendation is the result of a state-wide analysis of Reserve Component installations and facilities conducted by a team of functional experts from Headquarters, Department of the Army, the Office of the State Adjutant General, and the Army Reserve Regional Readiness Command.

This recommendation closes two Army Reserve centers, closes an Army Maintenance Support Activity and constructs two multi component, multi functional Armed Forces Reserve Centers (AFRCs), in the State of Arizona, capable of accommodating National Guard and Army Reserve units. This recommendation reduces military manpower and associated costs for maintaining existing facilities by collapsing units from six geographically separated facilities into two modern Armed Forces Reserve Centers. These joint use facilities will significantly reduce operating costs and create improved business processes. Relocating units to Buckeye will allow them to utilize a large local training area while maintaining a reasonably close commuting distance from Phoenix. The Department understands that the State of Arizona will close the Army National Guard Reserve Center and Organizational Maintenance Shop Phoenix, Arizona, and realign the Papago Park Army National Guard Readiness Center by relocating the 860<sup>th</sup> Military Police Company and the 98<sup>th</sup> Troop Command. The Armed Forces Reserve Centers will have the capability to accommodate these units if the State decides to relocate the units from these closed facilities into the new AFRCs. This recommendation provides the opportunity for other Local, State, or Federal organizations to partner with the Reserve Components to enhance Homeland Security and Homeland Defense at a reduced cost to those agencies.

Although not captured in the COBRA analysis, this recommendation avoids an estimated \$1,842,815 in mission facility renovation costs and procurement avoidances associated with meeting AT/FP construction standards and altering existing facilities to meet unit training and communications requirements. Consideration of these avoided costs would reduce costs and increase the net savings to the Department of Defense in the 6-year BRAC implementation period, and in the 20-year period used to calculate NPV.

**Payback:** The total estimated one-time cost to the Department of Defense to implement this recommendation is \$31.1M. The net of all costs and savings to the Department of Defense during the implementation period is a cost of \$5.3M. Annual recurring savings to the Department after implementation are \$5.9M with a payback expected in 5 years. The net present value of the costs and savings to the Department over 20 years is a savings of \$51.7M.

**Economic Impact on Communities:** Assuming no economic recovery, this recommendation could result in a maximum potential reduction of 113 jobs (60 direct and 53 indirect jobs) over the 2006 – 2011 period in the Tucson, AZ Metropolitan Statistical Area, which is less than 0.1 percent of economic area employment. The aggregate economic impact of all recommended actions on this economic region of influence was considered and is at Appendix B of Volume I.

**Community Infrastructure Assessment:** A review of the community attributes revealed no significant issues regarding the ability of the infrastructure of the communities to support missions, forces, and personnel. There are no known community infrastructure impediments to implementation of all recommendations affecting the installations in this recommendation.

**Environmental Impact:** This recommendation has no impact on air quality, cultural, archeological, or tribal resources; dredging; land use constraints or sensitive resource areas; marine mammals, resources, or sanctuaries; noise; threatened and endangered species or critical habitat; waste management; water resources; or wetlands. This recommendation will require spending approximately \$0.06M for waste management and/or environmental compliance activities. These costs were included in the payback calculation. This recommendation does not otherwise impact the costs of environmental restoration, waste management, and environmental compliance activities. The aggregate environmental impact of all recommended BRAC actions affecting the installations in this recommendation has been reviewed. There are no known environmental impediments to implementation of this recommendation.

## RC Transformation in Arkansas

**Recommendation:** Close the United States Army Reserve Center, Arkadelphia, Arkansas and re-locate units into a new Armed Forces Reserve Center in Arkadelphia, if the Army is able to acquire suitable land for the construction of the facilities. The new AFRC shall have the capability to accommodate Arkansas National Guard units from the Arkansas Army National Guard Readiness Center, Arkadelphia if the State of Arkansas decides to relocate those units.

Close the United States Army Reserve Center, Camden, Arkansas and relocate units into an Armed Forces Reserve Center by converting the Arkansas Army National Guard Readiness Center, Camden if the state decides to alter their facility.

Close the United States Army Reserve Center, El Dorado, Arkansas and re-locate units into a new Armed Forces Reserve Center in El Dorado, if the Army is able to acquire suitable land for the construction of the facilities. The new AFRC shall have the capability to accommodate Arkansas National Guard units from the Arkansas Army National Guard Readiness Center, El Dorado if the state decides to relocate those National Guard units.

Realign the Army Reserve Center, Darby, Arkansas, by relocating the 341st Engineer Company and elements of the 75th Division (Exercise) from buildings #2552-2560, 2516, and 2519, Fort Chaffee, AR into a new Armed Forces Reserve Center, on Fort Chaffee, AR. The new AFRC shall have the capability to accommodate Arkansas National Guard units from the following Arkansas National Guard Readiness Centers: the Arkansas Army National Guard Readiness Center, Charleston, AR, the Arkansas Army National Guard Readiness Center, Van Buren, AR, and the Arkansas Army National Guard Readiness Center, Fort Smith, AR, if the state decides to relocate those National Guard units.

Close the Army Reserve Equipment Concentration Site (ECS), Barling, Arkansas and relocate units to a new Joint Maintenance Facility on Fort Chaffee, Arkansas. The new Joint Maintenance Facility shall have the capability to accommodate Arkansas National Guard units from the Arkansas Army National Guard Combined Support Maintenance Shop (CSMS) on Fort Chaffee if the State of Arkansas decides to relocate those units.

Close the United States Army Reserve Center, Hot Springs, Arkansas and the United States Army Reserve Organizational Maintenance Activity (OMS), Malvern, AR and relocate units to a new Armed Forces Reserve Center on property located in Hot Springs, AR, if the Army is able to acquire suitable land for the construction of the facilities. The new AFRC shall have the capability to accommodate Arkansas Army National Guard units from the Arkansas Army National Guard Readiness Center in Hot Springs, AR if the State of Arkansas decides to relocate those units.

Close the United States Army Reserve Center, Jonesboro, Arkansas and relocate units into a new Armed Forces Reserve Center and Field Maintenance Site in Jonesboro, AR if the Army is able to acquire suitable land for the construction of the facilities. The new

AFRC shall have the capability to accommodate Arkansas National Guard units from the Arkansas Army National Guard Readiness Center, Jonesboro, AR, the Arkansas Army National Guard Readiness Center, Paragould, AR and the Field Maintenance Site (FMS), Jonesboro, if the state decides to relocate those National Guard units. Close the Pond United States Army Reserve Center, Fayetteville, Arkansas and re-locate units into a new Armed Forces Reserve Center in Northwest Arkansas, if the Army is able to acquire suitable land for the construction of the facilities. The new AFRC shall have the capability to accommodate Arkansas National Guard units from the Arkansas Army National Guard Readiness Centers in Fayetteville, Springdale, Rogers and Bentonville, Arkansas if the State of Arkansas decides to relocate those units.

Close the Stone United States Army Reserve Center, Pine Bluff, Arkansas and re-locate units into a new Armed Forces Reserve Center on Pine Bluff Arsenal, Arkansas. The new AFRC shall have the capability to accommodate Arkansas National Guard units from the Arkansas Army National Guard Readiness Center, Pine Bluff if the state decides to relocate those National Guard units.

**Justification:** This recommendation transforms Reserve Component facilities throughout the State of Arkansas. The implementation of this recommendation will enhance military value, improve homeland defense capability, greatly improve training and deployment capability, create significant efficiencies and cost savings, and is consistent with the Army's force structure plans and Army transformational objectives.

This recommendation is the result of a state-wide analysis of Reserve Component installations and facilities conducted by a team of functional experts from Headquarters, Department of the Army, the Office of the State Adjutant General, and the Army Reserve Regional Readiness Command.

This recommendation closes seven Army Reserve centers, one Equipment Concentration Site and one Organizational Maintenance Site and constructs eight multi-component, multi-functional Armed Forces Reserve Centers (AFRCs) and one multi-component, maintenance facility throughout the State of Arkansas, capable of accommodating National Guard and Reserve units. This recommendation reduces military manpower and associated costs for maintaining existing facilities by collapsing twenty-six geographically separated facilities into nine modern, multi-component facilities. These joint use facilities will significantly reduce operating costs and create improved business processes. The Department understands that the State of Arkansas will close fifteen Arkansas Army National Guard Readiness Centers: Charleston, Van Buren, Fort Smith, Jonesboro, Paragould, El Dorado, Pine Bluff, Arkadelphia, Fayetteville, Springdale, Rogers, Bentonville, and Hot Springs, the Fort Chaffee Combined Support Maintenance Shop and the Jonesboro Field Maintenance Shop. The Armed Forces Reserve Centers will have the capability to accommodate these units if the State decides to relocate the units from these closed facilities into the new AFRCs. This recommendation considered feasible locations within the demographic and geographic areas of the closing facilities and affected units. The sites selected were determined as the best locations because they optimize the Reserve Components ability to recruit and retain Reserve Component soldiers and to train and mobilize units impacted by this recommendation.

This recommendation provides the opportunity for other Local, State, or Federal organizations to partner with the Reserve Components to enhance Homeland Security and Homeland Defense at a reduced cost to those agencies.

Although not captured in the COBRA analysis, this recommendation avoids an estimated \$63,363,210 in mission facility renovation costs and procurement avoidances associated with meeting AT/FP construction standards and altering existing facilities to meet unit training and communications requirements. Consideration of these avoided costs would reduce costs and increase the net savings to the Department of Defense in the 6-year BRAC implementation period, and in the 20-year period used to calculate NPV.

**Payback:** The total estimated one-time cost to the Department of Defense to implement this recommendation is \$118.9M. The net of all costs and savings to the Department of Defense during the implementation period is a cost of \$97.6M. Annual recurring savings to the Department after implementation are \$5.8M with a payback expected in 31 years. The net present value of the costs and savings to the Department over 20 years is a cost of \$38.2M.

**Economic Impact on Communities:** Assuming no economic recovery, this recommendation could result in a maximum potential reduction of 48 jobs (34 direct and 14 indirect jobs) over the 2006 – 2011 period in the Pine Bluff Arkansas metropolitan statistical area, which is 0.1 percent of economic area employment.

Assuming no economic recovery, this recommendation could result in a maximum potential reduction of 37 jobs (24 direct and 13 indirect jobs) over the 2006 – 2011 period in the El Dorado/Union County micropolitan statistical area, which is 0.13 percent of economic area employment.

The aggregate economic impact of all recommended actions on these economic regions of influence was considered and is at Appendix B of Volume I.

**Community Infrastructure Assessment:** A review of the community attributes revealed no significant issues regarding the ability of the infrastructure of the communities to support missions, forces, and personnel. There are no known community infrastructure impediments to implementation of all recommendations affecting the installations in this recommendation.

**Environmental Impact:** This recommendation has no impact on air quality, cultural, archeological, or tribal resources; dredging; land use constraints or sensitive resource areas; marine mammals, resources, or sanctuaries; noise; threatened and endangered species or critical habitat; waste management; water resources; or wetlands. This recommendation will require spending approximately \$0.1M for waste management and/or environmental compliance activities. These costs were included in the payback calculation. This recommendation does not otherwise impact the costs of environmental restoration, waste management, and environmental compliance activities. The aggregate environmental impact of all recommended BRAC actions affecting the installations in

this recommendation has been reviewed. There are no known environmental impediments to implementation of this recommendation.

## RC Transformation in California

**Recommendation:** Close the United States Army Reserve Center, Moffett Field, California, the George Richey United States Army Reserve Center, San Jose, California, and the Jones Hall United States Army Reserve Center, Mountain View, California and relocate units to a new Armed Forces Reserve Center with an Organizational Maintenance Shop on existing Army Reserve property on Moffett Field, California. The new AFRC shall have the capability to accommodate California National Guard Units from the following California ARNG Readiness Centers: Sunnyvale, California, San Lorenzo, California, Redwood City, California, and the Organizational Maintenance Shop, San Jose, California, if the state decides to relocate those National Guard units.

Close the Desiderio United States Army Reserve Center, Pasadena, California, the Schroeder Hall United States Army Reserve Center, Long Beach, California, the Hazard Park United States Army Reserve Center, Los Angeles, California, and relocate units to a new Armed Forces Reserve Center on property being transferred to the Army Reserve from the General Services Administration at Bell, California. The new AFRC shall have the capability to accommodate California National Guard Units from the following California ARNG Readiness Centers: Bell, California, and Montebello, California, if the state decides to relocate those National Guard units.

**Justification:** This recommendation transforms Reserve Component facilities throughout the State of California. The implementation of this recommendation will enhance military value, improve homeland defense capability, greatly improve training and deployment capability, create significant efficiencies and cost savings, and is consistent with the Army's force structure plans and Army transformational objectives.

This recommendation is the result of a state-wide analysis of Reserve Component installations and facilities conducted by a team of functional experts from Headquarters, Department of the Army, the Office of the State Adjutant General, and the Army Reserve Regional Readiness Command.

This recommendation closes six Army Reserve centers, two Naval Reserve Centers, and one Marine Corps Reserve Center, throughout the State of California, and constructs two multi component, multi functional Armed Forces Reserve Centers (AFRCs), capable of accommodating National Guard and Reserve units. This recommendation reduces military manpower and associated costs for maintaining existing facilities by collapsing fifteen geographically separated facilities into two modern Armed Forces Reserve Centers. These joint use facilities will significantly reduce operating costs and create improved business processes. The Department understands that the State of California will close five California Army Guard Armories: Sunnyvale, San Lorenzo, Redwood City, Bell, and Montebello, California, and the Organizational Maintenance Shop, San Jose, California. The Armed Forces Reserve Centers will have the capability to accommodate these units if the State decides to relocate the units from these closed facilities into the new AFRCs.



The implementation of this recommendation and creation of these new AFRCs will enhance military value, improve homeland defense capability, greatly improve training and deployment capability, create significant efficiencies and cost savings, and is consistent with the Army's force structure plans and Army transformational objectives.

This recommendation considered feasible locations within the demographic and geographic areas of the closing facilities and affected units. The sites selected were determined as the best locations because they optimize the Reserve Components ability to recruit and retain Reserve Component soldiers and to train and mobilize units impacted by this recommendation.

This recommendation provides the opportunity for other Local, State, or Federal organizations to partner with the Reserve Components to enhance Homeland Security and Homeland Defense at a reduced cost to those agencies.

Although not captured in the COBRA analysis, this recommendation avoids an estimated \$6.3M in mission facility renovation costs and procurement avoidances associated with meeting AT/FP construction standards and altering existing facilities to meet unit training and communications requirements. Consideration of these avoided costs would reduce costs and increase the net savings to the Department of Defense in the 6-year BRAC implementation period, and in the 20-year period used to calculate NPV.

**Payback:** The total estimated one-time cost to the Department of Defense to implement this recommendation is \$78.7M. The net of all costs and savings to the Department of Defense during the implementation period is a cost of \$41.3M. Annual recurring savings to the Department after implementation are \$8.9M with a payback expected in 10 years. The net present value of the costs and savings to the Department over 20 years is a savings of \$46.0M.

**Economic Impact on Communities:** Assuming no economic recovery, this recommendation could result in a maximum potential reduction of 4 jobs (3 direct and 1 indirect jobs) over the 2006 – 2011 period in the San Jose-Sunnyvale-Santa Clara Metropolitan Statistical Area, which is less than 0.1 percent of economic area employment.

Assuming no economic recovery, this recommendation could result in a maximum potential reduction of 106 jobs (72 direct and 34 indirect jobs) over the 2006 – 2011 period in the Los Angeles-Long Beach-Glendale Metropolitan Statistical Area, which is less than 0.1 percent of economic area employment.

The aggregate economic impact of all recommended actions on these economic regions of influence was considered and is at Appendix B of Volume I.

**Community Infrastructure Assessment:** A review of the community attributes revealed no significant issues regarding the ability of the infrastructure of the communities to support missions, forces, and personnel. There are no known community

infrastructure impediments to implementation of all recommendations affecting the installations in this recommendation.

**Environmental Impact:** This recommendation has no impact on air quality, cultural, archeological, or tribal resources; dredging; land use constraints or sensitive resource areas; marine mammals, resources, or sanctuaries; noise; threatened and endangered species or critical habitat; waste management; water resources; or wetlands. This recommendation will require spending approximately \$0.3M for waste management and/or environmental compliance activities. These costs were included in the payback calculation. This recommendation does not otherwise impact the costs of environmental restoration, waste management, and environmental compliance activities. Installation has no jurisdictional wetlands. The aggregate environmental impact of all recommended BRAC actions affecting the installations in this recommendation has been reviewed. There are no known environmental impediments to implementation of this recommendation.

## RC Transformation in Connecticut

**Recommendation:** Close Turner US Army Reserve Center, Fairfield, CT, close Sutcovey US Army Reserve Center, Waterbury, CT; close Danbury US Army Reserve Center Danbury, CT and relocate units to a new Armed Forces Reserve Center and Maintenance Facility in Newtown, CT if the Army is able to acquire land suitable for the construction of the facilities adjacent to the existing CT Army National Guard Armory in Newtown, CT. The new AFRC and OMS shall have the capability to accommodate units from the following facilities: Connecticut Army National Guard Armories in Naugatuck, Norwalk and New Haven, CT if the state decides to relocate those National Guard units.

Close the US Army Reserve Center, Middletown, CT, the Organizational Maintenance Shop, Middletown, CT; the SGT Libby US Army Reserve Center, New Haven, CT; the Organizational Maintenance Shop, New Haven, CT; the Army Reserve Area Maintenance Support Activity #69, Milford, CT and relocate units to a new Armed Forces Reserve Center, Organizational Maintenance Shop and Army Maintenance Support Activity in Middletown, Connecticut, if the Army is able to acquire land suitable for the construction of the facilities. The new AFRC, OMS and AMSA shall have the capability to accommodate units from the following facilities: Connecticut Army National Guard Armories in Putnam, Manchester, New Britain and the CTARNG facility in Newington, CT if the state decides to relocate those National Guard units.

**Justification:** This recommendation transforms Reserve Component facilities throughout the State of Connecticut. The implementation of this recommendation will enhance military value, improve homeland defense capability, greatly improve training and deployment capability, create significant efficiencies and cost savings, and is consistent with the Army's force structure plans and Army transformational objectives.

This recommendation is the result of a state-wide analysis of Reserve Component installations and facilities conducted by a team of functional experts from Headquarters, Department of the Army, the Office of the State Adjutant General, and the Army Reserve Regional Readiness Command.

This recommendation closes five US Army Reserve Centers, one Army Maintenance Support Activity and two Organizational Maintenance Shops throughout the state of Connecticut and constructs two Armed Forces Reserve Centers and collocated Organizational Maintenance Shops and one Army Maintenance Support Activity capable of accommodating National Guard and Reserve units. The Department understands that the State of Connecticut will close seven Connecticut Army National Guard Centers: Naugatuck, Norwalk, New Haven, Putnam, Manchester, New Berlin and Newington, Connecticut. The Armed Forces Reserve Centers will have the capability to accommodate these units if the State decides to relocate the units from these closed facilities into the new AFRCs.

The implementation of this recommendation will enhance military value, improve homeland defense capability, greatly improve training and deployment capability, create

significant efficiencies and cost savings, and is consistent with the Army's force structure plans and Army transformational objectives.

This recommendation considered feasible locations within the demographic and geographic areas of the closing facilities and affected units. The sites selected were determined as the best locations because they optimize the Reserve Components ability to recruit and retain Reserve Component soldiers and to train and mobilize units impacted by this recommendation.

This recommendation provides the opportunity for other Local, State, or Federal organizations to partner with the Reserve Components to enhance Homeland Security and Homeland Defense at a reduced cost to those agencies.

Although not captured in the COBRA analysis, this recommendation avoids an estimated \$52,080,200 in mission facility renovation costs and procurement avoidances associated with meeting AT/FP construction standards and altering existing facilities to meet unit training and communications requirements. Consideration of these avoided costs would reduce costs and increase the net savings to the Department of Defense in the 6-year BRAC implementation period, and in the 20-year period used to calculate NPV.

**Payback:** The total estimated one-time cost to the Department of Defense to implement this recommendation is \$128.6M. The net of all costs and savings to the Department of Defense during the implementation period is a cost of \$107.0M. Annual recurring savings to the Department after implementation are \$5.8M with a payback expected in 36 years. The net present value of the costs and savings to the Department over 20 years is a cost of \$47.5M.

**Economic Impact on Communities:** Assuming no economic recovery, this recommendation could result in a maximum potential reduction of 26 jobs (18 direct and 8 indirect jobs) over the 2006 – 2011 period in the Hartford-West Hartford-East Hartford, CT metropolitan area, which is less than 0.1 percent of economic area employment.

Assuming no economic recovery, this recommendation could result in a maximum potential reduction of 33 jobs (21 direct and 12 indirect jobs) over the 2006 – 2011 period in the New Haven-Milford, CT metropolitan area, which is less than 0.1 percent of economic area employment.

The aggregate economic impact of all recommended actions on these economic regions of influence was considered and is at Appendix B of Volume I.

**Community Infrastructure Assessment:** A review of the community attributes revealed no significant issues regarding the ability of the infrastructure of the communities to support missions, forces, and personnel. There are no known community infrastructure impediments to implementation of all recommendations affecting the installations in this recommendation.

**Environmental Impact:** This recommendation has no impact on air quality, cultural, archeological, or tribal resources; dredging; land use constraints or sensitive resource areas; marine mammals, resources, or sanctuaries; noise; threatened and endangered species or critical habitat; waste management; water resources; or wetlands.

This recommendation will require spending approximately \$0.2M for waste management and/or environmental compliance activities. These costs were included in the payback calculation. This recommendation does not otherwise impact the costs of environmental restoration, waste management, and environmental compliance activities. The aggregate environmental impact of all recommended BRAC actions affecting the installations in this recommendation has been reviewed. There are no known environmental impediments to implementation of this recommendation.

## RC Transformation in Delaware

**Recommendation:** Close the Major Robert Kirkwood United States Army Reserve Center and its organizational maintenance shop in Newark, Delaware and re-locate units to a new Armed Forces Reserve Center and organizational maintenance support facility in Newark, Delaware, if the Army is able to acquire suitable land for the construction of the facilities. The new AFRC shall have the capability to accommodate Delaware Army National Guard units from the William Nelson Armory in Middletown, Delaware, if the state decided to relocate those units.

**Justification:** This recommendation transforms Reserve Component facilities in the State of Delaware. The implementation of this recommendation will enhance military value, improve homeland defense capability, greatly improve training and deployment capability, create significant efficiencies and cost savings, and is consistent with the Army's force structure plans and Army transformational objectives.

This recommendation is the result of a state-wide analysis of Reserve Component installations and facilities conducted by a team of functional experts from Headquarters, Department of the Army, the Office of the State Adjutant General, and the Army Reserve Regional Readiness Command.

This recommendation closes an Army Reserve Center in Newark, Delaware and relocates units to a new Armed Forces Reserve Center and organizational maintenance support facility capable of accommodating Delaware Army National Guard units. This recommendation reduces military manpower and associated costs for maintaining existing facilities by collapsing two facilities into one. The Department understands that the State of Delaware will close the William Nelson Armory in Middletown, Delaware. The Armed Forces Reserve Center will have the capability to accommodate these units if the State decides to relocate the units from the closed facilities into the new AFRC.

The implementation of this recommendation will enhance military value, improve homeland defense capability, greatly improve training and deployment capability, create significant efficiencies and cost savings, and is consistent with the Army's force structure plans and Army transformational objectives.

This recommendation considered feasible locations within the demographic and geographic areas of the closing facilities and affected units. The site selected was determined as the best location because it optimized the Reserve Components ability to recruit and retain Reserve Component soldiers, and to train and mobilize units impacted by this recommendation.

This recommendation provides the opportunity for other Local, State, or Federal organizations to partner with the Reserve Components to enhance Homeland Security and Homeland Defense at a reduced cost to those agencies.

Although not captured in the COBRA analysis, this recommendation avoids an estimated \$10.9M in mission facility renovation costs and procurement avoidances associated with

meeting AT/FP construction standards and altering existing facilities to meet unit training and communications requirements. Consideration of these avoided costs would reduce costs and increase the net savings to the Department of Defense in the 6-year BRAC implementation period, and in the 20-year period used to calculate NPV.

**Payback:** The total estimated one-time cost to the Department of Defense to implement this recommendation is \$13.6M. The net of all costs and savings to the Department of Defense during the implementation period is a cost of \$9.8M. Annual recurring savings to the Department after implementation are \$0.9M with a payback expected in 19 years. The net present value of the costs and savings to the Department over 20 years is a cost of \$0.9M.

**Economic Impact on Communities:** Assuming no economic recovery, this recommendation could result in a maximum potential reduction of 13 jobs (9 direct and 4 indirect jobs) over the 2006 – 2011 period in the Wilmington, DE-MD-NJ metropolitan division, which is less than 0.1 percent of economic area employment. The aggregate economic impact of all recommended actions on this economic region of influence was considered and is at Appendix B of Volume I.

**Community Infrastructure Assessment:** A review of the community attributes revealed no significant issues regarding the ability of the infrastructure of the communities to support missions, forces, and personnel. There are no known community infrastructure impediments to implementation of all recommendations affecting the installations in this recommendation.

**Environmental Impact:** This recommendation has no impact on air quality, cultural, archeological, or tribal resources; dredging; land use constraints or sensitive resource areas; marine mammals, resources, or sanctuaries; noise; threatened and endangered species or critical habitat; waste management; water resources; or wetlands. This recommendation will require spending approximately \$0.03M for waste management and/or environmental compliance activities. These costs were included in the payback calculation. This recommendation does not otherwise impact the costs of environmental restoration, waste management, and environmental compliance activities. The aggregate environmental impact of all recommended BRAC actions affecting the installations in this recommendation has been reviewed. There are no known environmental impediments to implementation of this recommendation.

## RC Transformation in Georgia

**Recommendation:** Close the United States Army Reserve Center, Columbus, Georgia and relocate and consolidate those units together with Army Reserve Units currently on Fort Benning into a new United States Army Reserve Center on Fort Benning, Georgia.

**Justification:** This recommendation transforms Reserve Component facilities in the State of Georgia. The implementation of this recommendation will enhance military value, improve homeland defense capability, greatly improve training and deployment capability, create significant efficiencies and cost savings, and is consistent with the Army's force structure plans and Army transformational objectives.

This recommendation is the result of a state-wide analysis of Reserve Component installations and facilities conducted by a team of functional experts from Headquarters, Department of the Army, the Office of the State Adjutant General, and the Army Reserve Regional Readiness Command.

This recommendation closes one United States Army Reserve Center in Columbus, GA and re-locates units together with United States Army Reserve units currently on Fort Benning into a new United States Army Reserve Center on Fort Benning, GA. This recommendation reduces military manpower and associated costs for maintaining existing facilities by reducing the number of separate DoD installations and by relocating a U.S. Army Reserve Center to an existing base. This recommendation supports the recommendation to close Fort Gillem by providing a relocation site for the vehicles and equipment stored at the Army Reserve Equipment Concentration Site (ECS).

This recommendation considered feasible locations within the demographic and geographic areas of the closing facilities and affected units. The site selected was determined as the best location because it optimizes the Reserve Components ability to recruit and retain Reserve Component soldiers, and to train and mobilize units impacted by this recommendation.

This recommendation provides the opportunity for other Local, State, or Federal organizations to partner with the Reserve Components to enhance Homeland Security and Homeland Defense at a reduced cost to those agencies.

Although not captured in the COBRA analysis, this recommendation avoids an estimated \$52.8M in mission facility renovation costs and procurement avoidances associated with meeting AT/FP construction standards and altering existing facilities to meet unit training and communications requirements. Consideration of these avoided costs would reduce costs and increase the net savings to the Department of Defense in the 6-year BRAC implementation period, and in the 20-year period used to calculate NPV.

**Payback:** The total estimated one-time cost to the Department of Defense to implement this recommendation is \$21.4M. The net of all costs and savings to the Department of Defense during the implementation period is a cost of \$3.5M. Annual recurring savings to the Department after implementation are \$5.0M with a payback expected in 5 years.



The net present value of the costs and savings to the Department over 20 years is a savings of \$44.8M.

**Economic Impact on Communities:** Assuming no economic recovery, this recommendation could result in a maximum potential reduction of 103 jobs (65 direct and 38 indirect jobs) over the 2006 – 2011 period in the Columbus, GA-AL metropolitan statistical area, which is less than 0.1 percent of economic area employment. The aggregate economic impact of all recommended actions on this economic region of influence was considered and is at Appendix B of Volume I.

**Community Infrastructure Assessment:** A review of the community attributes revealed no significant issues regarding the ability of the infrastructure of the communities to support missions, forces, and personnel. There are no known community infrastructure impediments to implementation of all recommendations affecting the installations in this recommendation.

**Environmental Impact:** This recommendation may impact air quality and water quality at Fort Benning. Due to the increase in personnel and new construction, an Air Conformity Analysis will be required. Significant mitigation measures to limit releases may be required to reduce impacts to water quality and achieve US EPA water quality standards. This recommendation has no impact on cultural, archeological, or tribal resources; dredging; land use constraints or sensitive resource areas; marine mammals, resources, or sanctuaries; noise; threatened and endangered species or critical habitat; waste management; or wetlands. This recommendation will require spending approximately \$0.008 for waste management and/or environmental compliance activities. These costs were included in the payback calculation. This recommendation does not otherwise impact the costs of environmental restoration, waste management, and environmental compliance activities. Installation has no jurisdictional wetlands. The aggregate environmental impact of all recommended BRAC actions affecting the installations in this recommendation has been reviewed. There are no known environmental impediments to implementation of this recommendation.

## RC Transformation in Hawaii

**Recommendation:** Close the United States Army Reserve Center, Hilo (SFC Minoru Kunieda), Hawaii and relocate units to a new Armed Forces Reserve Center on Keaukaha Military Reservation if the Army can acquire suitable land for the construction of the new facilities. The New AFRC shall have the capability to accommodate Hawaii National Guard units from the following Hawaii ARNG Armories: Keaau and Honokaa if the state decides to relocate those units.

**Justification:** This recommendation transforms Reserve Component facilities in the State of Hawaii. The implementation of this recommendation will enhance military value, improve homeland defense capability, greatly improve training and deployment capability, create significant efficiencies and cost savings, and is consistent with the Army's force structure plans and Army transformational objectives.

This recommendation is the result of a state-wide analysis of Reserve Component installations and facilities conducted by a team of functional experts from Headquarters, Department of the Army, the Office of the State Adjutant General, and the Army Reserve Regional Readiness Command.

This recommendation closes one Army Reserve Center in Hilo, Hawaii and constructs a multi component, multi functional Armed Forces Reserve Center (AFRC) on Keaukaha Military Reservation, Hawaii. The Department understands that the State of Hawaii will close two Hawaii Army National Guard Armories: Keaau and Honokaa, Hawaii. The Armed Forces Reserve Center will have the capability to accommodate these units if the State decides to relocate the units from the closed facilities into the new AFRC.

This recommendation considered feasible locations within the demographic and geographic areas of the closing facilities and affected units. The sites selected were determined as the best locations because they optimize the Reserve Components ability to recruit and retain Reserve Component soldiers and to train and mobilize units impacted by this recommendation.

This recommendation provides the opportunity for other Local, State, or Federal organizations to partner with the Reserve Components to enhance Homeland Security and Homeland Defense at a reduced cost to those agencies.

Although not captured in the COBRA analysis, this recommendation avoids an estimated \$17.4M in mission facility renovation costs and procurement avoidances associated with meeting AT/FP construction standards and altering existing facilities to meet unit training and communications requirements. Consideration of these avoided costs would reduce costs and increase the net savings to the Department of Defense in the 6-year BRAC implementation period, and in the 20-year period used to calculate NPV.

**Payback:** The total estimated one-time cost to the Department of Defense to implement this recommendation is \$56.6M. The net of all costs and savings to the Department of Defense during the implementation period is a cost of \$26.4M. Annual recurring savings

to the Department to the Department after implementation are \$9.1M with a payback expected in 7 years. The net present value of the costs and savings to the Department over 20 years is a savings of \$62.4M.

**Economic Impact on Communities:** Assuming no economic recovery, this recommendation could result in a maximum potential reduction of 181 jobs (118 direct and 63 indirect jobs) over the 2006 – 2011 period in the Hilo County metropolitan area, which is 0.2 percent of economic area employment. The aggregate economic impact of all recommended actions on this economic region of influence was considered and is at Appendix B of Volume I.

**Community Infrastructure Assessment:** A review of the community attributes revealed no significant issues regarding the ability of the infrastructure of the communities to support missions, forces, and personnel. There are no known community infrastructure impediments to implementation of all recommendations affecting the installations in this recommendation.

**Environmental Impact:** Keuakaha Military Reservation has potential contamination from underground storage tanks, and hazardous waste and pesticide storage areas. The installation reported potential for lead-based paint contaminated soil. There is the potential for encountering storm water permitting issues. These conditions may impose restrictions or delays that impact proposed construction. This recommendation has no impact on air quality, cultural, archeological, or tribal resources; dredging; marine mammals, resources, or sanctuaries; noise; threatened and endangered species or critical habitat; or wetlands. This recommendation will require spending approximately \$0.1M for waste management and/or environmental compliance activities. These costs were included in the payback calculation. This recommendation does not otherwise impact the costs of environmental restoration, waste management, and environmental compliance activities. The aggregate environmental impact of all recommended BRAC actions affecting the installations in this recommendation has been reviewed. There are no known environmental impediments to implementation of this recommendation.

## RC Transformation in Illinois

**Recommendation:** Close the United States Army Reserve Center in Marion, Illinois, and relocate units to a new Armed Forces Reserve Center in Carbondale, Illinois, if the Army is able to acquire suitable land for the construction of the facilities. The new AFRC shall have the capability to accommodate Illinois National Guard Units from the following Army National Guard Readiness Centers: Cairo, Illinois and Carbondale, Illinois, if the State of Illinois decides to relocate those units.

Close the United States Army Reserve Center in Centralia, Illinois and the United States Army Reserve Center in Fairfield, Illinois, and relocate units to a new Armed Forces Reserve Center in Mt. Vernon, Illinois. The new AFRC shall have the capability to accommodate Illinois National Guard Units from the following Army National Guard Readiness Centers: Mt. Vernon (17B75), Illinois, Mt. Vernon (17B73), Illinois, and Salem (17C65), Illinois, if the State of Illinois decides to relocate those units.

Close the Armed Forces Reserve Center in Waukegan, Illinois and re-locate units into a new Armed Forces Reserve Center in Lake County, Illinois, if the Army is able to acquire suitable land for the construction of the facilities. The new AFRC shall have the capability to accommodate Illinois National Guard Units from the Army National Guard Readiness Center in Waukegan, Illinois, if the State of Illinois decides to relocate those units.

**Justification:** This recommendation transforms Reserve Component facilities in the State of Illinois. The implementation of this recommendation will enhance military value, improve homeland defense capability, greatly improve training and deployment capability, create significant efficiencies and cost savings, and is consistent with the Army's force structure plans and Army transformational objectives.

This recommendation is the result of a state-wide analysis of Reserve Component installations and facilities conducted by a team of functional experts from Headquarters, Department of the Army, the Office of the State Adjutant General, and the Army Reserve Regional Readiness Command.

This recommendation closes four United States Army Reserve Centers and constructs three multi-component, multi-functional Armed Forces Reserve Centers (AFRCs), throughout the State of Illinois, capable of accommodating National Guard, Army Reserve, Naval Reserve and Marine Corps Reserve units. This recommendation reduces military manpower and associated costs for maintaining existing facilities by collapsing ten geographically separated facilities into three modern Armed Forces Reserve Centers. These joint use facilities will significantly reduce operating costs and create improved business processes. The Department understands that the State of Illinois will close six Illinois Army Guard Armories: Cairo, Illinois, Carbondale, Illinois, Mount Vernon, Illinois, Mount Vernon, Illinois, Salem, Illinois, and Waukegan, Illinois. The Armed Forces Reserve Centers will have the capability to accommodate these units if the State decides to relocate the units from these closed facilities into the new AFRCs. The implementation of this recommendation and creation of these new AFRCs will enhance

military value, improve homeland defense capability, greatly improve training and deployment capability, create significant efficiencies and cost savings, and is consistent with the Army's force structure plans and Army transformational objectives.

This recommendation considered feasible locations within the demographic and geographic areas of the closing facilities and affected units. The sites selected were determined as the best locations because they optimize the Reserve Components ability to recruit and retain Reserve Component soldiers and to train and mobilize units impacted by this recommendation.

This recommendation provides the opportunity for other Local, State, or Federal organizations to partner with the Reserve Components to enhance Homeland Security and Homeland Defense at a reduced cost to those agencies.

Although not captured in the COBRA analysis, this recommendation avoids an estimated \$29,847,992 in mission facility renovation costs and procurement avoidances associated with meeting AT/FP construction standards and altering existing facilities to meet unit training and communications requirements. Consideration of these avoided costs would reduce costs and increase the net savings to the Department of Defense in the 6-year BRAC implementation period, and in the 20-year period used to calculate NPV.

**Payback:** The total estimated one-time cost to the Department of Defense to implement this recommendation is \$42.6M. The net of all costs and savings to the Department of Defense during the implementation period is a cost of \$28.1M. Annual recurring savings to the Department after implementation are \$3.5M with a payback expected in 14 years. The net present value of the costs and savings to the Department over 20 years is a savings of \$6.5M.

**Economic Impact on Communities:** Assuming no economic recovery, this recommendation could result in a maximum potential reduction of 49 jobs (32 direct and 17 indirect jobs) over the 2006 – 2011 period in the Carbondale, IL micropolitan area, which is 0.1 percent of economic area employment. The aggregate economic impact of all recommended actions on this economic region of influence was considered and is at Appendix B of Volume I.

**Community Infrastructure Assessment:** A review of the community attributes revealed no significant issues regarding the ability of the infrastructure of the communities to support missions, forces, and personnel. There are no known community infrastructure impediments to implementation of all recommendations affecting the installations in this recommendation.

**Environmental Impact:** This recommendation has no impact on air quality, cultural, archeological, or tribal resources; dredging; land use constraints or sensitive resource areas; marine mammals, resources, or sanctuaries; noise; threatened and endangered species or critical habitat; waste management; water resources; or wetlands. This recommendation will require spending approximately \$0.05M for waste management and/or environmental compliance activities. These costs were included in the payback

calculation. This recommendation does not otherwise impact the costs of environmental restoration, waste management, and environmental compliance activities. The aggregate environmental impact of all recommended BRAC actions affecting the installations in this recommendation has been reviewed. There are no known environmental impediments to implementation of this recommendation.

## RC Transformation in Indiana

**Recommendation:** Close Lafayette United States Army Reserve Center in Lafayette, Indiana and relocate units into a new Armed Forces Reserve Center (AFRC) on the site of the existing Indiana Army Guard Armory (18B75) Lafayette, Indiana, if the Army is able to acquire land suitable for the construction of the facility. The new AFRC shall have the capability to accommodate the Indiana National Guard units from the following Indiana ARNG Readiness Centers: Boswell, Indiana, Attica, Indiana, Delphi, Indiana, Remington, Indiana, Monticello, Indiana, and Darlington, Indiana, if the state decides to relocate those National Guard units.

Realign Charles H. Seston United States Army Reserve Center by relocating the 402<sup>nd</sup> Engineer Company and Detachment 1 of the 417th Petroleum Company into a new Armed Forces Reserve Center in the vicinity of Greenwood and Franklin, Indiana, if the Army is able to acquire land suitable for the construction of the facility. The new AFRC shall have the capability to accommodate the Indiana National Guard units from the Camp Atterbury Army National Guard Readiness Center (building #500), and the 219<sup>th</sup> Area Support Group Readiness Center (Building #4), Camp Atterbury, Indiana, if the state decides to relocate those National Guard units.

**Justification:** This recommendation transforms Reserve Component facilities throughout the State of Indiana. The implementation of this recommendation will enhance military value, improve homeland defense capability, greatly improve training and deployment capability, create significant efficiencies and cost savings, and is consistent with the Army's force structure plans and Army transformational objectives.

This recommendation is the result of a state-wide analysis of Reserve Component installations and facilities conducted by a team of functional experts from Headquarters, Department of the Army, the Office of the State Adjutant General, and the Army Reserve Regional Readiness Command.

This recommendation closes one Army Reserve Center in the state of Indiana and constructs two multi component, multi functional Armed Forces Reserve Centers capable of accommodating National Guard and Reserve units. This recommendation reduces the number of separate DoD installations by relocating to an existing base. The Department understands that the State of Indiana will close the following INARNG Readiness Centers: Boswell, Indiana, Attica, Indiana, Delphi, Indiana, Remington, Indiana, Monticello, Indiana, Darlington, Indiana, and Camp Atterbury, Indiana. The Armed Forces Reserve Centers will have the capability to accommodate these units if the State decides to relocate the units from these closed facilities into the new AFRCs.

This recommendation considered feasible locations within the demographic and geographic areas of the closing facilities and affected units. The site selected was determined as the best location because it optimizes the Reserve Components ability to recruit and retain Reserve Component soldiers and to train and mobilize units impacted by this recommendation.

This recommendation provides the opportunity for other Local, State, or Federal organizations to partner with the Reserve Components to enhance Homeland Security and Homeland Defense at a reduced cost to those agencies.

Although not captured in the COBRA analysis, this recommendation avoids an estimated \$34.7M in mission facility renovation costs and procurement avoidances associated with meeting AT/FP construction standards and altering existing facilities to meet unit training and communications requirements. Consideration of these avoided costs would reduce costs and increase the net savings to the Department of Defense in the 6-year BRAC implementation period, and in the 20-year period used to calculate NPV.

**Payback:** The total estimated one-time cost to the Department of Defense to implement this recommendation is \$47.6M. The net of all costs and savings to the Department of Defense during the implementation period is a cost of \$33.7M. Annual recurring savings to the Department after implementation are \$2.7M with a payback expected in 22 years. The net present value of the costs and savings to the Department over 20 years is a cost of \$6.1M.

**Economic Impact on Communities:** Assuming no economic recovery, this recommendation could result in a maximum potential reduction of 32 jobs (21 direct and 11 indirect jobs) over the 2006 – 2011 period in the Lafayette, IN Metropolitan Statistical Area, which is less than 0.1 percent of economic area employment.

Assuming no economic recovery, this recommendation could result in a maximum potential reduction of 16 jobs (12 direct and 4 indirect jobs) over the 2006 – 2011 period in the Indianapolis, IN Metropolitan Statistical Area, which is less than 0.1 percent of economic area employment.

The aggregate economic impact of all recommended actions on these economic regions of influence was considered and is at Appendix B of Volume I.

**Community Infrastructure Assessment:** A review of the community attributes revealed no significant issues regarding the ability of the infrastructure of the communities to support missions, forces, and personnel. There are no known community infrastructure impediments to implementation of all recommendations affecting the installations in this recommendation.

**Environmental Impact:** This recommendation has no impact on air quality, cultural, archeological, or tribal resources; dredging; land use constraints or sensitive resource areas; marine mammals, resources, or sanctuaries; noise; threatened and endangered species or critical habitat; waste management; water resources; or wetlands. This recommendation will require spending approximately \$0.02M for waste management and/or environmental compliance activities. These costs were included in the payback calculation. This recommendation does not otherwise impact the costs of environmental restoration, waste management, and environmental compliance activities. The aggregate environmental impact of all recommended BRAC actions affecting the installations in



this recommendation has been reviewed. There are no known environmental impediments to implementation of this recommendation.

## RC Transformation in Iowa

**Recommendation:** Close the Recruiting Battalion Headquarters and Military Entrance Processing Station (MEPS) leased facilities in Des Moines and relocate units into a new Armed Forces Reserve Center and MEPS at Camp Dodge, Iowa. The new AFRC shall have the capability to accommodate units from the Army National Guard Readiness Center located at Camp Dodge, Iowa, if the state decides to relocate those National Guard units.

Close the United States Army Reserve Center and the Area Maintenance Support Activity in Middletown, Iowa and relocate units into a new Armed Forces Reserve Center (AFRC) with an Organizational Maintenance and Vehicle Storage Facility on Iowa Army Ammunition Plant, Iowa. The new AFRC shall have the capability to accommodate units from the Burlington Army National Guard Readiness Center located in Burlington, Iowa, if the state decides to relocate those National Guard units.

Close the United States Army Reserve Center in Muscatine, Iowa and relocate units into a new Armed Forces Reserve Center (AFRC) in Muscatine, Iowa, if the Army is able to acquire land suitable for the construction of the facility. The new AFRC shall have the capability to accommodate units from the Muscatine Army National Guard Readiness Center located in Muscatine, Iowa, if the state decides to relocate those National Guard units.

Close the Armed Forces Reserve Center in Cedar Rapids, Iowa and relocate units into a new Armed Forces Reserve Center (AFRC) with an Organizational Maintenance Facility (OMF) in Cedar Rapids, Iowa, if the Army is able to acquire land suitable for the construction of the facility. The new AFRC shall have the capability to accommodate units from the Cedar Rapids Army National Guard Readiness Center and its Organizational Maintenance Facility located in Cedar Rapids, Iowa, if the state decides to relocate those National Guard units.

**Justification:** This recommendation transforms Reserve Component facilities throughout the State of Iowa. The implementation of this recommendation will enhance military value, improve homeland defense capability, greatly improve training and deployment capability, create significant efficiencies and cost savings, and is consistent with the Army's force structure plans and Army transformational objectives.

This recommendation is the result of a state-wide analysis of Reserve Component installations and facilities conducted by a team of functional experts from Headquarters, Department of the Army, the Office of the State Adjutant General, and the Army Reserve Regional Readiness Command.

This recommendation closes three Army Reserve Centers, one Area Maintenance Support Activity, one Recruiting Battalion, and one Military Entrance Processing Station, throughout the state of Iowa and constructs three multi component, multi functional Armed Forces Reserve Centers, two Organizational Maintenance Facilities, and one MEPS, capable of accommodating National Guard and Reserve units. This

recommendation reduces military manpower and associated costs for maintaining existing facilities by collapsing eight geographically separated facilities into four modern Armed Forces Reserve Centers. This recommendation reduces the number of separate DoD installations by relocating to an existing base. The Department understands that the State of Iowa will close IAARNG Readiness Centers: Camp Dodge, Iowa, Burlington, Iowa, Muscatine, Iowa, and Cedar Rapids, Iowa. The Armed Forces Reserve Centers will have the capability to accommodate these units if the State decides to relocate the units from these closed facilities into the new AFRCs.

This recommendation provides the opportunity for other Local, State, or Federal organizations to partner with the Reserve Components to enhance Homeland Security and Homeland Defense at a reduced cost to those agencies.

Although not captured in the COBRA analysis, this recommendation avoids an estimated \$20.5M in mission facility renovation costs and procurement avoidances associated with meeting AT/FP construction standards and altering existing facilities to meet unit training and communications requirements. Consideration of these avoided costs would reduce costs and increase the net savings to the Department of Defense in the 6-year BRAC implementation period, and in the 20-year period used to calculate NPV.

**Payback:** The total estimated one-time cost to the Department of Defense to implement this recommendation is \$68.9M. The net of all costs and savings to the Department of Defense during the implementation period is a saving of \$16.5M. Annual recurring savings to the Department after implementation are \$19.4M with a payback expected in 3 years. The net present value of the costs and savings to the Department over 20 years is a savings of \$201.7M.

**Economic Impact on Communities:** Assuming no economic recovery, this recommendation could result in a maximum potential reduction of 303 jobs (218 direct and 85 indirect jobs) over the 2006 – 2011 period in the Des Moines Iowa metropolitan statistical area, which is less than 0.1 percent of economic area employment. The aggregate economic impact of all recommended actions on this economic region of influence was considered and is at Appendix B of Volume I.

**Community Infrastructure Assessment:** A review of the community attributes revealed no significant issues regarding the ability of the infrastructure of the communities to support missions, forces, and personnel. There are no known community infrastructure impediments to implementation of all recommendations affecting the installations in this recommendation.

**Environmental Impact:** This recommendation has no impact on air quality, cultural, archeological, or tribal resources; dredging; land use constraints or sensitive resource areas; marine mammals, resources, or sanctuaries; noise; threatened and endangered species or critical habitat; waste management; water resources; or wetlands. This recommendation will require spending approximately \$0.06M for waste management and/or environmental compliance activities. These costs were included in the payback calculation. This recommendation does not otherwise impact the costs of environmental

restoration, waste management, and environmental compliance activities. The aggregate environmental impact of all recommended BRAC actions affecting the installations in this recommendation has been reviewed. There are no known environmental impediments to implementation of this recommendation.

## RC Transformation in Kentucky

**Recommendation:** Close the Richmond US Army Reserve Center, Maysville US Army Reserve Center and relocate and consolidate those units with Army Reserve units currently on Bluegrass Army Depot into a new Armed Forces Reserve Center (AFRC) and Field Maintenance Facility (FMS) on Blue Grass Army Depot, Kentucky. The new AFRC shall have the capability to accommodate Kentucky National Guard units located on Bluegrass Army Depot, Kentucky, if the state decides to relocate those National Guard units.

Close the Paducah Memorial United States Army Reserve Center and the Paducah #2 United States Army Reserve Center and relocate units into a new Armed Forces Reserve Center (AFRC) and Field Maintenance Shop (FMS) adjacent to the Paducah Airport, Paducah, Kentucky, if the Army is able to acquire land suitable for the construction of the facilities. The new AFRC and FMS shall have the capability to accommodate units from the Paducah Army National Guard Readiness Center and the Kentucky Army National Guard Organizational Maintenance Shop (OMS) #2, Paducah, Kentucky, if the state decides to relocate those National Guard units.

**Justification:** This recommendation transforms Reserve Component facilities throughout the State of Kentucky. The implementation of this recommendation will enhance military value, improve homeland defense capability, greatly improve training and deployment capability, create significant efficiencies and cost savings, and is consistent with the Army's force structure plans and Army transformational objectives.

This recommendation is the result of a state-wide analysis of Reserve Component installations and facilities conducted by a team of functional experts from Headquarters, Department of the Army, the Office of the State Adjutant General, and the Army Reserve Regional Readiness Command.

This recommendation closes four Army Reserve Centers throughout the state of Kentucky and constructs two multi component, multi functional Armed Forces Reserve Centers, and two Field Maintenance Shops capable of accommodating National Guard and Reserve units. This recommendation reduces military manpower and associated costs for maintaining existing facilities by collapsing seven geographically separated facilities into two modern Armed Forces Reserve Centers. This recommendation reduces the number of separate DoD installations by relocating to an existing base. The Department understands that the State of Kentucky will close the Blue Grass Station and the Paducah Army National Guard Readiness Centers and the Kentucky Army National Guard Organizational Maintenance Shop, Paducah, Kentucky. The Armed Forces Reserve Centers will have the capability to accommodate these units if the State decides to relocate the units from these closed facilities into the new AFRCs.

The implementation of this recommendation will enhance military value, improve homeland defense capability, greatly improve training and deployment capability, create significant efficiencies and cost savings, and is consistent with the Army's force structure plans and Army transformational objectives.

This recommendation considered feasible locations within the demographic and geographic areas of the closing facilities and affected units. The site selected was determined as the best location because it optimizes the Reserve Components ability to recruit and retain Reserve Component soldiers and to train and mobilize units impacted by this recommendation.

This recommendation provides the opportunity for other Local, State, or Federal organizations to partner with the Reserve Components to enhance Homeland Security and Homeland Defense at a reduced cost to those agencies.

Although not captured in the COBRA analysis, this recommendation avoids an estimated \$5,811,563 in mission facility renovation costs and procurement avoidances associated with meeting AT/FP construction standards and altering existing facilities to meet unit training and communications requirements. Consideration of these avoided costs would reduce costs and increase the net savings to the Department of Defense in the 6-year BRAC implementation period, and in the 20-year period used to calculate NPV.

**Payback:** The total estimated one-time cost to the Department of Defense to implement this recommendation is \$25.3M. The net of all costs and savings to the Department of Defense during the implementation period is a cost of \$6.9M. Annual recurring savings to the Department after implementation are \$4.2M with a payback expected in 6 years. The net present value of the costs and savings to the Department over 20 years is a savings of \$34.1M.

**Economic Impact on Communities:** Assuming no economic recovery, this recommendation could result in a maximum potential reduction of 284 jobs (18 direct and 106 indirect jobs) over the 2006 – 2011 period in the Maysville, KY Micropolitan Statistical Area, which is less than 0.1 percent of economic area employment.

Assuming no economic recovery, this recommendation could result in a maximum potential reduction of 48 jobs (31 direct and 17 indirect jobs) over the 2006 – 2011 period in the Paducah, KY-IL metropolitan statistical area, which is less than 0.1 percent of economic area employment.

The aggregate economic impact of all recommended actions on these economic regions of influence was considered and is at Appendix B of Volume I.

**Community Infrastructure Assessment:** A review of the community attributes revealed no significant issues regarding the ability of the infrastructure of the communities to support missions, forces, and personnel. There are no known community infrastructure impediments to implementation of all recommendations affecting the installations in this recommendation.

**Environmental Impact:** Due to presence of cultural resources and a very limited portion of the installation having been surveyed, surveys may have to occur at Blue Grass. Blue Grass Army Depot has a limited ability to accept new missions due to

threatened and endangered species. This recommendation has no impact on air quality, dredging; land use constraints or sensitive resource areas; marine mammals, resources, or sanctuaries; noise; waste management; water resources; or wetlands. This recommendation will require spending approximately \$0.04M for waste management and/or environmental compliance activities. These costs were included in the payback calculation. This recommendation does not otherwise impact the costs of environmental restoration, waste management, and environmental compliance activities. Installation has no jurisdictional wetlands. The aggregate environmental impact of all recommended BRAC actions affecting the installations in this recommendation has been reviewed. There are no known environmental impediments to implementation of this recommendation.

## RC Transformation in Louisiana

**Recommendation:** Close the Roberts United States Army Reserve Center Baton Rouge, LA and the Navy-Marine Corps Reserve Center, Baton Rouge, LA, and relocate units to a new Armed Forces Reserve Center and Field Maintenance Shop on suitable state property adjacent to the Baton Rouge Airport (State Property). The new AFRC shall have the capability to accommodate Louisiana National Guard Units from the Army National Guard Readiness Center located in Baton Rouge, LA and the Army National Guard Organizational Maintenance Shop #8 located in Baton Rouge, LA if the State of Louisiana decides to relocate those National Guard units.

Close United States Army Reserve Center, Shreveport, Louisiana, and the United States Army Reserve Center, Bossier City, Louisiana and relocate all Reserve Component units to a new Armed Forces Reserve Center that will be constructed on or adjacent to the Naval-Marine Corps Reserve Center, Shreveport in Bossier City, Louisiana if the Army is able to acquire suitable property for construction of the facilities.

**Justification:** This recommendation transforms Reserve Component facilities in the State of Louisiana. The implementation of this recommendation will enhance military value, improve homeland defense capability, greatly improve training and deployment capability, create significant efficiencies and cost savings, and is consistent with the Army's force structure plans and Army transformational objectives.

This recommendation is the result of a state-wide analysis of Reserve Component installations and facilities conducted by a team of functional experts from Headquarters, Department of the Army, the Office of the State Adjutant General, and the Army Reserve Regional Readiness Command.

This recommendation closes three Army Reserve centers, one Navy-Marine Corps Reserve Center and constructs two multi component or joint, multi functional Armed Forces Reserve Centers (AFRCs), throughout the State of Louisiana, capable of accommodating National Guard, Army Reserve, Naval Reserve and Marine Corps Reserve units.

This recommendation reduces military manpower and associated costs for maintaining existing facilities by collapsing six separate facilities into two modern Armed Forces Reserve Centers. These joint use facilities will significantly reduce operating costs and create improved business processes. The Department understands that the State of Louisiana will close the Louisiana Army National Guard Readiness Center in Baton Rouge and Organizational Maintenance Shop # 8 in Baton Rouge. The Armed Forces Reserve Centers will have the capability to accommodate these units if the State decides to relocate the units from these closed facilities into the new AFRCs.

The implementation of this recommendation and creation of these new AFRCs will enhance military value, improve homeland defense capability, greatly improve training and deployment capability, create significant efficiencies and cost savings, and is consistent with the Army's force structure plans and Army transformational objectives.



This recommendation considered feasible locations within the demographic and geographic areas of the closing facilities and affected units. The sites selected were determined as the best locations because they optimize the Reserve Components ability to recruit and retain Reserve Component soldiers and to train and mobilize units impacted by this recommendation.

This recommendation provides the opportunity for other Local, State, or Federal organizations to partner with the Reserve Components to enhance Homeland Security and Homeland Defense at a reduced cost to those agencies.

Although not captured in the COBRA analysis, this recommendation avoids an estimated \$20.0M in mission facility renovation costs and procurement avoidances associated with meeting AT/FP construction standards and altering existing facilities to meet unit training and communications requirements. Consideration of these avoided costs would reduce costs and increase the net savings to the Department of Defense in the 6-year BRAC implementation period, and in the 20-year period used to calculate NPV.

**Payback:** The total estimated one-time cost to the Department of Defense to implement this recommendation is \$30.7M. The net of all costs and savings to the Department of Defense during the implementation period is a saving of \$17.7M. Annual recurring savings to the Department after implementation are \$13.6M with a payback expected in 2 years. The net present value of the costs and savings to the Department over 20 years is a savings of \$147.6M.

**Economic Impact on Communities:** Assuming no economic recovery, this recommendation could result in a maximum potential reduction of 235 jobs (158 direct and 77 indirect jobs) over the 2006 – 2011 period in the Baton Rouge, LA Metropolitan Statistical Area, which is less than 0.1 percent of economic area employment. The aggregate economic impact of all recommended actions on this economic region of influence was considered and is at Appendix B of Volume I.

**Community Infrastructure Assessment:** A review of the community attributes revealed no significant issues regarding the ability of the infrastructure of the communities to support missions, forces, and personnel. There are no known community infrastructure impediments to implementation of all recommendations affecting the installations in this recommendation.

**Environmental Impact:** This recommendation has no impact on air quality, cultural, archeological, or tribal resources; dredging; land use constraints or sensitive resource areas; marine mammals, resources, or sanctuaries; noise; threatened and endangered species or critical habitat; waste management; water resources; or wetlands. This recommendation will require spending approximately \$0.05M for waste management and/or environmental compliance activities. These costs were included in the payback calculation. This recommendation does not otherwise impact the costs of environmental restoration, waste management, and environmental compliance activities. The aggregate environmental impact of all recommended BRAC actions affecting the installations in

this recommendation has been reviewed. There are no known environmental impediments to implementation of this recommendation.

## RC Transformation in Maryland (AFRC Frederick, MD)

**Recommendation:** Close the Flair Memorial Armed Forces Reserve Center and its organizational maintenance shop in Frederick, Maryland and re-locate US Army Reserve and US Marine Corps Reserve units to new consolidated Armed Forces Reserve Center and organizational maintenance support facility on Fort Detrick, Maryland.

**Justification:** This recommendation transforms Reserve Component facilities in the State of Maryland. The implementation of this recommendation will enhance military value, improve homeland defense capability, greatly improve training and deployment capability, create significant efficiencies and cost savings, and is consistent with the Army's force structure plans and Army transformational objectives.

This recommendation is the result of a state-wide analysis of Reserve Component installations and facilities conducted by a team of functional experts from Headquarters, Department of the Army, the Office of the State Adjutant General, and the Army Reserve Regional Readiness Command.

This recommendation closes one Army Reserve Center and one Organizational Maintenance Shop in Frederick, Maryland and constructs a multi service, multi functional Armed Forces Reserve Center and Organizational Maintenance Shop on Ft. Detrick, Maryland. This recommendation reduces military manpower and associated costs for maintaining existing facilities by reducing the number of separate DoD installations by relocating to an existing base.

This recommendation provides the opportunity for other Local, State, or Federal organizations to partner with the Reserve Components to enhance Homeland Security and Homeland Defense at a reduced cost to those agencies.

Although not captured in the COBRA analysis, this recommendation avoids an estimated \$10.0M in mission facility renovation costs and procurement avoidances associated with meeting AT/FP construction standards and altering existing facilities to meet unit training and communications requirements. Consideration of these avoided costs would reduce costs and increase the net savings to the Department of Defense in the 6-year BRAC implementation period, and in the 20-year period used to calculate NPV.

**Payback:** The total estimated one-time cost to the Department of Defense to implement this recommendation is \$6.3M. The net of all costs and savings to the Department of Defense during the implementation period is a savings of \$1.4M. Annual recurring savings to the Department after implementation are \$1.7M with a payback expected in 3 years. The net present value of the costs and savings to the Department over 20 years is a savings of \$17.8M.

**Economic Impact on Communities:** Assuming no economic recovery, this recommendation could result in a maximum potential reduction of 38 jobs (22 direct and 16 indirect jobs) over the 2006 – 2011 period in the Bethesda-Frederick-Gaithersburg, MD metropolitan division, which is less than 0.1 percent of economic area

employment. The aggregate economic impact of all recommended actions on this economic region of influence was considered and is at Appendix B of Volume I.

**Community Infrastructure Assessment:** A review of the community attributes revealed no significant issues regarding the ability of the infrastructure of the communities to support missions, forces, and personnel. There are no known community infrastructure impediments to implementation of all recommendations affecting the installations in this recommendation.

**Environmental Impact:** An Air Conformity determination and a New Source Review and permitting effort will be required at Fort Detrick. This recommendation has no impact on cultural, archeological, or tribal resources; dredging; land use constraints or sensitive resource areas; marine mammals, resources, or sanctuaries; noise; threatened and endangered species or critical habitat; waste management; water resources; or wetlands. This recommendation will require spending approximately \$0.2M for waste management and/or environmental compliance activities. These costs were included in the payback calculation. This recommendation does not otherwise impact the costs of environmental restoration, waste management, and environmental compliance activities. Installation has no jurisdictional wetlands. The aggregate environmental impact of all recommended BRAC actions affecting the installations in this recommendation has been reviewed. There are no known environmental impediments to implementation of this recommendation.

## RC Transformation in Massachusetts

**Recommendation:** Close the Army Reserve Equipment Concentration Site 65 Annex, Ayer, MA and relocate units to a new Armed Forces Reserve Center in Ayer, MA; realign the Devens Reserve Forces Training Area, MA, by relocating the 323d Maintenance Facility, and the Regional Training Site Maintenance to a new Armed Forces Reserve Center complex in Ayer, MA; realign Ayer Area 3713 by relocating storage functions to a new Armed Forces Reserve Center complex in Ayer, MA. Realign the Marine Corps Reserve Center Ayer, MA, by relocating the 1/25th Marines Maintenance Facility, Marine Corps Reserve Electronic Maintenance Section, and Maintenance Company/4th Marine Battalion to a new Armed Forces Reserve Center complex in Ayer, MA. The new Armed Forces Reserve Center complex shall have the capability to accommodate all Reserve units affected by this recommendation including Army National Guard units from the Ayer Armory and Consolidated Support Maintenance Shop, Ayer, MA, if the state decides to relocate the National Guard units.

**Justification:** This recommendation transforms Reserve Component facilities in the State of Massachusetts. The implementation of this recommendation will enhance military value, improve homeland defense capability, greatly improve training and deployment capability, create significant efficiencies and cost savings, and is consistent with the Army's force structure plans and Army transformational objectives.

This recommendation is the result of a state-wide analysis of Reserve Component installations and facilities conducted by a team of functional experts from Headquarters, Department of the Army, the Office of the State Adjutant General, and the Army Reserve Regional Readiness Command.

This recommendation closes one Equipment Concentration Site Annex, realigns a Reserve Forces Training Area and a US Marine Corps Reserve Center, and constructs a multi component, multi functional Armed Forces Reserve Center in Ayer, Massachusetts. The Department understands that the State of Massachusetts will close: one Massachusetts Army National Guard Armory and one Consolidated Support Maintenance Site, Ayer, Massachusetts. The Armed Forces Reserve Centers will have the capability to accommodate these units if the State decides to relocate the units from the closed facilities to the new AFRC complex.

This recommendation considered feasible locations within the demographic and geographic areas of the closing facilities and affected units. The site selected was determined as the best location because it optimizes the Reserve Components ability to recruit and retain Reserve Component soldiers and to train and mobilize units impacted by this recommendation.

This recommendation provides the opportunity for other Local, State, or Federal organizations to partner with the Reserve Components to enhance Homeland Security and Homeland Defense at a reduced cost to those agencies.

Although not captured in the COBRA analysis, this recommendation avoids an estimated \$28,846,752 in mission facility renovation costs and procurement avoidances associated with meeting AT/FP construction standards and altering existing facilities to meet unit training and communications requirements. Consideration of these avoided costs would reduce costs and increase the net savings to the Department of Defense in the 6-year BRAC implementation period, and in the 20-year period used to calculate NPV.

**Payback:** The total estimated one-time cost to the Department of Defense to implement this recommendation is \$85.5M. The net of all costs and savings to the Department of Defense during the implementation period is a cost of \$ 79.7M. Annual recurring savings to the Department after implementation are \$1.7M with a payback expected in 100+ years. The net present value of the costs and savings to the Department over 20 years is a cost of \$60.4M.

**Economic Impact on Communities:** This recommendation will not result in any job reductions (direct or indirect) over the 2006-2011 period in the Worcester, MA metropolitan. The aggregate economic impact of all recommended actions on this economic region of influence was considered and is at Appendix B of Volume I.

**Community Infrastructure Assessment:** A review of the community attributes revealed no significant issues regarding the ability of the infrastructure of the communities to support missions, forces, and personnel. There are no known community infrastructure impediments to implementation of all recommendations affecting the installations in this recommendation.

**Environmental Impact:** This recommendation has no impact on air quality, cultural, archeological, or tribal resources; dredging; land use constraints or sensitive resource areas; marine mammals, resources, or sanctuaries; noise; threatened and endangered species or critical habitat; waste management; water resources; or wetlands. This recommendation will require spending approximately \$0.005M for waste management and/or environmental compliance activities. These costs were included in the payback calculation. This recommendation does not otherwise impact the costs of environmental restoration, waste management, and environmental compliance activities. The aggregate environmental impact of all recommended BRAC actions affecting the installations in this recommendation has been reviewed. There are no known environmental impediments to implementation of this recommendation.

## RC Transformation in Michigan

**Recommendation:** Close the US Army Reserve Center Stanford C. Parisian in Lansing, Michigan, close the Army Reserve Area Maintenance Support Activity #135 in Battle Creek, Michigan, and re-locate units to a new Armed Forces Reserve Center on Fort Custer Reserve Training Center, Michigan.

**Justification:** This recommendation transforms Reserve Component facilities in the State of Michigan. The implementation of this recommendation will enhance military value, improve homeland defense capability, greatly improve training and deployment capability, create significant efficiencies and cost savings, and is consistent with the Army's force structure plans and Army transformational objectives.

This recommendation is the result of a state-wide analysis of Reserve Component installations and facilities conducted by a team of functional experts from Headquarters, Department of the Army, the Office of the State Adjutant General, and the Army Reserve Regional Readiness Command.

This recommendation closes one Army Reserve Center in Lansing, Michigan and one Area Maintenance Support Activity in Battle Creek, Michigan and constructs a multi functional Armed Forces Reserve Center (AFRC) capable of accommodating Reserve units. This recommendation reduces the number of separate DoD installations by relocating to a new AFRC.

This recommendation provides the opportunity for other Local, State, or Federal organizations to partner with the Reserve Components to enhance Homeland Security and Homeland Defense at a reduced cost to those agencies.

Although not captured in the COBRA analysis, this recommendation avoids an estimated \$9.0M in mission facility renovation costs and procurement avoidances associated with meeting AT/FP construction standards and altering existing facilities to meet unit training and communications requirements. Consideration of these avoided costs would reduce costs and increase the net savings to the Department of Defense in the 6-year BRAC implementation period, and in the 20-year period used to calculate NPV.

**Payback:** The total estimated one-time cost to the Department of Defense to implement this recommendation is \$7.9M. The net of all costs and savings to the Department of Defense during the implementation period is a savings of \$1.4M. Annual recurring savings to the Department after implementation are \$2.1M with a payback expected in 3 years. The net present value of the costs and savings to the Department after implementation are a savings of \$21.6M.

**Economic Impact on Communities:** Assuming no economic recovery, this recommendation could result in a maximum potential reduction of 37 jobs (25 direct and 12 indirect jobs) over the 2006 – 2011 period in the Lansing – East Lansing MI metropolitan statistical area, which is 0.01 percent of economic area employment. The

aggregate economic impact of all recommended actions on this economic region of influence was considered and is at Appendix B of Volume I.

**Community Infrastructure Assessment:** A review of the community attributes revealed no significant issues regarding the ability of the infrastructure of the communities to support missions, forces, and personnel. There are no known community infrastructure impediments to implementation of all recommendations affecting the installations in this recommendation.

**Environmental Impact:** This recommendation has no impact on air quality, cultural, archeological, or tribal resources; dredging; land use constraints or sensitive resource areas; marine mammals, resources, or sanctuaries; noise; threatened and endangered species or critical habitat; waste management; water resources; or wetlands. This recommendation will require spending approximately \$0.03M for waste management and/or environmental compliance activities. These costs were included in the payback calculation. This recommendation does not otherwise impact the costs of environmental restoration, waste management, and environmental compliance activities. The aggregate environmental impact of all recommended BRAC actions affecting the installations in this recommendation has been reviewed. There are no known environmental impediments to implementation of this recommendation.



## RC Transformation in Minnesota

**Recommendation:** Close US Army Reserve Center Faribault, MN and relocate units to a new Armed Forces Reserve Center at Faribault Industrial Park if the Army is able to acquire suitable land for the construction of the facilities. The new AFRC shall have the capability to accommodate units from the Faribault Minnesota Army National Guard Armory, if the state decides to relocate those units.

Close US Army Reserve Center Cambridge, MN and relocate units to a new Armed Forces Reserve Center in Cambridge, MN if the Army is able to acquire suitable land for the construction of the facilities. The new AFRC shall have the capability to accommodate Minnesota ARNG units from the Cambridge Minnesota Army National Guard Armory, if the state decides to relocate those units.

**Justification:** This recommendation transforms Reserve Component facilities throughout the State of Minnesota. The implementation of this recommendation will enhance military value, improve homeland defense capability, greatly improve training and deployment capability, create significant efficiencies and cost savings, and is consistent with the Army's force structure plans and Army transformational objectives.

This recommendation is the result of a state-wide analysis of Reserve Component installations and facilities conducted by a team of functional experts from Headquarters, Department of the Army, the Office of the State Adjutant General, and the Army Reserve Regional Readiness Command.

This recommendation closes two US Army Reserve Centers throughout the state of Minnesota and constructs two Armed Forces Reserve Centers capable of accommodating National Guard and Reserve units. The Department understands that the State of Minnesota will close two Minnesota Army National Guard Armories: Faribault and Cambridge, Minnesota. The Armed Forces Reserve Centers will have the capability to accommodate these units if the State decides to relocate the units from these closed facilities into the new AFRCs.

This recommendation reduces military manpower and associated costs for maintaining existing facilities by collapsing four geographically separated facilities into two modern Armed Forces Reserve Centers. These joint use facilities will significantly reduce operating costs and create improved business practices.

This recommendation provides the opportunity for other Local, State, or Federal organizations to partner with the Reserve Components to enhance Homeland Security and Homeland Defense at a reduced cost to those agencies.

Although not captured in the COBRA analysis, this recommendation avoids an estimated \$3,000,000 in mission facility renovation costs and procurement avoidances associated with meeting AT/FP construction standards and altering existing facilities to meet unit training and communications requirements. Consideration of these avoided costs would

reduce costs and increase the net savings to the Department of Defense in the 6-year BRAC implementation period, and in the 20-year period used to calculate NPV.

**Payback:** The total estimated one-time cost to the Department of Defense to implement this recommendation is \$17.3M. The net of all costs and savings to the Department of Defense during the implementation period is a cost of \$17.8M. Annual recurring costs to the Department after implementation are \$0.006M. This recommendation never pays back. The net present value of the costs and savings to the Department over 20 years is a cost of \$17.1M.

**Economic Impact on Communities:** This recommendation will not result in any job reductions (direct or indirect) over the 2006-2011 period in the Faribault County, Minnesota or Minneapolis-St Paul-Bloomington, Minnesota-Wisconsin area. The aggregate economic impact of all recommended actions on this economic region of influence was considered and is at Appendix B of Volume I.

**Community Infrastructure Assessment:** A review of the community attributes revealed no significant issues regarding the ability of the infrastructure of the communities to support missions, forces, and personnel. There are no known community infrastructure impediments to implementation of all recommendations affecting the installations in this recommendation.

**Environmental Impact:** This recommendation has no impact on air quality, cultural, archeological, or tribal resources; dredging; land use constraints or sensitive resource areas; marine mammals, resources, or sanctuaries; noise; threatened and endangered species or critical habitat; waste management; water resources; or wetlands. This recommendation will require spending approximately \$0.04M for waste management and/or environmental compliance activities. These costs were included in the payback calculation. This recommendation does not otherwise impact the costs of environmental restoration, waste management, and environmental compliance activities. The aggregate environmental impact of all recommended BRAC actions affecting the installations in this recommendation has been reviewed. There are no known environmental impediments to implementation of this recommendation.

## RC Transformation in Missouri

**Recommendation:** Close the United States Army Reserve Center in Greentop, Missouri, and relocate units to a new United States Army Reserve Center in Kirksville, Missouri, if the Army is able to acquire suitable land for the construction of the facilities.

Close the Jefferson Barracks United States Army Reserve Center, and re-locate units into a new consolidated Armed Forces Reserve Center on Jefferson Barracks, Missouri, if the Army is able to acquire suitable land for the construction of the facilities. The new AFRC shall have the capability to accommodate Missouri Army National Guard Units from the Readiness Center in Jefferson Barracks if the State of Missouri decides to relocate those units.

**Justification:** This recommendation transforms Reserve Component facilities throughout the State of Missouri. The implementation of this recommendation will enhance military value, improve homeland defense capability, greatly improve training and deployment capability, create significant efficiencies and cost savings, and is consistent with the Army's force structure plans and Army transformational objectives.

This recommendation is the result of a state-wide analysis of Reserve Component installations and facilities conducted by a team of functional experts from Headquarters, Department of the Army, the Office of the State Adjutant General, and the Army Reserve Regional Readiness Command.

This recommendation closes two Army Reserve centers and constructs one Armed Forces Reserve Center (AFRC) and one United States Army Reserve Center, in the State of Missouri, capable of accommodating National Guard and Army Reserve units. This recommendation reduces military manpower and associated costs for maintaining existing facilities by collapsing four separate facilities into two modern Reserve Centers. These facilities will significantly reduce operating costs and create improved business processes. The Department understands that the State of Missouri will close one Missouri Army Guard Readiness Centers on Jefferson Barracks. The Armed Forces Reserve Center will have the capability to accommodate these units if the State decides to relocate the units from these closed facilities into the new AFRC.

This recommendation considered feasible locations within the demographic and geographic areas of the closing facilities and affected units. The sites selected were determined as the best locations because they optimize the Reserve Components ability to recruit and retain Reserve Component soldiers and to train and mobilize units impacted by this recommendation.

This recommendation provides the opportunity for other Local, State, or Federal organizations to partner with the Reserve Components to enhance Homeland Security and Homeland Defense at a reduced cost to those agencies.

Although not captured in the COBRA analysis, this recommendation avoids an estimated \$5.5M in mission facility renovation costs and procurement avoidances associated with

meeting AT/FP construction standards and altering existing facilities to meet unit training and communications requirements. Consideration of these avoided costs would reduce costs and increase the net savings to the Department of Defense in the 6-year BRAC implementation period, and in the 20-year period used to calculate NPV.

**Payback:** The total estimated one-time cost to the Department of Defense to implement this recommendation is \$28.6M. The net of all costs and savings to the Department of Defense during the implementation period is a cost of \$0.9M. Annual recurring savings to the Department after implementation are \$6.4M with a payback expected in 3 years. The net present value of the costs and savings to the Department over 20 years is a savings of \$61.0M.

**Economic Impact on Communities:** Assuming no economic recovery, this recommendation could result in a maximum potential reduction of 121 jobs (67 direct and 54 indirect jobs) over the 2006 – 2011 period in the St. Louis, MO-IL Metropolitan Statistical Area, which is less than 0.1 percent of economic area employment. The aggregate economic impact of all recommended actions on this economic region of influence was considered and is at Appendix B of Volume I.

**Community Infrastructure Assessment:** A review of the community attributes revealed no significant issues regarding the ability of the infrastructure of the communities to support missions, forces, and personnel. There are no known community infrastructure impediments to implementation of all recommendations affecting the installations in this recommendation.

**Environmental Impact:** Minor revisions to the air permit may be needed at Lambert IAP AGS (Jefferson Barracks). It may be necessary to build on constrained acreage at Lambert. A wetlands survey may need to be conducted at Lambert. This recommendation has no impact cultural, archeological, or tribal resources; dredging; marine mammals, resources, or sanctuaries; noise; threatened and endangered species or critical habitat; waste management; water resources; or wetlands. This recommendation will require spending approximately \$0.5M for waste management and/or environmental compliance activities. These costs were included in the payback calculation. This recommendation does not otherwise impact the costs of environmental restoration, waste management, and environmental compliance activities. The aggregate environmental impact of all recommended BRAC actions affecting the installations in this recommendation has been reviewed. There are no known environmental impediments to implementation of this recommendation.

## RC Transformation in Montana

**Recommendation:** Close Galt Hall Army Reserve Center in Great Falls, Montana and relocate units to a new Armed Forces Reserve Center on Malmstrom Air Force Base, Great Falls, Montana.

Close Army Reserve Center Veuve Hall (building #26) and Area Maintenance Support Activity #75 on Fort Missoula, Montana, and relocate units to a new Armed Forces Reserve Center in Missoula, Montana if the Army is able to acquire suitable land for the construction of the facilities. The new AFRC shall have the capability to accommodate Montana National Guard units from the Montana Army National Guard Armory in Missoula, Montana, if the state decides to relocate those National Guard units.

**Justification:** This recommendation transforms Reserve Component facilities throughout the State of Montana. The implementation of this recommendation will enhance military value, improve homeland defense capability, greatly improve training and deployment capability, create significant efficiencies and cost savings, and is consistent with the Army's force structure plans and Army transformational objectives.

This recommendation is the result of a state-wide analysis of Reserve Component installations and facilities conducted by a team of functional experts from Headquarters, Department of the Army, the Office of the State Adjutant General, and the Army Reserve Regional Readiness Command.

This recommendation closes two US Army Reserve Centers and one Army Maintenance Support Activity throughout the state of Montana and constructs two Armed Forces Reserve Centers capable of accommodating National Guard and Reserve units. This recommendation reduces the number of separate DoD installations by relocating to an existing base. The Department understands that the State of Montana will close one Montana Army National Guard Armory in Missoula, Montana. The Armed Forces Reserve Centers will have the capability to accommodate these units if the State decides to relocate the units from these closed facilities into the new AFRCs.

The implementation of this recommendation will enhance military value, improve homeland defense capability, greatly improve training and deployment capability, create significant efficiencies and cost savings, and is consistent with the Army's force structure plans and Army transformational objectives.

This recommendation considered feasible locations within the demographic and geographic areas of the closing facilities and affected units. The sites selected were determined as the best locations because they optimize the Reserve Components ability to recruit and retain Reserve Component soldiers and to train and mobilize units impacted by this recommendation.

This recommendation provides the opportunity for other Local, State, or Federal organizations to partner with the Reserve Components to enhance Homeland Security and Homeland Defense at a reduced cost to those agencies.

Although not captured in the COBRA analysis, this recommendation avoids an estimated \$19.5M in mission facility renovation costs and procurement avoidances associated with meeting AT/FP construction standards and altering existing facilities to meet unit training and communications requirements. Consideration of these avoided costs would reduce costs and increase the net savings to the Department of Defense in the 6-year BRAC implementation period, and in the 20-year period used to calculate NPV.

**Payback:** The total estimated one-time cost to the Department of Defense to implement this recommendation is \$26.0M. The net of all costs and savings to the Department of Defense during the implementation period is a cost of \$19.8M. Annual recurring savings to the Department after implementation are \$1.5M with a payback expected in 23 years. The net present value of the costs and savings to the Department over 20 years is a cost of \$4.3M.

**Economic Impact on Communities:** Assuming no economic recovery, this recommendation could result in a maximum potential reduction of 27 jobs (17 direct and 10 indirect jobs) over the 2006 – 2011 period in the Great Falls, MT Metropolitan Statistical Area, which is less than 0.1 percent of economic area employment. The aggregate economic impact of all recommended actions on this economic region of influence was considered and is at Appendix B of Volume I.

**Community Infrastructure Assessment:** A review of the community attributes revealed no significant issues regarding the ability of the infrastructure of the communities to support missions, forces, and personnel. There are no known community infrastructure impediments to implementation of all recommendations affecting the installations in this recommendation.

**Environmental Impact:** Additional operations may impact T&E species and/or critical habitats and wetlands at Malstrom. This recommendation has no impact on air quality, cultural, archeological, or tribal resources; dredging; land use constraints or sensitive resource areas; marine mammals, resources, or sanctuaries; noise; waste management; or water resources. This recommendation will require spending approximately \$0.09M for waste management and/or environmental compliance activities. These costs were included in the payback calculation. This recommendation does not otherwise impact the costs of environmental restoration, waste management, and environmental compliance activities. The aggregate environmental impact of all recommended BRAC actions affecting the installations in this recommendation has been reviewed. There are no known environmental impediments to implementation of this recommendation.

## RC Transformation in Nebraska

**Recommendation:** Close the United States Army Reserve Center in Wymore, Nebraska, and relocate units to a new Armed Forces Reserve Center with an organizational maintenance facility in the vicinity of Beatrice, Nebraska, if the Army is able to acquire land suitable for the construction of the facilities. The new AFRC shall have the capability to accommodate Nebraska National Guard Units from the following Nebraska ARNG Readiness Centers: Fairbury, Nebraska, Falls City, Nebraska and Troop C, 1-167th Cavalry in Beatrice, Nebraska, if the state decides to relocate those National Guard units.

Close the United States Army Reserve Center in Columbus, Nebraska, and relocate units to a new Armed Forces Reserve Center in Columbus, Nebraska, The new AFRC shall have the capability to accommodate Nebraska National Guard Units from the Nebraska ARNG Readiness Center, Columbus, Nebraska, if the state decides to relocate those National Guard units.

Close the United States Army Reserve Center in Hastings, Nebraska, and relocate units to a new Armed Forces Reserve Center on Greenlief Training Site in Nebraska. The new AFRC shall have the capability to accommodate Nebraska National Guard Units from the following Nebraska ARNG Readiness Centers: Grand Island, Nebraska, Crete, Nebraska, and Hastings, Nebraska, if the state decides to relocate those National Guard units.

Close the United States Army Reserve Center in Kearney, Nebraska, and relocate units to a new Armed Forces Reserve Center in Kearney, Nebraska if the Army is able to acquire suitable land for the construction of the facilities. The new AFRC shall have the capability to accommodate Nebraska National Guard Units from the Nebraska ARNG Readiness Center, Kearney, Nebraska, if the state decides to relocate those National Guard units.

Close the United States Army Reserve Center in McCook, Nebraska, and relocate units to a new Armed Forces Reserve Center in McCook, Nebraska, if the Army is able to acquire suitable land for the construction of the facilities. The new AFRC shall have the capability to accommodate Nebraska National Guard Units from the Nebraska ARNG Readiness Center, McCook, Nebraska, if the state decides to relocate those National Guard units.

**Justification:** This recommendation transforms Reserve Component facilities throughout the State of Nebraska. The implementation of this recommendation will enhance military value, improve homeland defense capability, greatly improve training and deployment capability, create significant efficiencies and cost savings, and is consistent with the Army's force structure plans and Army transformational objectives.

This recommendation is the result of a state-wide analysis of Reserve Component installations and facilities conducted by a team of functional experts from Headquarters, Department of the Army, the Office of the State Adjutant General, and the Army Reserve Regional Readiness Command.

This recommendation closes five Army Reserve centers, and constructs five multicomponent, multi-functional Armed Forces Reserve Centers (AFRCs), throughout the State of Nebraska, capable of accommodating National Guard and Reserve units.

This recommendation reduces military manpower and associated costs for maintaining existing facilities by collapsing thirteen geographically separated facilities into five modern Armed Forces Reserve Centers. These joint use facilities will significantly reduce operating costs and create improved business processes. The Department understands that the State of Nebraska will close eight Nebraska Army Guard Armories: Grand Island, Crete, Hastings, Fairbury, Falls City, Columbus, Kearney, and McCook, Nebraska. The Armed Forces Reserve Centers will have the capability to accommodate these units if the State decides to relocate the units from these closed facilities into the new AFRCs.

The implementation of this recommendation and creation of these new AFRCs will enhance military value, improve homeland defense capability, greatly improve training and deployment capability, create significant efficiencies and cost savings, and is consistent with the Army's force structure plans and Army transformational objectives. This recommendation considered feasible locations within the demographic and geographic areas of the closing facilities and affected units. The sites selected were determined as the best locations because they optimize the Reserve Components ability to recruit and retain Reserve Component soldiers and to train and mobilize units impacted by this recommendation.

This recommendation provides the opportunity for other Local, State, or Federal organizations to partner with the Reserve Components to enhance Homeland Security and Homeland Defense at a reduced cost to those agencies.

Although not captured in the COBRA analysis, this recommendation avoids an estimated \$31.4M in mission facility renovation costs and procurement avoidances associated with meeting AT/FP construction standards and altering existing facilities to meet unit training and communications requirements. Consideration of these avoided costs would reduce costs and increase the net savings to the Department of Defense in the 6-year BRAC implementation period, and in the 20-year period used to calculate NPV.

**Payback:** The total estimated one-time cost to the Department of Defense to implement this recommendation is \$33.1M. The net of all costs and savings to the Department of Defense during the implementation period is a cost of \$6.0M. Annual recurring savings to the Department after implementation are \$6.2M with a payback expected in 5 years. The net present value of the costs and savings to the Department over 20 years is a savings of \$53.7M.



**Economic Impact on Communities:** Assuming no economic recovery, this recommendation could result in a maximum potential reduction of 48 jobs (31 direct and 17 indirect jobs) over the 2006 – 2011 period in the Columbus, NE Micropolitan Statistical area, which is 0.21 percent of economic area employment.

Assuming no economic recovery, this recommendation could result in a maximum potential reduction of 48 jobs (31 direct and 17 indirect jobs) over the 2006 – 2011 period in the Grand Island NE Metropolitan Statistical Area, which is 0.1 percent of economic area employment.

Assuming no economic recovery, this recommendation could result in a maximum potential reduction of 12 jobs (8 direct and 4 indirect jobs) over the 2006 – 2011 period in the Kearney, NE Metropolitan Statistical Area, which is less than 0.1 percent of economic area employment.

The aggregate economic impact of all recommended actions on these economic regions of influence was considered and is at Appendix B of Volume I.

**Community Infrastructure Assessment:** A review of the community attributes revealed no significant issues regarding the ability of the infrastructure of the communities to support missions, forces, and personnel. There are no known community infrastructure impediments to implementation of all recommendations affecting the installations in this recommendation.

**Environmental Impact:** This recommendation has no impact on air quality, cultural, archeological, or tribal resources; dredging; land use constraints or sensitive resource areas; marine mammals, resources, or sanctuaries; noise; threatened and endangered species or critical habitat; waste management; water resources; or wetlands. This recommendation will require spending approximately \$0.07M for waste management and/or environmental compliance activities. These costs were included in the payback calculation. This recommendation does not otherwise impact the costs of environmental restoration, waste management, and environmental compliance activities. The aggregate environmental impact of all recommended BRAC actions affecting the installations in this recommendation has been reviewed. There are no known environmental impediments to implementation of this recommendation.

## RC Transformation in New Hampshire

**Recommendation:** Close Paul Doble Army Reserve Center in Portsmouth, NH; and relocate units to a new Armed Forces Reserve Center and associated training and maintenance facilities adjacent to Pease Air National Guard Base, NH, if the Army is able to acquire suitable land for the construction of the facilities. The new AFRC and complex will have the capability to accommodate New Hampshire National Guard units from the following New Hampshire ARNG Armories: Rochester, Portsmouth, Somersworth and Dover, New Hampshire, if the state decides to relocate those National Guard units.

**Justification:** This recommendation transforms Reserve Component facilities in the State of New Hampshire. The implementation of this recommendation will enhance military value, improve homeland defense capability, greatly improve training and deployment capability, create significant efficiencies and cost savings, and is consistent with the Army's force structure plans and Army transformational objectives.

This recommendation is the result of a state-wide analysis of Reserve Component installations and facilities conducted by a team of functional experts from Headquarters, Department of the Army, the Office of the State Adjutant General, and the Army Reserve Regional Readiness Command.

This recommendation closes one Armed Forces Reserve Center in Portsmouth, New Hampshire and constructs a multi-component, multi-functional Armed Forces Reserve Center on land adjacent to Pease Air National Guard Base. The Department understands that the State of New Hampshire will close four New Hampshire Army National Guard Readiness Centers: Rochester, Portsmouth, Somersworth and Dover. The Armed Forces Reserve Centers will have the capability to accommodate these units if the State decides to relocate the units from the closed facilities into the new AFRC.

This recommendation considered feasible locations within the demographic and geographic areas of the closing facilities and affected units. The site selected was determined as the best location because it optimizes the Reserve Components ability to recruit and retain Reserve Component soldiers and to train and mobilize units impacted by this recommendation.

This recommendation provides the opportunity for other Local, State, or Federal organizations to partner with the Reserve Components to enhance Homeland Security and Homeland Defense at a reduced cost to those agencies.

Although not captured in the COBRA analysis, this recommendation avoids an estimated \$14.6M in mission facility renovation costs and procurement avoidances associated with meeting AT/FP construction standards and altering existing facilities to meet unit training and communications requirements. Consideration of these avoided costs would reduce costs and increase the net savings to the Department of Defense in the 6-year BRAC implementation period, and in the 20-year period used to calculate NPV.

**Payback:** The total estimated one-time cost to the Department of Defense to implement this recommendation is \$54.2M. The net of all costs and savings to the Department of Defense during the implementation period is a cost of \$44.6M. Annual recurring savings to the Department after implementation are \$3.1M with a payback expected in 26 years. The net present value of the costs and savings to the Department over 20 years is a cost of \$12.9M.

**Economic Impact on Communities:** Assuming no economic recovery, this recommendation could result in a maximum potential reduction of 73 jobs (44 direct and 29 indirect jobs) over the 2006 – 2011 period in the Rockingham County-Strafford County, NH metropolitan division, which is less than 0.1 percent of economic area employment. The aggregate economic impact of all recommended actions on this economic region of influence was considered and is at Appendix B of Volume I.

**Community Infrastructure Assessment:** A review of the community attributes revealed no significant issues regarding the ability of the infrastructure of the communities to support missions, forces, and personnel. There are no known community infrastructure impediments to implementation of all recommendations affecting the installations in this recommendation.

**Environmental Impact:** Additional operations at Pease-Newington Air Reserve Base may impact sensitive resource areas and constrain operations. A wetlands survey may need to be conducted to determine impact to wetlands at Pease-Newington. This recommendation has no impact on air quality, cultural, archeological, or tribal resources; dredging; marine mammals, resources, or sanctuaries; noise; threatened and endangered species or critical habitat; waste management; or water resources. This recommendation will require spending approximately \$0.2M for waste management and/or environmental compliance activities. These costs were included in the payback calculation. This recommendation does not otherwise impact the costs of environmental restoration, waste management, and environmental compliance activities. The aggregate environmental impact of all recommended BRAC actions affecting the installations in this recommendation has been reviewed. There are no known environmental impediments to implementation of this recommendation.

## RC Transformation in New Jersey

**Recommendation:** Close the Nelson Brittin Army Reserve Center in Camden, New Jersey and relocate units to a new consolidated Armed Forces Reserve Center in Camden, New Jersey, if the Army can acquire suitable land for the construction of the new facilities. The New AFRC shall have the capability to accommodate units from the New Jersey ARNG Armory, Burlington, if the state decides to relocate those units.

**Justification:** This recommendation transforms Reserve Component facilities in the State of New Jersey. The implementation of this recommendation will enhance military value, improve homeland defense capability, greatly improve training and deployment capability, create significant efficiencies and cost savings, and is consistent with the Army's force structure plans and Army transformational objectives.

This recommendation is the result of a state-wide analysis of Reserve Component installations and facilities conducted by a team of functional experts from Headquarters, Department of the Army, the Office of the State Adjutant General, and the Army Reserve Regional Readiness Command.

This recommendation closes Brittin Army Reserve Center in Camden, New Jersey and constructs a multi component, multi functional Armed Forces Reserve Center (AFRC) in Camden, New Jersey. This recommendation reduces costs for maintaining existing facilities by collapsing two separate facilities into one modern AFRC. The Department understands that the State of New Jersey will close one National Guard Armory in Burlington, New Jersey. The Armed Forces Reserve Centers will have the capability to accommodate these units if the State decides to relocate units to the new multi functional AFRC in Camden, New Jersey.

This recommendation considered feasible locations within the demographic and geographic areas of the closing facilities and affected units. The sites selected were determined as the best locations because they optimize the Reserve Components ability to recruit and retain Reserve Component soldiers and to train and mobilize units impacted by this recommendation. This recommendation provides the opportunity for other Local, State, or Federal organizations to partner with the Reserve Components to enhance Homeland Security and Homeland Defense at a reduced cost to those agencies.

Although not captured in the COBRA analysis, this recommendation avoids an estimated \$14.5M in mission facility renovation costs and procurement avoidances associated with meeting AT/FP construction standards and altering existing facilities to meet unit training and communications requirements. Consideration of these avoided costs would reduce costs and increase the net savings to the Department of Defense in the 6-year BRAC implementation period, and in the 20-year period used to calculate NPV.

**Payback:** The total estimated one-time cost to the Department of Defense to implement this recommendation is \$15.1M. The net of all costs and savings to the Department of Defense during the implementation period is a cost of \$2.0M. Annual recurring savings to the Department after implementation are \$3.0M with a payback expected in 5 years.

The net present value of the costs and savings to the Department over 20 years is a savings of \$26.6M.

**Economic Impact on Communities:** Assuming no economic recovery, this recommendation could result in a maximum potential reduction of 64 jobs (35 direct and 29 indirect jobs) over the 2006 – 2011 period in the Camden, NJ Metropolitan Division, which is less than 0.1 percent of economic area employment. The aggregate economic impact of all recommended actions on this economic region of influence was considered and is at Appendix B of Volume I.

**Community Infrastructure Assessment:** A review of the community attributes revealed no significant issues regarding the ability of the infrastructure of the communities to support missions, forces, and personnel. There are no known community infrastructure impediments to implementation of all recommendations affecting the installations in this recommendation.

**Environmental Impact:** This recommendation has no impact on air quality, cultural, archeological, or tribal resources; dredging; land use constraints or sensitive resource areas; marine mammals, resources, or sanctuaries; noise; threatened and endangered species or critical habitat; waste management; water resources; or wetlands. This recommendation will require spending approximately \$0.01 for waste management and/or environmental compliance activities. These costs were included in the payback calculation. This recommendation does not otherwise impact the costs of environmental restoration, waste management, and environmental compliance activities. The aggregate environmental impact of all recommended BRAC actions affecting the installations in this recommendation has been reviewed. There are no known environmental impediments to implementation of this recommendation.

## RC Transformation in New Mexico

**Recommendation:** Close the Jenkins Armed Forces Reserve Center located in Albuquerque, New Mexico and re-locate the units into a new Armed Forces Reserve Center on Kirtland Air Force Base.

**Justification:** This recommendation transforms Reserve Component facilities in the State of New Mexico. The implementation of this recommendation will enhance military value, improve homeland defense capability, greatly improve training and deployment capability, create significant efficiencies and cost savings, and is consistent with the Army's force structure plans and Army transformational objectives.

This recommendation is the result of a state-wide analysis of Reserve Component installations and facilities conducted by a team of functional experts from Headquarters, Department of the Army, the Office of the State Adjutant General, and the Army Reserve Regional Readiness Command.

This recommendation closes an Armed Forces Reserve Center (AFRC) located in Albuquerque, New Mexico and relocates units to a new multi functional AFRC on Kirtland Air Force Base, New Mexico. This recommendation reduces the number of separate DoD installations by relocating a geographically separate facility onto an existing base. Reducing the number of DoD installations also reduces the manpower costs required to sustain multiple facilities.

This recommendation provides the opportunity for other Local, State, or Federal organizations to partner with the Reserve Components to enhance Homeland Security and Homeland Defense at a reduced cost to those agencies.

Although not captured in the COBRA analysis, this recommendation avoids an estimated \$0.8M in mission facility renovation costs and procurement avoidances associated with meeting AT/FP construction standards and altering existing facilities to meet unit training and communications requirements. Consideration of these avoided costs would reduce costs and increase the net savings to the Department of Defense in the 6-year BRAC implementation period, and in the 20-year period used to calculate NPV.

**Payback:** The total estimated one-time cost to the Department of Defense to implement this recommendation is \$17.9M. The net of all costs and savings to the Department of Defense during the implementation period is a cost of \$4.6M. Annual recurring savings to the Department after implementation are \$3.0M with a payback expected in 6 years. The net present value of the costs and savings to the Department over 20 years is a savings of \$24.6M.

**Economic Impact on Communities:** Assuming no economic recovery, this recommendation could result in a maximum potential reduction 65 jobs (36 direct and 29 indirect jobs) over the 2006 – 2011 period in the Albuquerque, NM metropolitan area, which is less than 0.1 percent of economic area employment. The aggregate economic

impact of all recommended actions on this economic region of influence was considered and is at Appendix B of Volume I.

**Community Infrastructure Assessment:** A review of the community attributes revealed no significant issues regarding the ability of the infrastructure of the communities to support missions, forces, and personnel. There are no known community infrastructure impediments to implementation of all recommendations affecting the installations in this recommendation.

**Environmental Impact:** A minor revision to the existing air permits may be necessary at Kirtland. Kirtland may have to modify their hazardous waste program due to incoming mission. Additional operations at Kirtland may impact wetlands. This recommendation has no impact on cultural, archeological, or tribal resources; dredging; land use constraints or sensitive resource areas; marine mammals, resources, or sanctuaries; noise; threatened and endangered species or critical habitat; waste management; or water resources. This recommendation will require spending approximately \$0.5M for waste management and/or environmental compliance activities. These costs were included in the payback calculation. This recommendation does not otherwise impact the costs of environmental restoration, waste management, and environmental compliance activities. The aggregate environmental impact of all recommended BRAC actions affecting the installations in this recommendation has been reviewed. There are no known environmental impediments to implementation of this recommendation.

## RC Transformation in New York

**Recommendation:** Close the United States Army Reserve Center, Stewart-Newburg, New York and relocate units to a new Armed Forces Reserve Center on Stewart Army Sub Post adjacent to Stewart Air National Guard Base, New York. The new AFRC shall have the capability to accommodate New York National Guard units from the Readiness Center at Newburg, New York, if the State of New York decides to relocate those National Guard units.

Close the United States Army Reserve Center and Army Maintenance Support Activity, Niagara Falls, New York and construct a new Armed Forces Reserve Center on the existing site in Niagara Falls, New York. The New AFRC shall have the capability to accommodate the NY National Guard units from the Niagara Falls Readiness Center, if the state of New York decides to relocate those National Guard units.

Close the BG Theodore Roosevelt United States Army Reserve Center, Uniondale, New York, the Amityville Armed Forces Reserve Center (Army Reserve and Marine Corps Reserve), Amityville, New York, and re-locate units into a new Armed Forces Reserve Center with an Organizational Maintenance Shop on federal property licensed to the New York Army National Guard in Farmingdale, New York. The new AFRC shall have the capability to accommodate New York National Guard units from the following New York Army National Guard Readiness Centers: Bayshore, Freeport, Huntington Station, Patchogue and Riverhead, and Organizational Maintenance Shop 21, Bayshore, New York, if the State of New York decides to relocate those National Guard units.

**Justification:** This recommendation transforms Reserve Component facilities throughout the State of New York. The implementation of this recommendation will enhance military value, improve homeland defense capability, greatly improve training and deployment capability, create significant efficiencies and cost savings, and is consistent with the Army's force structure plans and Army transformational objectives.

This recommendation is the result of a state-wide analysis of Reserve Component installations and facilities conducted by a team of functional experts from Headquarters, Department of the Army, the Office of the State Adjutant General, and the Army Reserve Regional Readiness Command.

This recommendation closes four Army Reserve centers and constructs three multi-component, multi-functional Armed Forces Reserve Centers (AFRCs), throughout the State of New York, capable of accommodating National Guard and Reserve units. This recommendation reduces military manpower and associated costs for maintaining existing facilities by collapsing three geographically separated facilities into three modern Armed Forces Reserve Centers. These joint use facilities will significantly reduce operating costs and create improved business processes. The Department understands that the State of New York will close six New York Army Guard Armories: Niagara Falls, Bayshore, Freeport, Huntington Station, Patchogue and Riverhead, and Organizational Maintenance Shop 21 Bayshore, New York. The Armed Forces Reserve Centers will



have the capability to accommodate these units if the State decides to relocate the units from these closed facilities into the new AFRCs.

The implementation of this recommendation and creation of these new AFRCs will enhance military value, improve homeland defense capability, greatly improve training and deployment capability, create significant efficiencies and cost savings, and is consistent with the Army's force structure plans and Army transformational objectives.

This recommendation considered feasible locations within the demographic and geographic areas of the closing facilities and affected units. The sites selected were determined as the best locations because they optimize the Reserve Components ability to recruit and retain Reserve Component soldiers and to train and mobilize units impacted by this recommendation.

This recommendation provides the opportunity for other Local, State, or Federal organizations to partner with the Reserve Components to enhance Homeland Security and Homeland Defense at a reduced cost to those agencies.

Although not captured in the COBRA analysis, this recommendation avoids an estimated \$81,550,856 in mission facility renovation costs and procurement avoidances associated with meeting AT/FP construction standards and altering existing facilities to meet unit training and communications requirements. Consideration of these avoided costs would reduce costs and increase the net savings to the Department of Defense in the 6-year BRAC implementation period, and in the 20-year period used to calculate NPV.

**Payback:** The total estimated one-time cost to the Department of Defense to implement this recommendation is \$103.8M. The net of all costs and savings to the Department of Defense during the implementation period is a cost of \$88.5M. Annual recurring savings to the Department after implementation are \$4.0M with a payback expected in 47 years. The net present value of the costs and savings to the Department over 20 years is a cost of \$46.5M.

**Economic Impact on Communities:** Assuming no economic recovery, this recommendation could result in a maximum potential reduction of 37 jobs (28 direct and 9 indirect jobs) over the 2006 – 2011 period in the Nassau-Suffolk County metropolitan area, which is less than 0.1 percent of economic area employment.

Assuming no economic recovery, this recommendation could result in a maximum potential reduction of 1 job (1 direct and 0 indirect jobs) over the 2006 – 2011 period in the Buffalo-Niagara Falls, NY metropolitan area, which is less than 0.1 percent of economic area employment.

The aggregate economic impact of all recommended actions on these economic regions of influence was considered and is at Appendix B of Volume I.

**Community Infrastructure Assessment:** A review of the community attributes revealed no significant issues regarding the ability of the infrastructure of the

communities to support missions, forces, and personnel. There are no known community infrastructure impediments to implementation of all recommendations affecting the installations in this recommendation.

**Environmental Impact:** This recommendation has no impact on air quality, cultural, archeological, or tribal resources; dredging; land use constraints or sensitive resource areas; marine mammals, resources, or sanctuaries; noise; threatened and endangered species or critical habitat; waste management; water resources; or wetlands. This recommendation will require spending approximately \$0.1M for waste management and/or environmental compliance activities. These costs were included in the payback calculation. This recommendation does not otherwise impact the costs of environmental restoration, waste management, and environmental compliance activities. The aggregate environmental impact of all recommended BRAC actions affecting the installations in this recommendation has been reviewed. There are no known environmental impediments to implementation of this recommendation.

## RC Transformation in North Carolina

**Recommendation:** Close the Army Reserve Adrian B. Rhodes Armed Forces Reserve Center in Wilmington, North Carolina, close the Rock Hill Armed Forces Reserve Center in Rock Hill, South Carolina, close the Niven Armed Forces Reserve Center in Albermarle, North Carolina and relocate all Army and Navy units to a new Armed Forces Reserve Center (AFRC) and Organizational Maintenance Shop (OMS) in Wilmington, North Carolina, if the Army is able to acquire suitable land for the construction of the facilities.

**Justification:** This recommendation transforms Reserve Component facilities in the State of North Carolina. The implementation of this recommendation will enhance military value, improve homeland defense capability, greatly improve training and deployment capability, create significant efficiencies and cost savings, and is consistent with the Army's force structure plans and Army transformational objectives.

This recommendation is the result of a state-wide analysis of Reserve Component installations and facilities conducted by a team of functional experts from Headquarters, Department of the Army, the Office of the State Adjutant General, and the Army Reserve Regional Readiness Command.

This recommendation closes two Army Reserve Centers in the state of North Carolina and one Army Reserve Center in the state of South Carolina and constructs a multi component, multi functional, Armed Forces Reserve Center capable of accommodating Navy and Army Reserve units. This recommendation reduces military manpower and associated costs for maintaining existing facilities by collapsing three geographically separated facilities into a modern Armed Forces Reserve Center.

The implementation of this recommendation will enhance military value, improve homeland defense capability, greatly improve training and deployment capability, create significant efficiencies and cost savings, and is consistent with the Army's force structure plans and Army transformational objectives.

This recommendation considered feasible locations within the demographic and geographic areas of the closing facilities and affected units. The site selected was determined as the best location because it optimizes the Reserve Components ability to recruit and retain Reserve Component soldiers and to train and mobilize units impacted by this recommendation.

This recommendation provides the opportunity for other Local, State, or Federal organizations to partner with the Reserve Components to enhance Homeland Security and Homeland Defense at a reduced cost to those agencies.

Although not captured in the COBRA analysis, this recommendation avoids an estimated \$10.2M in mission facility renovation costs and procurement avoidances associated with meeting AT/FP construction standards and altering existing facilities to meet unit training and communications requirements. Consideration of these avoided costs would reduce

costs and increase the net savings to the Department of Defense in the 6-year BRAC implementation period, and in the 20-year period used to calculate NPV.

**Payback:** The total estimated one-time cost to the Department of Defense to implement this recommendation is \$9.2M. The net of all costs and savings to the Department of Defense during the implementation period is a savings of \$5.1M. Annual recurring savings to the Department after implementation are \$2.6M with a payback expected in 2 years. The net present value of the costs and savings to the Department over 20 years is a saving of \$30.2M.

**Economic Impact on Communities:** Assuming no economic recovery, this recommendation could result in a maximum potential reduction of 43 jobs (29 direct and 14 indirect jobs) over the 2006 – 2011 period in the Albemarle, NC Micropolitan Statistical Area, which is 0.16 percent of economic area employment. The aggregate economic impact of all recommended actions on this economic region of influence was considered and is at Appendix B of Volume I.

**Community Infrastructure Assessment:** A review of the community attributes revealed no significant issues regarding the ability of the infrastructure of the communities to support missions, forces, and personnel. There are no known community infrastructure impediments to implementation of all recommendations affecting the installations in this recommendation.

**Environmental Impact:** This recommendation has no impact on air quality, cultural, archeological, or tribal resources; dredging; land use constraints or sensitive resource areas; marine mammals, resources, or sanctuaries; noise; threatened and endangered species or critical habitat; waste management; water resources; or wetlands. This recommendation will require spending approximately \$0.03M for waste management and/or environmental compliance activities. These costs were included in the payback calculation. This recommendation does not otherwise impact the costs of environmental restoration, waste management, and environmental compliance activities. The aggregate environmental impact of all recommended BRAC actions affecting the installations in this recommendation has been reviewed. There are no known environmental impediments to implementation of this recommendation.

## RC Transformation in North Dakota

**Recommendation:** Close 96th RRC David Johnson USARC in Fargo, North Dakota and relocate into a new Reserve Center on Hector Field Air National Guard Base.

**Justification:** This recommendation transforms Reserve Component facilities in the State of North Dakota. The implementation of this recommendation will enhance military value, improve homeland defense capability, greatly improve training and deployment capability, create significant efficiencies and cost savings, and is consistent with the Army's force structure plans and Army transformational objectives.

This recommendation is the result of a state-wide analysis of Reserve Component installations and facilities conducted by a team of functional experts from Headquarters, Department of the Army, the Office of the State Adjutant General, and the Army Reserve Regional Readiness Command.

This recommendation closes a United States Army Reserve Center (USARC) located in Fargo, North Dakota and relocates units to a new USARC on Hector Field Air National Guard Base, North Dakota. This recommendation reduces the number of separate DoD installations by relocating to an existing base.

This recommendation considered feasible locations within the demographic and geographic areas of the closing facility and affected units. The site selected was determined as the best location because it optimizes the Reserve Components ability to recruit and retain Reserve Component soldiers and to train and mobilize units impacted by this recommendation.

This recommendation provides the opportunity for other Local, State, or Federal organizations to partner with the Reserve Components to enhance Homeland Security and Homeland Defense at a reduced cost to those agencies.

Although not captured in the COBRA analysis, this recommendation avoids an estimated \$4.0M in mission facility renovation costs and procurement avoidances associated with meeting AT/FP construction standards and altering existing facilities to meet unit training and communications requirements. Consideration of these avoided costs would reduce costs and increase the net savings to the Department of Defense in the 6-year BRAC implementation period, and in the 20-year period used to calculate NPV.

**Payback:** The total estimated one-time cost to the Department of Defense to implement this recommendation is \$7.9M. The net of all costs and savings to the Department of Defense during the implementation period is a cost of \$8.1M. Annual recurring costs to the Department after implementation are \$0.02M. This recommendation never pays back. The net present value of the costs and savings to the Department over 20 years is a cost of \$8.0M.

**Economic Impact on Communities:** This recommendation will not result in any job reductions (direct or indirect) over the 2006-2011 period in the Fargo, North Dakota economic area. The aggregate economic impact of all recommended actions on this economic region of influence was considered and is at Appendix B of Volume I.

**Community Infrastructure Assessment:** A review of the community attributes revealed no significant issues regarding the ability of the infrastructure of the communities to support missions, forces, and personnel. There are no known community infrastructure impediments to implementation of all recommendations affecting the installations in this recommendation.

**Environmental Impact:** Wetlands Survey may need to be conducted at Hector Field Air National Guard Base to determine impact. This recommendation has no impact on air quality, cultural, archeological, or tribal resources; dredging; land use constraints or sensitive resource areas; marine mammals, resources, or sanctuaries; noise; threatened and endangered species or critical habitat; waste management; or water resources. This recommendation will require spending approximately \$0.01M for waste management and/or environmental compliance activities. These costs were included in the payback calculation. This recommendation does not otherwise impact the costs of environmental restoration, waste management, and environmental compliance activities. The aggregate environmental impact of all recommended BRAC actions affecting the installations in this recommendation has been reviewed. There are no known environmental impediments to implementation of this recommendation.

## RC Transformation in Ohio

**Recommendation:** Close the Scouten Army Reserve Center, Mansfield, OH and the Parrott Army Reserve Center, Kenton, OH, and relocate all units to a new AFRC at Mansfield Air National Guard Base located at Mansfield-Lahm Airport. The new AFRC shall have the capability to accommodate units from the following facilities: Ohio ARNG Armories in Mansfield and Ashland, OH, if the state decides to relocate those National Guard units.

Close US Army Reserve Center, Springfield OH, and relocate all units to a new Armed Forces Reserve Center on the Springfield Air National Guard Base, Springfield, OH. The new AFRC shall have the capability to accommodate units from the following facility: Ohio ARNG Readiness Center, Springfield, OH; if the state decides to relocate those National Guard units.

Close Ft. Hayes US Army Reserve Center, Columbus, OH and Whitehall US Army Reserve Center, Whitehall, OH and relocate units to a new Armed Forces Reserve Center on Defense Supply Center Columbus, OH. The new AFRC shall have the capability to accommodate units from the following facilities: Ohio ARNG Armories Howey (Columbus), Sullivant (Columbus), Newark, Westerville and Oxford, OH, Rickenbacker Air National Guard Base, Building #943 if the state decides to relocate those National Guard units.

**Justification:** This recommendation transforms Reserve Component facilities throughout the State of Ohio. The implementation of this recommendation will enhance military value, improve homeland defense capability, greatly improve training and deployment capability, create significant efficiencies and cost savings, and is consistent with the Army's force structure plans and Army transformational objectives.

This recommendation is the result of a state-wide analysis of Reserve Component installations and facilities conducted by a team of functional experts from Headquarters, Department of the Army, the Office of the State Adjutant General, and the Army Reserve Regional Readiness Command.

This recommendation closes five US Army Reserve Centers throughout the state of Ohio and constructs three Armed Forces Reserve Centers capable of accommodating National Guard and Reserve units. This recommendation reduces military manpower and associated costs for maintaining existing facilities by collapsing thirteen geographically separated facilities into three modern Armed Forces Reserve Centers.

This recommendation reduces the number of separate DoD installations by relocating to an existing base. These joint use facilities will significantly reduce operating costs and create improved business practices. The Department understands that the State of Ohio will close eight Ohio Army National Guard Centers: Mansfield, Ashland, Springfield, Howey (Columbus), Sullivant (Columbus), Newark, Westerville, and Oxford, Ohio and realign Rickenbacker Air National Guard Base Building #943 by relocating the Regional Training Institute to the new AFRC. The Armed Forces Reserve Centers will have the

capability to accommodate these units if the State decides to relocate the units from these closed facilities into the new AFRCs.

This recommendation provides the opportunity for other Local, State, or Federal organizations to partner with the Reserve Components to enhance Homeland Security and Homeland Defense at a reduced cost to those agencies.

Although not captured in the COBRA analysis, this recommendation avoids an estimated \$74.4M in mission facility renovation costs and procurement avoidances associated with meeting AT/FP construction standards and altering existing facilities to meet unit training and communications requirements. Consideration of these avoided costs would reduce costs and increase the net savings to the Department of Defense in the 6-year BRAC implementation period, and in the 20-year period used to calculate NPV.

**Payback:** The total estimated one-time cost to the Department of Defense to implement this recommendation is \$134.8M. The net of all costs and savings to the Department of Defense during the implementation period is a cost of \$93.6M. Annual recurring savings to the Department after implementation are \$9.3M with a payback expected in 18 years. The net present value of the costs and savings to the Department over 20 years is a cost of \$1.3M.

**Economic Impact on Communities:** Assuming no economic recovery, this recommendation could result in a maximum potential reduction of 56 jobs (41 direct and 15 indirect jobs) over the 2006 – 2011 period in the Columbus, OH metropolitan statistical area, which is less than 0.1 percent of economic area employment.

Assuming no economic recovery, this recommendation could result in a maximum potential reduction of 139 jobs (71 direct and 68 indirect jobs) over the 2006 – 2011 period in the Mansfield, OH metropolitan statistical area, which is 0.2 percent of economic area employment.

The aggregate economic impact of all recommended actions on these economic regions of influence was considered and is at Appendix B of Volume I.

**Community Infrastructure Assessment:** A review of the community attributes revealed no significant issues regarding the ability of the infrastructure of the communities to support missions, forces, and personnel. There are no known community infrastructure impediments to implementation of all recommendations affecting the installations in this recommendation.

**Environmental Impact:** A minor air permit revision may be needed at Springfield-Beckley AGS and Mansfield ANG Base and new permits may be needed at DSCC OH. The recommendation may require building on constrained acreage at Springfield-Beckley and Mansfield. Additional operations may impact sensitive resource areas at Springfield-Beckley. The hazardous waste program at Springfield-Beckley and Mansfield may need to be modified. Treatment works at Mansfield may need to be modified. Air emission permits and storm water management permits may be required at DSCC OH. Additional



operations at Springfield-Beckley and Mansfield may impact wetlands, which may restrict operations. This recommendation has no impact on cultural, archeological, or tribal resources; dredging; marine mammals, resources, or sanctuaries; noise; or threatened and endangered species or critical habitat. This recommendation will require spending approximately \$0.9M for waste management and/or environmental compliance activities. These costs were included in the payback calculation. This recommendation does not otherwise impact the costs of environmental restoration, waste management, and environmental compliance activities. The aggregate environmental impact of all recommended BRAC actions affecting the installations in this recommendation has been reviewed. There are no known environmental impediments to implementation of this recommendation.

## RC Transformation in Oklahoma

**Recommendation:** Close the Armed Forces Reserve Center (AFRC) Broken Arrow located in Broken Arrow, Oklahoma and relocate the Army Reserve, Marine Corps Reserve and Naval Reserve units into a new Armed Forces Reserve Center and consolidated maintenance facility in Broken Arrow, Oklahoma if the Army is able to acquire suitable land for the construction of the facility. The new AFRC shall have the capability to accommodate Oklahoma Army National Guard units from the following Oklahoma Army National Guard Readiness Centers: Broken Arrow, Eufaula, Okmulgee, Tahlequah, Haskell, Cushing, Wagoner and the Field Maintenance Shop (FMS 14) located in Okmulgee, if the State of Oklahoma decides to relocate those National Guard units.

Close the Keathley and Burris United States Army Reserve Centers located in Lawton and Chickasha, Oklahoma; close the Wichita Falls United States Army Reserve Center in Wichita Falls, Texas; close the 1st, 3rd, 5th, and 6th United States Army Reserve Centers and Equipment Concentration Site (ECS) located on Fort Sill and re-locate units into a new Armed Forces Reserve Center on Fort Sill, Oklahoma and a new United States Army Reserve Equipment Concentration Site to be collocated with the Oklahoma Army National Guard Maneuver Area Training Equipment Site on Fort Sill. The new AFRC shall have the capability to accommodate Oklahoma Army National Guard units from the following Oklahoma Army National Guard Readiness Centers: Lawton, Frederick, Anadarko, Chickasha, Marlow, Walters, and Healdton; realign B/1-158 Field Artillery (MLRS) from the Oklahoma Army National Guard Readiness Center located in Duncan if the State of Oklahoma decides to relocate those National Guard units.

Close the Floyd Parker United States Army Reserve Center in McAlester, Oklahoma and re-locate units into a new Armed Forces Reserve Center and Consolidated Field Maintenance Shop on the McAlester Army Ammunition Plant, McAlester, Oklahoma. The new AFRC shall have the capability to accommodate Oklahoma Army National Guard units from the following Oklahoma Army National Guard Readiness Centers: the Field Maintenance Shop in Durant, Oklahoma; the Oklahoma Army National Guard Readiness Centers in Atoka, Allen, Hartshorne, Madill, McAlester and Tishomingo, Oklahoma; the Oklahoma Army National Guard Readiness Center and Field Maintenance Shop in Edmond, OK if the State of Oklahoma decides to relocate those National Guard units.

Close the Ashworth United States Army Reserve Center located in Muskogee, Oklahoma and re-locate units into a new Armed Forces Reserve Center in Muskogee, Oklahoma, if the Army is able to acquire suitable land for the construction of the facility. The new AFRC shall have the capability to accommodate Oklahoma Army National Guard units from the following Oklahoma Army National Guard Readiness Centers: Henryetta, Muskogee, Okemah, Pryor, and Stilwell, Oklahoma if the State of Oklahoma decides to relocate those National Guard units.

Close the Farr United States Army Reserve Center, Antlers, OK, the Roush United States Army Reserve Center, Clinton, OK, the Smalley United States Army Reserve Center,

Norman, OK and relocate units into a new Armed Forces Reserve Center and Consolidated Maintenance Facility on the Norman Military Complex, Norman, Oklahoma. The new AFRC shall have the capability to accommodate Oklahoma Army National Guard units from the following Oklahoma Army National Guard facilities: Oklahoma Army National Guard Readiness Centers in Tonkawa, OK, Konawa, OK, Wewoka, OK, Oklahoma City (23rd Street), OK, the 23d Street Field Maintenance Shop in Oklahoma City, the Consolidated Maintenance Facility on the Norman Military Complex, Norman, Oklahoma and C CO, 700th Support Battalion from the Readiness Center, Edmond, OK if the State of Oklahoma decides to relocate those National Guard units.

Close the Manuel Perez and Billy Krowse United States Army Reserve Centers located in Oklahoma City, OK. Relocate units into a new Armed Forces Reserve Center in West Oklahoma City, Oklahoma, if the Army is able to acquire suitable land for the construction of the facility. The new AFRC shall have the capability to accommodate Oklahoma Army National Guard units from the following Oklahoma Army National Guard facilities: Readiness Centers located in Southwest Oklahoma City (44th Street), El Reno, Minco, and Pawnee, the Oklahoma Army National Guard 1345 Transportation Company and the 345th Quartermaster Water Support Battalion from Midwest City if the State of Oklahoma decides to relocate those National Guard units.

Close the Robbins United States Army Reserve Center located in Enid, Oklahoma and relocate units into a new Armed Forces Reserve Center and Consolidated Field Maintenance Shop on Vance Air Force Base, Oklahoma. The new AFRC shall have the capability to accommodate Oklahoma Army National Guard units from the following Oklahoma Army National Guard facilities: Enid, Alva, Woodward, Blackwell, Cherokee, Watonga, and the National Guard Field Maintenance Shop in Enid, Oklahoma if the State of Oklahoma decides to relocate those National Guard units.

**Justification:** This recommendation transforms Reserve Component facilities throughout the State of Oklahoma. The implementation of this recommendation will enhance military value, improve homeland defense capability, greatly improve training and deployment capability, create significant efficiencies and cost savings, and is consistent with the Army's force structure plans and Army transformational objectives.

This recommendation is the result of a state-wide analysis of Reserve Component installations and facilities conducted by a team of functional experts from Headquarters, Department of the Army, the Office of the State Adjutant General, and the Army Reserve Regional Readiness Command.

This recommendation closes eleven Army Reserve centers, realigns five Army Reserve facilities and constructs seven joint or multi-component, multi-functional Armed Forces Reserve Centers (AFRCs) throughout the State of Oklahoma, capable of accommodating National Guard and Reserve units. This recommendation reduces military manpower and associated costs for maintaining existing facilities by collapsing units from sixty-four geographically separated facilities into seven modern, multi-component facilities. These joint use facilities will significantly reduce operating costs and create improved business

processes. The Department understands that the State of Oklahoma will close forty Oklahoma Army National Guard Readiness Centers, close five Maintenance Facilities, realign two Readiness Centers and one Maintenance Facility. The Armed Forces Reserve Centers will have the capability to accommodate these units if the State decides to relocate the units from these closed facilities into the new AFRCs.

This recommendation considered feasible locations within the demographic and geographic areas of the closing facilities and affected units. The sites selected were determined as the best locations because they optimize the Reserve Components ability to recruit and retain Reserve Component soldiers and to train and mobilize units impacted by this recommendation.

This recommendation provides the opportunity for other Local, State, or Federal organizations to partner with the Reserve Components to enhance Homeland Security and Homeland Defense at a reduced cost to those agencies.

Although not captured in the COBRA analysis, this recommendation avoids an estimated \$61.9M in mission facility renovation costs and procurement avoidances associated with meeting AT/FP construction standards and altering existing facilities to meet unit training and communications requirements. Consideration of these avoided costs would reduce costs and increase the net savings to the Department of Defense in the 6-year BRAC implementation period, and in the 20-year period used to calculate NPV.

**Payback:** The total estimated one-time cost to the Department of Defense to implement this recommendation is \$168.7M. The net of all costs and savings to the Department of Defense during the implementation period is a cost of \$98.6M. Annual recurring savings to the Department after implementation are \$16.5M with a payback expected in 11 years. The net present value of the costs and savings to the Department over 20 years is a savings of \$63.8M.

**Economic Impact on Communities:** Assuming no economic recovery, this recommendation could result in a maximum potential reduction of 46 jobs (30 direct and 16 indirect jobs) over the 2006 – 2011 period in the Johnston County, OK Micropolitan Statistical Area, which is 0.19 percent of economic area employment.

Assuming no economic recovery, this recommendation could result in a maximum potential reduction of 25 jobs (16 direct and 9 indirect jobs) over the 2006 – 2011 period in the Muskogee, OK Micropolitan Statistical Area, which is less than 0.1 percent of economic area employment.

Assuming no economic recovery, this recommendation could result in a maximum potential reduction of 162 jobs (84 direct and 78 indirect jobs) over the 2006 – 2011 period in the Oklahoma City, OK, metropolitan area, which is less than 0.1 percent of economic area employment.

Assuming no economic recovery, this recommendation could result in a maximum potential reduction of 36 jobs (26 direct and 10 indirect jobs) over the 2006 – 2011 period

in the Tulsa OK Metropolitan Statistical Area, which is less than 0.1 percent of economic area employment.

The aggregate economic impact of all recommended actions on these economic regions of influence was considered and is at Appendix B of Volume I.

**Community Infrastructure Assessment:** A review of the community attributes revealed no significant issues regarding the ability of the infrastructure of the communities to support missions, forces, and personnel. There are no known community infrastructure impediments to implementation of all recommendations affecting the installations in this recommendation.

**Environmental Impact:** Potential cultural resource impacts may occur at McAlester, since resources must be evaluated on a case-by-case basis. Significant mitigation measures to limit releases may be required at McAlester and Fort Sill to reduce impacts to water quality and achieve USEPA Water Quality Standards. Modification of hazardous waste program at Vance may be necessary. This recommendation has no impact on air quality, dredging; land use constraints or sensitive resource areas; marine mammals, resources, or sanctuaries; noise; threatened and endangered species or critical habitat; or wetlands. This recommendation will require spending approximately \$0.6M for waste management and/or environmental compliance activities. These costs were included in the payback calculation. This recommendation does not otherwise impact the costs of environmental restoration, waste management, and environmental compliance activities. The aggregate environmental impact of all recommended BRAC actions affecting the installations in this recommendation has been reviewed. There are no known environmental impediments to implementation of this recommendation.

## RC Transformation in Oregon

**Recommendation:** Close Sears Hall United States Army Reserve Center in Portland, Oregon, close Sharff Hall United States Army Reserve Center in Portland, Oregon, and relocate units to a new Armed Forces Reserve Center on Camp Withycombe, Oregon. The new Armed Forces Reserve Center (AFRC) shall have the capability to accommodate Oregon National Guard units currently on Camp Withycombe and from the following Oregon ARNG Armories: Lake Oswego Armory, Maison Armory, and Jackson Band Armory, Oregon, if the state decides to relocate those National Guard units.

**Justification:** This recommendation transforms Reserve Component facilities in the State of Oregon. The implementation of this recommendation will enhance military value, improve homeland defense capability, greatly improve training and deployment capability, create significant efficiencies and cost savings, and is consistent with the Army's force structure plans and Army transformational objectives.

This recommendation is the result of a state-wide analysis of Reserve Component installations and facilities conducted by a team of functional experts from Headquarters, Department of the Army, the Office of the State Adjutant General, and the Army Reserve Regional Readiness Command.

This recommendation closes two Army Reserve Centers in the state of Oregon and constructs a multi component, multi functional Armed Forces Reserve Center capable of accommodating National Guard and Reserve units. This recommendation reduces the number of separate DoD installations by relocating to an existing base.

This recommendation reduces military manpower and associated costs for maintaining existing facilities by collapsing three geographically separated facilities into a modern Armed Forces Reserve Center. The Department understands that the State of Oregon will close: Lake Oswego Armory in Lake Oswego, Oregon and realign the Jackson Band Armory, and the Maison Armory. The Armed Forces Reserve Centers will have the capability to accommodate these units if the State decides to relocate the units from the closed and realigning facilities to the new AFRC complex.

This recommendation provides the opportunity for other Local, State, or Federal organizations to partner with the Reserve Components to enhance Homeland Security and Homeland Defense at a reduced cost to those agencies.

Although not captured in the COBRA analysis, this recommendation avoids an estimated \$36,000,000 in mission facility renovation costs and procurement avoidances associated with meeting AT/FP construction standards and altering the existing facilities to meet unit training and communications requirements. Consideration of these avoided costs, would reduce costs to the Department of Defense in the 6-year BRAC implementation period, and in the 20-year period used to calculate NPV.

**Payback:** The total estimated one-time cost to the Department of Defense to implement this recommendation is \$24.1M. The net of all costs and savings to the Department of

Defense during the implementation period is a cost of \$23.5M. Annual recurring savings to the Department after implementation are \$0.3M with a payback expected in 100+ years. The net present value of the costs and savings to the Department over 20 years is a cost of \$19.8M.

**Economic Impact on Communities:** This recommendation will not result in any job reductions (direct or indirect) over the 2006 – 2011 period in the Portland-Vancouver-Beaverton, OR-WA Metropolitan area. The aggregate economic impact of all recommended actions on this economic region of influence was considered and is at Appendix B of Volume I.

**Community Infrastructure Assessment:** A review of the community attributes revealed no significant issues regarding the ability of the infrastructure of the communities to support missions, forces, and personnel. There are no known community infrastructure impediments to implementation of all recommendations affecting the installations in this recommendation.

**Environmental Impact:** This recommendation has no impact on air quality, cultural, archeological, or tribal resources; dredging; land use constraints or sensitive resource areas; marine mammals, resources, or sanctuaries; noise; threatened and endangered species or critical habitat; waste management; water resources; or wetlands. This recommendation will require spending approximately \$0.02M for waste management and/or environmental compliance activities. These costs were included in the payback calculation. This recommendation does not otherwise impact the costs of environmental restoration, waste management, and environmental compliance activities. The aggregate environmental impact of all recommended BRAC actions affecting the installations in this recommendation has been reviewed. There are no known environmental impediments to implementation of this recommendation.

## RC Transformation in Pennsylvania

**Recommendation:** Close the United States Army Reserve Center in Lewisburg, Pennsylvania, the United States Army Reserve Center in Bloomsburg, Pennsylvania, the United States Army Reserve Organizational Maintenance Shop in Bloomsburg, Pennsylvania, and relocate units to a new Armed Forces Reserve Center with an organizational maintenance facility in the Lewisburg / Bloomsburg, Pennsylvania area, if the Army is able to acquire suitable land for the construction of the facilities. The new AFRC shall have the capability to accommodate Pennsylvania National Guard Units from the following Army National Guard Readiness Centers: Lewisburg, Pennsylvania, Sunbury, Pennsylvania, and Berwick, Pennsylvania, if the Commonwealth of Pennsylvania decides to relocate those units.

Close the United States Army Reserve Center in Williamsport, Pennsylvania, the United States Army Reserve Organizational Maintenance Shop in Williamsport, Pennsylvania, and relocate units to a new Armed Forces Reserve Center with an organizational maintenance facility in Williamsport, Pennsylvania, if the Army is able to acquire suitable land for the construction of the facilities. The new AFRC shall have the capability to accommodate Pennsylvania National Guard Units from the Army National Guard Readiness Center in Williamsport, Pennsylvania, if the Commonwealth of Pennsylvania decides to relocate those units.

Close the Reese United States Army Reserve Center in Chester, Pennsylvania, the United States Army Reserve Organizational Maintenance Shop in Chester, Pennsylvania, the Germantown Veterans Memorial United States Army Reserve Center in Philadelphia, Pennsylvania, the Horsham Memorial United States Army Reserve Center in Horsham, Pennsylvania, the 1LT Ray S. Musselman Memorial United States Army Reserve Center in Norristown, Pennsylvania, and the North Penn memorial United States Army Reserve Center in Norristown, Pennsylvania, and relocate units to a new Armed Forces Reserve Center with an organizational maintenance facility at Willow Grove Joint Reserve Base, Pennsylvania. The Army shall establish an enclave at Willow Grove Joint Reserve Base, Pennsylvania, to retain essential facilities to support activities of the Reserve Components.

Close the Wilson Kramer United States Army Reserve Center in Bethlehem, Pennsylvania, and the United States Army Reserve Organizational Maintenance Shop in Bethlehem, Pennsylvania, and relocate units to a new United States Army Reserve Center with an organizational maintenance facility in the Allentown/ Bethlehem, Pennsylvania area, if the Army is able to acquire suitable land for the construction of the facilities.

Close the Philadelphia Memorial United States Armed Forces Reserve Center in Philadelphia, Pennsylvania, the Philadelphia Memorial United States Armed Forces Reserve Center Organizational Maintenance Shop in Philadelphia, Pennsylvania, and relocate Army Reserve and Marine Corps Reserve units to a new Armed Forces Reserve Center with an organizational maintenance facility in Bristol, Pennsylvania, on the existing Bristol Veterans Memorial Reserve Center site.



Close the Serrenti Memorial United States Army Reserve Center in Scranton, Pennsylvania, the Serrenti Memorial United States Army Reserve Organizational Maintenance Shop in Scranton, Pennsylvania, the United States Army Reserve Center in Wilkes-Barre, Pennsylvania, the United States Army Reserve Organizational Maintenance Shop in Wilkes-Barre, Pennsylvania, and relocate units to a new Armed Forces Reserve Center with an organizational maintenance facility in Scranton, Pennsylvania, if the Army is able to acquire suitable land for the construction of the facilities.

**Justification:** This recommendation transforms Reserve Component facilities throughout the Commonwealth of Pennsylvania. The implementation of this recommendation will enhance military value, improve homeland defense capability, greatly improve training and deployment capability, create significant efficiencies and cost savings, and is consistent with the Army's force structure plans and Army transformational objectives.

This recommendation is the result of a state-wide analysis of Reserve Component installations and facilities conducted by a team of functional experts from Headquarters, Department of the Army, the Office of the State Adjutant General, and the Army Reserve Regional Readiness Command.

This recommendation closes eleven Army Reserve Centers, one Armed Forces Reserve Center, and seven Organizational Maintenance Shops, throughout the Commonwealth of Pennsylvania and constructs six multi-component, multi-functional Armed Forces Reserve Centers, with six co-located Organizational Maintenance Facilities, capable of accommodating National Guard and Reserve units. This recommendation reduces military manpower and associated costs for maintaining existing facilities by collapsing sixteen geographically separated facilities into six modern Armed Forces Reserve Centers. This recommendation reduces the number of separate DoD installations by relocating to an existing base. The Department understands that the Commonwealth of Pennsylvania will close PAARNG Readiness Centers: Lewisburg, Pennsylvania, Sunbury, Pennsylvania, Berwick, Pennsylvania, and Williamsport, Pennsylvania. The Armed Forces Reserve Centers will have the capability to accommodate these units if the State decides to relocate the units from these closed facilities into the new AFRCs.

This recommendation provides the opportunity for other Local, State, or Federal organizations to partner with the Reserve Components to enhance Homeland Security and Homeland Defense at a reduced cost to those agencies.

Although not captured in the COBRA analysis, this recommendation avoids an estimated \$110.4M in mission facility renovation costs and procurement avoidances associated with meeting AT/FP construction standards and altering existing facilities to meet unit training and communications requirements. Consideration of these avoided costs would reduce costs and increase the net savings to the Department of Defense in the 6-year BRAC implementation period, and in the 20-year period used to calculate NPV.

**Payback:** The total estimated one-time cost to the Department of Defense to implement this recommendation is \$142.7M. The net of all costs and savings to the Department of Defense during the implementation period is a cost of \$81.1M. Annual recurring savings to the Department after implementation are \$14.2M with a payback expected in 10 years. The net present value of the costs and savings to the Department over 20 years is a savings of \$58.4M.

**Economic Impact on Communities:** Assuming no economic recovery, this recommendation could result in a maximum potential reduction of 18 jobs (11 direct and 7 indirect jobs) over the 2006 – 2011 period in the Lewisburg, PA micropolitan statistical area, which is less than 0.1 percent of economic area employment.

Assuming no economic recovery, this recommendation could result in a maximum potential reduction of 66 jobs (44 direct and 22 indirect jobs) over the 2006 – 2011 period in the Philadelphia, PA Metropolitan Division, which is less than 0.1 percent of economic area employment.

Assuming no economic recovery, this recommendation could result in a maximum potential reduction of 77 jobs (55 direct and 22 indirect jobs) over the 2006 – 2011 period in the Scranton – Wilkes Barre metropolitan statistical area, which is less than 0.1 percent of economic area employment.

Assuming no economic recovery, this recommendation could result in a maximum potential reduction of 46 jobs (29 direct and 17 indirect jobs) over the 2006 – 2011 period in the Williamsport, PA metropolitan area, which is less than 0.1 percent of economic area employment.

Assuming no economic recovery, this recommendation could result in a maximum potential reduction of 34 jobs (22 direct and 12 indirect jobs) over the 2006 – 2011 period in the Bloomsburg-Berwick, PA Micropolitan Statistical Area, which is less than 0.1 percent of economic area employment.

The aggregate economic impact of all recommended actions on these economic regions of influence was considered and is at Appendix B of Volume I.

**Community Infrastructure Assessment:** A review of the community attributes revealed no significant issues regarding the ability of the infrastructure of the communities to support missions, forces, and personnel. There are no known community infrastructure impediments to implementation of all recommendations affecting the installations in this recommendation.

**Environmental Impact:** This recommendation may impact air quality at NAS Willow-Grove, which is in a region projected/proposed for non-attainment for PM2.5 and Ozone (8-hour). Due to new construction an Air Conformity Analysis and New Source Review and permitting effort will be required. This recommendation has no impact on cultural, archeological, or tribal resources; dredging; land use constraints or sensitive resource areas; marine mammals, resources, or sanctuaries; noise; threatened and endangered

species or critical habitat; waste management; water resources; or wetlands. This recommendation will require spending approximately \$0.4M for waste management and/or environmental compliance activities. These costs were included in the payback calculation. This recommendation does not otherwise impact the costs of environmental restoration, waste management, and environmental compliance activities. The aggregate environmental impact of all recommended BRAC actions affecting the installations in this recommendation has been reviewed. There are no known environmental impediments to implementation of this recommendation.

## RC Transformation in Rhode Island

**Recommendation:** Close the Bristol Army Reserve Center, Bristol, RI, the Harwood Army Reserve Center, Providence, RI, the Warwick Army Reserve Center and Organizational Maintenance Shop, Warwick, RI. Relocate all units to a new Army Reserve Center on Newport Naval Base, Rhode Island.

**Justification:** This recommendation transforms Reserve Component facilities in the State of Rhode Island. The implementation of this recommendation will enhance military value, improve homeland defense capability, greatly improve training and deployment capability, create significant efficiencies and cost savings, and is consistent with the Army's force structure plans and Army transformational objectives.

This recommendation is the result of a state-wide analysis of Reserve Component installations and facilities conducted by a team of functional experts from Headquarters, Department of the Army, the Office of the State Adjutant General, and the Army Reserve Regional Readiness Command.

This recommendation closes three Army Reserve Centers in Bristol, Harwood and Warwick, Rhode Island; and closes one Army Reserve Organizational Maintenance Shop in Warwick, Rhode Island and constructs a multi functional Army Reserve Center (AFRC) on Newport Naval Base, Rhode Island. This recommendation reduces the number of separate DoD installations by relocating to an existing base.

The implementation of this recommendation will enhance military value, improve homeland defense capability, greatly improve training and deployment capability, create significant efficiencies and cost savings, and is consistent with the Army's force structure plans and Army transformational objectives.

This recommendation considered feasible locations within the demographic and geographic areas of the closing facilities and affected units. The site selected was determined as the best location because it optimizes the Reserve Components ability to recruit and retain Reserve Component soldiers and to train and mobilize units impacted by this recommendation.

This recommendation provides the opportunity for other Local, State, or Federal organizations to partner with the Reserve Components to enhance Homeland Security and Homeland Defense at a reduced cost to those agencies.

Although not captured in the COBRA analysis, this recommendation avoids an estimated \$20.8M in mission facility renovation costs and procurement avoidances associated with meeting AT/FP construction standards and altering existing facilities to meet unit training and communications requirements. Consideration of these avoided costs would reduce costs and increase the net savings to the Department of Defense in the 6-year BRAC implementation period, and in the 20-year period used to calculate NPV.

**Payback:** The total estimated one-time cost to the Department of Defense to implement this recommendation is \$32.4M. The net of all costs and savings to the Department of Defense during the implementation period is cost of \$9.4M. Annual recurring savings to the Department after implementation are \$4.6M with a payback expected in 6 years. The net present value of the costs and savings to the Department over 20 years is a savings of \$35.3M.

**Economic Impact on Communities:** Assuming no economic recovery, this recommendation could result in a maximum potential reduction of 108 jobs (48 direct and 60 indirect jobs) over the 2006 – 2011 period in the Providence-New Bedford-Fall River, RI-MA metropolitan area, which is less than 0.1 percent of economic area employment. The aggregate economic impact of all recommended actions on this economic region of influence was considered and is at Appendix B of Volume I.

**Community Infrastructure Assessment:** A review of the community attributes revealed no significant issues regarding the ability of the infrastructure of the communities to support missions, forces, and personnel. There are no known community infrastructure impediments to implementation of all recommendations affecting the installations in this recommendation.

**Environmental Impact:** Naval Station Newport is in serious Non Attainment for Ozone (1-hr). Consultation with state historic preservation authorities may be necessary at Newport. This recommendation may impact waste management and water resources at Newport. This recommendation has no impact on dredging; land use constraints or sensitive resource areas; marine mammals, resources, or sanctuaries; noise; threatened and endangered species or critical habitat; or wetlands. This recommendation will require spending approximately \$41,000 for waste management and/or environmental compliance activities. These costs were included in the payback calculation. This recommendation does not otherwise impact the costs of environmental restoration, waste management, and environmental compliance activities. The aggregate environmental impact of all recommended BRAC actions affecting the installations in this recommendation has been reviewed. There are no known environmental impediments to implementation of this recommendation.

## RC Transformation in Tennessee

**Recommendation:** Close the Guerry United States Army Reserve Center, Chattanooga, Tennessee, and Bonney Oaks United States Army Reserve Center, Chattanooga, Tennessee, and relocate units into a new Armed Forces Reserve Center (AFRC) on Volunteer Army Ammunition Plant, Chattanooga, Tennessee.

Close the Kingsport Armed Forces Reserve Center (AFRC), the Kingsport Organizational Maintenance Shop (OMS), and the Army Maintenance Support Activity (AMSA), Kingsport, Tennessee, and relocate units into a new Armed Forces Reserve Center and Field Maintenance Shop on Holston Army Ammunition Plant, Kingsport, Tennessee. The new AFRC shall have the capability to accommodate Tennessee National Guard units from the Kingsport Armed Forces Reserve Center, Kingsport, Tennessee, if the state decides to relocate those National Guard units.

Close the United States Army Reserve Center outside of Fort Campbell (located in Clarksville TN), Kentucky, and relocate units, along with units currently in buildings #6912 and #2907 on Fort Campbell into a new Armed Forces Reserve Center (AFRC) and Organizational Maintenance Shop (OMS) on Fort Campbell, Kentucky. The new AFRC shall have the capability to accommodate units from the Clarksville Army National Guard Readiness Center, Clarksville, Tennessee, if the state decides to relocate those National Guard units.

**Justification:** This recommendation transforms Reserve Component facilities throughout the State of Tennessee. The implementation of this recommendation will enhance military value, improve homeland defense capability, greatly improve training and deployment capability, create significant efficiencies and cost savings, and is consistent with the Army's force structure plans and Army transformational objectives.

This recommendation is the result of a state-wide analysis of Reserve Component installations and facilities conducted by a team of functional experts from Headquarters, Department of the Army, the Office of the State Adjutant General, and the Army Reserve Regional Readiness Command.

This recommendation closes four Army Reserve Centers, one Area Maintenance Support Activity and one Organizational Maintenance Shop throughout the state of Tennessee and constructs three multi component, multi functional Armed Forces Reserve Centers, one Field Maintenance Shop, and one Organizational Maintenance Shop capable of accommodating National Guard and Reserve units. This recommendation reduces military manpower and associated costs for maintaining existing facilities by collapsing nine geographically separated facilities into three modern Armed Forces Reserve Centers. This recommendation reduces the number of separate DoD installations by relocating to an existing base.

The Department understands that the State of Tennessee will close the Clarksville Army National Guard Readiness Center, Clarksville, Tennessee. The Armed Forces Reserve Centers will have the capability to accommodate these units if the State decides to relocate the units from these closed facilities into the new AFRCs.

The implementation of this recommendation will enhance military value, improve homeland defense capability, greatly improve training and deployment capability, create significant efficiencies and cost savings, and is consistent with the Army's force structure plans and Army transformational objectives.

This recommendation provides the opportunity for other Local, State, or Federal organizations to partner with the Reserve Components to enhance Homeland Security and Homeland Defense at a reduced cost to those agencies.

Although not captured in the COBRA analysis, this recommendation avoids an estimated \$23.8M in mission facility renovation costs and procurement avoidances associated with meeting AT/FP construction standards and altering existing facilities to meet unit training and communications requirements. Consideration of these avoided costs would reduce costs and increase the net savings to the Department of Defense in the 6-year BRAC implementation period, and in the 20-year period used to calculate NPV.

**Payback:** The total estimated one-time cost to the Department of Defense to implement this recommendation is \$36.9M. The net of all costs and savings to the Department of Defense during the implementation period is a cost of \$28.2M. Annual recurring savings to the Department after implementation are \$2.7M with a payback expected in 18 years. The net present value of the costs and savings to the Department over 20 years is a cost of \$1.1M.

**Economic Impact on Communities:** Assuming no economic recovery, this recommendation could result in a maximum potential reduction of 39 jobs (32 direct and 7 indirect jobs) over the 2006 – 2011 period in the Kingsport-Bristol-Bristol, TN-VA metropolitan area, which is less than 0.1 percent of economic area employment. The aggregate economic impact of all recommended actions on this economic region of influence was considered and is at Appendix B of Volume I.

**Community Infrastructure Assessment:** A review of the community attributes revealed no significant issues regarding the ability of the infrastructure of the communities to support missions, forces, and personnel. There are no known community infrastructure impediments to implementation of all recommendations affecting the installations in this recommendation.

**Environmental Impact:** An Air Conformity Analysis and New Source Review is required at Holston and Fort Campbell. Significant mitigation measures and training restrictions to limit releases may be required at Holston and Fort Campbell to reduce impacts to water quality and achieve US EPA water quality standard. This recommendation has no impact on cultural, archeological, or tribal resources; dredging; land use constraints or sensitive resource areas; marine mammals, resources, or sanctuaries; noise; threatened and endangered species or critical habitat; waste management; or wetlands. This recommendation will require spending approximately \$0.5M for waste management and/or environmental compliance activities. These costs were included in the payback calculation. This recommendation does not otherwise

impact the costs of environmental restoration, waste management, and environmental compliance activities. The aggregate environmental impact of all recommended BRAC actions affecting the installations in this recommendation has been reviewed. There are no known environmental impediments to implementation of this recommendation.



## RC Transformation in Texas

**Recommendation:** Close the Tharp United States Army Reserve Center, Amarillo, Texas and relocate units to a new Armed Forces Reserve Center in Amarillo, Texas, if the Army is able to acquire land suitable for the construction of the facilities. The new AFRC shall have the capability to accommodate Texas National Guard Units from the following Texas ARNG Readiness Centers: Amarillo, Pampa, and Hale Co, Texas, if the state decides to relocate those National Guard units.

Close the United States Army Reserve Center, Brownsville, Texas and relocate units to a new Armed Forces Reserve Center in Brownsville, Texas, if the Army is able to acquire suitable land for the construction of the facilities. The new AFRC shall have the capability to accommodate Texas National Guard Units from the Texas ARNG Readiness Center in Brownsville, Texas, if the state decides to relocate those National Guard units.

Close the United States Army Reserve Center, Boswell, Texas and the United States Army Reserve Center, Callaghan, Texas and relocate units to a new Armed Forces Reserve Center on existing Federal property on Camp Bullis, Texas. The new AFRC shall have the capability to accommodate Texas National Guard Units from the Texas ARNG Readiness Center in Hondo, Texas, A Company and Headquarters Company, 1<sup>st</sup> of the 141st Infantry, the Fifth Army ITAAS, the Regional Training Site-Intelligence, and the Texas Army National Guard Area Support Medical Battalion, if the state decides to relocate those National Guard units.

Close the Grimes United States Army Reserve Center, Abilene, Texas and relocate B Company of the 413th Civil Affairs Battalion and the Area Maintenance Support Activity 11 Sub-Shop to a new Armed Forces Reserve Center with a Field Maintenance Shop on Dyess Air Force Base, Texas. The new AFRC shall have the capability to accommodate Texas National Guard Units from the following Texas ARNG Readiness Centers: Abilene, Coleman, and Snyder, Texas, and the Texas Army National Guard Field Maintenance Shop, Abilene, Texas, if the state decides to relocate those National Guard units.

Close the United States Army Reserve Center, Seguera, Texas, the United States Army Reserve Center, Benavidez, Texas, the United States Army Reserve Center, Fort Bliss, Texas, the United States Army Reserve Center, McGregor Range, Texas and the United States Army Reserve Equipment Concentration Site, McGregor Range, Texas and relocate units to a new Armed Forces Reserve Center with a Consolidated Equipment Concentration Site and Maintenance Facility on Fort Bliss, Texas. The new AFRC shall have the capability to accommodate Texas National Guard Units from the following Texas ARNG Readiness Centers: Fort Bliss and Hondo Pass, Texas, if the state decides to relocate those National Guard units.

Close the Herzog United States Army Reserve Center, Dallas, Texas and relocate units to a new Armed Forces Reserve Center on the existing Grand Prairie Reserve Complex, Grand Prairie, Texas. Realign the 490th Civil Affairs Battalion from the Grimes United States Army Reserve Center and relocate the unit into the new AFRC. The new AFRC

shall have the capability to accommodate Texas National Guard Units from the following Texas ARNG Readiness Centers: Arlington, Texas, and California Crossing Texas, if the state decides to relocate those National Guard units.

Close the United States Army Reserve Center, Pasadena, Texas and relocate units to a new Armed Forces Reserve Center with a Field Maintenance Shop in (East) Houston, Texas, if the Army is able to acquire land suitable for the construction of the facilities. The new AFRC shall have the capability to accommodate Texas National Guard Units from the following Texas ARNG Readiness Centers: Baytown, Pasadena, and Ellington Field, Texas, and the Texas Army National Guard Field Maintenance Shop located on Ellington Field, Texas, if the state decides to relocate those National Guard units.

Close United States Army Reserve Center #2, Perimeter Park, Texas and United States Army Reserve Center #3, Houston, Texas and relocate units to a new Armed Forces Reserve Center with a consolidated Field Maintenance Shop in (Northwest) Houston, Texas, if the Army is able to acquire land suitable for the construction of the facilities. The new AFRC shall have the capability to accommodate Texas National Guard Units from the following Texas ARNG Readiness Centers: Beaumont, Port Arthur, Port Neches, and Orange, Texas, and the Texas Army National Guard Field Maintenance Shop located in Port Neches, Texas if the state decides to relocate those National Guard units.

Close the Miller United States Army Reserve Center, Huntsville, Texas and relocate units to a new Armed Forces Reserve Center in Huntsville, Texas, if the Army is able to acquire suitable land for the construction of the facilities. The new AFRC shall have the capability to accommodate Texas National Guard Units from the Texas ARNG Readiness Center in Huntsville, Texas, if the state decides to relocate those National Guard units.

Close the Muchert United States Army Reserve Center, Dallas, Texas and relocate units to a new Armed Forces Reserve Center Lewisville, Texas, if the Army is able to acquire land suitable for the construction of the facilities. The new AFRC shall have the capability to accommodate Texas National Guard Units from the following Texas ARNG Readiness Centers: Denton, Irving, and Denison, Texas, if the state decides to relocate those National Guard units.

Close the United States Army Reserve Center, Lufkin, Texas and relocate units to a new Armed Forces Reserve Center in Lufkin, Texas, if the Army is able to acquire suitable land for the construction of the facilities. The new AFRC shall have the capability to accommodate Texas National Guard Units from the following Texas ARNG Readiness Centers: Lufkin and Nacogdoches, Texas, if the state decides to relocate those National Guard units.

Close the United States Army Reserve Center, Alice, Texas and the United States Army Reserve Center, NAS Kingsville, Texas and relocate units to a new Armed Forces Reserve Center on NAS Kingsville, Texas, if the Army determines the property is suitable for construction. The new AFRC shall have the capability to accommodate Texas

National Guard Units from the following Texas ARNG Readiness Centers: Alice and Kingsville, Texas, if the state decides to relocate those National Guard units.

Close the Watts-Guillot United States Army Reserve Center, Texarkana, Texas and realign the Hooks Army Reserve Center on Red River Army Depot by relocating units to a new Armed Forces Reserve Center on Red River Army Depot, Texas. The new AFRC shall have the capability to accommodate Texas National Guard Units from the following Texas ARNG Readiness Centers: Atlanta, and Texarkana, if the state decides to relocate those National Guard units.

Close Round Rock United States Army Reserve Center (leased) and relocate units to a new Armed Forces Reserve Center with a consolidated Field Maintenance Shop in Round Rock, Texas, if the Army is able to acquire land suitable for the construction of the facilities. The new AFRC shall have the capability to accommodate Texas National Guard Units from the Texas ARNG Readiness Centers in Austin and Taylor, Texas, and the Texas Army National Guard Field Maintenance Shop in Austin, Texas if the state decides to relocate those National Guard units.

Close the United States Army Reserve Center, San Marcos, Texas and relocate units to a new Armed Forces Reserve Center in San Marcos, Texas, if the Army is able to acquire land suitable for the construction of the facilities. The new AFRC shall have the capability to accommodate Texas National Guard Units from the following Texas ARNG Readiness Centers: San Marcos, Sequin, and New Braunfels, Texas, if the state decides to relocate those National Guard units. Close the Hanby-Hayden United States Army Reserve Center, Mesquite, Texas and relocate units to a new Armed Forces Reserve Center with an Organizational Maintenance Shop on United States Army Reserve property in Seagoville, Texas. The new AFRC shall have the capability to accommodate Texas National Guard Units from the following Texas ARNG Readiness Centers: Dallas #2, Kaufman and Terrell (including the Organizational Maintenance Shop), Texas, if the state decides to relocate those National Guard units.

Close the United States Army Reserve Center, Tyler, Texas and the United States Army Reserve Center, Marshall, Texas and relocate units to a new Armed Forces Reserve Center with a Field Maintenance Shop in Tyler, Texas, if the Army is able to acquire suitable land for the construction of the facilities. The new AFRC shall have the capability to accommodate Texas National Guard Units from the following Texas ARNG Readiness Centers: Athens, Tyler, Henderson, Kilgore, Marshall, and Corsicana, Texas, and the Field Maintenance Shop in Marshall, Texas, if the state decides to relocate those National Guard units.

**Justification:** This recommendation transforms Reserve Component facilities throughout the state of Texas. The implementation of this recommendation will enhance military value, improve homeland defense capability, greatly improve training and deployment capability, create significant efficiencies and cost savings, and is consistent with the Army's force structure plans and Army transformational objectives.

This recommendation is the result of a state-wide analysis of Reserve Component installations and facilities conducted by a team of functional experts from Headquarters Department of the Army, the Office of the State Adjutant General and the Army Reserve Regional Readiness Command.

The recommendation closes twenty-four Army Reserve centers and one equipment concentration site, realigns one Army Reserve Center, and constructs seventeen multicomponent, multi-functional Armed Forces Reserve Centers (AFRCs), throughout the State of Texas, capable of accommodating National Guard and Reserve units. This recommendation reduces military manpower and associated costs for maintaining existing facilities by collapsing seventy-seven geographically separated facilities into seventeen modern Armed Forces Reserve Centers. These joint use facilities will significantly reduce operating costs and create improved business processes. The Department understands that the State of Texas will close forty-three Texas Army Guard Armories: Abilene, Alice, Amarillo, Arlington, Atlanta, Athens, Austin, Baytown, Beaumont, Brownsville, California Crossing, Coleman, Corsicana, Dallas #2, Denison, Denton, Ellington Field, Fort Bliss, Henderson, Hondo, Hondo Pass, Huntsville, Irving, Kaufman, Kilgore, Kingsville, Lufkin, Marshall, Nacogdoches, New Braunfels, Orange, Pampa, Pasadena, Hale Co, Port Arthur, Port Neches, San Marcos, Sequin, Snyder, Taylor, Terrell, Texarkana and Tyler, Texas; close six Army National Guard Field Maintenance Facilities in Abilene, Austin, Marshall, Ellington Field, Port Neches and Terrell; and realign Camp Bullis. The Armed Forces Reserve Centers will have the capability to accommodate these units if the State decides to relocate the units from these closed facilities into the new AFRCs.

This recommendation provides the opportunity for other Local, State, or Federal organizations to partner with the Reserve Components to enhance Homeland Security and Homeland Defense at a reduced cost to those agencies.

Although not captured in the COBRA analysis, this recommendation avoids an estimated \$231.3M in mission facility renovation costs and procurement avoidances associated with meeting AT/FP construction standards and altering existing facilities to meet unit training and communications requirements. Consideration of these avoided costs would reduce costs and increase the net savings to the Department of Defense in the 6-year BRAC implementation period, and in the 20-year period used to calculate NPV.

**Payback:** The total estimated one-time cost to the Department of Defense to implement this recommendation is \$375.6M. The net of all costs and savings to the Department of Defense during the implementation period is a cost of \$220.6M. Annual recurring savings to the Department after implementation are \$36.0M with a payback expected in 12 years. The net present value of the costs and savings to the Department over 20 years is a savings of \$133.2M.

**Economic Impact on Communities:** Assuming no economic recovery, this recommendation could result in the maximum potential job reductions (direct and indirect) over the 2006-2011 period, as follows:

<u>Economic Area</u>	<u>Direct Job Reductions</u>	<u>Indirect Job Reductions</u>	<u>Total Job Reductions</u>	<u>% of Economic Area Employment</u>
Austin-Round Rock, Texas, Metropolitan Statistical Area	106	39	145	Less than 0.1%
Dallas – Plano - Irving, Texas, Metropolitan Division	137	73	210	Less than 0.1%
El Paso Metropolitan Statistical Area	106	82	188	Less than 0.1%
Houston-Baytown-Sugarland, TX Metropolitan Statistical Area	61	43	104	Less than 0.1%
Lufkin, Texas, Micropolitan Statistical Area	10	5	15	Less than 0.1%
San Antonio, TX Metropolitan Statistical Area	106	89	195	Less than 0.1%
Tyler, TX Metropolitan Statistical Area	16	9	25	Less than 0.1%

The aggregate economic impact of all recommended actions on these economic regions of influence was considered and is at Appendix B of Volume I.

**Community Infrastructure Assessment:** A review of the community attributes revealed no significant issues regarding the ability of the infrastructure of the communities to support missions, forces, and personnel. There are no known community infrastructure impediments to implementation of all recommendations affecting the installations in this recommendation.

**Environmental Impact:** An Air Conformity determination and New Source Review and permitting effort will be required at Fort Bliss. To preserve cultural and archeological resources, training restrictions may be imposed and increased operational delays and costs are possible at Fort Bliss and NAS Kingsville. Tribal consultations may be required at Fort Bliss. This recommendation may require minor air permit modifications at Dyess. This recommendation may also impact noise and wetlands at Dyess. This recommendation has no impact on dredging; land use constraints or sensitive resource areas; marine mammals, resources, or sanctuaries; threatened and endangered species or critical habitat; waste management; or water resources. This recommendation will require spending approximately \$0.9M for waste management and/or environmental compliance activities. These costs were included in the payback calculation. This recommendation does not otherwise impact the costs of environmental restoration, waste management, and environmental compliance activities. The aggregate environmental impact of all recommended BRAC actions affecting the installations in this

recommendation has been reviewed. There are no known environmental impediments to implementation of this recommendation.

## RC Transformation in Vermont

**Recommendation:** Close Chester Memorial Army Reserve Center and Organizational Maintenance Shop, Chester, Vermont and Berlin Army Reserve Center, Berlin, Vermont and relocate all units to a new Armed Forces Reserve Center with an Organizational Maintenance Facility in the vicinity of White River Junction, Vermont if the Army is able to acquire land suitable for the construction of the facilities. The new AFRC and OMS shall have the capability to accommodate units from the following facilities: Vermont Army National Guard Armories in Ludlow, North Springfield and Windsor, Vermont, if the state decides to relocate those National Guard units.

Close Army Reserve Center, Courcelle Brothers and associated Organizational Maintenance Shop, Rutland, Vermont; close Army Reserve Army Maintenance Support Activity, Rutland, Vermont and relocate all units to a new Armed Forces Reserve Center and Organizational Maintenance Facility in the vicinity of Rutland, VT, if the Army is able to acquire land suitable for the construction of the facilities. The new AFRC and Maintenance Activity shall have the ability to accommodate units from the following facility: Vermont Army National Guard Armory Rutland, Vermont; if the state decides to relocate those National Guard units.

**Justification:** This recommendation transforms Reserve Component facilities throughout the State of Vermont. The implementation of this recommendation will enhance military value, improve homeland defense capability, greatly improve training and deployment capability, create significant efficiencies and cost savings, and is consistent with the Army's force structure plans and Army transformational objectives.

This recommendation is the result of a state-wide analysis of Reserve Component installations and facilities conducted by a team of functional experts from Headquarters, Department of the Army, the Office of the State Adjutant General, and the Army Reserve Regional Readiness Command.

The recommendation closes four US Army Reserve Centers, one Area Maintenance Support Activity and two Organizational Maintenance Shops throughout the state of Vermont and constructs two Armed Forces Reserve Centers and collocated Organizational Maintenance facilities capable of accommodating National Guard and Reserve units. This recommendation reduces military manpower and associated costs for maintaining existing facilities by collapsing eleven geographically separated facilities into two modern Armed Forces Reserve Centers with maintenance facilities. These new facilities will significantly reduce operating costs and create improved business practices. The Department understands that the State of Vermont will close four Vermont Army National Guard Centers: Ludlow, North Springfield, Windsor and Rutland, Vermont. The Armed Forces Reserve Centers will have the capability to accommodate these units if the State decides to relocate the units from these closed facilities into the new AFRCs. This recommendation provides the opportunity for other Local, State, or Federal organizations to partner with the Reserve Components to enhance Homeland Security and Homeland Defense at a reduced cost to those agencies.

Although not captured in the COBRA analysis, this recommendation avoids an estimated \$30,067,195 in mission facility renovation costs and procurement avoidances associated with meeting AT/FP construction standards and altering existing facilities to meet unit training and communications requirements. Consideration of these avoided costs would reduce costs and increase the net savings to the Department of Defense in the 6-year BRAC implementation period, and in the 20-year period used to calculate NPV.

**Payback:** The total estimated one-time cost to the Department of Defense to implement this recommendation is \$61.4M. The net of all costs and savings to the Department of Defense during the implementation period is a cost of \$57.2M. Annual recurring savings to the Department after implementation are \$1.4M with a payback expected in 100+ years. The net present value of the costs and savings to the Department over 20 years is a cost of \$41.7M.

**Economic Impact on Communities:** This recommendation will not result in any job reductions (direct or indirect) over the 2006-2011 period in the Ludlow, VT or Rutland County VT economic areas. The aggregate economic impact of all recommended actions on this economic region of influence was considered and is at Appendix B of Volume I.

**Community Infrastructure Assessment:** A review of the community attributes revealed no significant issues regarding the ability of the infrastructure of the communities to support missions, forces, and personnel. There are no known community infrastructure impediments to implementation of all recommendations affecting the installations in this recommendation.

**Environmental Impact:** This recommendation has no impact on air quality, cultural, archeological, or tribal resources; dredging; land use constraints or sensitive resource areas; marine mammals, resources, or sanctuaries; noise; threatened and endangered species or critical habitat; waste management; water resources; or wetlands. This recommendation will require spending approximately \$0.8M for waste management and/or environmental compliance activities. These costs were included in the payback calculation. This recommendation does not otherwise impact the costs of environmental restoration, waste management, and environmental compliance activities. The aggregate environmental impact of all recommended BRAC actions affecting the installations in this recommendation has been reviewed. There are no known environmental impediments to implementation of this recommendation.



## RC Transformation in Washington

**Recommendation:** Close Mann Hall Army Reserve Center, Area Maintenance Support Shop #80 and Walker Army Reserve Center in Spokane, WA and relocate units to a new consolidated Armed Forces Reserve Center and Organizational Maintenance Shop on Fairchild Air Force Base. The new AFRC shall have the capability to accommodate units from the following Washington ARNG facilities: Washington ARNG Armory and Organizational Maintenance Shop, Geiger Field, Washington, if the state decides to relocate those units.

Close Wagenaar Army Reserve Center Pasco, Washington and relocate units to a new consolidated Armed Forces Reserve Center on Yakima Training Center. Realign Pendleton Army Reserve Center on Yakima Training Center by moving all assigned units to the new Armed Forces Reserve Center on Yakima Training Center. The new AFRC shall have the capability to accommodate units from the following Washington ARNG facility: Washington ARNG Ellensburg Readiness Center, if the state decides to relocate those units.

Close the Oswald United States Army Reserve Center, Everett, Washington, and relocate units to a new Armed Forces Reserve Center in the Everett, Washington area if the Army is able to acquire suitable land for construction of the new facility. The new AFRC shall have the capability to accommodate units from the following Washington ARNG facilities: Washington ARNG Everett Readiness Center and Snohomish Readiness Center, if the state decides to relocate those units.

**Justification:** This recommendation transforms Reserve Component facilities throughout the State of Washington. The implementation of this recommendation will enhance military value, improve homeland defense capability, greatly improve training and deployment capability, create significant efficiencies and cost savings, and is consistent with the Army's force structure plans and Army transformational objectives.

This recommendation is the result of a state-wide analysis of Reserve Component installations and facilities conducted by a team of functional experts from Headquarters, Department of the Army, the Office of the State Adjutant General, and the Army Reserve Regional Readiness Command.

This recommendation closes four US Army Reserve Centers and one Area Maintenance Support Activity, realigns one Army Reserve Center and constructs three multi component, multi functional Armed Forces Reserve Center (AFRCs) throughout the state of Washington, capable of accommodating National Guard and Reserve units. This recommendation also reduces military manpower and associated costs for maintaining existing facilities by collapsing nine geographically separated facilities into three modern Armed Forces Reserve Centers. These joint use facilities will significantly reduce operating costs and create improved business practices. The Department understands that the State of Washington will close four Washington Army National Guard Centers: Geiger Field, Everett, Snohomish and Ellensburg; and one Organizational Maintenance Shop, Geiger Field, Washington. The Armed Forces Reserve Centers will have the

capability to accommodate these units if the State decides to relocate the units from these closed facilities into the new AFRCs.

The implementation of this recommendation will enhance military value, improve homeland defense capability, greatly improve training and deployment capability, create significant efficiencies and cost savings, and is consistent with the Army's force structure plans and Army transformational objectives.

This recommendation considered feasible locations within the demographic and geographic areas of the closing facilities and affected units. The sites selected were determined as the best locations because they optimize the Reserve Components ability to recruit and retain Reserve Component soldiers and to train and mobilize units impacted by this recommendation.

This recommendation provides the opportunity for other Local, State, or Federal organizations to partner with the Reserve Components to enhance Homeland Security and Homeland Defense at a reduced cost to those agencies.

Although not captured in the COBRA analysis, this recommendation avoids an estimated \$24.5M in mission facility renovation costs and procurement avoidances associated with meeting AT/FP construction standards and altering existing facilities to meet unit training and communications requirements. Consideration of these avoided costs would reduce costs and increase the net savings to the Department of Defense in the 6-year BRAC implementation period, and in the 20-year period used to calculate NPV.

**Payback:** The total estimated one-time cost to the Department of Defense to implement this recommendation is \$61.2M. The net of all costs and savings to the Department of Defense during the implementation period is a cost of \$33.6M. Annual recurring savings to the Department after implementation are \$8.2M with a payback expected in 9 years. The net present value of the costs and savings to the Department over 20 years is a savings of \$46.1M.

**Economic Impact on Communities:** Assuming no economic recovery, this recommendation could result in a maximum potential reduction of 70 jobs (38 direct and 32 indirect jobs) over the 2006 – 2011 period in the Spokane, WA Metropolitan Statistical Area, which is less than 0.1 percent of economic area employment.

Assuming no economic recovery, this recommendation could result in a maximum potential reduction of 89 jobs (57 direct and 32 indirect jobs) over the 2006 – 2011 period in the Seattle-Tacoma-Bellevue, WA metropolitan area, which is less than 0.1 percent of economic area employment.

The aggregate economic impact of all recommended actions on these economic regions of influence was considered and is at Appendix B of Volume I.

**Community Infrastructure Assessment:** A review of the community attributes revealed no significant issues regarding the ability of the infrastructure of the

communities to support missions, forces, and personnel. There are no known community infrastructure impediments to implementation of all recommendations affecting the installations in this recommendation.

**Environmental Impact:** A minor air permit revision may be needed at Fairchild. Additional operations may impact cultural, archeological, or tribal resources at Fairchild. Environmental consultation is required at Fairchild and Wagenaar USARC, due to the presence of species of concern. This recommendation may impact wetlands at Fairchild. This recommendation has no impact on dredging; land use constraints or sensitive resource areas; marine mammals, resources, or sanctuaries; noise; waste management; or water resources. This recommendation will require spending approximately \$0.4M for waste management and/or environmental compliance activities. These costs were included in the payback calculation. This recommendation does not otherwise impact the costs of environmental restoration, waste management, and environmental compliance activities. The aggregate environmental impact of all recommended BRAC actions affecting the installations in this recommendation has been reviewed. There are no known environmental impediments to implementation of this recommendation.

## RC Transformation in West Virginia

**Recommendation:** Close the Elkins US Army Reserve Center and its supporting Maintenance Shop in Beverly, West Virginia and re-locate units into a new Armed Forces Reserve Center in the vicinity of Elkins, WV, if the Army is able to acquire land suitable for the construction of the facilities. The new AFRC shall have the capability to accommodate West Virginia Army National Guard Units from the Readiness Center in Elkins, WV if the State decides to relocate those National Guard units.

Close the 1LT Harry Colburn US Army Reserve Center and its supporting Maintenance Shop in Fairmont, West Virginia and re-locate units into a new Armed Forces Reserve Center in the vicinity of Fairmont, WV, if the Army is able to acquire land suitable for the construction of the facilities. The new AFRC shall have the capability to accommodate West Virginia National Guard Units from the Readiness Center in Fairmont, WV if the State decides to relocate those National Guard units.

Close SSG Roy Kuhl US Army Reserve Center and Maintenance Facility in Ripley and the MAJ Elbert Bias USAR Center, Huntington, West Virginia and re-locate units into a new Armed Forces Reserve Center in the vicinity of Ripley, West Virginia, if the Army is able to acquire land suitable for the construction of the facilities. The new AFRC shall have the capability to accommodate West Virginia National Guard Units from the West Virginia Army National Guard Readiness Center in Spencer, West Virginia if the State of West Virginia decides to relocate those National Guard units.

**Justification:** This recommendation transforms Reserve Component facilities throughout the State of West Virginia. The implementation of this recommendation will enhance military value, improve homeland defense capability, greatly improve training and deployment capability, create significant efficiencies and cost savings, and is consistent with the Army's force structure plans and Army transformational objectives.

This recommendation is the result of a state-wide analysis of Reserve Component installations and facilities conducted by a team of functional experts from Headquarters, Department of the Army, the Office of the State Adjutant General, and the Army Reserve Regional Readiness Command.

This recommendation closes four Army Reserve centers, three supporting Maintenance Shops and constructs three multi-component, multi-functional Armed Forces Reserve Centers (AFRCs), throughout the State of West Virginia, capable of accommodating National Guard and Reserve units. This recommendation reduces military manpower and associated costs for maintaining existing facilities by collapsing ten separate facilities into three modern Armed Forces Reserve Centers. These multi-component facilities will significantly reduce operating costs and create improved business processes. The Department understands that the State of West Virginia will close three West Virginia Army Guard Armories: Spencer, Fairmont, Elkins, West Virginia. The Armed Forces Reserve Centers will have the capability to accommodate these units if the State decides to relocate the units from these closed facilities into the new AFRCs.

The implementation of this recommendation and creation of these new AFRCs will enhance military value, improve homeland defense capability, improve training and deployment capability, create significant efficiencies and cost savings, and is consistent with the Army's force structure plans and Army transformational objectives.

This recommendation considered feasible locations within the demographic and geographic areas of the closing facilities and affected units. The sites selected were determined as the best locations because they optimize the Reserve Components ability to recruit and retain Reserve Component soldiers and to train and mobilize units impacted by this recommendation.

This recommendation provides the opportunity for other Local, State, or Federal organizations to partner with the Reserve Components to enhance Homeland Security and Homeland Defense at a reduced cost to those agencies.

Although not captured in the COBRA analysis, this recommendation avoids an estimated \$43,623,941 in mission facility renovation costs and procurement avoidances associated with meeting AT/FP construction standards and altering existing facilities to meet unit training and communications requirements. Consideration of these avoided costs would reduce costs and increase the net savings to the Department of Defense in the 6-year BRAC implementation period, and in the 20-year period used to calculate NPV.

**Payback:** The total estimated one-time cost to the Department of Defense to implement this recommendation is \$29.5M. The net of all costs and savings to the Department of Defense during the implementation period is a savings of \$4.2M. Annual recurring savings to the Department after implementation are \$7.6M with a payback expected in 3 years. The net present value of the costs and savings to the Department over 20 years is a savings of \$77.0M.

**Economic Impact on Communities:** Assuming no economic recovery, this recommendation could result in a maximum potential reduction of 135 jobs (88 direct and 47 indirect jobs) over the 2006 – 2011 period in the Fairmont, WV metropolitan statistical area, which is 0.51 percent of economic area employment.

Assuming no economic recovery, this recommendation could result in a maximum potential reduction of 1 job (1 direct and 0 indirect jobs) over the 2006 – 2011 period in the Huntington-Ashland, WV-KY-OH Metropolitan Statistical Area, which is less than 0.1 percent of economic area employment.

The aggregate economic impact of all recommended actions on these economic regions of influence was considered and is at Appendix B of Volume I.

**Community Infrastructure Assessment:** A review of community attributes revealed no significant issues regarding the ability of the local communities' infrastructure to support forces, missions, and personnel. There are no known community infrastructure impediments to implementation of all recommendations affecting the installations in this recommendation.

**Environmental Impact:** This recommendation has no impact on air quality, cultural, archeological, or tribal resources; dredging; land use constraints or sensitive resource areas; marine mammals, resources, or sanctuaries; noise; threatened and endangered species or critical habitat; waste management; water resources; or wetlands. This recommendation will require spending approximately \$0.08M for waste management and/or environmental compliance activities. These costs were included in the payback calculation. This recommendation does not otherwise impact the costs of environmental restoration, waste management, and environmental compliance activities. The aggregate environmental impact of all recommended BRAC actions affecting the installations in this recommendation has been reviewed. There are no known environmental impediments to implementation of this recommendation.

## RC Transformation in Wisconsin

**Recommendation:** Close the Truman Olson and G.F. O’Connell US Army Reserve Centers in Madison, WI and relocate units to a new Armed Forces Reserve Center (AFRC) in Madison, WI, if the Army can acquire suitable land for the construction of the new facilities. The new AFRC shall have the capability to accommodate Army National Guard units from the following Wisconsin Army National Guard Armories; the Madison Armory (Bowman Street), Madison Armory / OMS 9, and the Madison Armory (2400 Wright Street), if the state decides to relocate those units.

**Justification:** This recommendation transforms Reserve Component facilities in the state of Wisconsin. The implementation of this recommendation will enhance military value, improve homeland defense capability, greatly improve training and deployment capability, create significant efficiencies and cost savings, and is consistent with the Army’s force structure plans and Army transformational objectives.

This recommendation is the result of a state-wide analysis of Reserve Component installations and facilities conducted by a team of functional experts from Headquarters Department of the Army, the Office of the State Adjutant General and the Army Reserve Regional Readiness Command.

This recommendation closes two Army Reserve Centers and realigns three Wisconsin Army National Guard Armories and constructs a multi-service, multi-functional Armed Forces Reserve Center (AFRC) in Madison, Wisconsin. The Department understands that the State of Wisconsin will realign the Madison Armory (Bowman Street) by relocating the 64th Troop Command; the Madison Armory / OMS 9, by re-locating the 54th Civil Support Team, the Madison Armory (2400 Wright Street) by re-locating the 641st Troop Command. The Armed Forces Reserve Centers will have the capability to accommodate these units if the State decides to relocate the units from these facilities to the new AFRC.

This is a joint proposal with the Navy that supports actions to close the Navy and Marine Corps Reserve Center, Madison, WI, the Navy Reserve Center, La Crosse, WI and the Navy Reserve Center in Dubuque, IA. This recommendation reduces costs for maintaining existing facilities by collapsing two separate facilities and units from three overcrowded facilities into one modern AFRC.

This recommendation provides the opportunity for other Local, State, or Federal organizations to partner with the Reserve Components to enhance Homeland Security and Homeland Defense at a reduced cost to those agencies.

Although not captured in the COBRA analysis, this recommendation avoids an estimated \$12.7M in mission facility renovation costs and procurement avoidances associated with meeting AT/FP construction standards and altering existing facilities to meet unit training and communications requirements. Consideration of these avoided costs would reduce costs and increase the net savings to the Department of Defense in the 6-year BRAC implementation period, and in the 20-year period used to calculate NPV.

**Payback:** The total estimated one-time cost to the Department of Defense to implement this recommendation is \$10.7M. The net of all costs and savings to the Department of Defense during the implementation period is a saving of \$37.7M. Annual recurring savings to the Department after implementation are \$10.8M with a payback expected immediately. The net present value of the costs and savings to the Department over 20 years is a savings of \$139.7M.

**Economic Impact on Communities:** Assuming no economic recovery, this recommendation could result in a maximum potential reduction of 173 jobs (125 direct and 48 indirect jobs) over the 2006 – 2011 period in the Madison, WI metropolitan statistical area, which is less than 0.1 percent of economic area employment. The aggregate economic impact of all recommended actions on this economic region of influence was considered and is at Appendix B of Volume I.

**Community Infrastructure Assessment:** A review of the community attributes revealed no significant issues regarding the ability of the infrastructure of the communities to support missions, forces, and personnel. There are no known community infrastructure impediments to implementation of all recommendations affecting the installations in this recommendation.

**Environmental Impact:** This recommendation has no impact on air quality, cultural, archeological, or tribal resources; dredging; land use constraints or sensitive resource areas; marine mammals, resources, or sanctuaries; noise; threatened and endangered species or critical habitat; waste management; water resources; or wetlands. This recommendation will require spending approximately \$33,000 for waste management and/or environmental compliance activities. These costs were included in the payback calculation. This recommendation does not otherwise impact the costs of environmental restoration, waste management, and environmental compliance activities. The aggregate environmental impact of all recommended BRAC actions affecting the installations in this recommendation has been reviewed. There are no known environmental impediments to implementation of this recommendation.



## RC Transformation in Wyoming

**Recommendation:** Close Wyoming Army National Guard (WYARNG) Army Aviation Support Facility (AASF) in Cheyenne, Wyoming (DA leased facility) and relocate Army National Guard units and aviation functions to a new WYARNG AASF, Readiness Center, and Field Maintenance Shop (FMS) on F.E. Warren Air Force Base, Wyoming. The new readiness center/FMS shall have the capability to accommodate Army National Guard units from the Joint Force Headquarters Complex in Cheyenne, Wyoming, if the state decides to relocate those units.

**Justification:** This recommendation transforms Reserve Component facilities in the State of Wyoming. The implementation of this recommendation will enhance military value, improve homeland defense capability, greatly improve training and deployment capability, create significant efficiencies and cost savings, and is consistent with the Army's force structure plans and Army transformational objectives.

This recommendation is the result of a state-wide analysis of Reserve Component installations and facilities conducted by a team of functional experts from Headquarters, Department of the Army, the Office of the State Adjutant General, and the Army Reserve Regional Readiness Command.

This recommendation closes a WYARNG AASF, two WYARNG armories and constructs an AASF, readiness center and FMS on F.E. Warren Air Force Base, Wyoming. This recommendation reduces costs for maintaining existing facilities by collapsing an AASF and consolidating with other units in the Cheyenne area into a single facility onto an existing Air Force Base. The Department understands that the State of Wyoming will close the Thermopolis Armory (vacant- no units relocating) and the Joint Force Headquarters Armory (adjacent to F.E. Warren Air Force Base). The new facility will have the capability to accommodate these units if the state decides to relocate those units.

This recommendation provides the opportunity for other Local, State, or Federal organizations to partner with the Reserve Components to enhance Homeland Security and Homeland Defense at a reduced cost to those agencies.

Although not captured in the COBRA analysis, this recommendation avoids an estimated \$22.2M in mission facility renovation costs and procurement avoidances associated with meeting AT/FP construction standards and altering existing facilities to meet unit training and communications requirements. Consideration of these avoided costs would reduce costs and increase the net savings to the Department of Defense in the 6-year BRAC implementation period, and in the 20-year period used to calculate NPV.

**Payback:** The total estimated one-time cost to the Department of Defense to implement this recommendation is \$72.4M. The net of all costs and savings to the Department of Defense during the implementation period is a cost of \$53.8M. Annual recurring savings to the Department after implementation are \$4.5M with a payback expected in 21 years.

The net present value of the costs and savings to the Department over 20 years is a cost of \$9.0M.

**Economic Impact on Communities:** Assuming no economic recovery, this recommendation could result in a maximum potential reduction of 49 jobs (34 direct and 15 indirect jobs) over the 2006 – 2011 period in the Cheyenne, WY metropolitan statistical area, which is less than 0.1 percent of economic area employment. The aggregate economic impact of all recommended actions on this economic region of influence was considered and is at Appendix B of Volume I.

**Community Infrastructure Assessment:** A review of the community attributes revealed no significant issues regarding the ability of the infrastructure of the communities to support missions, forces, and personnel. There are no known community infrastructure impediments to implementation of all recommendations affecting the installations in this recommendation.

**Environmental Impact:** A minor air permit revision may be needed at F.E. Warren. Noise contours at F.E. Warren may change as a result of the change in mission. Additional operations may impact T&E species and/or critical habitats at F.E. Warren. The hazardous waste program at F.E. Warren may need to be modified. This recommendation has no impact on cultural, archeological, or tribal resources; dredging; land use constraints or sensitive resource areas; marine mammals, resources, or sanctuaries; water resources; or wetlands. This recommendation will require spending approximately \$0.6M for waste management and/or environmental compliance activities. These costs were included in the payback calculation. This recommendation does not otherwise impact the costs of environmental restoration, waste management, and environmental compliance activities. The aggregate environmental impact of all recommended BRAC actions affecting the installations in this recommendation has been reviewed. There are no known environmental impediments to implementation of this recommendation.

## RC Transformation in Puerto Rico

**Recommendation:** Close the US Army Reserve Center 1st Lieutenant Paul Lavergne, Bayamon, Puerto Rico and relocate the 973rd Combat Support (CS) Company into a new Armed Forces Reserve Center on United States Army Reserve property in Ceiba, Puerto Rico, and relocate all other units into a new Armed Forces Reserve Center (AFRC) on Fort Buchanan, Puerto Rico. Realign the US Army Reserve Center Captain E. Rubio Junior, Puerto Nuevo, Puerto Rico, by relocating the 807th Signal Company into a new Armed Forces Reserve Center on Fort Buchanan, Puerto Rico. The new AFRC on Fort Buchanan, Puerto Rico shall have the capability to accommodate units from the Puerto Rico Army Guard San Juan Readiness Center, San Juan, Puerto Rico, if Puerto Rico decides to relocate those National Guard units. The new AFRC facility in Ceiba, Puerto Rico shall have the capability to accommodate Puerto Rico National Guard units from the following PRARNG Readiness Centers: Humacao, Juncos, and Ceiba, Puerto Rico, if Puerto Rico decides to relocate those National Guard units.

Realign United States Army Reserve Center Captain E. Rubio Junior, Puerto Nuevo, Puerto Rico, by relocating the 8th Brigade, 108th DIV (IT) to a new Armed Forces Reserve Center on Fort Allen, Puerto Rico.

Realign United States Army Reserve Center Ramey, Aguadilla, Puerto Rico by relocating the 249th Quartermaster Company into a new Armed Forces Reserve Center in Mayaguez, Puerto Rico, if the Army is able to acquire suitable land. The new facility shall have the capability to accommodate Puerto Rico National Guard units from the Puerto Rico Army National Guard Readiness Center Mayaguez, if Puerto Rico decides to relocate those National Guard units.

**Justification:** This recommendation transforms Reserve Component facilities throughout Puerto Rico. The implementation of this recommendation will enhance military value, improve homeland defense capability, greatly improve training and deployment capability, create significant efficiencies and cost savings, and is consistent with the Army's force structure plans and Army transformational objectives.

This recommendation is the result of a state-wide analysis of Reserve Component installations and facilities conducted by a team of functional experts from Headquarters, Department of the Army, the Office of the State Adjutant General, and the Army Reserve Regional Readiness Command.

This recommendation closes one and realigns four US Army Reserve Centers throughout Puerto Rico and constructs four multi component, multi functional Armed Forces Reserve Centers capable of accommodating National Guard and Reserve units. This recommendation reduces the number of separate DoD installations by relocating to an existing base. This recommendation reduces military manpower and associated costs for maintaining existing facilities by collapsing five geographically separated facilities into three modern Armed Forces Reserve Centers. These joint facilities will significantly reduce operating costs and create improved business processes. The Department understands that Puerto Rico will close PRARNG Readiness Centers: Humacao, Juncos,

Ceiba, and Mayaguez, Puerto Rico. The Armed Forces Reserve Centers will have the capability to accommodate these units if the State decides to relocate the units from these closed facilities into the new AFRCs.

This recommendation provides the opportunity for other Local, State, or Federal organizations to partner with the Reserve Components to enhance Homeland Security and Homeland Defense at a reduced cost to those agencies.

Although not captured in the COBRA analysis, this recommendation avoids an estimated \$36.4M in mission facility renovation costs and procurement avoidances associated with meeting AT/FP construction standards and altering existing facilities to meet unit training and communications requirements. Consideration of these avoided costs would reduce costs and increase the net savings to the Department of Defense in the 6-year BRAC implementation period, and in the 20-year period used to calculate NPV.

**Payback:** The total estimated one-time cost to the Department of Defense to implement this recommendation is \$87.0M. The net of all costs and savings to the Department of Defense during the implementation period is a cost of \$64.0M. Annual recurring savings to the Department after implementation are \$7.3M with a payback expected in 15 years. The net present value of the costs and savings to the Department over 20 years is a savings of \$8.6M.

**Economic Impact on Communities:** Assuming no economic recovery, this recommendation could result in a maximum potential reduction of 161 jobs (95 direct and 66 indirect jobs) over the 2006 – 2011 period in the San Juan-Caguas-Guaynabo, Puerto Rico MSA metropolitan area, which is less than 0.1 percent of economic area employment.

Assuming no economic recovery, this recommendation could result in a maximum potential reduction of 15 jobs (10 direct and 5 indirect jobs) over the 2006 – 2011 period in the Aguadilla-Isabela-San Sebastian, Puerto Rico metropolitan area, which is less than 0.1 percent of economic area employment.

The aggregate economic impact of all recommended actions on these economic regions of influence was considered and is at Appendix B of Volume I.

**Community Infrastructure Assessment:** A review of the community attributes revealed no significant issues regarding the ability of the infrastructure of the communities to support missions, forces, and personnel. There are no known community infrastructure impediments to implementation of all recommendations affecting the installations in this recommendation.

**Environmental Impact:** Additional operations at Fort Buchanan may impact threatened and endangered leading to additional restrictions on construction, training, or operations. This recommendation has no impact on air quality, cultural, archeological, or tribal resources; dredging; land use constraints or sensitive resource areas; marine mammals, resources, or sanctuaries; noise; waste management; water resources; or wetlands. This

recommendation will require spending approximately \$0.1M for waste management and/or environmental compliance activities. These costs were included in the payback calculation. This recommendation does not otherwise impact the costs of environmental restoration, waste management, and environmental compliance activities. The aggregate environmental impact of all recommended BRAC actions affecting the installations in this recommendation has been reviewed. There are no known environmental impediments to implementation of this recommendation.



## ACRONYMS

<u>ACRONYM</u>	<u>DEFINITION</u>
AAP	Army Ammunition Plant
AC	Active Component
ACR	Armored Cavalry Regiment
AD	Army Depot
AMC	Army Materiel Command
AMC	Army Medical Center
ARO	Army Research Office
ARPERCEN	Army Reserve Personnel Center
ARSTAF	Army Staff, HQDA
ASA (I&E)	Asst. Secretary of the Army for Infrastructure and Environment
ATEC	Army Test and Evaluation Command
BCT	Brigade Combat Team
BRAC	Base Realignment and Closure
BRACO	Base Realignment and Closure Office
CAA	Center for Army Analysis
CD	Chemical Depot
COBRA	Cost of Base Realignment Actions
CONUS	Continental United States
CSEI	Cumulative Scenario Environmental Impacts
DASA (IA)	Deputy Assistant Secretary of the Army, Infrastructure Analysis
DCS	Deputy Chief of Staff
DOD	Department of Defense
DOD IG	Department of Defense Inspector General
ECON	Economics
EIT	Economic Impact Tool
ENV	Environmental
EOH	Executive Office, Headquarters
FAC	Facility Analysis Category
FORSCOM	Forces Command
GAO	Government Accountability Office
HQ	Headquarters
HQDA	Headquarters, Department of the Army
IEC	Infrastructure Executive Council
IGPBS	Integrated Global Presence Basing Study
IMA	Installation Management Agency
ISG	Infrastructure Steering Group

<u>ACRONYM</u>	<u>DEFINITION</u>
IVT	Installation Visualization Tool
JAG	Judge Advocate General
JAST	Joint Action Scenario Team
JCSG	Joint Cross-Service Group
JPAT	Joint Process Action Team
LAI	Local Area Infrastructure
MACOM	Major Command
MANSCEN	Maneuver Support Center
MILCON	Military Construction
MILDEP	Military Department
MODA	Multiple Objective Decision Analysis Model
MOS	Military Occupational Skills
MOT	Military Ocean Terminal
MR	Missile Range
MV	Military Value
MVA	Military Value Analysis
MVI	Military Value of Installations
MVP	Military Value Portfolio
NCR	National Capital Region
ODIN	Online Data Interface
OGC	Office of the General Counsel
OPM	Option Portfolio Model
OSAF	Optimal Stationing of Army Forces
OSD	Office of the Secretary of Defense
OVM	Option Value Model
PEO	Program Executive Office
PG	Proving Ground
PIMS	Proposal Information Management System
RC	Reserve Component
RC PAT	Reserve Component Process Action Team
RDAT&E	Research, Development, Acquisition, Testing, and Evaluation
RRC	Regional Readiness Command
SF	Square Feet
SME	Subject Matter Expert
SRG	Senior Review Group
SSEI	Scenario Summary of Environmental Impacts
STRICOM	Simulation, Training, and Instrumentation Command
SY	Square Yards
TABS	The Army Basing Study



**ACRONYM**

**DEFINITION**

TAG	The Adjutant General
TO	Transformational Option
USAAA	United States Army Audit Agency
USC	United States Code
USD(AT&L)	Under Secretary of Defense (Acquisition, Technology, and Logistics)

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## GLOSSARY

<u>Term</u>	<u>Definition</u>
Acre-Days	Unit of measure used to calculate training requirements and training capacity. Training requirements are the product of the number of acres required to train a task and the number of days required to train the task per year. Training capacity is a product of the number of acres available for training and the number of days available for training per year.
BRAC	“BRAC” is an acronym which stands for base realignment and closure. It is the process DOD has previously used to reorganize its installation infrastructure to more efficiently and effectively support its forces, increase operational readiness and facilitate new ways of doing business. BRAC 2005 will build upon processes used in previous BRAC efforts.
Candidate Recommendation	A scenario that a JCSG or Military Department has formally analyzed against all eight selection criteria and which it recommends to the ISG and IEC respectively for SecDef approval. A JCSG Candidate Recommendation must be approved by the ISG, IEC, and SecDef before it becomes a Recommendation. A Military Department Candidate Recommendation must be approved by the IEC and SecDef before it becomes a Recommendation.
Close	Any action that ceases or relocates all current missions of an installation and eliminates or relocates all current personnel positions (military, civilian and contractor), except for personnel required for caretaking, conducting any ongoing environmental cleanup, or property disposal. Retention of a small enclave, not associated with the main mission of the base, is still a closure.
Closure	All missions of the installation have ceased or have been relocated. All personnel positions (military, civilian and contractor) have either been eliminated or relocated, except for personnel required for caretaking, conducting any ongoing environmental cleanup, and disposal of the base, or personnel remaining in authorized enclaves.
COBRA	Cost of Base Realignment Actions (COBRA), is an analytical tool used to calculate the costs, savings, and return on investment, of proposed realignment and closure actions.

<u>Term</u>	<u>Definition</u>
Co-locate	A description of an action that implements a closure or realignment action that stations functions and/or activities at the same site where they will share existing assets.
Commission	The Commission established by section 2902 of the Defense Base Closure and Realignment Act of 1990, as amended.
Consolidate	A description of an action that implements a closure or realignment action that combines one or more functions or activities. Normally includes a decrease of civilian or military personnel.
Data certification	Section 2903 (c)(5) of BRAC requires specified DOD personnel to certify to the best of their knowledge and belief that information provided to the Secretary of Defense or the 2005 Commission concerning the realignment or closure of a military installation is accurate and complete.
Force structure	Numbers, size and composition of the units that comprise US defense forces; e.g., divisions, ships, air wings, aircraft, tanks, etc.
Idea	A concept for stationing and supporting forces and functions that lacks the specificity of a proposal. A transformational option is an idea.
Infrastructure Executive Council (IEC)	One of two senior groups established by the Secretary of Defense to oversee and operate the BRAC 2005 process. The Infrastructure Executive Council, chaired by the Deputy Secretary of Defense, and composed of the Secretaries of the Military Departments and their Chiefs of Services, the Chairman of the Joint Chiefs of Staff and Under Secretary of Defense (Acquisition, Technology and Logistics) (USD(AT&L)), is the policy making and oversight body for the entire BRAC 2005 process.

<u>Term</u>	<u>Definition</u>
Infrastructure Steering Group (ISG)	The subordinate of two senior groups established by the Secretary of Defense to oversee and operate the BRAC 2005 process. The Infrastructure Steering Group, chaired by the Under Secretary of Defense (Acquisition, Technology and Logistics) (USD(AT&L)), and composed of the Vice Chairman of the Joint Chiefs of Staff, the Military Department Assistant Secretaries for installations and environment, the Service Vice Chiefs, and the Deputy Under Secretary of Defense (Installations & Environment) (DUSD(I&E)), will oversee joint cross-service analyses of common business-oriented functions and ensure the integration of that process with the Military Department and Defense Agency specific analyses of all other functions.
Joint	Connotes activities, operations, organizations, etc., in which elements of two or more Military Departments participate.
Joint Base	For purposes of base defense operations, a joint base is a locality from which operations of two or more of the Military Departments are projected or supported and which is manned by significant elements of two or more Military Departments or in which significant elements of two or more Military Departments are located.
Law	National Defense Authorization Act of 1991, Pub. L. 101-510, § 2901(b), as amended.
Losing Installation	An installation from which missions, units or activities have ceased or been relocated pursuant to a closure or realignment recommendation. An installation can be a losing installation for one recommendation and a receiving installation for a different recommendation.
Military Departments	The Military Departments are the Department of the Army, Department of the Navy, which includes the Marine Corps, and Department of the Air Force.
Military installation	A base, camp, post, station, yard, center, homeport facility for any ship, or other activity under the jurisdiction of the Department of Defense, including any leased facility. Such term does not include any facility used primarily for civil works, rivers and harbors projects, flood control, or other projects not under the primary jurisdiction or control of the Department of Defense.

<u>Term</u>	<u>Definition</u>
Operating forces	Those forces whose primary missions are to participate in combat and the integral supporting elements thereof.
Payback	In accordance with the guidance and narrative format contained in the Policy Memo on selection criteria 5, describe the COBRA payback projections. Include total estimated one-time cost to implement; net of all costs and savings during the implementation period; annual recurring savings after implementation (including number of years for payback); and the net present value of the costs and savings over 20 years. If a candidate recommendation affects another Federal agency, include the statement that describes how the Department has taken into account the effect on the costs of this agency when making this recommendation, as required by Section 2913(d) of the BRAC statute.
Proposal	A description of one or more potential closure or realignment actions that have not been declared as a scenario for formal analysis by either a JCSG or a Military Department. Normally includes detail on the transfer of units, missions or other work activity; facilities or locations that would close or lose such effort; facilities or locations that would gain from the losing locations; tenants or other missions or functions that would be affected by the action. A proposal can come from Ideas or options derived from Optimization Tools. Proposals must be catalogued at the JCSG or MilDep level for tracking
Realignment	Includes any action that both reduces and relocates functions and civilian personnel positions, but does not include a reduction in force resulting from workload adjustments, reduced personnel or funding levels, or skill imbalances.
Receiving Installation	An installation to which missions, units or activities have been relocated pursuant to a closure or realignment recommendation. An installation can be a receiving installation for one recommendation and a losing installation for a different recommendation.
Recommendation	A Candidate Recommendation approved by the SecDef.
Relocate	A description of an action that moves functions, missions, units, activities, or personnel positions from one location to another.

<u>Term</u>	<u>Definition</u>
Scenario	A proposal that has been declared for formal analysis by a Military Department/JCSG deliberative body. The content of a scenario is the same as the content of a proposal. The only difference is that it has been declared for analysis by a deliberative body. Once declared, a scenario is registered at the ISG by inputting it into the ISG BRAC Scenario Tracking Tool.
Scenario Analysis	The process to formally evaluate a scenario against all eight selection criteria.
Transformation	According to the Department’s April 2003 Transformation Planning Guidance document, transformation is “ a process that shapes the changing nature of military competition and cooperation through new combinations of concepts, capabilities, people and organizations that exploit our nation's advantages and protect against our asymmetric vulnerabilities to sustain our strategic position, which helps underpin peace and stability in the world.”
United States	The 50 states, the District of Columbia, the Commonwealth of Puerto Rico, Guam, the Virgin Islands, American Samoa, and any other territory or possession of the United States.





**DEPARTMENT OF DEFENSE REPORT TO THE DEFENSE BASE  
CLOSURE AND REALIGNMENT COMMISSION**

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**DEPARTMENT OF THE ARMY  
ANALYSIS AND RECOMMENDATIONS  
BRAC 2005**

**Volume III**

**APPENDIX A. CAPACITY ANALYSIS REPORT**

**May 2005**

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## EXECUTIVE SUMMARY

The Army capacity analysis included a Physical Capacity analysis, which examined the availability of resources (Level I identifies assets, Level II determines excess and shortages); Operational Capacity analysis, which examined capacity in terms of unit requirements (Level III); and surge analysis, which looked at the Army's ability to meet unforeseen requirements. The Army determined Army-wide as well as installation-level capacity. The analysis included 230 facility types with 12 different units of measure, 28 metrics applied to BRAC Objectives, and seven unit footprints.

Capacity analysis, combined with Military Value, provided a starting point for installation analysis. An inventory of Army assets by facility type, a listing of excesses and shortages by facility type, and potential capacity for chosen unit types, provided the TABS Group analysts the capacity information needed to develop and complete scenario analysis.

For each BRAC Objective, the TABS Group chose metrics that provide a summary picture of Army capacity with respect to those mission areas that the Army BRAC Senior Review Group had determined were essential to the successful completion of Army BRAC 2005. Not all metrics lent themselves to an excess-shortage review; instead, they were relegated to a Level I or asset level review. Where possible an excess-shortage Level II analysis was completed.

In the future, the Army may need capacity to meet unforeseen requirements; this is commonly referred to as surge capability. Surge capability can exist in the form of numerous assets and does not always equate to excess physical capacity; For example, surge can also be reflected in excess potential to build, station, purchase, lease, partner, and produce. Capacity analysis concentrated on assets that are difficult to reconstitute and not readily available; maneuver land is the most difficult to reconstitute and buildable acres is the most flexible of all assets. Flexibility in this case is providing the basic asset needed to satisfy future unforeseen requirements. Buildable acres provide this flexibility because land is the starting point for all military construction (MILCON) and is required for training. Throughout the capacity analysis report, we highlight surge implications associated with different assets.

The primary assumption within this analysis was "linearity." For example, 100 square feet (sq. ft.) at Installation X equals 100 sq. ft. at Installation Y; the entire 100 sq. ft. can be used by units at the installation, and the 100 sq. ft. are contiguous. The assumed availability and contiguous nature of linearity ensures the results are slightly optimistic; during implementation when units occupy "excess," the assumption's impact will be seen.

This analysis determined the installations that have more units than what their facilities can doctrinally support. The Army is completing its mission by using temporary facilities, using facilities for other than intended use, using other-than-home stationing training, and other techniques to augment existing facilities.

The Army determined unit requirements and installation assets not only for this capacity analysis, but also for Cost of Base Realignment Actions (COBRA) MILCON estimates, which were the primary costs in BRAC implementation. Capacity analysis helped lower the eventual implementation cost, by highlighting potential excess.

Using this analysis, the Army made the following general conclusions:

1. The Army has the potential through BRAC to better utilize its facility assets.
2. Excess exists throughout the Army, but there are also shortages of various facility types. Regardless of the perceived excess, the Army cannot take advantage of all excess without MILCON.
3. Community facilities are limited but can be complemented by local area assets, leases, temporary facilities, and MILCON.
4. For every facility type, the Army has a number of installations with excess and some number with shortages.
5. The Army has surge capability and maintains sufficient surge capacity after executing BRAC 2005 recommendations. The two primary assets required to meet Army surge requirements are maneuver land (most difficult to reconstitute) and buildable acres (flexibility to meet an array of requirements).
6. Maneuver land is a constraining asset. The Army has 27 installations that have land to support Brigade Combat Teams, 25 can currently support direct and indirect fire weapons, 23 can support light brigade maneuver land requirements, 14 can support heavy brigade requirements, and 9 can support SBCT maneuver requirements.
7. The Army would need \$80M-300M to construct facilities to station an additional Brigade Combat Team on an Army installation.

## 1.0 INTRODUCTION

### 1.1 Background

In the kickoff memo for Base Realignment and Closure 2005, the Secretary of Defense stated, “At a minimum, BRAC 2005 must eliminate excess physical capacity”.<sup>1</sup> An improved level of capacity utilization would save the Army valuable resources (e.g., sustainment and base operating support funds) that could be directed elsewhere.

In the past, the Army did not conduct a separate, extensive capacity analysis for BRAC. However, amendments to the law and a change in guidance ensured that capacity analysis was a major element of Army research and decision-making during BRAC 2005. A comprehensive analysis determined the nature and location of excess, shortages, potential efficiencies, and provided one set of insights that informed the BRAC process<sup>2</sup>.

#### *1.1.1 BRAC Law*

Section 2912 of the Defense Base Closure and Realignment Act of 1990, an amendment that was implemented for the BRAC 2005 round, explicitly states the requirement for capacity analysis. The legislation requires the Secretary of Defense to include with the DOD force structure plan, a description of excess infrastructure, infrastructure capacity, and the amount of infrastructure necessary to support the plan. This was accomplished in the Report to Congress of May 2004. The Report to Congress, because of its requirement to be submitted with budget justification material for the FY05 President’s Budget, was completed before certified data was available. To build on those insights, this capacity analysis was completed with certified data and made part of the Army BRAC analytical process.

#### *1.1.2 BRAC Guidance*

OSD provided tutorials to the Services and JCSGs that emphasized capacity analysis, along with military value, as preparatory analyses for scenario development. Each BRAC office conducted the analyses regarding capacity and capabilities before developing scenarios.

### 1.2 Purpose

Capacity analysis examined certified data and gave analysts a means to accurately locate excesses and shortages on Army installations. Combined with military value, capacity provided a starting point for installation analysis, which was the method by which the Army began to formulate BRAC scenarios and candidate recommendations.

Capacity analysis was also used for unit analysis, as analysts sought to relocate units and activities to better utilize excess or under-utilized infrastructure.

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<sup>1</sup> United States. Secretary of Defense. Transformation Through Base Realignment and Closure. 15 Nov 2002.

<sup>2</sup> United States. Department of Defense. Report Required by Section 2912 of the Defense Base Closure and Realignment Act of 1990, as amended through the National Defense Authorization Act for Fiscal Year 2003. March, 2004.

The Army considered potential capacity to complete missions as part of its surge analysis. Surge provides a means to define the amount of risk the Army takes when considering the infrastructure it retains to support future, unknown requirements.

### 1.3 Building Block of BRAC Analysis

Capacity analysis played a key role in the Army’s analytical process by informing the Military Value (MV) assessment as well as scenario development.

#### 1.3.1 Role in BRAC Process

Capacity analysis was the first part of the Army’s process. The Army determined potential installation capacity for chosen unit types and used this information to calculate the additional selected units and missions an installation can potentially absorb. The following figure illustrates the Army process.

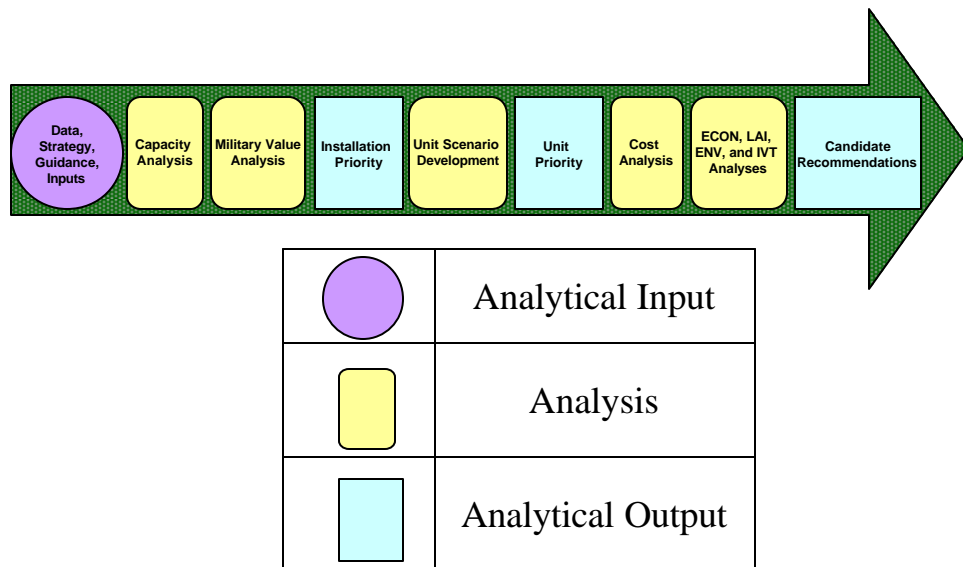


Figure 1. Capacity Analysis within the TABS Analytical Process

### 1.3.2 Link to Military Value (MV)<sup>3</sup>

MV analysis provided a starting point to analyze proposals by evaluating installations and ranking them from a MV perspective. Sixteen of 40 attributes used to determine MV were capacity-related (e.g., heavy maneuver area, munitions production, and buildable acres). The completed analyses provided the Army with an initial means to develop stationing actions (SAs) for relocating units and activities from lower-valued installations to better utilized existing excess, under-utilized infrastructure, and buildable acreage at higher-MV installations. In some instances, the analysis sought potential efficiencies that could be achieved through the rehabilitation of existing buildings, construction of new facilities, and acquisition of additional land.

### 1.3.3 Link to Scenario Development

Capacity analysis provided an inventory of assets as well as a status quo review of shortages and excess based on current stationing and current requirements, which provided insight for potential scenarios because they represented both the baseline capacity and opportunities for improved efficiency (consolidation of missions within existing facilities). If the analyst saw excess available, and has a unit that could use this excess, then this situation may merit the development of a proposal (given the proposal supports military value, Army BRAC Objectives and/or a Transformational Option). The basic concept entails stationing units on installations to achieve efficiencies through improved utilization of excess capacity.

## 1.4 Definitions

1. **Capacity:** The facility or power to produce, perform, or deploy.<sup>4</sup>
2. **Physical Capacity:** A measure of an *installation's* capacity in terms of essential *facilities*, also considered static in nature. The primary use for this type of capacity is to identify excess individual facilities, which may lead to BRAC proposals.
3. **Operational Capacity:** A measure of the *Army's* capacity in terms of its ability to support units and meet unit requirements (e.g., ability to support a brigade's facilities, ranges, and land requirements), also considered dynamic in nature. The primary use for this type of analysis is to support scenario development by identifying installation capacity of selected footprints and identifying where major units could be stationed.
4. **Surge:** A measure of the *Army's* capacity to support mobilization requirements, meet national defense contingency needs, and other emergency or unforeseen requirements. Surge can be in various forms of assets and does not always equate to excess of current facilities, e.g., buildings, warehouses or manufacturing plants, but can also take the form of excess potential to build, station, purchase, lease, partner, or produce.

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<sup>3</sup> See Appendix B, Military Value Analysis.

<sup>4</sup> "Capacity" -- Merriam-Webster's Online Dictionary. 10<sup>th</sup> ed. 2004.

## 1.5 Products

The Capacity Analysis provided the following insights:

1. **Availability of resources (excess/shortage)** – examines capacity throughout the Army and at each installation, pinpointing Army-wide and installation-level excess and shortages.
2. **Expansion capabilities** – projects expansion possibilities for individual installations and the Army in general.
3. **Potential BRAC actions** – excess/shortage identifies potential cost-saving and efficiency-maximizing BRAC actions and provides the potential for improving capacity utilization through BRAC action.
4. **Ability to support units** – the capacity of installations to accommodate current units and an estimate for additional units and/or mission functions that installations could absorb.
5. **The ability to support Brigade Combat Teams (BCT)** – results illustrate the number of BCTs installations can support (based on a set of working assumptions on required capabilities for brigades).
6. **Impact on readiness** – improvements in capacity utilization save sustainment and base operating dollars that can be used to support other Army priorities and impact readiness.
7. **Surge Analysis** – highlights types of capacity required to meet unknown future requirements.

## 1.6 Data Sources

The Army performed capacity analysis on 87 Army installations and 10 leases. TABS analysts extracted information from three certified data sources – the Real Property Planning and Analysis System (RPLANS), Training Database in the Army Range Requirements Model (ARRM), and Installation Data Calls:

- **RPLANS:** The Department of the Army manages its real property assets using this automated database. The information in the tables of this Report was extracted from the October 2003 version of RPLANS. The version is isolated and protected from further updates, thus providing a certified source of data for BRAC analysis
- **ARRM Training Database:** ARRM is an automated planning tool that uses training data as of 30 September 2003 to determine approximate live training throughput capacities and requirements for selected installations.
- **Installation Data Calls:** In addition to using RPLANS, TABS analysts also collect data on assets through the BRAC 2005 Installation Data Calls. TABS sent the Data Call to each installation who submitted the requested certified information.

TABS used the RPLANS data for building and utility facilities, while the Data Call information was used to compare specific facilities, maneuver training land, and ranges among installations.

## 1.7 Timeline

Prior to completing data calls, the Army defined the capabilities of interest, determined the data required to define the capabilities, and conducted data calls. The progression is highlighted below:

1. **Define Objectives and Missions** –Capacity analysis began indirectly with the Army BRAC Objectives on which all Army analysis is based.<sup>5</sup> The Army BRAC Objectives were grouped into Missions. The capacity metrics were related to the Objectives, through these Missions.<sup>6</sup>
2. **Issue Data Calls** – Starting in January 2004, initial Data Calls were sent to Army BRAC 05 installations. The data calls were composed of questions regarding installations' physical and operational capacities.
3. **Receive Answers to Data Call** – The TABS Group received Data Call responses from installations beginning in early March. These continued for several months and included an exhaustive effort to update, validate, and correct faulty data.
4. **Conduct Data Review** – The TABS Group conducted a preliminary analysis of the submitted information and examined the quality of the data.
5. **Brief BRAC Senior Review Group (SRG)** – The TABS Group briefed the BRAC SRG on the capacity analysis approach and initial results on 4 May 2004. The analysis continued as data was updated and corrected. Final results were briefed on 22 March, 2005.

## 1.8 Key Assumptions and Limitation

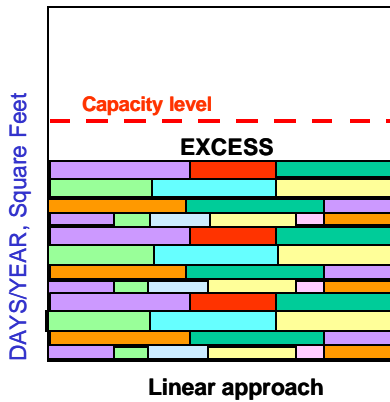
### 1.8.1 Key Assumptions

1. **Accuracy:** certified data is accurate.
2. **Adequacy:** capabilities and requirements are adequately defined.
3. **Linearity:** The Army assumed linearity, which is consistent with other macro-analyses. For example, 100 square feet (sq. ft.) at Installation X equals 100 sq. ft. at Installation Y, the entire 100 sq. ft. can be used by units at the installation, and the 100 sq. ft. are contiguous. Figure 2 provides an example of current capacity level (dashed red line) and the various facilities, land, and ranges required by the units and activities (colored blocks), which add up to the current demand at a particular installation. The difference between the two sums is the excess or shortage (Figure 2 illustrates an excess).

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<sup>5</sup> See TAF Appendix E, "Army BRAC Objectives."

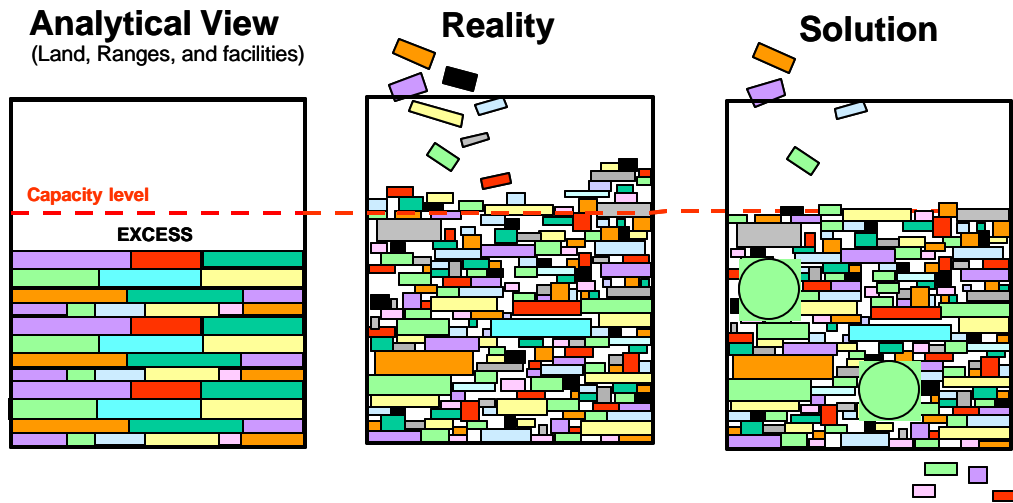
<sup>6</sup> This relation is illustrated in the table in 3.6.



**Figure 2. Linear Assumption**

*1.8.2 Key Limitation*

The linearity assumption was also a key limitation. 100,000 sq. ft. at Installation X may not be comparable to 100,000 sq. ft. at Installation Y. If the Army desired to move a unit from X that required 100,000 sq. ft., but the 100,000 sq. ft. at Y was not contiguous, then the usable excess might be smaller than the reported 100,000 sq. ft. For example, a building may have 100 sq. ft., but units use 85 sq. ft. The additional 15 sq. ft. is usable space, but the space may not be large enough to satisfy a second unit’s requirements. This phenomenon leads to small pieces of excess (represented by space between blocks in the center figure below) that units cannot use. The goal is to find large contiguous spaces that new units can use (third figure, large green circles).



**Figure 3. Linear Limitation**

This phenomenon highlights the linearity limitation, its slightly optimistic result, and tendency to overstate excess. As shown above, the initial analysis might lead to additional units being proposed for the installation, but the lack of contiguous space makes their absorption difficult if not impossible (units pile up over the capacity level in the Reality graphic). The Army understood the assumption and its related limitation that



excess and shortage estimates were at times optimistic and relied on additional research by analysts to find contiguous spaces. To develop these contiguous spaces, the installation may have needed to complete consolidation of units already on the installation or realignment of some units off the installation (implementation issue).

### **1.9 Mathematical Concept and Selected Metrics**

Installations and their assets are considered “supply,” and Army units and their requirements are considered “demand.” The following equation depicts how the Army determined excess and shortage:

$$\text{Surplus or (Shortage if negative)} = \# \text{ Assets} - \# \text{ Required Assets}$$

DOD and the Army have developed a number of standard codes, DOD Facility Analysis Categories (FACs) and Facility Category Groups (FCGs), to standardize the process of identifying space and its usage, and assigning a code (DA Pam 415-28 lists the codes and definitions). These codes include identification of utility supplies, land, roads, and sports fields. The data associated with these codes illustrate the quantity of each facility type present at an installation. Annex 1 provides a brief overview of the category codes used to identify Army real property assets and several sample tables showing quantities of each facility type. Additional inventory listings can be found in the materials accompanying this report.

Metrics were linked to the ten Army BRAC Missions – Unit Training, Deployment, Mobilization, Institutional Training & Education, Well-Being, Joint Logistics, C4I/Headquarters, RDT&E, Environment, and Mission Expansion. Listed below are selected metrics, which are defined by DOD FACs or Data Call questions where FACs are not applicable, and the Army BRAC Missions to which they relate.

Missions	CAPACITY METRICS
Unit Training	DoD Q #144 Military Operations in Urban Terrain (MOUT) Ranges or Facilities Used
	DoD Q #877 Maneuver Areas; heavy and light
	DoD Q #160 Airspace Attributes
Deployment	FAC 1111 Fixed Wing Runway, Surfaced
	FAC 1131 Aircraft Apron, Surfaced
	FAC 8601 Railroad Track
Mobilization	DoD Q #63 Number of Soldiers Processed
	FAC 2141 Vehicle Maintenance Shop
	FAC 7214 Annual Training /Mobilization Barracks
Institutional Training and Education	FAC 1711 General Instructional Facilities
	FAC 1712 Applied Instructional Facilities
Well-Being	FAC 5100 Medical Center/Hospital
	FAC 5400 Dental Facility
	FAC 7210 Enlisted Unaccompanied Personnel Housing
	FAC 7351 Education Center
	FAC 7371 Nursery And Child Care Facility
Joint Logistics	DoD Q #501, #506 Depot Maintenance
	DoD Q #512, #515 Armaments Production
	DoD Q #517 Ammunition Storage
C4I / Headquarters	FAC 6100 General Administrative Space
	FAC 6101 Small Unit Headquarters
	FAC 6102 Large Unit Headquarters
RDT&E	DoD Q #84 Specialized Testing Facilities
	DoD Q #85 Specialized Labs
	DoD Q #86 Testing Areas
Environment	DoD Q #213 Air Quality Attainment
	DoD Q #239 Off-Installation Zones with Incompatible Land Use Matrix - NZ II & NZ III
Mission Expansion	DoD Q #30 Buildable Acres
	DoD Q #198 Land Owned/Controlled by Installation

**Table 1. Selected Metrics by Mission**

## 2.0 RESULTS

Table 2 describes the analytical components of Capacity analysis; It consists of two phases and three levels. Physical analysis was completed first, and includes Levels I and II. Operational analysis, Level III, was performed last.

Phase	Level	Description
Physical	Level I	Considered an inventory of Army-owned assets (buildings, leaseholds, and land) available for use by DoD units and activities.
Physical	Level II	Calculated excesses and shortages of assets by comparing peacetime, operational, and surge requirements to the inventory of assets based on current stationing assignments.
Operational	Level III	Documented the potential capacity of an installation to support additional units and activities.

**Table 2. Phases and Levels of Capacity Analysis**

### 2.1 Physical Capacity Analysis (*Level I and Level II*)

#### 2.1.1 Physical Capacity Inventory (*Level I*)

Level I provided the Army with an inventory listing of assets available on installations. The Army reports its assets in RPLANS. Annex 1 provides several tables showing asset quantities for each type of facility on each installation. Detailed inventory listings can be found in the materials accompanying this report.

In addition to RPLANS assets, the TABS Group collected additional facility information through Data Calls. The data call information augmented RPLANS with specifics on services, manufacturing processes, unique capabilities, maneuver training land, and ranges.

A summary of selected metrics for Level I is listed in Table 3; all Level I results are at Annex 1. Level I, which simply depicts assets, was not as informative as Level II analysis, but it did illustrate that the Army has a rich inventory of diverse assets. During the scenario analysis phase, TABS determined the efficiencies within these assets and supported the JCSGs as they examined specific areas of study.

Missions	CAPACITY METRICS	Level of Analysis	Army Wide		UM
			Assets	Excess /Shortage	
Unit Training	DoD Q #144 Military Operations in Urban Terrain (MOUT) Ranges or Facilities Used	I	41,907		Acres
	DoD Q #877 Maneuver Areas Used	I	1,628		Million Acre-Days
	DoD Q #160 Airspace Attributes	I	40,702		Square NMiles
Deployment	FAC 8601 Railroad Track	I	1,816		Miles of Track
Mobilization	DoD Q #63 Number of Soldiers Processed	I	13,502		Solders per day
RDT&E	DoD Q #85 Specialized Labs	I	2,895		Thousand SF
	DoD Q #86 Testing Areas	I	6,138		Thousand Acres
Environment	DoD Q #213 Air Quality Attainment	I	3		No. of Pollutants
	DoD Q #239 Off-Installation Zones with Incompatible Land Use Matrix - NZ II & NZ III	I	320,754 8,152		Acres
Mission Expansion	DoD Q #30 Buildable Acres and DoD Q #198 Land Owned/Controlled by Installation	I	11,522		Thousand Acres

**Table 3. Summary of Selected Level I Metrics**

*2.1.2 Excess and Shortage Assessment (Level II)*

Level II compared the real property inventory for each installation, the assets the Army has (supply), against a list of requirements (demand). This supply-and-demand comparison defines where the Army has space for additional units and where unit requirements cannot be met. Level II analysis illustrated that the Army 1) has excess throughout its installations that will assist TABS in finding efficiencies, and 2) even though the Army may have such excess, it also has shortages throughout its installations. This over-short phenomenon was ideal for a BRAC analysis because it provided a cross-leveling opportunity to match units with specific requirements to installations with available assets. Unfortunately, most Army units do not need one facility, but need an array of facilities, which made the leveling problem more difficult.

Total unit requirements vary among installations due to different types of units, different equipment inside each unit, and different numbers of soldiers being located on each installation. The facility requirements that RPLANS generates are determined by a process which is briefly outlined in Annex 2. TABS used Army Training Circular 25-1 to determine maneuver training land and range requirements.

While the Army has some excess facilities in aggregate, numerous installations can still be short these assets. The Army also has a shortage in many types of facilities, some of which directly impact maneuver units such as company headquarters space, vehicle maintenance space, and enlisted Unaccompanied Personnel Housing (UPH) space. These shortages can hinder the Army’s ability to sustain its forces while in garrison. Knowing what installation is short or excess, in what type of facility, provides a key insight in recommending where to station units. Annex 2 contains tables showing differences between selected permanent assets and requirements based on current stationing.

Level II metrics at the Army-wide level did not capture the installation-specific situations. In fact, Army-wide measures can be deceiving because one installation with excess (shortage) can hide numerous installations with shortage (excess) simply because

Army-wide is an aggregate measure. Therefore, the Army examined the metrics at Table 4 at the installation level. Details for these metrics and additional summary tables showing differences between selected permanent assets and requirements based on current stationing can be found in Annex 2.

Missions	CAPACITY METRICS	Level of Analysis	Army Wide			Installation Level	
			Assets	Excess /Shortage	Unit of Measure	# of Excess	# of Shortage
Deployment	FAC 1111 Fixed Wing Runway, Surfaced	II	6,858	1,524	Thousand SY	16	10
	FAC 1131 Aircraft Apron, Surfaced	II	10,502	-2,288	Thousand SY	14	23
Mobilization	FAC 2141 Vehicle Maintenance Shop	II	12,836	-3,278	Thousand SF	27	40
	FAC 7214 Annual Training /Mobilization Barracks	II	6,308	-8,318	Thousand SF	7	46
Institutional Training and Education	FAC 1711 General Instructional Facilities	II	10,347	-948	Thousand SF	23	39
	FAC 1712 Applied Instructional Facilities	II	6,666	-1,523	Thousand SF	20	22
Well-Being	FAC 5100 Medical Center/Hospital	II	15,910	1,340	Thousand SF	17	10
	FAC 5400 Dental Facility	II	1,067	-79	Thousand SF	11	36
	FAC 7210 Enlisted Unaccompanied Personnel Housing	II	37,300	-2,518	Thousand SF	33	27
	FAC 7351 Education Center	II	1,210	-57	Thousand SF	16	21
	FAC 7371 Nursery And Child Care Facility	II	1,770	-1,365	Thousand SF	9	40
Joint Logistics	DoD Q #501, #506 Depot Maintenance	II	16,700	3,308	Thousand Hours	10	5
	DoD Q #512, #515 Armaments Production	II	6,119	4,206	Thousand Hours	6	0
	DoD Q #517 Ammunition Storage	II	48,315	19,195	Thousand SF	18	0
C4I/Headquarters	FAC 6100 General Administrative Space	II	36,281	1,693	Thousand SF	51	35
	FAC 6101 Small Unit Headquarters	II	13,707	-9,886	Thousand SF	9	48
	FAC 6102 Large Unit Headquarters	II	8,035	-1,047	Thousand SF	17	33
RDT&E	DoD Q #84 Specialized Testing Facilities	II	172,293	65,859	Thousand SF	30	1

**Table 4. Summary of Selected Level II Metrics**

**2.2 Operational Capacity Analysis (Level III)**

Operational analysis considered an installation’s ability to support additional specific unit requirements for selected facilities, maneuver lands, and range assets. Unlike Levels I and II, Level III analysis considered the potential capacity of an installation to support additional units and activities based on defined footprints across these assets.

Level III analysis began with *footprint development* for selected types of military units and supporting activities.<sup>7</sup> The footprints document the typical operational requirements in facilities and training lands for selected unit types such as an infantry brigade, small training school (e.g., Sergeants Major Academy), large training school (e.g., Infantry Center and School), administrative headquarters facility (e.g., TRADOC HQs), and an industrial facility. By overlaying the selected footprint on an installation’s inventory of assets, the analyst simulated the extent to which an installation could accommodate additional units. The footprints identify the maximum support available for selected unit types by using the installation’s existing facilities to satisfy the selected requirement. Analysis also estimated the capacity required to support additional units through the purchase of additional resources (e.g., MILCON) and highlighted the binding constraint(s) that preclude an installation from absorbing additional units.

Unit Type	
1	Light Maneuver Brigade
2	Heavy Maneuver Brigade
3	Stryker Brigade Combat Team (SBCT)
4	Small School
5	Large School
6	Small Administrative Organization
7	Large Administrative Organization

**Table 5. Types of Stationing Units for Level III**

As part of operational analysis, cost estimates for additional capability were included. Level II analysis highlight potential excess but that did not imply that the Army could take advantage of the excess without considerable cost. As an example, assume an installation has 100 KSF excess of general educational facilities. Consider a unit that can use excess general instructional facilities, the unit undoubtedly also has a requirement for other facilities. Unless the installation has these “other” facility types in excess as well, the installation’s excess general educational facilities can not be used without MILCON to build all other required facility types that are not available. This is the primary benefit of footprint analysis – it identifies what excess can be used within the context of a unit’s total requirement.

<sup>7</sup> Footprint analysis supported by the Center for Army Analysis (CAA), U.S. Army Construction Engineering Research Lab (CERL), the Corps of Engineers, and the Office of the Assistant Chief of Staff for Installation Management (OACSIM).

The Level III analysis considered two approaches: Clean Slate Stationing and Add-One Unit Stationing.

- **Clean Slate Stationing:** Assuming *all* permanent assets are vacant, the ability of those assets to support units was then assessed. This is called “clean slate” stationing. This analysis provides an *upper bound* for the potential placement units and gives TABS a greater understanding of an installation’s potential capacity.
- **Add-One Unit Stationing:** In this case, the *excess* permanent asset capacity on the installation was considered as available to reduce the need to build new facilities to satisfy an additional unit’s requirements. Any facility types with existing shortages were considered as having zero space available; requirements for these facilities would necessitate new MILCON. We calculated the cost of the required facilities for one additional unit for each installation and identified the binding facility type. This approach is referred as “Add-One Unit” stationing.

All FACs are within RPLANS; footprint requirements are determined in terms of three FAC groups – Range, Core and Community.<sup>8</sup> Two additional groups, Utility and “Other” have less of an impact on operational unit requirements or are problematic when it comes to measuring assets. At the end of the analysis, a cost estimate for satisfying the Core and Community facility requirements for these units was included.

Due to recent changes in Army force structure and IGPBS, this analysis considered stationing of 48 brigades.<sup>9</sup> This is a “maximum” number, meant to illustrate the surge capacity the Army would need to station if all brigades were stationed on CONUS Army installations as opposed to overseas (43) and additional brigades to account for potential surge (5).

### 2.2.1 Clean Slate Stationing

Clean slate stationing considered the maximum use of all installation facilities and provided the most optimistic capacity results by assuming that all permanent facilities were vacant and could be used to station each respective standard footprint. The ability of those assets to support units was assessed in terms of Range, Core, and Community FAC groups.

#### 2.2.1.1 Range Requirements

The Army considered the operational capacity analysis from the direct and indirect fires, training area requirement, contiguous maneuver area, and airspace perspectives. The future Army will include a mix of Current, Stryker, and Future forces and vehicles, which will require maneuver and training areas with appropriate complex terrain that provides realistic conditions for all three force structures and organizations.

- **Direct and Indirect Fires:** Data calls provided information on training capability, e.g. data on impact areas, standoff distances, and other information

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<sup>8</sup> Annex 1, Table 43 illustrates the mapping between the FAC group and BRAC Missions.

<sup>9</sup> 22 heavy brigades, 21 light brigades and 5 Stryker Brigade Combat Teams (SBCTs).

pertaining to installation’s capability to train various types of weapons on the installation (see Annex 2 for details).

To determine a baseline capability of an installation to support direct and indirect fires, the Army used a set of screening criteria to eliminate non-maneuver-capable installations from the list of 87 installations. The Army considered installations with direct fire impact areas of more than 30,000 acres, with direct fire impact areas of more than 10,000 acres that were available for 50 caliber ammunition and larger, or those with any size impact area able to support direct fire weapons larger than 120 mm, capable of supporting a maneuver brigade size unit’s requirements (from the direct-fire perspective). Installations with indirect firing points over 30 kilometers from an impact area, with indirect firing points able to support weapons larger than 120 mm, or able to safely fire Multiple-Launch Rocket System (MLRS) and Patriot missiles, were considered capable from an indirect perspective.

Using these direct and indirect fire screening criteria, 25 installations were identified capable of supporting Army requirements (Table 6). This list includes traditional Army maneuver installations and the Army’s three major test ranges, White Sands Missile Range, Yuma and Dugway Proving Grounds.

Installation	Direct/Indirect Criteria Satisfied	Currently Have MNVR BDE
Ft Benning	Yes	Yes
Ft Bragg	Yes	Yes
Ft Campbell	Yes	Yes
Ft Carson	Yes	Yes
Ft Drum	Yes	Yes
Ft Hood	Yes	Yes
Ft Lewis	Yes	Yes
Ft Polk	Yes	Yes
Ft Riley	Yes	Yes
Ft Stewart / Hunter AAF	Yes	Yes
Ft Wainwright	Yes	Yes
Schofield Barracks	Yes	Yes
Ft Irwin	Yes	No
Dugway PG	Yes	No
Ft AP Hill	Yes	No
Ft Bliss	Yes	No
Ft Dix	Yes	No
Ft Jackson	Yes	No
Ft Knox	Yes	No
Ft McCoy	Yes	No
Ft Richardson	Yes	No
Ft Rucker	Yes	No
Ft Sill	Yes	No
White Sands MR	Yes	No
Yuma PG	Yes	No

**Table 6. Installations Meeting Screening Criteria**



- Training Area requirement:** In general, live training asset inventories include training area in square kilometers or acres, square kilometer x days (km<sup>2</sup> x days), and institutional training land requirements (km<sup>2</sup> x days). From ARRM, three of the stationing units – small-school, small-admin organizations, and large-admin organizations – have no training land requirements. The other four units, Heavy Brigade, Light Brigade, Stryker BCT, and Large School have requirements of varying amounts for both light and heavy training areas (Table 7).

Requirements (square kilometer-Days)	Light MNVR Area (Dismounted)	Heavy MNVR Area (Mounted)
Light Maneuver Brigade	48,702	0
Heavy Maneuver Brigade	8,708	51,738
SBCT	157,060	896
Large School	88,973	150
Small School	0	0
Large Admin	0	0
Small Admin	0	0

**Table 7. Maneuver Land Requirements<sup>10</sup>**

Table 7 is based on current requirements; future force maneuver land requirements are examined in detail in the maneuver land assessment.

To determine the sensitivity of installation unit capacity to maneuver area requirements, the TABS Group changed the percent of the maneuver area requirement that the installation needs to satisfy and then determined the installation’s expanded capability. In Table 8, the first row shows the number of Army installations that meet maneuver land requirements. From the second row down, each row shows the number of installations that satisfy requirements under successive 10 percent reductions to the requirement potentially satisfied with simulations, CTC training, or other means.

Sensitivity Percentage	Light BDE	Heavy BDE	SBCT
100% Satisfied	22	14	9
90% Satisfied	23	14	9
80% Satisfied	23	16	10
70% Satisfied	25	17	11
60% Satisfied	26	18	12

**Table 8. Number of Installations Satisfying Maneuver Area Requirements**

Based on the above results, the TABS Group determined that up to 26 installations have some level of ability to support heavy, light, or SBCT maneuver land requirements.

<sup>10</sup> Future Force maneuver land requirements are examined in detail in the maneuver land assessment.

Standard Footprint Unit	Light BDE			Heavy BDE			SBCT			Currently have MNVR Bde
	100%	80%	60%	100%	80%	60%	100%	80%	60%	
Installations Satisfying Requirements	22	23	26	14	16	18	9	10	12	
Ft Benning	2	3	4	1	1	2	0	1	1	Yes
Ft Bragg	2	2	3	1	1	1	0	0	1	Yes
Ft Campbell	1	1	2	0	0	0	0	0	0	Yes
Ft Carson	5	5	5	5	5	5	2	2	3	Yes
Ft Drum	1	1	2	0	0	0	0	0	0	Yes
Ft Hood	2	3	4	2	2	3	0	0	1	Yes
Ft Lewis	5	5	5	5	5	5	2	2	3	Yes
Ft Polk	3	4	5	2	3	4	1	1	1	Yes
Ft Riley	1	1	2	1	1	1	0	0	0	Yes
Ft Stewart / Hunter AAF	5	5	5	4	5	5	1	1	2	Yes
Ft Wainwright	5	5	5	5	5	5	5	5	5	Yes
Schofield Barracks	0	0	1	0	0	0	0	0	0	Yes
Ft Irwin	5	5	5	5	5	5	2	2	3	
Dugway PG	5	5	5	0	0	0	0	0	0	
Ft AP Hill	1	1	2	0	0	0	0	0	0	
Ft Bliss	5	5	5	5	5	5	5	5	5	
Ft Gordon	0	0	1	0	0	1	0	0	0	
Ft Huachuca	1	1	2	0	0	0	0	0	0	
Ft Knox	1	2	2	1	1	2	0	0	0	
Ft McCoy	1	1	1	0	1	1	0	0	0	
Ft Richardson	1	1	1	0	1	1	0	0	0	
Ft Rucker	0	0	1	0	0	0	0	0	0	
Ft Sill	0	1	1	0	0	1	0	0	0	
White Sands MR	5	5	5	5	5	5	5	5	5	
Yuma PG	5	5	5	3	4	5	2	2	3	
Hawthorne AD	1	1	2	0	0	0	0	0	0	

**Table 9. Installations Satisfying Maneuver Land Requirements**

Table 9 provides the number of brigades given the requirements in Table 8 and the assets of these installations. Each entry is independent of all others, and the entries are not additive. Table 9 assumed initially that all the lands could be used to satisfy requirements and did not include environmental restrictions, operational considerations, sustainability, etc.; however, any value greater than five was truncated to five due to these considerations (for Ft. Bliss, Ft. Wainwright, and White Sands Missile Range).

As seen in Table 9, the Army has installations that station brigades but have limited capability. These installations cannot satisfy doctrinal requirements, but satisfy maneuver land requirements through training management or the use of other training locations.

- **Contiguous Maneuver Area:** Ideally, installations would have sufficient contiguous maneuver-training areas to support the largest collective training event conducted at home station. ARRM describes the contiguous and non-contiguous maneuver training area requirements for training operational forces. “Contiguous” means the unit commander has the appropriate size (km<sup>2</sup> or acres) maneuver area available and control over that maneuver area to support collective

live training. For example, a heavy brigade needs 20 km X 30 km, and a light brigade needs a 16 km X 20 km for force-on-force mounted training area. The commander must control that maneuver area to ensure there are no training distractions or unsafe activities resulting from other units in the same area.<sup>11</sup> From the TABS Capacity Data Call, 25 installations reported more than 100 acres of contiguous maneuver area. Eight installations (including a test range) reported the land to support the above requirements for a force-on-force maneuver mounted training area for a light brigade, and five installations for a heavy brigade (Table 10). Other maneuver training installations cannot support force-on-force training at the brigade level IAW doctrinal requirements, but the Army has brigades at these locations because they can meet most requirements and the Army cannot locate all maneuver brigades at a small set of installations, due to environmental restrictions, operational considerations, sustainability, etc.

Installation	Contiguous mounted training area (km2)	Light BDE training	Heavy BDE training
Ft Wainwright	2,413	Yes	Yes
Dugway PG	1,981	Yes	Yes
Ft Irwin	1,449	Yes	Yes
Ft Bliss	1,230	Yes	Yes
Ft Carson	707	Yes	Yes
Ft Stewart / Hunter AAF	394	Yes	
Ft Lewis	328	Yes	
Ft Benning	317		
Others >100 km2 (6)	1,045		

**Table 10. Installations with Largest Contiguous Maneuver Area**

- **Airspace:** Airspace is a critical element in combined arms training; the ground shadow of the airspace is a common metric for measurement. Provisions must be made to designate airspace for airborne intelligence-gathering platforms, close air support, air defense, field artillery, mortar firing and UAV military operations area as part of the combined arms team.

Most of the Army installations have control over a large ground shadow of airspace; however, if a 50 km radius of UAV military operations area is considered, only a small set of installations can support the requirement.

Based on the above perspective, the Army has 25 installations with direct and indirect fire capability; 22 with 100% light brigade maneuver land capability; eight with contiguous capability; and multiple with airspace capability.

2.2.1.2 Core Facilities

Installation assets are available to satisfy the Core group<sup>12</sup> facility requirements for varying numbers of all but one of the standard footprints. Neither Fort Benning (home of

<sup>11</sup> TC 25-1, “Training Land,” March 2004.

<sup>12</sup> E.g. Organizational Classroom, Vehicle Maintenance Shop, General Administrative Building, Small and Large Unit Headquarters Building, Enlisted Unaccompanied Personnel Housing, Vehicle Parking, Surfaced, etc.

the Infantry School) nor any other installation was able to satisfy the total Core group doctrinal requirements of the Large School footprint with permanent assets. Other installations currently support various missions although they are short of the required Core facilities. For example, the lack of sufficient permanent assets implies that Fort Campbell is unable to properly support the small-school currently stationed there, and that Fort McPherson is unable to properly support the large-admin footprint stationed there. Each of these locations currently has units of this type and is meeting unit requirements in some way (e.g., substitute facility types, temporary facilities, multiple shifts), which illustrates the resiliency of Army units to adjust and the flexibility of Army installations to provide support.

The TABS Group deleted FACs from the standard footprint to determine their impact on installation capacities and potential stationing actions. The most binding Core facility for maneuver unit stationing was the Officer Unaccompanied Personnel Housing requirement (O-UPH). Eliminating this constraint enabled stationing of 33 light brigades before one or more other assets were unable to support additional light brigade footprints. This relaxation seemed reasonable since most installations' local communities can handle unaccompanied officer housing requirements, a common practice on Army installations.

Permanent assets were available to satisfy the adjusted standard footprint requirements for all footprints except Large-School. Analysis of the Large-School results indicated three installations with shortages in eight facility types. Eliminating the requirement for four facility types, General Purpose Instruction Building, Applied Instruction Building, Student Barracks, and Recruit/Trainee Barracks allowed two installations to satisfy the remaining Core doctrine requirements for a Large-School. The reduced list of Core requirements was compared for all seven types of units. Table 11 lists the number of footprints the Army can station.

Core Requirements	Light BDE	Heavy BDE	SBCT	Small School	Large School	Small Admin	Large Admin
Full	3	2	2	64	0	441	126
Reduced	33	24	26	227	2	441	126

**Table 11. Footprints with Core Facilities Supported by Army Installations**

2.2.1.3 Community Facilities<sup>13</sup>

Technically, most Army installations can support several of the standard footprints since each installation currently supports multiple missions. Initial results indicated that the Army is short of permanent facilities in the Community group; the use of non-permanent assets reduced some shortages, but many installations were still short Community FAC group facilities for each footprint. For example, according to RPLANS, Ft. Hood does not have sufficient community facilities to support a brigade. In fact, Ft. Hood, like many other installations, currently supports numerous units including several brigades.

Installations like Ft Hood often use non-permanent structures that were pressed into service or made available when another agency moved out of their old facilities; Army analysis did not consider non-permanent assets. Second, local areas provide facilities and services in the community around an installation. Facilities and services commonly available outside installations include post offices, banks, churches, service stations, restaurants, sports fields, auto repair shops, and numerous other retail outlets.

To account for the fact that installations are supporting their current units, the TABS Group adjusted the requirements based on existing shortages in Community FACs. For example, permanent dental facilities (FAC 5400) are short in aggregate across the Army. Examining the shortage at the installations, dental facilities average a 25 percent shortage; therefore the dental facility requirements were reduced by 25 percent. Applying the same method to other FACs in the community group provided an adjusted requirement. Adding the adjusted requirements for each FAC determined the overall requirement, which were then overlaid to the existing capacity.

All units except the Large-School have permanent assets to satisfy the adjusted requirements. The Large School permanent facility shortages were reviewed and after eliminating four from consideration, two installations were able to satisfy the remaining adjusted requirements. The eliminated FACs include Bank and Credit Union, Miscellaneous MWR Support Facility, Religious Education Facility, and Education Center. The numbers of footprints that Army installations can support that met the full doctrinal and adjusted community facility requirements are listed in Table 12.

Community Requirements	Light BDE	Heavy BDE	SBCT	Small School	Large School	Small Admin	Large Admin
Full	5	1	1	44	0	53	16
Adjusted	18	10	11	62	2	72	55

**Table 12. Footprints with Community Facilities Supported by Army Installations**

Lack of community facilities could restrict stationing at most installations, this shortage is not seen as a binding constraint for capacity, because shortages can be satisfied by MILCON for permanent assets, relying on off-post facilities, or using temporary facilities.

2.2.1.4 Summary of Clean Slate Stationing

The Army currently operates with shortages of different facility types on all of its installations. The installation commands have resolved individual installation shortages

<sup>13</sup> E.g., Dental Facility, Commissary, Bowling Center, Athletic Field, etc.

and are meeting their mission requirements. This may mean using a range more than planned or using heavy maneuver land for light maneuver units. Installations that have capacity to support the Core requirements of one footprint may not have the Community assets to support the same number of footprints. For example Fort Bragg has Core facilities for six light maneuver brigades but cannot satisfy the Community facility requirements for a single brigade. Lack of permanent Community facilities is the single most limiting factor in Clean Slate stationing.

By combining the results from the Range, Core, and Community facility analysis, the Army could determine the installation's capability to support the different unit footprints. An installation may have Core facilities to support multiple units yet not have a similar amount of Community facilities. Likewise an installation may have Community facilities yet lack Core assets. For an installation to have a facility capacity in Table 13 it had to have capacity in both Core and Community facilities. The facility type results were compared and the lowest capacity of these two was used as the combined or Facility Capacity for the installation. Table 13 provides the installations capable of supporting a number of footprints.

Footprint used	Installation Capacity (Combines FAC and MNVR)							Facility Capacity							MNVR Land Capacity				Weapons Capability
	Light BDE	Heavy BDE	SBCT	Small School	Large School	Small Admin	Large Admin	Light BDE	Heavy BDE	SBCT	Small School	Large School	Small Admin	Large Admin	Light BDE	Heavy BDE	SBCT	Large School	
Aberdeen PG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	No
Adelphi Labs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	No
Anniston AD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	No
Blue Grass AD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	No
Carlisle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	No
Charles E. Kelly SPT CTR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	No
Corpus Christi AD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	No
Crane AAP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	No
Deseret Chem Plant	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	No
Detroit Arsenal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	No
Dugway PG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	1	Yes
Ft AP Hill	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	Yes
Ft Belvoir	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	No
Ft Benning	2	1	0	6	1	6	4	2	1	2	6	1	6	4	2	1	0	1	Yes
Ft Bliss	0	0	0	1	0	2	1	0	0	0	1	0	2	1	5	5	5	5	Yes
Ft Bragg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	1	Yes
Ft Buchanan	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	No
Ft Campbell	1	0	0	5	0	6	1	2	1	1	5	0	6	1	1	0	0	0	Yes
Ft Carson	2	1	1	4	0	4	3	2	1	1	4	0	4	3	5	5	2	3	Yes
Ft Detrick	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	No
Ft Dix	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Yes
Ft Drum	1	0	0	5	0	5	1	1	0	0	5	0	5	1	1	0	0	0	Yes
Ft Eustis	0	0	0	0	0	4	3	0	0	0	3	0	4	3	0	0	0	0	No
Ft Gillem	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	No
Ft Gordon	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	No
Ft Hamilton	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	No
Ft Hood	2	2	0	11	0	14	4	3	3	3	11	0	14	4	2	2	0	1	Yes
Ft Huachuca	0	0	0	0	0	2	2	0	0	0	2	0	2	2	1	0	0	0	No
Ft Jackson	0	0	0	1	0	2	1	0	0	0	1	0	2	1	0	0	0	0	Yes
Ft Knox	1	0	0	3	0	3	3	1	0	0	3	0	3	3	1	1	0	0	Yes
Ft Leavenworth	0	0	0	0	0	2	1	0	0	0	0	0	2	1	0	0	0	0	No
Ft Lee	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	No
Ft Leonard Wood	0	0	0	0	0	2	2	0	0	0	2	0	2	2	0	0	0	0	No
Ft Lewis	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	5	2	3	Yes
Ft McCoy	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	Yes
Ft McNair	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	No
Ft McPherson	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	No
Ft Meade	0	0	0	0	0	4	2	0	0	0	2	0	4	2	0	0	0	0	No
Ft Monmouth	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	No
Ft Monroe	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	No
Ft Mver	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	No
Ft Polk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	2	1	2	Yes
Ft Richardson	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	Yes
Ft Rilev	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	Yes
Ft Rucker	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Yes
Ft Sam Houston	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	No
Ft Shafter	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	No
Ft Sill	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Yes
Ft Stewart / Hunter AAF	1	1	1	3	0	3	1	1	1	1	3	0	3	1	5	4	1	2	Yes
Ft Wainwright	0	0	0	4	0	4	1	0	0	0	4	0	4	1	5	5	5	5	Yes
Hawthorne AD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	No

Table 13. Installations Capable of Supporting Footprints

### *2.2.2 Add-One Unit Stationing*

Unlike Clean Slate, in Add-One Unit Stationing analysis the Army considered the current unit stationing assignments. Level II analysis identified some excess facilities on different installations. While not enough to support stationing of a standard footprint, these excess facilities could be used to reduce the amount of new facilities the Army needs to build for a unit. Add-One used the same basic assumptions and building blocks in Level I, II, and Clean-Slate; therefore we did not restate the basics here, we simply reviewed results.

An installation's MILCON requirements to support a footprint were determined by "stationing" a unit at the installation using the RPLANS analysis tools. When stationing additional units at an installation, many of the Community facilities already exist and may only require "expansion" to accommodate the additional personnel.

#### *2.2.2.1 Results*

Table 14 shows a modified requirement for a maneuver brigade when stationed at an installation with existing facilities. The "modified" column illustrates what FAC requirements can be decreased given some facilities exist.



	Representative Maneuver Units	Light BDE	Light BDE	
	Population of unit	2,726	2,726	
GROUP	FAC DESCRIPTION	Full	Modified	UM
Core	Organizational Classroom	23	23	KSF
Core	Vehicle Maintenance Shop	62	62	KSF
Core	General Administrative Building	6	6	KSF
Core	Small Unit Headquarters Building	238	238	KSF
Core	Large Unit Headquarters Building	72	72	KSF
Core	Enlisted Unaccompanied Personnel Housing	404	404	KSF
Core	Dining Facility	28	28	KSF
Core	Officer Unaccompanied Personnel Housing	50	0	KSF
Core	Vehicle Parking, Surfaced	369	369	KSY
Community	Dental Facility	12	1	KSF
Community	Dispensary And Clinic	8	3	KSF
Community	Exchange Eating Facility	6	2	KSF
Community	Open Mess And Club Facility	13	1	KSF
Community	Postal Facility	3	2	KSF
Community	Exchange Automotive Facility	4	2	KSF
Community	Exchange Sales Facility	48	16	KSF
Community	Bank And Credit Union	3	1	KSF
Community	Commissary	35	10	KSF
Community	Education Center	10	6	KSF
Community	Chapel Facility	25	18	KSF
Community	Religious Education Facility	5	4	KSF
Community	Nursery and Child Care Facility	24	24	KSF
Community	Family Service Center	7	0	KSF
Community	Hobby And Craft Center	10	5	KSF
Community	Automobile Craft Center	9	6	KSF
Community	Bowling Center	16	0	KSF
Community	Library, General Use	11	9	KSF
Community	Recreation Center	34	34	KSF
Community	Indoor Physical Fitness Facility	65	31	KSF
Community	Auditorium And Theater Facilities	0	0	KSF
Community	Miscellaneous MWR Support Facility	8	0	KSF
Community	Outdoor Swimmng Pool	2	0	EA
Community	Outdoor Playing Court	4	4	EA
Community	Athletic Field	18	18	EA

**Table 14. Facility Requirements for Add One Unit Analysis (Light Brigade)**

The modified requirements from Table 14 were used when calculating the facility requirements to add a unit to an installation. After considering the units already stationed at the installation, any excess facilities were considered in calculating the amount of facilities required for the additional unit. For example, excess E-UPH was used to reduce the E-UPH requirement for the additional unit. Excess general administrative space was not used to reduce requirements for large or small unit headquarters. Any existing shortage was not considered. For example, if the additional unit required 25,000 SF for small unit headquarters and the installation was already short 40,000 SF, only the requirement of 25,000 SF was used to determine the additional

facility costs. Once the amount of each type of FAC needed to support stationing one additional representative unit on the installation was determined, the individual amounts were multiplied by the Fiscal year 2004 Major Construction, Army (MCA) cost factors from TABS RPLANS for that facility type to determine the cost of the new facilities. These factors include such costs as \$159.99 per square foot for vehicle maintenance facilities, \$159.03 per square foot for enlisted unaccompanied personnel housing, \$248.20 per square foot for dining facilities, \$175.06 per square foot for child development centers, and \$170.05 per square foot for indoor fitness centers.

Standard Footprint	Lowest Cost		Highest Cost	
	(Core Facilities)	(All Facilities)	(Core Facilities)	(All Facilities)
Light MNVR BDE	\$49.4	\$79.9	\$151.5	\$186.4
Heavy MNVR BDE	\$103.2	\$145.5	\$224.4	\$269.5
SBCT	\$94.1	\$132.1	\$198.4	\$241.2
Small School	\$5.1	\$5.5	\$22.4	\$23.4
Large School	\$735.7	\$827.7	\$850.4	\$967.5
Small Admin Organization	\$0.0	\$0.4	\$10.6	\$11.6
Large Admin Organization	\$0.0	\$2.0	\$22.4	\$25.0

**Table 15. Add One Unit Costs (\$M)**

Table 15 reflects the construction costs across Army Installations for the required Core *and* Community facilities for each standard footprint that were lessened to include the impact of using excess permanent facilities on the installation to satisfy requirements. These estimates do not include housing, range costs, and supporting utility infrastructure for the new facilities, which costs from a few million to many millions depending on the amount and types of facilities required for the unit.

Table 16 illustrates the cost to place different types of brigade structures on Army installations that can support the maneuver and range requirements for at least one maneuver brigade. The shaded areas indicate construction costs at installations where maneuver land is not available to support the unit. Facilities could be constructed at these installations, but arrangements would be required to provide access to the required maneuver land.

Installation	Currently Have MNVR BDE	Range	MNVR Land			Light BDE		Heavy BDE		SBCT	
		Direct/Indirect Criteria Satisfied	Light BDE	Heavy BDE	SBCT	Core Facility Costs	Community Facility Costs	Core Facility Costs	Community Facility Costs	Core Facility Costs	Community Facility Costs
Ft Bliss		Yes	Yes	Yes	Yes	\$86	\$25	\$148	\$33	\$124	\$31
Ft Carson	Yes	Yes	Yes	Yes	Yes	\$111	\$32	\$171	\$42	\$146	\$40
Ft Lewis	Yes	Yes	Yes	Yes	Yes	\$67	\$33	\$103	\$42	\$102	\$40
Ft Polk	Yes	Yes	Yes	Yes	Yes	\$122	\$25	\$185	\$34	\$163	\$32
Ft Stewart / Hunter AAF	Yes	Yes	Yes	Yes	Yes	\$127	\$34	\$200	\$44	\$174	\$42
Ft Wainwright	Yes	Yes	Yes	Yes	Yes	\$87	\$25	\$159	\$32	\$132	\$30
Ft Irwin	Yes	Yes	Yes	Yes	Yes	\$141	\$33	\$214	\$43	\$188	\$41
White Sands MR		Yes	Yes	Yes	Yes	\$126	\$24	\$199	\$34	\$173	\$32
Yuma PG		Yes	Yes	Yes	Yes	\$148	\$29	\$221	\$39	\$192	\$37
Ft Benning	Yes	Yes	Yes	Yes		\$94	\$29	\$157	\$39	\$135	\$36
Ft Bragg	Yes	Yes	Yes	Yes		\$124	\$28	\$186	\$35	\$164	\$33
Ft Hood	Yes	Yes	Yes	Yes		\$141	\$32	\$214	\$42	\$188	\$40
Ft Knox		Yes	Yes	Yes		\$111	\$28	\$151	\$35	\$149	\$34
Ft Riley	Yes	Yes	Yes	Yes		\$122	\$25	\$185	\$34	\$163	\$32
Dugway PG		Yes	Yes			\$144	\$27	\$217	\$38	\$191	\$35
Ft AP Hill		Yes	Yes			\$133	\$33	\$205	\$43	\$176	\$40
Ft Campbell	Yes	Yes	Yes			\$130	\$34	\$193	\$44	\$171	\$42
Ft Drum	Yes	Yes	Yes			\$147	\$35	\$220	\$45	\$194	\$42
Ft McCoy		Yes	Yes			\$119	\$33	\$183	\$43	\$160	\$41
Ft Richardson		Yes	Yes			\$49	\$31	\$117	\$40	\$94	\$38
Ft Dix		Yes				\$146	\$29	\$219	\$37	\$193	\$35
Ft Rucker		Yes				\$49	\$31	\$117	\$40	\$94	\$38
Schofield Barracks	Yes	Yes				\$87	\$32	\$160	\$42	\$134	\$39
Ft Jackson		Yes				\$135	\$30	\$207	\$37	\$178	\$35
Ft Sill		Yes				\$98	\$32	\$158	\$41	\$134	\$39

**Table 16. Costs to Station One Additional Maneuver Brigade (\$M) (FY 03 Requirements)**

2.2.2.2 Summary of Add-One Unit Stationing

The Army has the capability to expand to meet facility requirements, but this expansion can be expensive due to large MILCON requirements. Actual costs will be higher due to the limited set of facilities included in the core and community facility groups.

Supporting utility infrastructure will increase costs by approximately 25%. Housing will increase costs in all cases.

Each installation listed in Table 16 has some excess facilities. Even with such excess, the cost to place a brigade on any installation is greater than \$79M. Facilities such as administrative buildings can be purchased, but maneuver land and range requirements are harder to satisfy. In Table 16 we see there are 20 Army installations that can satisfy a light brigade’s maneuver requirements and even fewer for Heavy and SBCT units. Two of the installations listed on Table 13 as having facilities and maneuver land, Ft Huachuca and Hawthorne AD, are not on Table 16 since they do not have range capabilities (Table 6). The future will bring even larger requirements as unit footprints

grow due to new Army technology and the increasing capabilities of Army weapons and vehicles.

## **2.3 Maneuver Stationing**

### *2.3.1 Introduction*

The Army must retain installations that are capable of projecting and sustaining highly operationally ready forces on short notice to respond to any crisis. To support these forces, the Army must take a strategic view of its training infrastructure and provide the best capabilities based on mission and doctrinal requirements. The TABS training capacity analysis indicates that the Army has sufficient training land to meet current training requirements if it maintains its major maneuver training installations, but the Army will have a challenge to meet future requirements. The Army requirement is a function of unit training requirements and the number of units documented in the Army's Twenty-Year Force Structure Plan. With the programmed increase from 33 Brigade Combat Teams (BCTs) in FY03 to 43 BCTs in FY06, the Army is at its overall capacity. An installation analysis indicates that the Army has a stationing challenge and should consider realigning some of its installations to make better use of existing capacity. The focus of the training capacity analysis is to provide insight into the development of potential BRAC scenarios.

The US Army (Active Army, Army National Guard, Army Reserve) trains according to Army Training and Evaluation Programs (ARTEP) Mission Training Plans (MTP) and the Combined Arms Training Strategy (CATS), which identify requirements for maneuver / training areas (maneuver areas, live-fire ranges, surface danger zones and impact areas) to support training. Realistic training is the essential element that assures unit combat readiness. Maneuver space that restricts doctrinal unit employment and does not reflect the potential battlefield will impair this readiness.

The TABS analysis focused on determining the training capacity of each installation in the BRAC 2005 portfolio and the training requirements of units assigned: 1) Light maneuver training acreage; 2) Heavy maneuver training acreage; 3) Largest contiguous heavy maneuver area acreage; 4) direct fire range capability; 5) indirect fire range capability; 6) Military Operations in Urban Terrain (MOUT) capability; and 7) Airspace.

After reviewing the installation certified data on these measures, TABS determined that the most constraining was maneuver training acreage. Typically, the airspace associated with an installation was equal to or greater than the maneuver acreage. Direct, indirect fire, and MOUT capabilities were, with some exceptions, directly related to the units currently assigned. In those exceptions identified, these capabilities routinely exceeded that of the installation's maneuver training capability. Based on these insights, TABS' BRAC 2005 training capacity analysis focused on available maneuver acreage.

TABS conducted a three step process. First it determined the maneuver land inventory to support Army requirements across 87 installations. The second step determined the Army's unit training land requirements. Each type of Army unit has a different doctrinal set of maneuver land requirements that are dictated by unit type, mission, and size (specific unit requirements are documented in Training Circular 25-1). The third and

most challenging step was to combine the supply (step 1) and demand (step 2) to estimate required capacity in terms of excesses, shortages, and surge.

2.3.2 *Maneuver Land Inventory*

2.3.2.1 Data

The TABS Group had two sets of certified data for heavy and light maneuver land, the Real Property Planning and Analysis System (RPLANS) database and the results of the capacity data call; aggregate acres are shown in Table 17. There were differences between the total available maneuver acres according to RPLANS and the Data Call.

BRAC 2005 Capacity Data	RPLANS (Acres)	Data Call (Acres)
	3,980,000	6,727,587

**Table 17. Certified Data Sets for Maneuver Land**

2.3.2.2 Test Ranges

The reason for the discrepancy was that RPLANS did not include a large majority of the land at the Army Test and Evaluation Command (ATEC) installations at Yuma Proving Grounds, Dugway Proving Grounds, and White Sands Missile Range. ATEC considered these tracts of land as Research, Development, Test & Evaluation (RDT&E) ranges where the primary mission is to support RDT&E operations. During the capacity data call, the TABS Group asked the ATEC installations which land “could” support maneuver training, which increased their maneuver land estimates as shown in Table 18. TABS used the certified data to analyze training capacity.

Installation	RPLANS (Acres)	Data Call (Acres)
Yuma Proving Ground	1,000	367,639
Dugway Proving Ground	83,000	635,000
White Sands Missile Range	0	557,146
TOTAL	84,000	1,559,785

**Table 18. Potential Maneuver Land Estimates, ATEC Installations**

2.3.2.3 Active and Reserve Component Assets

In addition to active component Army installations, another source of maneuver training land exists on Reserve Component installations such as Camp Grayling in Michigan or the Orchard Training Area / Gowen Field Complex in Idaho, which are not used as often as the active installations, but provide opportunities for additional training capacity. These installations are not on the Army’s installation list for BRAC 2005, so TABS did not collect information from them during the capacity data call, but RPLANS database indicates that there are 811,000 maneuver acres spread across all RC installations. TC 25-1 states that the training area requirement for an infantry company to train retrograde operations is 102 square kilometers. Table 19 provides a summary of the major reserve

component maneuver training acres that can meet this requirement of approximately 25 K acres.

RC Installation	Acres
Camp Grayling, MI	118,764
Camp Shelby, MS	117,115
Orchard / Gowen	76,381
Chaffee, AR	50,656
Camp Gruber, OK	40,847
Camp Blanding, FL	38,994
Camp Ripley, MN	35,011
Camp Roberts, CA	30,822
Biak Training Center, OR	27,953
Major RC Total	536,543
TOTAL	811,000

**Table 19. Major RC Maneuver Training Lands**

A summary of active component installation maneuver land acres is in Table 20.

Installation	Acres
Ft Wainwright	1,292,264
Ft Bliss	992,303
Ft Irwin	358,000
Ft Carson /PCMS	351,124
Ft Lewis YTC	348,581
Ft Stewart	263,686
Ft Polk	183,146
Ft Hunter-Liggett	157,570
Ft Benning	142,126
Ft Hood	136,912
Ft Bragg	105,733
Ft Knox	87,857
Ft Drum	77,387
Ft AP Hill	74,262
Ft Riley	68,692
Hawthorne AD	68,268
Ft Campbell	66,424
Ft Huachuca	66,310
Ft Richardson	50,313
Ft McCoy	47,137
Ft Sill	46,404
Ft Rucker	38,745
Ft Gordon	37,217
Schofield Barracks/PTA	34,437
Ft Jackson	24,563
Ft Leonard Wood	21,052

**Table 20. Major AC Maneuver Training Lands**

2.3.2.4 Other Military Departments

In addition to Army analysis, TABS analysts also worked with the other Military Departments and the Education and Training Joint Cross Service Group (E&T JCSG) to examine capacity. Table 21 shows the major training land controlled by the other Military Departments. TABS examined the stationing of Army BCTs at these installations during scenario analysis. While each installation is somewhat unique, TABS made the following conclusions with respect to these installations. The Marine Corps Bases (MCB) and Marine Corps Air Stations (MCAS) are already at capacity or have shortages. The land generally associated with Air Force and Navy bases has not been certified as compatible for ground maneuver training. In many cases, the Air Force training land is not located adjacent to the installation, but is a separate enclave with little to no infrastructure located 100 or more miles from the parent installation, which makes the installation an effective Air Force location but not conducive to Army stationing.

Installation	Acreage
Nellis AFB, NV	7,612,800
Hill AFB, UT	2,224,189
MCAS Yuma, AZ	1,152,087
China Lake, CA	1,110,443
Luke AFB, AZ	1,021,936
Eglin AFB, FL	463,067
MCB 29 Palms, CA	340,047
Edwards AFB, CA	301,000
NAS Fallon, NV	230,977
MCB Pendelton, CA	125,703
MCB Lejeune, NC	100,980
Cannon AFB, NM	66,033
MCB Quantico, VA	60,484
TOTAL	14,809,746

**Table 21. Major Other Service Maneuver Training Lands**

2.3.3 Unit Requirements

2.3.3.1 Defining Requirements

After determining the maneuver land inventory, TABS focused on unit training requirements. The training of soldiers, leaders, and units is vital in ensuring the readiness of the force to accomplish all missions. To be effective, individual and collective training must provide soldiers and leaders with the opportunity to practice battle-focused mission essential training tasks in tough and realistic live training – field environments. Maneuver training requirements are outlined in Training Circular (TC) 25-1, Training Land, which RPLANS uses to determine unit requirements for each installation. This value can be used to determine current (FY03) force requirements (discussed in previous sections). However, the current version of TC 25-1 does not include requirements for the Army’s modular heavy and infantry BCTs. Using TC 25-1 as a start point, TABS worked with the Army’s G3 Training Directorate and developed the revised requirements for the new modular force structure.

The new modular BCT structure includes armor, infantry, cavalry and artillery as organic subordinate elements. These changes along with emerging doctrine and technological advances dramatically increase the training requirements for a modular BCT compared to the former, generally homogeneous armor and infantry brigades. TABS was not able to conduct the same level of analysis with other units in the modular structure because the composition and mission of units such as the Fires, Sustain, and Maneuver Enhancement Brigades continues to evolve (TRADOC is also transforming the institutional Army affecting its training requirements).

2.3.3.2 FY 03 and FY 06 Comparison

Table 22 compares the FY03 and FY06 force aggregate maneuver land requirements in acre days. The increase in BCT training requirement and number of units dramatically increase the Army’s aggregate requirement. The FY06 unit numbers are in the Army’s Twenty-Year Force Structure Plan.

Unit	FY03			FY06		
	# of Units	Available Acre Days	Requirement (Acre days)	# of Units	Available Acre Days	Requirement (Acre days)
Heavy BCT	17	18,376,800	312,405,600	20	39,056,875	781,137,500
Infantry BCT	13	14,474,200	188,164,600	18	33,454,668	602,184,024
Stryker	3	40,705,600	122,116,800	5	34,551,101	172,755,505
TOTAL	33	73,556,600	622,687,000	43	107,062,644	1,556,077,029

**Table 22. FY03 and FY06 Comparison**

As illustrated in Table 22, requirements for maneuver training land will likely continue to increase as commanders train to standard on emerging weapons systems of greater lethality and digital information systems that provide greater situational awareness. Additionally, Table 22 only includes the requirements for the selected combat units and do not include those of the Institutional Army, Special Operations Forces or Reserve Component unit training requirements. By design, this approach underestimates the Army’s modular capacity requirements.

2.3.3.3 Army National Guard

The programmed (2010) ARNG Force Structure includes 10 Heavy BCTs, 23 Infantry BCTs and a Stryker BCT as documented in the Army’s Twenty-Year Force Structure Plan. Current Army policy describes an Army force generation cycle where an Army National Guard (ARNG) unit will deploy once every five years. Applying this factor to the active component BCT requirements derived from TC 25-1, Table 23 provides an estimate of the training requirement of the ARNG BCTs.



ARNG Unit	FY10		
	# of Units	Available Acre Days	Requirement (Acre days)
Heavy BCT	10	7,811,375	78,113,750
Infantry BCT	23	6,690,934	153,891,473
Stryker	1	6,910,220	6,910,220
<b>TOTAL</b>	<b>34</b>	<b>21,412,529</b>	<b>238,915,443</b>

**Table 23. Army National Guard FY10 Requirements**

Now that we have documented the maneuver land inventory and the unit requirements we can illustrate the Army’s ability to meet unit training requirements and estimate the impacts on this ability given an estimate of FY06-11 requirements.

*2.3.4 Estimating Required Capacity (Excess, Shortages, and Surge)*

For the purposes of BRAC 2005 analysis, surge for training capacity analysis is defined as the capacity to station all BCTs in the force structure within the United States and adequately meet their training requirements as well as meet unforeseen requirements.

**2.3.4.1 Reserve Component**

Applying a standard of 242 available training days per year to the available training land acres estimates the capacity of the major Reserve Component installations (Table 24).

RC Installation	Acres	Capacity (Acre Days)
Camp Grayling, MI	118,764	28,740,888
Camp Shelby, MS	117,115	28,341,830
Orchard / Gowen	76,381	18,484,202
Chaffee, AR	50,656	12,258,752
Camp Gruber, OK	40,847	9,884,974
Camp Blanding, FL	38,994	9,436,548
Camp Ripley, MN	35,011	8,472,662
Camp Roberts, CA	30,822	7,458,924
Biak Training Center, OR	27,953	6,764,626
<b>Major RC Total</b>	<b>536,543</b>	<b>129,843,406</b>
<b>TOTAL</b>	<b>811,000</b>	<b>196,262,000</b>

**Table 24. Estimated Capacity, Major RC Maneuver Installations**

There is a shortage of available training land in the reserve component with a demand of almost 240 million acre days (Table 23) and a capacity at the major reserve component installations of only 196 million (Table 24). Some of the reserve component training requirement will be met by smaller installations for platoon and company-level requirements and the Reserve Component units also train on active component installations. Therefore, while active component could elect to station a BCT on an ARNG and Army Reserve installation, the Reserve Components do not have sufficient training land capacity within their own resources and such stationing would worsen RC capabilities to train.

2.3.4.2 Active Component

In the same manner, the TABS Group analyzed the Army’s major active component training installations’ capacity against training requirements and estimated the percent excess or shortages. In order to estimate surge requirements, we considered that the Army must be capable of training all active component BCTs in the United States. Using the Army’s Twenty-Year Force Structure Plan this is 43 BCTs (20 Heavy BCTs, 18 Infantry BCTs and 5 SBCTs). Table 25 illustrates the total current and FY 06 active component BCT requirements compared to the estimated capacity with and without test ranges.

Unit	Current Requirement (Acre days)	FY06 Requirement (Acre days)	Capacity
Heavy BCT	312,405,600	781,137,500	With Test Ranges
Infantry BCT	188,164,600	602,184,024	1,616,983,258
Stryker	122,116,800	172,755,505	Without Test Ranges
TOTAL	622,687,000	1,556,077,029	1,239,515,288

**Table 25. Estimated Capacity, Major AC Maneuver Installations**

Table 25 shows that the Army’s active component installations can support the training requirements of the FY03 force structure. In fact, without considering test range installations, the Army has an excess of approximately 47% in the aggregate. However, the Army does not have sufficient maneuver training land without including test ranges to meet estimated FY06 requirements. In this case, the Army has a shortage of approximately 29%. Including test range installations, the Army has an excess of 1% or is essentially at capacity in FY06. In order to represent a minimum surge capability, this analysis assumes all BCTs in the force structure for FY06 must be stationed in the United States. This assumption accounts for a possible restationing of forces or the growth of the force to include five additional BCTs.

2.3.5 By Installation Analysis

2.3.5.1 FY 03 Baseline

Up to this point, the analysis assumed linearity—that the Army’s installations are a contiguous tract of maneuver land available to satisfy Army unit training requirements. Unfortunately, the significant tracts of maneuver land are spread over 35 installations across continental United States, Alaska, and Hawaii (listed in tables 19 and 21). Table 26 represents the FY 03 BCT requirements associated with the installations at which they are currently stationed. The 11<sup>th</sup> Armored Cavalry Regiment at Fort Irwin is technically not a BCT, but is included in this analysis as the 34<sup>th</sup> BCT in FY03.

Installation	Acres	Capacity (Acre Days)	Heavy BCT Units	Infantry BCT Units	Stryker BCT Units	Total BCT Requirement	Excess or Shortage
Ft Wainwright	1,292,264	312,727,888	0	0	1	40,705,600	272,022,288
Ft Bliss	992,303	240,137,326	0	0	0	0	240,137,326
Ft Irwin	358,000	86,636,000	1	0	0	18,376,800	68,259,200
Ft Carson /PCMS	351,124	84,972,008	2	0	0	36,753,600	48,218,408
Ft Lewis YTC	348,581	84,356,602	0	0	2	81,411,200	2,945,402
Ft Stewart	263,686	63,812,012	2	0	0	36,753,600	27,058,412
Ft Polk	183,146	44,321,332	0	1	0	14,474,200	29,847,132
Ft Hunter-Ligeett	157,570	38,131,940	0	0	0	0	38,131,940
Ft Benning	142,126	34,394,492	1	0	0	18,376,800	16,017,692
Ft Hood	136,912	33,132,704	5	0	0	91,884,000	-58,751,296
Ft Bragg	105,733	25,587,386	0	3	0	43,422,600	-17,835,214
Ft Knox	87,857	21,261,394	0	0	0	0	21,261,394
Ft Drum	77,387	18,727,654	0	2	0	28,948,400	-10,220,746
Ft AP Hill	74,262	17,971,404	0	0	0	0	17,971,404
Ft Riley	68,692	16,623,464	2	0	0	36,753,600	-20,130,136
Hawthorne AD	68,268	16,520,856	0	0	0	0	16,520,856
Ft Campbell	66,424	16,074,608	0	3	0	43,422,600	-27,347,992
Ft Huachuca	66,310	16,047,020	0	0	0	0	16,047,020
Ft Richardson	50,313	12,175,746	0	0	0	0	12,175,746
Ft McCoy	47,137	11,407,154	0	0	0	0	11,407,154
Ft Sill	46,404	11,229,768	0	0	0	0	11,229,768
Ft Rucker	38,745	9,376,290	0	0	0	0	9,376,290
Ft Gordon	37,217	9,006,514	0	0	0	0	9,006,514
Schofield Barracks/PTA	34,437	8,333,754	0	2	0	28,948,400	-20,614,646
Ft Jackson	24,563	5,944,246	0	0	0	0	5,944,246
Ft Leonard Wood	21,052	5,094,584	0	0	0	0	5,094,584
USAREUR / Korea			6	1		124,735,000	
<b>TOTAL</b>			<b>19</b>	<b>12</b>	<b>3</b>	<b>644,966,400</b>	<b>723,772,746</b>
Available Maneuver Acres	5,140,513	1,244,004,146					
Including Test Ranges	6,700,298	1,621,472,116					

**Table 26. FY 03 BCT Requirements and Installations**

The FY03 results demonstrate that while the Army has sufficient training capacity, units at several installations cannot meet all their training requirements at home station (6 installations in Table 26 are short maneuver land).

2.3.5.2 FY 06 Baseline

As part of the modular force transformation, the Army obtained approval from the Secretary of Defense to increase to 43 BCTs by the end of 2006 and the temporary stationing of BCTs subject to the completion of BRAC 2005. For example, in FY 06, the Army will activate BCTs at Fort Benning, Fort Bliss, Fort Bragg, and Fort Riley. In FY05, the Army also received approval to return one BCT from Korea to the United States. This is represented by a decrease in one Heavy BCT for Korea and an increase of one Infantry BCT at Fort Carson. The 11<sup>th</sup> Armored Cavalry Regiment at Fort Irwin is again counted as a requirement. While Ft Benning is shown as having one BCT, the land requirement is larger to reflect the maneuver land requirement for the infantry training center. Table 27 is the revised baseline for FY 06.

Installation	Acres	Capacity (Acre Days)	Heavy BCT Units	Infantry BCT Units	Stryker BCT Units	Total BCT Requirement	Excess or Shortage
Ft Wainwright	1,292,264	312,727,888	0	0	1	34,551,101	278,176,787
Ft Bliss	992,303	240,137,326	1	0	0	39,056,875	201,080,451
Ft Irwin	358,000	86,636,000	1	0	0	39,056,875	47,579,125
Ft Carson/PCMS	351,124	84,972,008	2	1	0	111,568,418	-26,596,410
Ft Lewis YTC	348,581	84,356,602	0	0	3	103,653,303	-19,296,701
Ft Stewart	263,686	63,812,012	3	0	0	117,170,625	-53,358,613
Ft Polk	183,146	44,321,332	0	1	0	33,454,668	10,866,664
Ft Hunter-Liggett	157,570	38,131,940	0	0	0	0	38,131,940
Ft Benning	142,126	34,394,492	1	0	0	72,511,543	-38,117,051
Ft Hood	136,912	33,132,704	6	0	0	234,341,250	-201,208,546
Ft Bragg	105,733	25,587,386	0	4	0	133,818,672	-108,231,286
Ft Knox	87,857	21,261,394	0	1	0	0	21,261,394
Ft Drum	77,387	18,727,654	0	3	0	100,364,004	-81,636,350
Ft AP Hill	74,262	17,971,404	0	0	0	0	17,971,404
Ft Riley	68,692	16,623,464	2	1	0	111,568,418	-94,944,954
Hawthorne AD	68,268	16,520,856	0	0	0	0	16,520,856
Ft Campbell	66,424	16,074,608	0	4	0	133,818,672	-117,744,064
Ft Huachuca	66,310	16,047,020	0	0	0	0	16,047,020
Ft Richardson	50,313	12,175,746	0	1	0	33,454,668	-21,278,922
Ft McCoy	47,137	11,407,154	0	0	0	0	11,407,154
Ft Sill	46,404	11,229,768	0	0	0	0	11,229,768
Ft Rucker	38,745	9,376,290	0	0	0	0	9,376,290
Ft Gordon	37,217	9,006,514	0	0	0	0	9,006,514
Schofield Barracks/PTA	34,437	8,333,754	0	1	1	68,005,769	-59,672,015
Ft Jackson	24,563	5,944,246	0	0	0	0	5,944,246
Ft Leonard Wood	21,052	5,094,584	0	0	0	0	5,094,584
USAREUR / Korea			5	1		267,795,918	
<b>TOTAL</b>			<b>21</b>	<b>18</b>	<b>5</b>	<b>1,634,190,779</b>	<b>-122,390,715</b>
Available Maneuver Acres	5,140,513	1,244,004,146					
Including Test Ranges	6,700,298	1,621,472,116					

**Table 27. Revised FY06 Baseline**

Note that with the revised baseline the Army now has 10 installations with maneuver land shortfalls.

*2.3.6 The Stationing Challenge*

Conceptually, the stationing challenge is concerned with packing different-sized objects into fixed sized bins. Theoretically, in the case of BRAC, the problem is to meet the requirements while using as few of the bins as possible. The unit requirements are not going to fit perfectly into the tracts of maneuver land. As the FY 06 baseline analysis shows, several Army installations, such as Fort Hood, Fort Campbell, and Fort Bragg, have severe shortages of land. Other installations such as Fort Bliss and Fort Wainwright have a significant amount of excess land.

2.3.6.1 Shortages

The results indicated that the Army should consider scenarios that realigned installations with the most severe shortages as listed in Table 28 by relocating units to installations with large excess capacity; specific scenarios will require detailed analysis. Installation operations needed to be considered, for example, while the available maneuver space at Fort Campbell is noted as insufficient, Fort Campbell units also train at other installations, to include Fort Knox. Units from Fort Bragg and Fort Benning also have access to large tracts of non-DOD owned land where units regularly train. The Army’s current operational requirements have led to the development of a rotation cycle for BCTs that deployed them one year out of every three. As part of the implementation of the Integrated Global Posture and Basing Strategy (IGPBS), Army BCTs will also serve six months to a year deployed as part of a rotational presence. At installations like Fort Hood, this means that at least one out of every four units will usually be deployed away from home installation. Finally, it is more efficient and effective to station more than one BCT at an installation. In this way, facilities such as ranges, MOUT sites, and simulation centers along with deployment infrastructure are shared. There would also be less of a void at the installation and in the surrounding community when one of the units is deployed.

Installation	Acres	Capacity (Acre Days)	Total BCT Requirement	Excess or Shortage
Ft Hood	136,912	33,132,704	234,341,250	-201,208,546
Ft Campbell	66,424	16,074,608	133,818,672	-117,744,064
Ft Bragg	105,733	25,587,386	133,818,672	-108,231,286
Ft Riley	68,692	16,623,464	111,568,418	-94,944,954
Ft Drum	77,387	18,727,654	100,364,004	-81,636,350
Schofield Barracks/PTA	34,437	8,333,754	68,005,769	-59,672,015
Ft Stewart	263,686	63,812,012	117,170,625	-53,358,613
Ft Benning	142,126	34,394,492	72,511,543	-38,117,051
Ft Carson/PCMS	351,124	84,972,008	111,568,418	-26,596,410

**Table 28. Installations with Greatest Shortages (FY06)**

2.3.6.2 Excesses

Table 29 identifies those installations with the greatest amount of excess maneuver capacity and locations where the Army can place additional maneuver BCTs. While the BCT requirement identified with these installations is minimal or zero, these installations routinely support other training requirements. For example, Forts Hunter-Liggett, Knox, and A.P. Hill support substantial Reserve Component training requirements. The three test ranges support the Army’s most demanding developmental and operational testing requirements along with some unit training.

Installation	Acres	Capacity (Acre Days)	Total BCT Requirement	Excess or Shortage
Ft Wainwright	1,292,264	312,727,888	34,551,101	278,176,787
Ft Bliss	992,303	240,137,326	39,056,875	201,080,451
Dugway PG	635,000	153,670,000	0	153,670,000
White Sands MR	557,146	134,829,332	0	134,829,332
Yuma PG	367,639	88,968,638	0	88,968,638
Ft Irwin	358,000	86,636,000	39,056,875	47,579,125
Ft Hunter-Liggett	139,021	33,643,082	0	63,812,012
Ft Knox	87,857	21,261,394	0	21,261,394
Ft AP Hill	74,262	17,971,404	0	17,971,404

**Table 29. Installations with Greatest Excess (FY06)**

*2.3.7 Conclusions*

This analysis indicates that with the increase in the Operational Army force structure and modular force transformation, the Army unit training requirements will exceed total available capacity in FY 06. Pending the outcome of BRAC 2005 and final IGPBS-related decisions, the Army may have as many as 40 of the proposed 43 BCTs stationed in the United States. Based on operational and contingency requirements, the Army may also further expand to up to 48 BCTs. With nearly all the traditional Army maneuver installations either at or already short capacity, the Army must consider proposals that better balance the excesses and shortages across Army installations to meet the Twenty-Year Force Structure Plan. The Army should consider the following options for proposal development: 1) Realign one or more of the installations with the greatest shortages by relocating units to an installation with excess capacity; 2) Realign an institutional training or test range installation and transform it into a major maneuver installation; and 3) Continue to explore Joint stationing options with Operational Army units.

The training capacity analysis suggests that the Army should not close any of its large maneuver or test range installations that currently have excess capacity. In the aggregate, the Army is at capacity. If not directly impacted through BRAC 2005, these installations may support training for units stationed at other installations, be necessary to support any increase in Army force structure in the future, and meet unforeseen requirements. In addition, this analysis concentrated on BCTs; other units have maneuver requirements that use these same resources and place additional stress on Army maneuver lands.

**2.4 Surge**

*2.4.1 Introduction*

During times of war, the Army may need capacity that exceeds peacetime requirements; this is commonly referred to as surge capability. Excess capacity can be used as a source of surge. Raymond DuBois, then Deputy Undersecretary of Defense for Installations and Environment, told members of the Association of the U.S. Army, that BRAC 2005 has a number of goals, one being to enhance military "surge" capacity to deal with future threats. If U.S. Forces need to increase the size of the present force structure to meet the requirements of unforeseen military contingencies or adapt to changes in force

capabilities due to technological advances, the present inventory of installation assets may be required to “surge” to meet increased facilities requirements. Surge can be in the form of numerous assets and does not always equate to an excess of buildings; surge can also be reflected in an excess potential to build, station, and produce. Examples of surge include increased facility throughput to support reserve mobilization or an increase in training land requirements to support the increased range of an improved weapons system.

To ensure surge requirements were included in BRAC analysis, Congress modified the previously published BRAC selection criteria to add surge to Criterion 3. This modification tasked the Military Departments and JCSGs to determine any surge capabilities necessary to meet probable threats and projected changes to the force structure. The Army capacity analysis defined surge capability for selected requirements based on the needs of the 20-Year Force Structure. Throughout the capacity analysis, the Army highlighted surge implications along with other results. When the TABS Group could determine an asset and demand based on unit needs or other means, surge was considered.

The surge capability needed for the Army is ultimately defined by the amount of risk the Army is willing to accept in its ability to react as uncertainties unfold. This analysis therefore did not address whether or not the surge capability is adequate, instead it highlighted deficits (0 surge capability) and excess (available surge capability) in Annex 2, Real Property Excess and Shortage (Level II) Analysis and stress the difference between surge we can develop and difficult-to-reconstitute capacity. By definition, excess is available to meet unforeseen requirements. If such a capability is not needed, the TABS Group could recommend BRAC actions to dispose of the excess. BRAC Objectives helped TABS focus on certain capacities and define where surge needs to be considered.

Since the BRAC focus was on installation facilities, surge capabilities refer to the retaining of excess facilities that may be used to support a surge scenario. Facilities required for surge are divided into two categories, reconstitutable assets and difficult-to-reconstitute assets.

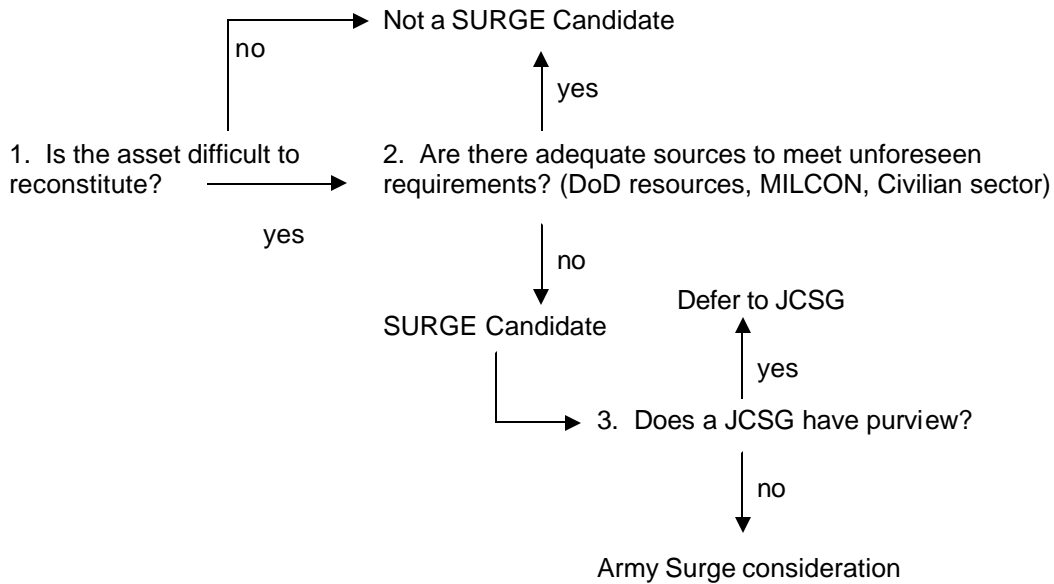
#### *2.4.2 Surge Approach*

Surge capability is required if the capacity element must be able to rapidly adjust in response to probable threats, changes in force structure, or other unforeseen requirements. Such a need constitutes a “requirement” for surge capability in the military judgment of the Army’s BRAC SRG.

If the capacity element is difficult to reconstitute and there are inadequate resources to potentially meet requirements, then the Army considered the asset a surge candidate. In such cases Army analysis purposefully avoided reducing the quantity of the assets available to the Army.

As depicted in Figure 4, for each asset, the Army considered different sources of surge capability including Army excess resources (facilities and manpower), conversion of assets from other than their intended use, other DOD resources, MILCON, partnering, and the civilian sector. If an asset was difficult to reconstitute and had few potential sources to meet requirements, then the asset was deemed a candidate for surge capability.

If a JCSG had purview over the capacity metric (e.g., special laboratories, test facilities) then the Army deferred to the JCSG to determine surge capability.



**Figure 4. Surge Approach**

Excess facilities do offer a surge capability. If an asset was not deemed a surge candidate, then the Army actively sought ways to reduce the asset through BRAC actions within the scenario development process.

2.4.2.1 Reconstitutable Assets

Reconstitutable assets are physical facilities and structures that can be easily constructed (e.g., building, hangars, runways, and maintenance shops), but are costly to operate and maintain and require periodic recapitalization. A common suite of reconstitutable assets for mobilization would be administrative buildings, unaccompanied personnel housing (UPH), and dining facilities. To determine whether or not such facilities should be maintained for mobilization or other surge requirements, TABS must evaluate two criteria. First, is the facility valuable? And second, is it cost effective to maintain the facility?

A facility is valuable if the Army has a mission that requires the facility. For instance, a mobilized unit would need not only billeting and administrative space to support pre-mobilization training, but also an efficient way to deploy to a contingency; therefore, valuable assets are typically near transportation nodes (e.g. ports, airfields, and railheads). On-installation transportation nodes are the most desirable, but nodes at other close-by installations or nodes attained by agreements with local governments or private organizations can also provide the needed transportation assets. It would be less efficient to deploy a reserve unit to an installation when the unit would have to be deployed again to converge on a transportation asset. Surge facilities may also be considered valuable if



they are near unique training assets. For example, barracks space in the desert may not seem valuable, but if that desert provides a large contiguous maneuver space that is not readily available elsewhere, then the value of those barracks increases.

If a facility was deemed valuable, then TABS considered whether it would be cost effective to maintain. Vacant facilities tend to deteriorate due to lack of use. The Army must allocate resources to sustain facilities during no-use periods, or expensive renovations may be required before it can be used to support a surge requirement. Temporary modular facilities have been built to support the increase in the number of brigades caused by Army transformation. A similar strategy could be used to support surge with most facilities being available within 45 days.

To determine facilities and quantity that should be retained for surge, TABS compared the cost to sustain excess facilities versus the cost to build temporary modular facilities to meet a surge requirement.

Based on the capacity data collected for BRAC analysis, TABS determined the present inventory of all of the core facility categories (FACs) at the 87 installations within the BRAC study list. For every FAC, there is a sustainment cost factor (SCF) used to estimate the resource requirements for maintenance and repair activities necessary to keep a facility in good working order over a 50-year service life. Also, based on the Army recapitalization rate of 103 years, there is a requirement to fund the renewal of facilities that support ongoing missions. The sum of the sustainment and the recapitalization equals the total yearly resource requirement to maintain surge or other facilities.

Based on the current installation FAC inventory and the above resource requirement, TABS determined that for every one percent increase in the above FACs, the Army should resource \$7.7 million a year; an additional \$118 million over 20 years to sustain the additional facilities. A one percent increase in facilities can support mobilization operations for two brigade sized reserve units.

Given an average brigade strength of 7,000 soldiers and 30 days of pre-mobilization training, the Army can mobilize 14,000 soldiers a month and 168,000 soldiers a year. At present, there are 162,000 Army National Guard and Army Reserve soldiers on active duty, so a small increase in capacity can maintain a robust mobilization of reserve units. To build a new suite of facilities to support surge for two brigades would cost \$234 million dollars. If we assume the cost of temporary construction is 60% of the construction of permanent facilities, then the cost for new construction to support a two brigade surge is \$140 million. Assuming that the Army will use the surge facilities once every 20 years, and current events indicate that this assumption is conservative, then it is more cost effective to maintain an excess of facilities and only a small increase in inventory would support the two-brigade surge.

#### 2.4.2.2 Difficult-to-Reconstitute Assets

A difficult-to-reconstitute asset consists of infrastructure that is not readily available commercially for military use, not available from other DOD resources, and is not substitutable with other assets. These assets go beyond physical structures to include elements of topography and the ability to use the assets required to fulfill a military need.

One of the Army's most important difficult-to-reconstitute assets is maneuver land. Maneuver land is scarce, difficult to acquire, and an essential resource for Army training and readiness. Next to fighting and winning the nation's war, the Army's most important task is to train in preparation for those wars. With the price of failure so high, training facilities must support the commander's training mission, so if the Army is going to "Train as We Fight," then the Army needs to have a constructive training environment where it can best mirror combat operations. At some point, soldiers must pack up their personal gear, mount their equipment and move out into the field. Since its inception, the Army has trained in the field. In the early years, training could be accomplished on a drill field during daylight hours; since this is how early 18<sup>th</sup> and 19<sup>th</sup> century warfare was conducted. On the onset of the 20<sup>th</sup> century, warfare changed with mechanized warfare and airpower expanding the size of the battle-space, preventing Army units from training on the parade field.

Early attempts to expand maneuver training area began before World War II, and the most notable include the Louisiana Maneuvers in August and September of 1941. These maneuvers utilized more than 2 million acres of rural farmland to train over 19 divisions in the art of modern mechanized warfare. After the United States' entry into the war, the Army opened up several training centers, the largest being the Desert Training Center near Indio, California, which contained almost 18 million acres stretched across three states. Most of the original land was already government owned and the rest was sparsely populated, which made it easier for the government to acquire. Today, even remote locations have restrictions due to land-ownership issues and increased environmental awareness. Not only is land difficult to acquire, it is just as difficult to maintain, with costs allocated to land recovery and environmental compliance.

The present Army maneuver-land inventory is only half as big, a little over 8 million acres, as the old Desert Training Center and is spread across the country, with 13% of that inventory in Alaska. Although the size of the Army is far less than the 8 million under arms during World War II, the frontage of an Army combat arms unit has increased with technology. For instance, the present armor/mechanized infantry task force can cover a frontage of 6 kilometers, while the task force in the future force will be expected to cover 30 kilometers, further stressing an already scarce resource. The Army must analyze the present maneuver-land inventory, determine whether it is adequate to meet present needs, and cope with the increased requirements of the future force.

### 2.4.3 Analysis

The primary areas considered for surge were those assets that are not easily reconstituted and without available alternatives or substitutes.

#### 2.4.3.1 Cost

Regardless of the surge requirement, if the facility type is not difficult to reconstitute or has potential sources outside of the Army, then there is little reason to maintain the facility. If the facility is expected to be used at anytime within the next 20 years then the Army is better off maintaining the facility as opposed to destroying or closing the facility and building a new one in the future. If however, the closure of an installation is being considered, even a small installation would provide enough savings to affect a considerable future unforeseen MILCON requirement.

#### 2.4.3.2 Excess

The Army considered the following cases where excess existed:

Case 1: The Army has an excess facility. In this case, the Army has facilities available to either cross level units within BRAC to take advantage of the excess or maintain the excess for future unforeseen requirements.

If an installation is not closing within BRAC then excess on the installation can be considered surge. If an installation is closing then the net impact across all assets needs to be examined to determine the overall impact of the closure on available facilities.

Maneuver acres and buildable acres may be excess at an installation, but due to aggregate Army requirements, TABS did not actively try to reduce the quantity of these assets available to the Army.

Case 2: The Army has a net shortfall of a facility. Case 2 is similar to Case 1 in all respects unless the Army has a surge requirement for the facility that is short. If a surge requirement exists, then the decrease of a facility that is already short within the Army is questionable. Shortages are also opportunities within BRAC to align units with requirements to installations with assets.

#### 2.4.3.3 Sources

Possible providers of assets that could be used to meet Army surge requirements include:

- Existing Army assets including excess facilities and Army installation assets (e.g., buildable acres).
- Other DOD resources including other Service installations.
- Army resources other than intended use. The Army has shortages in numerous facility types, but has shown the ability to meet some of these shortages by using facilities for other than intended use. This practice can assist with meeting surge requirements.
- MILCON
- Civilian sector for facilities, partnering, leases, and contractual relationships.

#### 2.4.4 Results

Table 30 below illustrates the surge results for selected capacity assets.

- Section One: Capabilities that must be able to adjust in response to probable threats or to changes in the force structure. These capabilities have a surge requirement in the military judgment of the Army's BRAC Senior Review Group, the deliberative body charged with the assessment. Note that these assets are not available in the private sector and are difficult to reconstitute. Because these capabilities are difficult to reconstitute, Army BRAC recommendations *did not actively reduce the quantity of assets* available to the Army.
- Section Two: deployment assets that are needed for surge capability but have sufficient sources to meet unforeseen requirements. Because these capabilities are difficult to reconstitute, Army BRAC recommendations *did not actively reduce* the quantity of assets available to the Army.
- Section Three: a listing of assets that have a surge requirement, but a JCSG has purview over the asset and the surge requirement. The Army *did not avoid reducing* installations with facilities of these types. An exception is test ranges, which are difficult to reconstitute and are not available in the public sector. For test ranges, TABS *did not actively reduce* the quantity of assets available to the Army.
- Section Four: Several of these capabilities need to adjust in response to probable threats or changes to force structure. However, other government assets, including other Service installations can be reallocated to these functions. Additionally, there are Army assets available for other than intended use, MILCON, and private sector resources available for short term surge requirements. Because these capabilities are not difficult to reconstitute, Army BRAC recommendations *did not avoid reducing* the quantity of the assets available to the Army.

Section 1	Surge Requirement	Source of Surge	Private Sector Available	Difficult to reconstitute	Avoid reducing
Maneuver Acres	Yes	A,B	No	Yes	Yes
Buildable Acres	Yes	A			
<b>Section 2</b>					
Deployment Infrastructure	Yes	A,B,E	Yes	Yes	Yes
<b>Section 3</b>					
Depot Maintenance	Yes	A,E	Yes	No	No
Armaments Production	Yes	A,E	Yes	Yes	
Medical / Dental	Yes	B,E	Yes	No	
Special Labs	Yes	A,B	Yes	No	
Special Test Facilities	Yes	A	Yes	Yes	
Ammunition Storage	Yes	A	No	No	
Testing Areas	Yes	A	No	Yes	
<b>Section 4</b>					
Mobilization	Yes	A,B,C,D,E	Yes	No	No
Vehicle Maintenance	Yes				
Instructional Facilities	Yes				
Housing	Yes				
Education Centers	No				
Child Development Centers	No				
Administrative / HQ	No				
Source A	Existing Army assets including excess facilities and Army installation assets				
Source B	Other DoD resources including other Service installations				
Source C	Army resources other than intended use				
Source D	MILCON				
Source E	Civilian sector for facilities				

**Table 30. Selected Surge Results**

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## **Annex 1. REAL PROPERTY ASSETS (LEVEL I)**

### **1.1. Purpose**

The completed Level I listings document, in a spreadsheet format, provides the type of facilities currently available to support Army requirements. Inventories were developed for each CONUS-based installation and summarized for the Army in total.

### **1.2. Introduction**

The Army manages its real property assets using several automated databases. The database of record used at the installation level for asset management is a standard Army system called the Installation Facilities System or IFS. The asset data from IFS provides the real property data for the Real Property Planning and Analysis System (RPLANS). RPLANS is used for master planning at the installation level and for analysis at headquarters above the installation level. The information in the tables in this annex was extracted from the October 2003 version of RPLANS. This information, which is isolated and protected from further updates, provides a single source of certified data for BRAC analysis.

For inventory purposes, assets are assigned facility category codes. These codes are assigned based on the original design or current use of the space within a building or an outdoor area. The space is assigned a code according to the use, either original design or current use. Department of the Army Pamphlet 415-28, Guide to Army Real Property Category Codes, 3 October 2003 (DA Pam 415-28) contains all of the codes approved for use in the Army system. DA Pam 415-28 lists category codes, the description of the facilities associated with each code, the primary and any additional units of measure (UM), and the associated Facility Category Group (FCG) and Facility Analysis Category (FAC) codes. A building may have one code or possibly several category codes. For example, an older barracks building may have a different code for the sleeping area, the company headquarters, and for some very old buildings, the dining facility. At the installation level it is important to know how much space is assigned to the brigade courtroom, the Red Cross, or the garrison staff. Each of these three tenants has a different category code for that reason. For analysis above the installation level, the Army developed FCGs combining similar types of space as identified by category code. An FCG is an aggregation of one or more real property categories that have a like functional purpose and are measured in the same units. Outside of the installation the distinction between the three tenants (courtroom, Red Cross, and garrison staff) is less relevant and therefore all three have the same FCG code for general administrative space. For analysts above the installation headquarters level the amount of each type of asset within a building is lost as the totals are generated for the same type of space across the entire installation and used in space analysis.

### **1.3. Approach**

To compare Army assets with other Services, DOD developed the Facility Analysis Category (FAC). A single FAC code denotes the facility types within a basic category grouped by commonality of function, construction cost, and maintenance & repair costs. Most FCG codes convert directly to FAC codes. However FCG-FAC conversion is not

always a straightforward one-to-one mapping. In some instances the FCG code has either no equivalent in FAC, or the information loses detail as it passes from FCG to FAC, or even the unit of measure can change. Table 31 shows the FCG to FAC conversion where the UM for each is different.

- 1. No equivalent FAC:** For example, there is an FCG code for the number of families in Army Family Housing (AFH) along with another code for the square footage. FAC only considers the square footage of these AFH assets. Similarly the number of spaces in barracks is not carried into FAC, only the square footage of the facilities.
- 2. Loss of details:** There are separate codes for places where military vehicles are parked, called Organizational Vehicle Parking, and for places where private vehicles park, called Non-Organizational Vehicle Parking. When this information moves from FCG to FAC both are combined into one code for Vehicle Parking, Surfaced.
- 3. UM changes:** The specific codes and the conversion factor are listed in table G-2 of *DA PAM 415-28*. For CATCD and FCG facilities measured in lane (LN) the FAC has a UM of firing point (FP). The conversion is direct with each LN equal to FP. Facilities measured in barrels (BL) must have the quantity multiplied by 42 to match the FAC UM of gallons (GA). Some electrical utilities are measured in kilo-volt amperes (KV) under FCG. When reported under FAC the measure is multiplied by 0.8 and the UM becomes kilowatt (KW). Facilities measured in GA must be converted to million gallons (MG) by dividing by one million to be reported under FAC. Since RPLANS reports some of these measures in thousands, care must be taken to apply a proper conversion factor to the number to provide the correct result. For FAC facilities that are measured in each (EA) and the FCG is measured in something else, SF or KG, there is no direct conversion from FCG based on RPLANS data. The actual number of the facilities must be determined and reported by the installation. Since there is some entry in FCG it can be assumed that at least one facility exists at the installation. Range data falling into this area will not be converted to FAC, but will be analyzed using FCG data to avoid range conversion issues.

FCG	FCG DESCRIPTION	FCG UM	FAC Group	FAC	FAC DESCRIPTION	FAC UM	FCG to FAC Conversion
F14170	PROD PLT SPT ST	SF	Other	1499	Miscellaneous Operations Support Facility	EA	Count
F17852	MORTAR RANGES	FP	Range	1767	Indirect Fire Range	EA	Count
F17856	ARTY INDIRECT	FP	Range	1767	Indirect Fire Range	EA	Count
F17857	MLRS RANGES	FP	Range	1767	Indirect Fire Range	EA	Count
F17863	TANK STA GUN RG	LN	Range	1766	Tank Stationary Gunnery Range	FP	1
F17864	MULTIPUR TNG RG	LN	Range	1771	Armor Vehicle Crew Training Range	FP	1
F17866	MPRC	LN	Range	1772	Armor Vehicle Unit Training Range	FP	1
F17886	HVY DEMO RGS	FP	Other	1497	Explosive Ordnance Disposal Area	EA	Count
F17891	INFILTRATION CS	LN	Range	1798	Infiltration Course, Live Fire	EA	Count
F17892	FIRE/MOVE RGS	LN	Range	1773	Fire and Movement Range	FP	1
F17894	INF SQ BTL CSE	LN	Range	1775	Infantry Battle Course	FP	1
F21141	AC ENG TST STRU	SF	Other	2118	Aircraft Engine Test Facility	EA	Count
F21320	MARINE RAILWAY	SF	Other	2132	Marine Railway	EA	Count
F21340	FIXED CRANE	SF	Other	2137	Fixed Crane Structure	EA	Count
F41170	LUBRICANT STR	BL	Other	4121	Bulk Liquid Storage, Other Than Fuel	GA	42
F44215	OXY/ACETYL STR	SF	Other	8922	Installation Gas Storage	EA	Count
F72100	UPH, ENL FACS	SF	Core	7210	Enlisted Unaccompanied Personnel Housing	SF	1
F7210F	UPH, ENL SPACES	SP			< Not used in FAC >		
F81100	ELEC PWR SOURCE	KV	Utility	8111	Electrical Power Source	KW	0.8
F81150	STANDBY PWR	KV	Utility	8112	Stand-By/Emergency Power	KW	0.8
F84450	CHLORINATOR NP	KG	Other	8929	Miscellaneous Utility Facilities	EA	Count
F84620	RESERVOIR POT	GA	Utility	8443	Reservoir, Water	MG	0.001
F84720	RESERVOIR NP	GA	Utility	8443	Reservoir, Water	MG	0.001
F84730	FIRE PROT POND	GA	Utility	8433	Water Impoundment, Fire Protection	MG	0.001

**Table 31. FCG to FAC UM Conversions**

**1.4. Physical Results Capacity Analysis**

*1.4.1. Inventory of Selected Assets (Level I)*

We report Level I for capacity metrics listed in Table 32.

Missions	CAPACITY METRICS	Level of Analysis
Unit Training	DoD Q #144 Military Operations in Urban Terrain (MOUT) Ranges or Facilities Used	I
	DoD Q #877 Maneuver Areas Used	I
	DoD Q #160 Airspace Attributes	I
Deployment	FAC 8601 Railroad Track	I
Mobilization	DoD Q #63 Number of Soldiers Processed	I
RDT&E	DoD Q #85 Specialized Labs	I
	DoD Q #86 Testing Areas Used	I
Environment	DoD Q #213 Air Quality Attainment	I
	DoD Q #239 Off-Installation Zones with Incompatible Land Use Matrix - NZ II & NZ III	I
Mission Expansion	DoD Q #30 Buildable Acres and DoD Q#198 Land Owned/Controlled by Installation	I

**Table 32. Level of Physical Capacity Analysis, Selected Metrics**

*1.4.2. Unit Training*

1.4.2.1. Military Operations in Urban Terrain (MOUT)

MOUT sites provide a terrain complex where man-made construction affects the tactical options available to the commander. Army installations that manage and control MOUT training, testing, operational ranges, or other full-scale mockup facilities are required to report their capacity in the TABS Capacity Data Call. In general, MOUT capacity is expressed in terms of number of buildings and size of landmass. MOUT sites are constructed in a variety of ways that include troop construction projects, re-configurable mockup buildings, and facades. The size of available land with MOUT capability is the most important metric for capacity assessment. Thirty out of eighty-seven installations reported MOUT Sites and identified an overall capacity of 41,907 acres across the Army.

Yuma Proving Ground and White Sand Missile Ranges both have large test and training lands that allowed them to construct robust MOUT Sites that include numerous buildings and roads networks over a large area accounting for 96 percent of the Army’s capability.

Military Operations in Urban Terrain (MOUT)		
Installations	Assets	Summary
Yuma PG	35,163	✓ 30 of 87 installations have MOUT sites ✓ Overall Capacity is 41,907 acres ✓ Yuma PG and White Sands MR represent 96 % of Army capability
White Sands MR	5,128	
Ft Story	334	
Ft Riley	167	
Ft Stewart / Hunter AAF	157	
Ft Lewis	142	
Others (24)	816	
Total	41,907	

**Table 33. MOUT Sites**

**Surge:** High quality MOUT training and a sustained training requirement entail additional resources; but short term surge can be satisfied. Army requirements for MOUT sites and the unit training tasks that drive them are evolving. MOUT training is increasingly becoming linked to the overall maneuver training strategy and MOUT sites are being constructed throughout an installation’s maneuver training areas and integrated into training. Provision of MOUT must be able to adjust in response to probable threats or to changes in force structure. This constitutes a requirement for surge capability in the military judgment of the Army’s BRAC SRG, the deliberative body charged with assessment. MOUT surge requirements could be satisfied with current Army maneuver land resources, MILCON, and the use of facilities for other than intended use.

Because these capabilities are not difficult to reconstitute, Army BRAC recommendations did not purposefully avoid reducing the quantity of the assets available to the Army. In the military judgment of the BRAC SRG, existing excess and other potential sources are adequate to meet any surge requirements. BRAC recommendations did not worsen the Department’s ability to achieve this requirement.

**Implications:** With the recent, increasing need for urbanized training, the Army not only must integrate MOUT into existing training ranges as part of new training strategies, but must also maintain sufficient training land to meet a myriad of evolving training requirements. This suggests that the Army consider realigning units from installations where the total unit training requirements exceed the capacity of the installation (e.g., Fort Bragg, Fort Hood, Fort Stewart, Fort Campbell, and Fort Drum).

1.4.2.2. Maneuver Area

A complete review of maneuver area is within the main body of the report and will not be repeated here.

The capacity metric for unit training is acre-days. Per Army Training Circular (TC 25-1), the Army baseline goal for annual training days on a training acre is 242 days. For this analysis, an installation's unit training capacity is defined as the product of maneuver area size in acres and 242 days. The ground maneuver area was collected for mounted and dismounted training. Maneuver land for mounted (heavy forces) training includes areas where maneuver is unrestricted in that the land can support all types of ground vehicles, including tracked combat systems, and engineer training areas. Light forces training maneuver areas are restricted by terrain and topography to dismounted movement or movement by light wheeled vehicles only.

Maneuver Areas		
Installations	Assets (M Acre-days)	Summary
Ft Wainwright	313	✓ 49 of 87 installations have Maneuver Areas ✓ Overall Capacity is 1,628 Million Acres-Days ✓ Capacity at White Sand, Dugway, and Yuma is not counted as maneuver areas since they are used for test ranges.
Ft Bliss	240	
Dugway PG	154	
White Sands MR	135	
Yuma PG	89	
Ft Irwin	87	
Others (43)	610	
Total	1,628	

Table 34. Maneuver Areas

**Surge:** Provision of maneuver area must be able to adjust in response to probable threats or to changes in force structure. This constitutes a requirement for surge capability in the military judgment of the BRAC SRG, the deliberative body charged with the assessment.

Other government assets, including other Services' potential training areas, can also be reallocated to this function. Private sector capacity is not available to augment government-owned capacity.

The Army must retain its training acreage to support the 20-year Force Structure. Forty-three or possibly 48 BCTs, with increased requirements will require an expansion of the number of installations that house major maneuver units. Maneuver land is difficult to reconstitute and must be retained to meet current, future, and surge requirements.

Because these capabilities are difficult to reconstitute, Army BRAC recommendations did not actively reduce the quantity of assets available to the Army.

In the military judgment of the BRAC SRG, there is a requirement for 99 percent of current heavy assets and 98% of light assets. BRAC recommendations achieve this requirement.

**Implications:** Installations traditionally thought of as Army maneuver installations generally have a shortage of training land. In some cases, the shortages are severe and suggest that these installations are currently home to one or even two more ground maneuver brigades than the maneuver area will doctrinally support. The Army has several large maneuver areas that are used almost exclusively for RDTE or Air Defense training and testing. The vast majority of Army excess falls in this category. Many installations (55 of 87) have little to no training land available for operational forces. Several factors will worsen the Army's future shortfall, including the application of increased digitization, the establishment of units equipped with Future Combat System (FCS), the creation of more brigade-sized units, and the global posturing initiative which will bring more units to CONUS.

TABS should consider excess at Wainwright and White Sands Missile Range, but this maneuver land may not be able to satisfy requirements due to other considerations (e.g. environment, geography, command & control). The excess at the two locations skews the Army's maneuver area situation and should not be considered a reason to reduce the Army's available maneuver lands.

Significant amounts of training land are available for surge at four sites – Fort Wainwright, White Sand Missile Range, Dugway, and Yuma Proving Grounds.

#### 1.4.2.3. Airspace

Most Army installations are responsible for control of their airspace. A common set of airspace capacity metrics includes the ground shadow of airspace (square nautical miles – NM<sup>2</sup>), lower and higher published altitudes (ft MSL), and volumetric measurement (NM<sup>3</sup>). Because most Army training and testing requirements are centered on air-to-ground, direct and indirect fire, and air operations in support of ground maneuver, the ground shadow of airspace is the most important metric. The ground shadow includes land used as Military Operational Areas. Areas that cannot be over flown include restricted impact areas, cantonment areas, ranges, off-limits areas, and prohibited areas

because of formal agreement/direction, wildlife management area restrictions, and no fly noise sensitive areas.

In the TABS Data Call, three installations reported an aggregate area of more than 3,600 square nautical miles (NM<sup>2</sup>) in ground shadow of airspace. Respondents include eleven installations that have over 1,000 square nautical miles. The top six installations report almost 70 percent of the total airspace ground shadow. White Sands Missile Range reported a third of the Army’s total ground shadow capability.

Airspace		
Installations	Ground shadow of airspace	Summary
White Sands MR	12,730	✓ 3 installations reported an aggregate area of more than 3,600 square nautical miles (NM <sup>2</sup> ) in ground shadow of airspace ✓ 11 installations have over 1,000 square nautical miles ✓ Top six installations report almost 70% of the total airspace ground shadow
Ft Rucker	5,292	
Ft Polk	3,671	
Ft Bliss	2,769	
Ft Huachuca	1,986	
Ft Campbell	1,961	
Others (31)	12,293	
Total	40,702	

**Table 35. Ground Shadow of Airspace**

**Surge:** Because of the linkage between the Army’s use of airspace and ground maneuver, any airspace surge requirement is directly linked to the units assigned to an installation and their associated training tasks. Ongoing changes in the Operational Army force structure and maneuver and training requirements, including the proliferation of unmanned aerial vehicles, make it difficult to accurately calculate surge requirements. As with ground maneuver training land, it is extremely difficult to increase airspace on short notice. Increases or changes in airspace usage require extensive coordination with FAA and the local/State government.

Provision of airspace capability must be able to adjust in response to probable threats or to changes in force structure. This constitutes a requirement for surge capability in the military judgment of the Army’s BRAC SRG, the deliberative body charged with assessment.

Because these capabilities are difficult-to-reconstitute, Army BRAC recommendations limited the reduction of the quantity of the assets available to the Army. In the military judgment of the BRAC SRG, there is a requirement for surge capability airspace. BRAC recommendations achieve this requirement by maintaining Army maneuver lands, which by definition include Army airspace and ground footprint capability.

**Implications:** Due to current shortages within the Army and additional future requirements the Army will have a worsening airspace availability problem and should maintain current capability. The Army should retain the majority of their existing controlled air space and, where possible, seek to gain access to additional airspace. The Army should seek new training strategies to better support maneuver and aviation brigade combat team stationing requirements. Finally, the Army must retain access to sufficiently large amounts of airspace in order to conduct developmental and operational testing for a wide-range of current and future combat systems.

1.4.3. Deployment

1.4.3.1. Railroad Tracks

The Army uses railroads to move equipment, supplies, and soldiers. All fifteen major deployment installations have railroad tracks albeit with some minor shortages. RPLANS records that fifty-six installations have direct access to a railroad head and an overall inventory of railroad track of 1,816 miles across the Army. Thirty-one installations that have no rails will have to use other ground means and airlift for transport. The twelve installations that have more than 50 miles of railroad tracks are depots and ammunition plants except Military Ocean Terminal Sunny Point and Fort Campbell.

Railroad Tracks		
Installations	Assets	Summary
Hawthorne AD	273	✓ 56 installations have direct access to a railroad head; 31 installations have no rails and must use other transport ✓ Installations with more than 50 miles of railroad tracks are depots and ammunition plants except Military Ocean Terminal Sunny Point and Fort Campbell ✓ Overall inventory equals 1,816 miles
McAlester AAP	212	
Crane AAP	168	
Iowa AAP	103	
MOT Sunny Point	93	
Others (50)	967	
Total	1,816	

**Table 36. Miles of Railroad Tracks**

**Surge:** Provision of rail capability must be able to adjust in response to probable threats or to changes in force structure. This constitutes a requirement for surge capability in the military judgment of the Army’s BRAC SRG, the deliberative body charged with assessment. Because these capabilities are difficult to reconstitute, Army BRAC recommendations did not actively reduce the quantity of the assets available to the Army.

In the military judgment of the BRAC SRG, there is a requirement for surge capability for rail. BRAC recommendations did not worsen the Department’s ability to achieve this requirement.

The Army does not have sufficient rail support to meet all transportation requirements and seeks airlift or ground transportation to transport goods and soldiers to the nearest ocean terminal. These alternatives to rail actions can continue to meet surge requirements.

**Implications:** 31 installations have no rail support. The Army must seek alternate shipping means if rail support is not available. Out of that 31 installations, 3 are maneuver training installations (Ft. A.P. Hill, Schofield Barracks, and Ft. Irwin), 1 test range, 2 depots, 1 ammunition production plant, 2 hospitals, plus other R&D, acquisition, educational and administrative types of installation. TABS needs to consider the rail availability if an installation with this capability is considered for closure.

1.4.4. Mobilization

1.4.4.1. Number of Soldiers Processed

A common mobilization capacity metric is the maximum number of soldiers that can be processed by an installation each day (active and reserve components) through the Service Reenlistment Program (SRP) site. Thirty-eight installations responded with an



aggregate capacity to process 13,502 soldiers daily. At this capacity, the Army would take a minimum of 11 days to process 150,000 soldiers, which represents an estimate of the time needed to process about the number of soldiers in an operation such as Iraqi Freedom. Fort Hood and Fort Knox reported the greatest capacity, with each possessing the ability to process 1,200 soldiers per day.

Number of Soldiers Processed		
Installations	Capacity Soldiers/day	Summary
Ft Hood	1,200	✓ 38 installations report an aggregate capacity to process 13,502 soldiers daily ✓ Fort Hood and Fort Knox reported the greatest capacity, with each possessing the ability to process 1,200 soldiers per day
Ft Knox	1,200	
Schofield Barracks	1,000	
Ft Campbell	800	
Ft Drum	650	
Others	8,652	
Total	13,502	

**Table 37. Number of Soldiers Processed**

**Surge:** Provision of mobilization capability must be able to adjust in response to probable threats or to changes in force structure. This constitutes a requirement for surge capability in the military judgment of the Army’s BRAC SRG, the deliberative body charged with assessment.

Other Army assets, including using facilities for other than intended use and temporary MILCON, can also be reallocated to this function. Some SRP sites can be modified to increase throughput capacity. Other sites can use alternative facilities such as gymnasium, auditorium, etc. to augment throughput, which provides a current surge capability. Private sector housing capacity is available to augment government-owned capacity. BRAC recommendations did not worsen the Department’s ability to achieve this requirement.

**Implications:** TABS needs to consider the availability of these mobilization resources if an installation with this capability is considered for closure. Retention of assets roughly equal to current capabilities, augmented with the surge techniques described above, should provide acceptably low levels of risk in the accomplishment of the mobilization processing of the mission.

*1.4.5. RDT&E*

1.4.5.1. Specialized Labs

Twenty-five installations reported a total of 2.9 million square feet of specialized area (e.g., clean room, dry room) in their laboratories. Each specialized area contains expensive equipment (e.g., Molecular Beam Epitaxy (MBE) Machine, Scanning Electron Microscope) with an individual replacement cost of more than \$3 million. Respondents include six installations that have less than 10,000 square feet. The top six installations report more than 2.3 million square feet – 80 percent of the reported square footage. Listed below are the top six installations and examples of their specialized laboratories:

- Yuma Proving Ground: Climatic Simulation Facility, Radiographic Inspection Facility

- Picatinny Arsenal: Small Arms Simulator
- Redstone Arsenal: Patriot PAC3SIM Digital Simulation Lab, Joint Tactical Data Link Interoperability and Integration Lab
- Adelphi Laboratory Center: Class 10 Specialty Electronic Materials/Sensors Clean- Room and Advanced Materials Growth and Processing Lab for Microelectronics
- Aberdeen Proving Ground: Ceramic Processing and Consolidation Lab, Immersive Environment Simulation Facility (Tactical Environment Simulation Facility)
- White Sand Missile Range: Dosimetry & Health Physics Laboratories, 14 Optics Laboratory, Dimensional Metrology Laboratory, Pulsed Laser Vulnerability Test Suite plus other assets from Army Research Laboratory, Space and Missile Command and NASA.

Specialized Labs		
Installations	Assets	Summary
Yuma PG	999	✓ 25 installations report a total of 2.9 million square feet of specialized area in their laboratories ✓ Each specialized area contains equipment with an individual replacement cost of more than \$3 million ✓ The top 6 installations report more than 2.3 million square feet or 80% of the reported square footage
Picatinny Arsenal	378	
Redstone Arsenal	295	
Adelphi Labs	250	
Aberdeen PG	250	
White Sands MR	130	
Others	593	
Total	2,835	

**Table 38. Specialized Labs**

**Surge:** The Army has sufficient land to build specialized laboratories. If establishing laboratories is not cost effective, the Army can meet its needs through leases, contracting, privatization, or additional shifts to meet short-term increases in workload.

The Army did not review specialized labs for surge capabilities; the Technical JCSG completed this review.

**Implications:** Specialized labs require a detailed review of requirements on a case-by-case basis. Requirements for building additional laboratories do not relate directly to an increase in force structure or level of operational activities. TABS will work closely with the Technical JCSG to ensure that lab requirements are considered throughout the analysis and will not unilaterally close or realign a specialized facility.

1.4.5.2. Testing Areas

Twenty-five installations identified more than 6 million acres of unrestricted training area or test ranges that they either own or operate; fourteen installations reported less than 1,000 acres. The top six installations report more than 250,000 acres each and comprise 91 percent of the total reported acreage. The Army has three large installations that are currently used almost exclusively for RDTE or Joint-program training and testing. Below are the largest test ranges and their respective unique capability:

<sup>14</sup> Dosimetry & Health Physics Laboratories house the only nuclear reactor in the Department of Defense.

- White Sands Missile Range: Missile testing
- Yuma Proving Ground: Best analog to world’s desert regions such as Afghanistan and Iraq
- Dugway Proving Ground: Chemical-biological testing & training

Testing Areas		
Installations	Assets (K Acres)	Summary
White Sands MR	2,264	✓ 25 installations either own or operate more than 6 million acres of unrestricted training area or test ranges ✓ The top 6 installations have more than 250,000 acres each or 91% of the total reported acreage ✓ Several large installations are currently used almost exclusively for RDTE or joint-program training and testing
Yuma PG	1,509	
Dugway PG	770	
Ft Irwin	460	
Ft Lewis	348	
Ft Stewart	264	
Others	522	
Total	6,138	

**Table 39. Training-Testing Acres**

All three test ranges have vast land and air space with room for expansion. Additionally, they provide support to Multi-Service, Inter-Agency, and International test and training missions. Yuma has facilities in Hawaii, Panama, and Alaska for tropical- and cold-region tests.

**Surge:** The Army has room to expand test areas and needs to consider future weapons test requirements and that test ranges are often used to meet training requirements of a growing force and/or an increased level of operational activities.

The Army did not review specialized labs for surge capabilities; the Technical JCSG completed this review.

**Implications:** The data indicates a potential to integrate, virtually and physically the Army’s testing and training ranges. These ranges can sustain unique Joint-use with test facilities. TABS will examine this potential synergy, specifically at large test ranges. Like specialized laboratories, test ranges are specialized. The Army has test-time available for additional testing on these test sites, which equates to a surge capability.

*1.4.6. Environment*

The Army normally considers the 10 following attributes for environmental capacities: Air Quality, Cultural/Archeological/Tribal Resources, Dredging, Land Use Constraints/Sensitive Resources Areas, Marine Mammal/Marine Resources/Marine Sanctuaries, Noise, Threatened and Endangered Species/Critical Habitat, Waste Management, Water Resources, and Wetlands. TABS produced an assessment report for each installation based on these 10 attributes and provided a general discussion on air quality and noise in this report.<sup>15</sup>

1.4.6.1. Air Quality Attainment

Air quality measures the air attainment status for specified criteria pollutants in accordance with the EPA’s Clean Air Act. Air attainment status reflects the “quality” of

<sup>15</sup> TABS Report, *The 87 Army Environment Profiles*, 2 Sep 2004

air above an installation, not necessarily emitted by the installation itself. Criteria pollutants considered in the data collection included CO, NO<sub>2</sub>, SO<sub>2</sub>, Pb, O<sub>3</sub> (1 hour), O<sub>3</sub> (8 Hour), PM<sub>2.5</sub>, and PM<sub>10</sub>. Out of these eight measures, NO<sub>2</sub> and SO<sub>2</sub>, are precursors to O<sub>3</sub>, O<sub>3</sub> (1-hr) is obsolete, and Pb is not reported to be a problem in any of the installations studied. PM<sub>2.5</sub> will become effective in 2005, and is largely captured by PM<sub>10</sub>. Therefore, TABS considers CO, O<sub>3</sub> (8 Hour), and PM<sub>10</sub> as the most significant pollutants for use in capacity analysis.

Sixty-one installations reported either “in attainment” for all three pollutants or “not-applicable,” indicating that they are in attainment. Twenty-two installations are in non-attainment for one pollutant, three are in non-attainment for two, and one installation is in non-attainment for all three of the pollutants.

Air Quality Attainment		
Installations	Non Attainment Count	Summary
Ft Bliss	3	✓ 61 installations reported either "in attainment" for all three pollutants or "not-applicable," indicating that they are in attainment
Ft Hamilton	2	
River Bank AAP	2	
Ft AP Hill	1	✓ 22 installations are in non-attainment for one pollutant
Ft Belvoir	1	
Ft Campbell	1	✓ 3 installations are in non-attainment for two
Ft Dix	1	
Ft Eustis	1	✓ 1 installation is in non-attainment for all three of the significant pollutants
Ft Gillem	1	
Ft Jackson	1	
Ft Leavenworth	1	
Ft McPherson	1	
Ft Meade	1	
Ft Wainwright	1	
Holston AAP	1	
Letterkenny AD	1	
Lima Tank Plant	1	
NTC and Ft Irwin	1	
Scranton AAP	1	
Walter Reed	1	
West Point	1	
Yuma PG	1	

**Table 40. Air Pollutants**

**Surge:** Air attainment status is determined by an air inventory conducted in accordance with EPA requirements. A surge requirement for air attainment is not applicable to this analysis.

**Implications :** Non attainment is not a “surge” issue, however non-attainment for one or more critical pollutants can result in mission or training restrictions placed on the installation, as well as being a quality-of-life issue for the soldiers and families. The greater the number of pollutants in non-attainment, the worse the overall air quality. TABS needs to consider air attainment when realigning units to installations with air quality issues.

1.4.6.2. Noise Zones Extending Off Installation

The noise capacity metric measures the number of acres of noise contours extending off the installation. TABS considers two metrics for evaluating the effect of noise and the hazards associated with training operations.

**Noise Zone II (NZ II) :** NZ II consists of the area around the source of the noise in which the day-night sound level is between 65 and 75 decibels, ADNL (A-weighted Day Night Level), and further defined as the noise exposure that would be expected to result in 15 to 39 percent of the population describing themselves as “annoyed.” Exposure to noise within this area is considered significant and use of land within NZ II should normally be limited to activities such as industrial, manufacturing, transportation, and resource protection.

**Noise Zone III (NZ III):** NZ III consists of the area around the source of the noise in which the day-night sound level is greater than 75 decibels ADNL, and further defined as

noise exposure that would be expected to result in greater than 39 percent of the population describing themselves as “highly annoyed.” This level is normally created by use of aircraft and the firing of weapons systems smaller than 20-mm.

Of eighty-seven Army installations studied, sixty-six reported either zero acres or "not-applicable," indicating that no off-installation property was affected by noise zones. Of the twenty-one that reported off-installation acreage, eleven installations reported greater than 3000 acres of NZ II off-installation. Three installations reported greater than 1000 acres of NZ III off-installation.

Noise at Off-Installation Zones			
Installations	Noise Zone II	Noise Zone III	Summary
Aberdeen PG	235,848	0	✓ 66 installations reported either zero acres or "not-applicable," indicating that no off-installation property was affected by noise zones ✓ Of the 21 that reported off-installation acreage, 11 installations reported greater than 3000 acres of NZ II off-installation ✓ 3 installations reported greater than 1000 acres of NZ III off-installation ✓ Total for NZ II is 320,754 ✓ Total for NZ III is 8,152
Ft Carson	15,686	2,322	
Ft Stewart	14,239	30	
Ft Campbell	11,765	2,168	
Ft Knox	11,647	962	
Ft Benning	9,003	1,785	
Ft Polk	5,100	35	
Crane AD	4,650	0	
Redstone Arsenal	4,339	693	
Ft Drum	3,511	0	
Ft McCoy	3,182	65	
Others	1,784	92	
Total	320,754	8,152	

**Table 41. Off-Installation NZ II & Off-Installation NZ III**

**Surge:** Noise zones are produced through noise surveys conducted over extended time. Noise predictions can also be generated through noise modeling, but specific inputs as to frequency, location, and caliber of weapons systems are required. Surge is not considered for noise; however, noise status on an installation can influence the Army’s ability to train.

**Implications :** The size of NZs II and III extending off an installation are an indicator that community relations will be adversely impacted through an increase in noise-related complaints. All noise zone acreage off-installation does not affect relations, since some noise zones fall in water or wilderness areas.

*1.4.7. Mission Expansion*

1.4.7.1. Buildable Acres

Buildable acres represent land that is not already being used and is available to support new training and facilities. Installations are generally required to have a current master plan to guide the orderly growth of the installation.<sup>16</sup> Based on the master plan,

<sup>16</sup> AR 210-20, “Master Planning for Army Installations,” 30 July 1993.

installations provide separate acre totals available for expansion for each of the ten uses listed below. A buildable acre must be free of environmental constraints, e.g., historical use restrictions, contamination, wetlands, incompatible encroachment, and man-made constraints such as explosive safety quantity distance (ESQD) arcs, airfield safety zones, anti-terrorism/force protection setbacks, etc. Any facility constructed within buildable acreage must be “land use” compatible with the location being considered, e.g., a playground is compatible with a family housing area and a vehicle maintenance facility is compatible with an industrial area. Land use includes construction for the following categories: Administration, Airfield Operations, Barracks, Community, Family Housing, Industrial, Medical Service, Outdoor Recreation, Training Area/Ranges, and Waterfront Operations.<sup>17</sup> Since most construction generally occurs in categories other than Training Area/Ranges, TABS defines the buildable acreage for Other Land Use as the buildable acreage summing all categories except the Training Area/Ranges. This total, less Training, is the primary metric when analyzing installation expansion capacities.

Eighty-three out of 87 installations identified more than 0.7 million acres or 6 percent of Army land that is appropriate for different types of “Other Land Use.” For example, “Other Land Use” may include land planned for office buildings, air operations facilities, aircraft maintenance hangars and shops, barracks, post exchanges, commissaries, security police, education facilities, equipment/vehicle maintenance and production, supply and storage, and industrial type RDT&E facilities, medical and dental clinic, and athletic centers. Eleven installations reported more than 10,000 acres, and thirty-two installations with less than 500 acres. The top five installations (Table 42) report more than 517 thousand buildable acres combined and comprise 73 percent of the total reported buildable acreage.

Buildable Acres				
Installations	Other Land Use	Training	Land Size	Summary
Dugway PG	401	10	798	✓ 11 installations have greater than 10,000 acres; 32 installations have less than 500 acres ✓ Total Army land acreage is 11,522 K ✓ Total “Other Land Use” acreage is 711 K or 6 % of land ✓ Total training acreage equals 2,478 K
FT Jackson	33	9	52	
Ft Leonard Wood	30	5	63	
McAlester AAP	28	1	45	
Yuma PG	25	10	1,009	
Others (78)	194	2,332	9,554	
Total	711	2,478	11,522	

**Table 42. Buildable Acres (000s)**

**Surge:** Provision of buildable acres must be able to adjust in response to probable threats or to changes in force structure. This constitutes a requirement for surge capability in the military judgment of the BRAC SRG, the deliberative body charged with the assessment.

The Army has a total of 11.5 million acres on the 87 BRAC installations. Buildable acres provides information on land that is not already being used and is available to support new construction for different land uses, e.g. headquarters and general office buildings, classroom training, and laboratories, airfield operations, barracks, industrial facilities, hospitals, and training/test ranges, and pier/wharf operations, and associated supporting

<sup>17</sup> A complete list of construction types for land use is provided in the DOD Capacity Data Call Questions, January 2004.

facilities. Buildable acres across the Army provide a general capability to “surge” and serve as a hedge to meet unforeseen requirements.

Because of these capabilities are difficult to reconstitute, Army BRAC recommendations did not actively reduce the quantity of the assets available to the Army.

In the military judgment of the BRAC SRG, there is an Army requirement to maintain buildable acres. BRAC recommendations achieve this requirement (maintain >80%).

**Implications:** Installations with larger buildable acres may have the capacity to absorb new demands or requirements. Consolidation may improve the efficiency and effectiveness of our installations in support of military operations.

*1.4.8. Summary of Selected Metrics*

Table 43 provides a summary of the capacity metrics described in the above section, each has assets listed, but does not have excess because requirements were not defined.

Missions	CAPACITY METRICS	Level of Analysis	Army Wide		UM
			Assets	Excess /Shortage	
Unit Training	DoD Q #144 Military Operations in Urban Terrain (MOUT) Ranges or Facilities Used	I	41,907		Acres
	DoD Q #877 Maneuver Areas Used	I	1,628		Million Acre-Days
	DoD Q #160 Airspace Attributes	I	40,702		Square NMiles
Deployment	FAC 8601 Railroad Track	I	1,816		Miles of Track
Mobilization	DoD Q #63 Number of Soldiers Processed	I	13,502		Solders per day
RDT&E	DoD Q #85 Specialized Labs	I	2,895		Thousand SF
	DoD Q #86 Testing Areas	I	6,138		Thousand Acres
Environment	DoD Q #213 Air Quality Attainment	I	3		No. of Pollutants
	DoD Q #239 Off-Installation Zones with Incompatible Land Use Matrix - NZ II & NZ III	I	320,754 8,152		Acres
Mission Expansion	DoD Q #30 Buildable Acres and DoD Q #198 Land Owned/Controlled by Installation	I	11,522		Thousand Acres

**Table 43. Summary of Level I Assets, Selected Metrics**

**1.5. Level I Additional Assets**

Section 1.4 provided an in-depth Level I analysis for a subset of metrics, this section completes the Army Level I review and includes all metrics.

For the purposes of this analysis, the information on the following installations is combined: Fort Lewis includes Fort Lewis and the Yakima Firing Center; Fort Stewart includes Fort Stewart and Hunter Army Airfield. The Fort Shafter data reported here excludes Tripler Army Medical Center, which is reported separately. Leased space was considered as general administrative space. Information on leased facilities appears at the bottom of the Core assets (measured in SF) table.

The permanent assets for the installations were summed by FAC and arranged in a series of tables. There are 165 FCGs used by DA’s Headquarters Integrated Facilities System (HQIFS) for assets inventory purposes. RPLANS uses an additional 286 FCGs to organize real property data. The FCGs used in RPLANS translate into 230 FACs which



are used in this report. Sixty-six FACs are grouped into four major categories --Core, Community, Utility, and Others. The thirteen FACs in the Core group include 22% of all RPLANS reported assets measured in SF. The Community group includes 7% of all RPLANS SF assets. The Others group includes 128 FACs and the remaining 71% of all RPLANS SF assets. Army Family Housing, part of the Others group, accounts for 25% of total Army SF assets. The Utility group contains twenty-three FACs with nine different units of measure. The data displayed represents the Army-owned utility systems and equipment used to operate the installations. Each table contains data belonging to one FAC group and one unit of measure. Installations may have additional semi-permanent or even temporary assets being used by units and activities. Non-permanent assets are not considered for stationing of new units and are not shown in the displayed data. Only one table is presented in this report. All tables are provided in the materials accompanying this report.

Physical capacity analysis results are grouped into FACs that are based on operational unit requirements. Many facilities that are not listed as “Core,” are essential to the efficient operation of an installation. However, they are not essential to an operational unit. The “Core” FAC includes the facilities essential to units. This enables a basis for comparison and allows analysts to examine an installation’s potential to support unit requirements, be they Core, Community, Utility, or Other.

The following table illustrates how the capacity metrics are linked to FACs, through Missions. As noted earlier, all capacity metrics are linked to BRAC Missions. The table shows how the BRAC Missions are linked to FACs. For example, certain “Deployment” capacity metrics are included in the Core FAC, while other metrics under the same Objective are contained in the “Others” FAC.

Missions	Facility Analysis Category (FAC)				
	Range	Core	Community	Utilities	Others
Unit Training	X	X			X
Deployment		X			X
Mobilization		X	X		X
Institutional Training and Education		X			
Well-Being		X	X		X
Joint Logistics		X			X
C4I/Headquarters		X			X
RDT&E					X
Environment				X	X
Mission Expansion					X

**Table 44. Mapping from FAC Group to BRAC Missions**

*1.5.1. Core Assets*

1.5.1.1. Core Assets measured in square feet (SF)

There are 138 different FACs with a unit of measure in square feet (SF). Thirteen of these were assigned to a group of FAC codes entitled Core and are presented in Table 46. These FAC types include the space most critical to supporting mission at home station. These include single soldier housing, unit headquarters, vehicle maintenance shops, and instructional space. The number shown is the inventory amount for permanent assets for that particular type of facility for Army BRAC installations.

The following short titles were used in the Level I capacity table:

Short Title	FAC Description
GPI Bldg	General Purpose Instruction Building
AI Bldg	Applied Instruction Building
Org Clrm	Organizational Classroom
Av Maint	Aircraft Maintenance Hangar
Veh Maint	Vehicle Maintenance Shop
Gen Admin	General Administrative Building
Co HQ	Small Unit Headquarters Building
Bde/Bn HQ	Large Unit Headquarters Building
E-UPH	Enlisted Unaccompanied Personnel Housing
Stu Bks	Student Barracks
R/T Bks	Recruit/Trainee Barracks
DFAC	Dining Facility
O-UPH	Officer Unaccompanied Personnel Housing

**Table 45. Abbreviation for FAC Description**

DEPARTMENT OF THE ARMY—BRAC 2005—ANALYSES AND RECOMMENDATIONS

FAC	7210	6100	6101	2141	1711	2111	6102	7218	7213	1712	7220	1717	7240
SHORT TITLE	E-UPH	Gen Admin	Co HQ	Veh Maint	GPI Bldg	Av Maint	Bde/Bn HQ	R/T Bks	Stu Bks	AI Bldg	DFAC	Org Clrm	O-UPH
Army Total	37,300	38,631	13,707	12,871	10,347	8,335	8,035	7,682	7,268	6,666	4,154	2,196	1,307
Aberdeen PG	223	2,138	100	177	346	98	37	0	544	680	46	107	17
Adelphi Labs	0	244	0	0	0	0	0	0	0	0	0	2	0
Anniston AD	0	280	0	209	8	0	0	0	0	7	0	0	0
Blue Grass AD	0	39	0	0	1	54	0	0	0	0	5	0	0
Carlisle	21	135	6	0	156	0	0	0	0	5	0	0	7
Charles E Kelly SPT CTR	0	45	0	2	6	0	0	0	0	0	0	0	0
Corpus Christi AD	27	238	0	15	8	1,567	0	0	0	16	0	0	0
Crane AAP	0	61	0	0	0	0	0	0	0	0	0	0	0
Deseret Chem Plant	0	7	0	0	0	0	0	0	0	0	0	1	0
Detroit Arsenal	0	617	3	0	2	21	0	0	0	30	0	9	0
Dugway PG	45	138	8	43	0	28	0	0	0	19	10	0	263
Ft AP Hill	0	49	21	3	11	4	25	5	0	0	56	25	3
Ft Belvoir	228	1,810	68	113	554	157	24	0	0	22	39	8	0
Ft Benning	1,450	612	608	398	455	175	395	1,457	926	68	341	202	77
Ft Bliss	1,303	964	591	603	512	282	245	0	370	441	66	99	79
Ft Bragg	4,289	1,437	1,644	1,119	358	618	1,069	0	200	117	288	425	6
Ft Buchanan	47	239	14	0	1	0	12	0	0	0	7	5	0
Ft Campbell	2,551	276	1,170	487	28	913	577	0	0	34	158	102	0
Ft Carson	1,559	469	632	816	3	216	383	0	0	8	109	53	13
Ft Detrick	153	228	22	4	0	0	17	0	0	2	6	0	0
Ft Dix	89	214	92	12	220	0	42	0	98	58	82	23	39
Ft Drum	1,234	211	407	529	12	283	236	0	0	4	99	44	0
Ft Eustis	600	457	492	140	136	108	53	0	168	783	39	22	22
Ft Gillem	0	314	53	12	8	0	79	0	0	24	0	0	0
Ft Gordon	754	495	268	100	422	0	168	0	1,032	778	99	36	0
Ft Hamilton	82	177	0	0	0	0	18	0	0	0	3	2	0
Ft Hood	4,122	692	1,468	1,814	200	701	829	0	0	62	287	142	34
Ft Huachuca	303	755	59	134	315	74	79	0	659	342	65	20	4
Ft Jackson	278	260	153	27	531	0	161	2,310	0	484	229	94	144
Ft Knox	440	1,125	254	379	362	111	149	1,017	251	395	210	57	31
Ft Leavenworth	274	548	12	2	572	36	11	0	0	20	0	15	4
Ft Lee	296	476	96	29	421	0	97	0	811	498	59	1	39
Ft Leonard Wood	217	395	243	126	391	10	157	1,913	0	491	203	75	0
Ft Lewis	2,475	854	931	887	83	424	533	0	0	53	165	129	24
Ft McCoy	0	90	0	67	144	42	32	0	0	64	36	1	0
Ft McNair	82	218	7	0	487	0	0	0	0	0	9	0	0
Ft McPherson	106	1,061	24	0	0	0	6	0	0	0	0	0	0
Ft Meade	640	866	56	24	232	0	98	0	188	0	29	23	26
Ft Monmouth	318	1,048	0	14	31	0	0	0	0	8	7	10	39

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FAC	7210	6100	6101	2141	1711	2111	6102	7218	7213	1712	7220	1717	7240
SHORT TITLE	E-UPH	Gen Admin	Co HQ	Veh Maint	GPI Bldg	Av Maint	Bde/Bn HQ	R/T Bks	Stu Bks	AI Bldg	DFAC	Org Clrm	O-UPH
Ft Monroe	21	536	6	4	18	0	0	0	0	1	7	0	0
Ft Mver	808	183	0	22	0	0	21	0	0	0	27	4	0
Ft Polk	846	424	422	660	33	157	148	0	32	0	58	4	0
Ft Richardson	606	372	286	391	42	105	127	0	46	0	22	3	19
Ft Riley	1,570	573	534	659	20	196	270	0	0	22	101	85	38
Ft Rucker	269	487	108	21	280	625	115	0	126	231	27	17	36
Ft Sam Houston	276	1,692	154	8	552	0	130	0	1,019	223	86	89	0
Ft Shafter	94	141	67	0	68	0	82	0	0	0	7	0	0
Ft Sill	1,240	948	558	397	474	107	524	871	0	157	158	106	51
Ft Stewart / Hunter AAF	1,664	239	775	896	37	451	435	0	14	4	338	61	32
Ft Wainwright	866	201	394	327	7	209	138	0	49	0	62	28	31
Hawthorne AD	30	102	1	32	25	0	0	0	0	0	0	0	31
Holston AAP	0	86	0	0	0	0	0	0	0	0	0	0	0
Iowa AAP	0	99	0	17	0	0	0	0	0	2	0	1	0
Kansas AAP	0	86	0	21	0	0	0	0	0	0	0	0	0
Lake City AAP	0	167	0	17	2	0	0	0	0	1	0	0	0
Letterkenny AD	11	247	0	0	0	0	0	0	0	0	0	0	0
Lima Tank Plant	0	76	0	52	0	0	0	0	0	8	0	0	0
Lone Star AAP	0	8	0	16	0	0	0	0	0	0	0	0	0
McAlester AAP	0	130	10	31	71	0	0	0	0	0	0	0	1
Milan AAP	0	63	0	17	0	0	0	0	0	0	0	1	0
MOT Sunny Point	1	41	0	6	0	0	0	0	0	0	0	0	0
Mississippi AAP	0	211	0	10	8	0	0	0	0	0	0	0	0
Newport CD	0	30	0	5	0	0	0	0	0	0	0	0	0
Ft Irwin	396	51	89	136	19	89	37	48	0	7	25	0	85
Picatiny Arsenal	19	867	0	27	27	8	0	0	0	0	0	5	4
Pine Bluff Arsenal	9	158	3	0	4	0	0	0	0	0	0	8	0
Presidio of Monterey	23	116	70	0	336	0	30	61	490	37	22	8	0
Pueblo CD	0	119	0	106	0	0	0	0	0	0	0	0	0
Radford AAP	4	175	0	0	7	0	0	0	0	0	0	0	0
Red River AD	0	135	0	69	48	0	0	0	0	0	0	0	0
Redstone Arsenal	182	2,192	32	37	265	46	3	0	209	348	26	4	12
Riverbank AAP	0	12	0	1	0	0	0	0	0	0	0	0	0
Rock Island Arsenal	0	1,573	0	9	5	0	0	0	0	78	0	7	0
Schofield Barracks	1,908	282	639	369	17	311	423	0	32	3	146	19	27
Scranton AAP	0	33	0	0	0	0	0	0	0	0	0	0	0
Sierra AD	25	68	0	0	5	0	0	0	0	0	0	1	0
Soldier SPT CTR	23	241	0	0	2	0	0	0	0	0	3	1	0
Tobyhanna AD	7	310	0	0	26	0	0	0	0	0	3	0	0
Tooele AD	0	43	0	0	0	0	0	0	0	0	0	0	0
Tripler AMC	45	63	16	0	0	0	7	0	0	0	0	0	0
Umatilla CD	0	39	0	23	3	0	0	0	0	0	0	0	0
USAG Selfridge	139	58	0	0	0	0	0	0	0	0	17	0	0

FAC	7210	6100	6101	2141	1711	2111	6102	7218	7213	1712	7220	1717	7240
SHORT TITLE	E-UPH	Gen Admin	Co HQ	Veh Maint	GPI Bldg	Av Maint	Bde/Bn HQ	R/T Bks	Stu Bks	AI Bldg	DFAC	Org Clrm	O-UPH
Walter Reed AMC	162	410	17	11	56	0	13	0	4	31	0	12	0
Watervliet Arsenal	0	101	0	0	4	0	0	0	0	0	0	0	1
West Point	1,634	903	6	38	805	67	0	0	0	0	245	0	0
White Sands MR	153	785	5	49	28	0	0	0	0	0	22	0	60
Yuma PG	63	123	13	67	37	42	0	0	0	0	0	0	8
Lease - ARPERCEN		420											
Lease - Army JAG Agency		0											
Lease - Army JAG School		53											
Lease - Army Research Office		30											
Lease - Bailey's Crossroads		181											
Lease - Crystal City Complex		750											
Lease - HQ, ATEC		83											
Lease - PEO STRICOM		100											
Lease - Rosslyn Complex		59											
Lease - Hoffman complex		674											

**Table 46. Core Assets Measured in Thousand Square Feet (KSF)**

The following areas were also examined and are included in the materials accompanying this report.

1.5.1.2. Core Assets measured in square yards (SY)

One Core asset, Vehicle Parking Surfaced, is measured in square yards (SY). At the FAC level this includes both parking for military equipment, Organizational Vehicle Parking, and parking for privately owned vehicles, Non-Organizational Vehicle Parking. The number shown is the total of all permanent assets at the installation listed. The amounts shown are rounded to the nearest thousand square yards (KSY).

1.5.2. Community Assets

1.5.2.1. Community Assets measured in square feet (SF)

Twenty-four of the FACs measured in square feet (SF) were assigned to a group of FAC codes entitled Community. These FAC types include the space most commonly associated with quality of life issues: recreation, physical fitness, religious support, family support, and health care. The number shown is the inventory amount for permanent assets for that particular type of facility. The amounts shown are rounded to the nearest thousand SF.

1.5.2.2. Community Assets measured in each (EA)

Four types of assets in the FAC group entitled Community are measured in each (EA). The specific size of these facilities is not as important as whether they exist. The facilities are generally of standard size in any case. The central vehicle wash facility is used to remove mud and caked on dirt from military vehicles when they return from the field.

### *1.5.3. Utility Assets*

#### 1.5.3.1. Utility Assets measured in linear feet (LF)

The assets in the FAC group entitled Utilities have a variety of units of measure. Those measured in linear feet (LF) include pipelines and cables used to move utilities from one location to another outside of buildings. The amounts shown are in rounded thousands of linear feet (KLF).

#### 1.5.3.2. Utility Assets measured in thousands of gallons per day (KG)

The assets in the FAC group entitled Utilities measured in thousands of gallons per day (KG) include Army owned water sources and treatment facilities. Water that is purchased from a local supplier or sewage that is sent off post for treatment is not reported in this source.

#### 1.5.3.3. Utility Assets measured in kilowatt-amperes (KV)

Substations and associated equipment are measured in kilovolt-amperes (KV). This only includes the capacity of Army owned substations and associated electrical distribution equipment such as transformers.

#### 1.5.3.4. Utility Assets measured in kilowatt (KW)

Electrical sources are measured in kilowatt (KW). These are Army owned generators burning oil or natural gas to provide primary power to part or all of an installation. Sources could also include solar. Stand-by and emergency sources are normally fixed generators providing power to one or more buildings or portions of buildings in the event regular power is interrupted.

#### 1.5.3.5. Utility Assets measured in million BTUs per hour (MB)

Heat sources, boilers or furnaces, are measured in millions of BTUs per hour (MB). These heat sources could be consuming natural gas, oil, electricity, or even coal to produce the heat. Geothermal and solar heating sources are also included in this total.

#### 1.5.3.6. Utility Assets measured in tons of refrigeration (TR)

Refrigeration and air conditioning sources are measured in tons (TR). Geothermal cooling sources, also known as ground source heat pumps, are included in this total.

#### 1.5.3.7. Utility Assets measured millions of gallons (MG)

Large water storage facilities are measured in millions of gallons (MG).

#### 1.5.3.8. Utility Assets measured in gallons (GA)

Relatively small water storage facilities are measured in gallons (GA). The amounts shown are in thousands of gallons (KGA).

### *1.5.4. Other Assets*

#### 1.5.4.1. Other Assets measured in square feet (SF)

Facilities that were not included in one of the primary FAC groups (Core, Community, Utility, and Range) were assigned to the Other group. Generally buildings and other enclosed spaces are measured in square feet (SF). This group includes the majority of the facility types that the Army measures in square feet and two-thirds of the space reported

in square footage. The following are but a few of the facilities in this group: Army family housing, RTD&E buildings, aircraft hangers, Reserve training centers, warehouses, ammunition production plants, and such.

1.5.4.2. Other Assets measured in square yards (SY)

Paved areas and roads are measured in square yards (SY). These facilities include aircraft parking areas, taxiways, runways, roads, and bridges.

1.5.4.3. Other Assets measured in barrels (BL)

Large fuel storage facilities are measured in barrels (BL). The fuel in these facilities is issued to bulk customers who dispense the fuel with their own refueling equipment. The Army uses a conversion factor of 42 gallons per barrel when measuring these facilities.

1.5.4.4. Other Assets measured in each (EA)

Various types of facilities in the Other group are measured in each (EA). These include some ammunition production facilities, athletic fields, and RTD&E facilities. The primary interest is whether they exist at an installation versus how large they are.

1.5.4.5. Other Assets measured in feet of berthing (FB)

Small craft berthing is measured in feet (FB). This is space for mooring small boats while they are still in the water.

1.5.4.6. Other Assets measured in firing points (FP)

Explosive ordinance disposal areas are measured in firing points (FP) in FCG and in RPLANS. The FAC UM is EA, but there is insufficient information in RPLANS to convert from FP to EA. This information is grouped by FAC but reported using the FCG UM.

1.5.4.7. Other Assets measured in gallons (GA)

The capacity of fuel and fluid storage directly supporting a retail user is measured in gallons (GA).

1.5.4.8. Other Assets measured in thousand of gallons per day (KG)

Non-potable chlorination equipment is reported with a capacity of thousands of gallons per day in FCG and RPLANS. The FAC UM is EA but there is insufficient information in RPLANS to convert from FP to EA. This information is grouped by FAC but reported using the FCG UM.

1.5.4.9. Other Assets measured in miles (MI)

Railroad trackage is measured in miles (MI).

1.5.4.10. Other Assets measured in outlets (OL)

Fuel dispensing pumps for vehicles and other equipment are measured in outlets (OL).

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## **Annex 2. REAL PROPERTY EXCESS AND SHORTAGE (LEVEL II)**

### **2.1. Purpose**

Level II capacity compares available assets documented in Annex 1 (Level I analysis) to current operational requirements and identifies potential assets available for surge. Capacity measures in excess of current and surge requirements are considered potentially available for units relocating to the installation. Conversely, when capacity is less than current and surge requirements, the TABS analyst may want to determine how the shortage affects the installation's ability to satisfy mission readiness and possibly consider developing a proposal to relocate selected units to higher valued installations with known excess capacity.

### **2.2. Introduction**

As illustrated in Annex 1, RPLANS is an assets comparison tool used in the Department of Army for planning at the installation level and for analysis at headquarters above the installation level. Like Level I, the information in the tables in this annex were extracted from the October 2003 version of RPLANS, which is isolated and protected from further updates. Level II also employs the same FCG, FAC, and other basic facility information used for Level I analysis.

### **2.3. Approach**

RPLANS normally sets Requirements equal to Allowances, which is internally computed by RPLANS. The Allowance may be based on a particular unit, e.g., soldier housing, or based on the total number of personnel on the installation, e.g., the Commissary (for detailed explanation, refer to Annex 4). Requirements may be changed following a local analysis by the installation and approval by IMA and may be increased or decreased. Requirements therefore represent unit "demands."

The real property inventory is referred to as Assets in RPLANS. Assets are permanent, semi-permanent, or temporary depending on the design life span when the facility was built. Total Assets also include approved major construction projects that will increase the real property inventory on an installation within the next few years. Some units may even use assets other than real property to satisfy their requirements. These can include shipping containers intended for deployment but used at home station for additional storage. This analysis only considered permanent assets. Permanent assets are therefore considered installation "supply."

The difference between permanent assets and requirements gives an indication of how deficient or excess the Army is in a particular type of facility on an installation; this difference is estimated in Level II. While the Army has some excess facilities, it has a deficit in several types of facilities, most of which directly hinder the Army's ability to sustain its forces while in garrison. Knowing what installation is in deficit or excess in what type of facility provides key insights into recommending where to station units.

### **2.4. Results Physical Capacity Analysis – Excess/Shortage (Level II)**

This section summarizes study results of physical and operational capacity analysis within two categories: Army-wide and Installation Level. In this report we state "Army-

wide” excess; it is important to note that Army-wide “excess” does not imply that all Army installations have what they require nor does it mean that the excess can be utilized by other units. It does, however, highlight a potential for TABS stationing actions.

2.4.1. Selected Metrics

For selected metrics, the total Army and installation-level capacities are presented. Additional details are provided in the materials accompanying this report.<sup>18</sup>

Missions	CAPACITY METRICS	Level of Analysis
Deployment	FAC 1111 Fixed Wing Runway, Surfaced	II
	FAC 1131 Aircraft Apron, Surfaced	II
Mobilization	FAC 2141 Vehicle Maintenance Shop	II
	FAC 7214 Annual Training /Mobilization Barracks	II
Institutional Training and Education	FAC 1711 General Instructional Facilities	II
	FAC 1712 Applied Instructional Facilities	II
Well-Being	FAC 5100 Medical Center/Hospital	II
	FAC 5400 Dental Facility	II
	FAC 7210 Enlisted Unaccompanied Personnel Housing	II
	FAC 7351 Education Center	II
	FAC 7371 Nursery And Child Care Facility	II
Joint Logistics	DoD Q #501, #506 Depot Maintenance	II
	DoD Q #512, #515 Armaments Production	II
	DoD Q #517 Ammunition Storage	II
C4I/Headquarters	FAC 6100 General Administrative Space	II
	FAC 6101 Small Unit Headquarters	II
	FAC 6102 Large Unit Headquarters	II
RDT&E	DoD Q #84 Specialized Testing Facilities	II

**Table 47. Level II Capacity Analysis – Excess/Shortage, Selected Metrics**

2.4.2. Deployment

2.4.2.1. Fixed-Wing Runway, Surfaced

The Army calculates an allowance for fixed-wing runways based on the existence of parking available for Army fixed-wing aircraft. If there are Army aircraft assigned to the unit, then parking space is provided, and one runway of 58,889 square yards is allowed. Although the Army shows an overall excess of 22 percent, ten installations are deficient in fixed-wing runway space for their current aircraft. Sixteen installations have excess fixed-wing runway capacity. It is likely that any runway excess had been provided for previously stationed aviation units.

For the table below, and for the following tables, installations were sorted according to the difference between permanent assets and requirements. This difference indicates the amount of excess or shortage of the particular facility type. The excess or shortage for

<sup>18</sup> Results are based on certified data as of 10 September 2004.

the top 5 and the bottom 5 installations are shown in the tables. A blank line separates the two groups.

Fixed-Wing Runway, Surfaced			
Installations	Excess /Shortage	Assets	Summary
Ft Bliss	526	585	✓ 10 installations are deficient in fixed-wing runway space for their current aircraft ✓ 16 installations have excess fixed-wing runway capacity ✓ Overall excess in capacity is 22%
Ft Lewis	338	397	
Ft Bragg	214	431	
Schofield Barracks	207	259	
Ft Riley	140	146	
Ft AP Hill	-42	0	
Ft Buchanan	-59	0	
Aberdeen PG	-61	365	
Ft Drum	-71	416	
White Sands MR	-162	247	

**Table 48. Fixed-Wing Runway, Surfaced**

**Surge:** Provision of runway must be able to adjust in response to probable threats or to changes in force structure. This constitutes a requirement for surge capability in the military judgment of the BRAC SRG, the deliberative body charged with the assessment.

Excesses of 22 percent in capacity exist in this functional area, thus providing government-owned surge capability on 16 Army installations. Shortages exist on ten Army installations in this functional area, so surge capability is not currently available on these installations. Other DOD assets, including other Services’ installations, can also be reallocated to this function. Private sector capacity is available to augment government-owned capacity.

Because these capabilities are difficult to reconstitute, Army BRAC recommendations did not actively reduce the quantity of the assets available to the Army.

This metric shows that there is excess on most major maneuver installations; however, it also identifies shortage in other major installations such as Fort Drum and White Sands Missile Range. In response to a crisis, these installations will have to use the closest Air Force facilities and commercial airports. For instance, at White Sands, the Army will request access to Holloman AFB.

**Implications :** Fixed-wing runway assets could provide facilities to station aviation units from the Army and other Services. The potential of these runways to support Air Force aircraft should be examined during TABS scenario analysis through the JAST.

2.4.2.2. Aircraft Apron, Surfaced

Paved parking area is provided for 85 percent of assigned Army fixed-wing aircraft by type. Aircraft type is identified by line item number in the unit MTOE, and area requirements are calculated based on information in Technical Manual 5-803-4. Requirements supporting mobilization and loading Air Force aircraft are developed and submitted by the individual installation as necessary and reported in RPLANS as a requirement. The Army has a total requirement for 12,790 KSY, but has only 10,502

KSY of assets to satisfy that need, leaving the Army with a shortage of 2,288 KSY. Twenty-three installations have a combined shortage of 4,597 KSY – 18 percent compared against the Army requirement. The aggregate shortage appears to be less because of the fourteen installations that have a combined excess of 2,309 KSY. The table identifies assets on the installations with the five largest excess and shortages.

Aircraft Apron			
Installations	Excess /Shortage	Assets	Summary
Fort Bliss	596	700	✓ Total Army aircraft apron is 10,502 KSY ✓ Paved parking area is provided for 85 % of assigned Army fixed-wing aircraft by type ✓ 23 installations have a combined shortage of 4,597 KSY – 18 % of the total Army requirement ✓ Army requirement is 12,790 KSY ✓ Total shortage is 2,288 KSY
Fort Stewart	574	1131	
Fort Wainwright	410	642	
Fort Benning	208	449	
Fort Richardson	122	122	
Ft Rucker	-326	1303	
Ft Polk	-366	219	
Aberdeen PG	-380	89	
Ft Campbell	-445	1242	
Ft Hood	-1,533	893	

**Table 49. Aircraft Apron**

**Surge:** Provision of aircraft apron must be able to adjust in response to probable threats or to changes in force structure. This constitutes a requirement for surge capability in the military judgment of the BRAC SRG, the deliberative body charged with the assessment.

Shortages in capacity exist in this functional area on 10 Army installations, so surge capability is not currently available on these installations. Other DOD assets, including other Services’ installations, can be reallocated to this function. Private sector capacity is available to augment government-owned capacity.

Because these capabilities are difficult to reconstitute, Army BRAC recommendations did not actively reduce the quantity of the assets available to the Army.

Similar to the runway metric, this metric shows that there are both excess and shortage at major maneuver and training installations; these two metrics are complementary and should be considered together. Comparing Tables 48 and 49, we see only Ft Bliss provides the assets to support the stationing action for an aviation unit with complementary metrics of runway and apron. In response to a crisis, some installations will have to use the closest Air Force facilities and commercial airports to satisfy requirements.

**Implications:** The Army has excess runways, but cannot use that excess with aircraft parking except at Ft Bliss. Like so many capacity measures, aircraft runway and aircraft parking are an example wherein a unit needs both assets, but most installations that have one do not have the other available as excess – this is an example of excess capacity that cannot be readily used without additional construction; in this case MILCON is required to satisfy aircraft parking space requirements.

2.4.3. Mobilization

2.4.3.1. Vehicle Maintenance Shop

Suitable facilities are required to properly care for Army vehicles when they are not in the field. Though future combat system (FCS) vehicles will be more reliable, they will still require routine maintenance and service in suitable facilities. Few of the current Army and FCS vehicles can be sent to the vehicle maintenance shops of the local economy because of security concerns involving weapons systems, communications systems, and other equipment. Thus, shops must be provided on the installation for these vehicles. With requirements of 16,114 KSF and permanent assets of 12,836 KSF, the Army has a 20 percent deficit (3,278 KSF). Twenty-six installations have some excess, forty installations have deficits. The excess facilities are generally at installations where maneuver units have departed within the past ten years or at industrial locations with no maneuver units. Installations with large numbers of maneuver units have varying degrees of deficits. One installation has only 22 percent of the permanent vehicle maintenance shop space it requires. Even when semi-permanent and temporary assets are considered, installations remain with a deficit.

Vehicle Maintenance Shop			
Installations	Excess /Shortage	Assets	Summary
Ft Lewis	236	887	✓ Army permanent vehicle maintenance shop assets total 12,836 KSF ✓ 27 installations have some excess, 40 installations have deficits ✓ Army requirement is 16,114 KSF ✓ Army shortage is 3,278 KSF or 20% of requirements
Ft Knox	205	379	
Pueblo CD	106	106	
Ft Belvoir	100	113	
Ft Richardson	91	391	
Ft Stewart	-364	896	
NTC and Ft Irwin	-492	136	
Ft Campbell	-589	487	
Ft Hood	-605	1,814	
Ft Bragg	-896	1,119	

**Table 50. Vehicle Maintenance Shops**

**Surge:** Shortages of 20 percent exist in this functional area, so surge capability is currently not available. Other DOD assets, including other Service assets, can be reallocated to this function. Private-sector capacity is available to augment government-owned capacity (lease, rents).

Because these assets are not difficult to reconstitute, Army BRAC recommendations did not purposefully avoid reducing the quantity of the assets available to the Army.

The majority of maneuver training installations are short vehicle maintenance shops. This shortage will be further exasperated when responding to surge as requirements materialize. For now, Army surge requirements would have to be met with temporary facilities and/or extra funding for contract work.

**Implications:** Excess vehicle maintenance facilities are generally not located at locations where the Army can readily take advantage of them. Some excess exists at White Sands, which could be a potential location for stationing maneuver units. Major maneuver training lands, such as Fort Stewart, NTC and Fort Irwin, Fort Campbell, Fort

Hood, and Fort Bragg, are deficit in vehicle maintenance shop space. Complete vehicle maintenance shop facilities must be constructed in support of new stationing. The existing shortages may become more of a concern with newer systems, especially the FCS.

2.4.3.2. Annual Training/Mobilization Barracks

Annual Training and Mobilization Barracks (AT/Mob Bks) are provided to house enlisted personnel during Reserve Component (RC) annual training and during mobilization of the Armed Forces. Allowances are based on space criteria for annual training barracks of enlisted grades in *NG Pam 415-12, Army National Guard Facilities Allowances, 23 July 2003*, and *AR 140-483, Army Reserve Land and Facilities Management, 30 July 1994*. Overall the Army is short 8,313 KSF of AT/Mob Barracks for the Reserve Component. Compared against the capacity of 4,304 KSF, this is a shortage of 66 percent.

Annual Training/Mobilization Barracks			
Installations	Excess /Shortage	Assets	Summary
Ft Dix	372	897	✓ Army permanent assets total 4,304 KSF ✓ Army requirement is 12,617 KSF ✓ Army shortage is 8,313 KSF or 66% of requirements
Ft Sill	220	356	
Ft Stewart	92	537	
Ft Huachuca	56	87	
West Point	41	127	
Ft Bliss	-824	80	
Ft Lewis	-886	111	
Ft Hood	-988	193	
Ft McCoy	-1,063	30	
Ft Polk	-1,190	268	

**Table 51. AT/Mob Barracks**

**Surge:** Shortages of 66 percent exist in this functional area, so surge capability is currently not available. Other DOD assets, including other Service assets, can also be reallocated to this function. Private-sector capacity is available to augment government-owned capacity (lease, rents).

Because these assets are not difficult to reconstitute, Army BRAC recommendations did not purposefully avoid reducing the quantity of the assets available to the Army.

This metric shows a shortage of barracks in most of the major maneuver training installations. Previous mobilization planning assumed that the Active unit barracks would be available after deployment for use by Reserves during mobilization. Recent deployments to Iraq and Afghanistan have not met this expectation. This shortage will be further exasperated when responding to surge as requirements materialize. For now, Army surge requirements would have to be met with temporary facilities and/or extra funding for contract work.

**Implications:** TABS needs to consider the current shortfalls along with historical mobilization sites within its scenario analysis.

2.4.4. Institutional Training and Education

2.4.4.1. General Instructional Facilities

For each installation, TABS uses the current allowance and maximum capacity in KSF for General Instructional facilities, e.g., Sergeants Major Academy, Drill Sergeants School, Accession Schools (including Military Academy, Academy Prep School, Officer Candidate School, and ROTC Summer Camps), and Initial Military Training (including Basic Training and One-Station Unit Training). The Army has requirements for 11,295 KSF and assets of 10,347 KSF resulting in a shortage of 948 KSF, or approximately 8 percent of requirements. The disparity is much greater when examined at the local level: thirty-nine installations are short 2,212 KSF, while twenty-three installations are excess 1,264 KSF. Some major training maneuver installations, industrial plants, and depots, such as Fort Gordon and Fort Bragg, are short at least 200,000 square feet of instructional space.

General Instructional Space			
Installations	Excess /Shortage	Assets	Summary
West Point	353	805	✓ Army assets total 10,347 KSF ✓ 39 installations are short 2,212 KSF, while 23 installations are excess 1,264 KSF ✓ Army requirement is 11,295 KSF ✓ Army shortage is 948 KSF, or about 8 % of requirements
Ft Belvoir	185	554	
Ft Meade	159	232	
Ft Jackson	149	531	
Aberdeen PG	86	346	
Ft Lee	-160	421	
Ft Bliss	-203	512	
Ft Bragg	-245	358	
Ft Leonard Wood	-262	391	
Ft Gordon	-285	422	

Table 52. General Instructional Space

**Surge:** Provision of general instructional space must be able to adjust in response to probable threats or to changes in force structure. This constitutes a requirement for surge capability in the military judgment of the Army’s BRAC SRG, the deliberative body charged with the assessment.

Because these capabilities are not difficult to reconstitute, Army BRAC recommendations did not purposefully avoid reducing the quantity of the assets available to the Army.

This metric shows that there are considerable excesses and/or shortages at most installations. In response to crisis, those installations with excess will have to make adjustments to accept an increased mission load, and those with shortages will have to convert administrative buildings to organizational classrooms or lease space.

In the military judgment of the BRAC SRG, there is a requirement for 90 percent of existing Army capability. BRAC recommendations achieve this requirement.

**Implications:** Initial reviews illustrate potential consolidation of units requiring these facilities. Excess space could satisfy other requirements where the Army encounters a shortage, e.g., small unit headquarters organizational classrooms. Conversely, shortages can be resolved by converting small unit headquarters or administration buildings to organizational classrooms. Additionally, adding shifts, as currently implemented at Fort

Eustis, would help meet an increased demand. TABS needs to consider the current excess within its scenario analysis.

2.4.4.2. Applied Instructional Facilities

Applied Instructional building space is used for hands-on training of soldiers. In these facilities soldiers learn vehicle maintenance, weapons-system repair, radar systems repair, maintenance of communications systems maintenance, etc. Throughout all Army installations there are requirements for 8,189 KSF, but assets of only 6,666 KSF, leaving the Army short 1,523 KSF or 19 percent of requirements. At the local level, twenty-two installations are short 2,397 KSF and twenty installations have excess space of 874 KSF. Fort Eustis has the worst shortage, which is nearly 1.74 times its capacity. Fort Eustis has implemented multiple shifts to meet its requirements.

Applied Instructional Space			
Installations	Excess /Shortage	Assets	Summary
Ft Jackson	161	484	✓ Army assets total 6,666 KSF ✓ 22 installations are short 2,397 KSF and 20 installations have excess space of 874 KSF ✓ Army requirement is 8,189 KSF ✓ Army shortage totals 1,523 KSF or 19 % of requirements
Ft Huachuca	121	342	
Ft Knox	89	395	
Ft Rucker	77	231	
Rock Island Arsenal	77	78	
Ft Benning	-130	68	
Ft Gordon	-148	778	
West Point	-169	0	
Ft Leonard Wood	-174	491	
Ft Eustis	-1,363	783	

**Table 53. Applied Instructional Space**

**Surge:** Provision of applied instructional space must be able to adjust in response to probable threats or to changes in force structure. This constitutes a requirement for surge capability in the military judgment of the Army’s BRAC SRG, the deliberative body charged with the assessment.

Because these capabilities are not difficult to reconstitute, Army BRAC recommendations did not purposefully avoid reducing the quantity of the assets available to the Army.

The Army does not have sufficient buildings to provide adequate applied instructional spaces. The current shortage needs to be addressed either by realigning workload or building new permanent instructional facilities. The shortage can also be resolved through leases or sharing of facilities with local schools.

In the military judgment of the BRAC SRG, there is a requirement for 90 percent of existing Army capability. BRAC recommendations achieve this requirement.

**Implications:** Twenty-two installations have shortages. Among them, Fort Eustis is 174 percent short of permanent instructional buildings for the soldiers enrolled in their schools. Some of this training may have been conducted in semi-permanent or temporary buildings on the installation or in very crowded facilities, which negatively impacts the quality of learning in the schools using these facilities. Units requiring this type of space should not be stationed at installations that need significant MILCON funds to address shortages.



2.4.5. *Well Being*

2.4.5.1. Medical Centers and Hospitals

Numerous factors, including local area capability and installation resources, drive the determination for the size of medical centers/hospitals. In RPLANS, if the Medical Activity does not have at least 180 personnel assigned to the supported installation, then that installation is not authorized a hospital. The Army totals tell a mixed picture for hospital space. Looking across the Army, the total assets of 15,910 KSF minus the total requirement of 14,570 KSF gives the impression that the Army has excess hospital space. Looking at individual installation assets and requirements, seventeen installations are excess a total of 1,927 KSF, but ten installations are deficit 587 KSF of hospital space. At five of the installations with excess space, excess is due to the closure of the hospital eliminating any requirement for the existing 500 KSF of facility assets at those locations. Local facility shortages impact the ability of medical personnel to provide quality care to soldiers where they are currently stationed. Adding units to installations with crowded medical centers will only further strain the health care system at those locations.

Medical Centers and Hospitals			
Installations	Excess /Shortage	Assets	Summary
Walter Reed AMC	459	2,673	✓ Army assets total 15,910 KSF ✓ 17 installations have excess space of 1,927 KSF, 10 installations have a deficit 587 KSF ✓ Army requirement is 14,570 KSF
Ft Dix	384	384	
Ft Bliss	234	918	
Ft Lewis	229	1,410	
Ft Bragg	144	1,020	
Aberdeen APG	-76	78	
Ft Campbell	-79	494	
Ft Hood	-102	567	
Ft Gordon	-122	626	
Ft Benning	-124	393	

**Table 54. Medical Center/Hospital**

**Surge:** Provision of medical center / hospital must be able to adjust in response to probable threats or to changes in force structure. This constitutes a requirement for surge capability in the military judgment of the BRAC SRG, the deliberative body charged with the assessment.

Other government assets, including the TRICARE program, can be reallocated for this function. Private sector capacity is available to augment government-owned capacity. In the opinion of the BRAC SRG, surge capacity is required due to the importance of medical care, but the Medical JCSG will determine actual requirements.

**Implications:** Medical facility requirements and the source to fill these requirements are determined within MEDCOM, which ensures the Army meets medical requirements. Any stationing of forces should be coordinated with MEDCOM and decisions on what facilities are excess should be made within the medical community.

2.4.5.2. Dental Facility

Dental facilities are sized based on the total military population on the installation. Given permanent assets totaling 1,067 and requirements totaling 1,146 KSF, across all installations the Army appears to have a shortage of only 79 KSF. The installation details indicate a much greater shortage. Thirty-six installations are short a total of 308 KSF of dental facilities. Twenty of these have no permanent dental facility assets. The Army total appears to be less due to excess facilities on eleven installations totaling 229 KSF. Stationing additional soldiers on installations with less dental facilities than required for the current population will worsen any existing dental support problems and may create them where no problem existed.

Dental Facilities			
Installations	Excess /Shortage	Assets	Summary
Ft Benning	57	82	✓ Army permanent assets total 1,067 KSF ✓ 36 installations are short a total of 308 KSF; 20 of these have no permanent dental facility assets ✓ 11 installations have excess facilities totaling 229 KSF ✓ Army requirement is 1,146 KSF ✓ Army shortage is 79 KSF
Ft Gordon	53	70	
Ft Bragg	50	83	
Ft Lewis	21	53	
Ft Knox	20	39	
Radford AAP	-11	0	
Umatilla CD	-11	0	
USAG Selfridge	-11	0	
Walter Reed AMC	-12	0	
Ft Stewart	-13	34	

**Table 55. Dental Facilities**

**Surge:** Provision of dental facilities must be able to adjust in response to probable threats or to changes in force structure. This constitutes a requirement for surge capability in the military judgment of the BRAC SRG, the deliberative body charged with the assessment.

Other government assets, including the TRICARE program, can also be reallocated for this function. Private sector capacity is available to augment government-owned capacity. In the opinion of the BRAC SRG, surge capacity is required due to the importance of medical care, but the Medical JCSG will determine actual requirements.

Dental care service is only available for Soldiers. Service for family members is dependent upon enrollment in the United Concordia insurer and is paid by the Soldier. Surge requirements for active duty personnel can be met, but response and quality will be affected without additional resources.

**Implications:** Dental facilities are determined based on existing facilities and local-area availability. Like medical, dental care and associated assets should be coordinated with the dental community and not arbitrarily considered in excess or shortage due to simplistic stationing metrics that do not consider local availability.

2.4.5.3. Enlisted Unaccompanied Personnel Housing

Enlisted Unaccompanied Personnel Housing (E-UPH) is for Soldiers permanently assigned to maneuver and support units. Providing housing on post for single Soldiers reduces out-of-pocket costs for the Soldier.

Living in Government housing also reduces the need for Soldiers to pay rent while deployed for long periods. Across the Army there is a requirement for 39,818 KSF and only 37,300 KSF available leaving a deficit of 2,518 KSF or 6 percent. The actual differences are greater when measured at the installation level. Twenty-seven installations show a deficit of 5,709 KSF or 14 percent of requirements. At the Army level this is masked by thirty-three installations with excesses of 3,191 KSF. The deficit is concentrated on installations with large numbers of maneuver units. In the worst instance, only 22 percent of the Enlisted UPH requirement is met with permanent assets. Some installations have semi-permanent and temporary assets for their Soldiers, which slightly lessens the problem. Deficits are probably being satisfied by allowing single

Soldiers to live on the economy thus reducing the effective demand for space in enlisted UPH. Stationing additional Soldiers at locations without adequate housing will cause crowding of existing facilities and reduce quality of life or will require sending single Soldiers to live in economy rental units.

Enlisted Unaccompanied Personnel Housing			
Installations	Excess /Shortage	Assets	Summary
Schofield Barracks	387	1,908	✓ Army assets total 37,300 KSF ✓ 27 installations show a deficit of 5,709 KSF or 14 % of requirements ✓ 33 installations have excesses of 3,191 KSF ✓ Army requirement is 39,818 KSF ✓ Army shortage is 2,518 KSF or 6% of requirements
Ft Richardson	327	606	
Ft Wainwright	292	866	
Ft Myer	232	808	
Ft Bliss	217	1,303	
Ft Campbell	-367	2,551	
Ft Drum	-556	1,234	
Ft Hood	-894	4,122	
Ft Stewart	-930	1,664	
Ft Bragg	-1,350	4,289	

**Table 56. Enlisted Unaccompanied Personnel Housing**

**Surge:** Provision of enlisted unaccompanied personnel housing need not be able to adjust in response to probable threats or to changes in force structure. This constitutes a requirement for surge capability in the military judgment of the BRAC SRG, the deliberative body charged with the assessment.

Shortages of 6 percent Army-wide and 14 percent installation level exist in this functional area, thus providing no government-owned surge capability. Private sector capacity is available to augment government-owned capacity, including leases, contracts, and like services.

Because these capabilities are not difficult to reconstitute, Army BRAC recommendations did not purposefully avoid reducing the quantity of assets available to the Army.

Surge capacities can be met in several ways. More Soldiers could be forced to live in smaller square footage by doubling the amount of personnel authorized to stay in a billeting space. This would create living conditions that may impact negatively on morale and health. The more acceptable method would to authorize billeting off-post. Senior grades would be moved until substantial space is opened to meet surge requirements.

**Implications:** Excess UPH facilities at some installations will lessen the cost for stationing additional maneuver units.

The Barracks Upgrade Program (BUP) must continue to address both the deficit and the quality of existing enlisted UPH across the Army. TABS needs to determine how units are meeting current requirements at installations with large shortages and consider these approaches in their analysis.

2.4.5.4. Education Center

Education center allowances are determined by entering the military population of an installation into a step function table to size the allowance for that installation. Comparing total assets of 1,210 KSF against total requirements of 1,267 KSF, the Army

has a shortage of 57 KSF of education center space. The Army has a shortage of 386 KSF across twenty-one installations, and an excess of 329 KSF on sixteen installations.

Education Center			
Installations	Excess /Shortage	Assets	Summary
Ft Lewis	55	90	✓ Army assets total 1,210 KSF ✓ 21 installation have a shortage of 386 KSF; 16 installations have an excess of 329 KSF ✓ Army requirement is 1,267 KSF ✓ Army shortage is 57 KSF
Ft Knox	49	78	
Ft Bragg	47	107	
Ft Rucker	36	54	
Ft Dix	35	40	
Ft Drum	-37	20	
Ft Meade	-40	0	
Ft Benning	-44	0	
Ft Stewart	-48	40	
Ft Hood	-60	0	

**Table 57. Education Center**

**Surge:** Provision of education centers need not be able to adjust in response to probable threats or to changes in force structure. This constitutes a requirement for surge capability in the military judgment of the BRAC SRG, the deliberative body charged with the assessment.

Shortages exist in this functional area, thus providing no government-owned surge capability. Private sector capacity is available to augment government-owned capacity, including leases, contracts, and like services.

Because these capabilities are not difficult to reconstitute, Army BRAC recommendations did not purposefully avoid reducing the quantity of assets available to the Army.

Distance learning needs to be stressed for a highly mobilized Army. It is more beneficial for Soldiers to take distance learning courses and assess them while deployed than to “drop” a course every time the unit deploys. Distance learning requires less space per soldier than traditional classroom instruction. Army distance learning would allow more Soldiers’ attendance than what the Army can accommodate in its existing education center classrooms.

**Implications:** Four of the top five installations with excess facilities are likely candidates to receive additional maneuver units. This could enable advantageous use of these facilities. However, the three installations with the greatest shortages might also receive additional units, which would stress an already strained education system. The education center shortfall may be slightly lessened through distant learning access and must be examined at the installation level.

2.4.5.5. Nursery and Child Care Facility

Most commonly called child development centers (CDCs), facilities are sized according to projected enrollment. The data shows permanent assets totaling 1,770 KSF against a requirement of 3,135 KSF for child development centers. Nine installations show an excess of 62 KSF of CDC facilities, including two that have closed their CDC operations.

Forty installations are short a total of 1,427 KSF in CDC facilities, leaving the Army with a shortage of CDC facilities. Most of the installations with shortages in CDCs have a large number of soldiers. This unsatisfied requirement assumes that families, who would use the facilities if available, are obtaining services from either the local economy or other families on the installation.

Nursery and Child Care Facility			
Installations	Excess /Shortage	Assets	Summary
Ft Wainwright	24	67	✓ Army assets total 1,770 KSF ✓ 9 installations show an excess of 62 KSF; 40 installations are short a total of 1,427 KSF ✓ Army requirement is 3,135 KSF ✓ Army shortage is 1,365 KSF
Ft Belvoir	12	68	
Pine Bluff Arsenal	8	14	
Ft Richardson	5	31	
USAG Selfridge	5	18	
Ft Lewis	-90	66	
Ft Stewart	-103	47	
Ft Campbell	-139	53	
Ft Bragg	-150	93	
Ft Hood	-254	67	

**Table 58. Child Development Centers**

**Surge:** Provision of child development centers need not be able to adjust in response to probable threats or to changes in force structure. This constitutes a requirement for surge capability in the military judgment of the BRAC SRG, the deliberative body charged with the assessment.

Shortages exist in this functional area, thus providing no government-owned surge capability. Private sector capacity is available to augment government-owned capacity, including leases, contracts, and like services.

Because these capabilities are not difficult to reconstitute, Army BRAC recommendations did not purposefully avoid reducing the quantity of assets available to the Army.

Garrison commanders should anticipate and support an increase of in-home providers to offset surge requirements, keeping care affordable with the same quality. Currently there are no agreements with off-post centers that can give comparable care at low cost.

**Implications:** Given the increasing number of married soldiers and dual-soldier families, providing CDC services on military installations is an increasingly vital quality of life measure. In light of the highlighted shortages, CDCs could be a significant source of required MILCON to support BRAC actions.

2.4.6. *Joint Logistics*

2.4.6.1. Depot Maintenance

For Depot Maintenance, TABS used the measurements for workload and capacity index expressed in direct labor hours (DLH) for fiscal year 2003 by depot level commodity

groups<sup>19</sup> at maintenance depots. The workload is the total organic workload, funded, being performed and reported by each installation from all funded sources. The reported capacity index for the depot commodity groups applicable to depot maintenance work at each maintenance installation used the formula in Chapter 3 of the DOD Depot Maintenance Capacity and Utilization Measurement Handbook. Subtracting the workload from the capacity index at each installation, depot maintenance capacity shows 20 percent excess across the Army, but there is a 8 percent shortage at Red River Army Depot.

Depot Maintenance			
Installations	Assets	Excess/Shortage	Summary
Anniston AD	3,962	739	✓ 13,392 direct labor hours ✓ 20 % excess exists across the Army; 8 % shortage exists at Red River Army Depot
Corpus Christi	3,957	697	
Tobyhanna AD	3,687	706	
Red River AD	1,849	-158	
Letterkenny AD	1,575	213	
Others (11)	1,670	1,118	
Total	13,392	3,308	

**Table 59. Depot Maintenance**

**Surge:** The Army’s goal for its five principal depots (Anniston Army Depot, Tobyhanna Army Depot, Corpus Christi Army Depot, Letterkenny Army Depot, and Red River Army Depot) is a workload of 85 percent capacity based on one shift, eight hours per day, and five days per week. The remaining 15 percent is available to meet surge requirements.

In the opinion of the BRAC SRG, surge capacity is required due to the importance of depot maintenance, but the Industrial JCSG will determine actual requirements.

**Implications:** Larger depots may have the capacity to absorb the workload of smaller depots as well as other DOD depot-type activities. Consolidation may improve the efficiency and effectiveness of our depots in support of the warfighter.

2.4.6.2. Armaments Production

The Army has four Manufacturing Centers: Lima Army Tank Plant, Pine Bluff Arsenal, Watervliet Arsenal, and Rock Island Arsenal. Each manufacturing center has a unique capability that must be maintained. While the capability needs to be maintained, this does not imply that the installation itself needs to be retained.

- Lima – Only DOD organic combat vehicle manufacturing facility.
- Pine Bluff Arsenal – Only DOD organic facility for Chem/Bio production and rebuild. Sole supplier for producing white phosphorous
- Watervliet Arsenal – Unique capability for the manufacture of light arms and heavy arms, thick-/thin-walled mortar, and cannon tubes.<sup>20</sup>
- Rock Island Arsenal – USMC howitzers mounts. Unique Foundry capability.

<sup>19</sup> DOD 4151.18H, DOD Depot Maintenance Capacity and Utilization Measurement Handbook, Jan 24, 1997 and Handbook Supplemental guidance, Oct 4, 2001.

<sup>20</sup> Industrial Analysis Center, DCMA, *Army Transformation of the Industrial Base Study*, April 2003.

Each manufacturing center is Joint in nature. TABS collected data on FY 03 direct labor hours (DLHs) from these manufacturing centers and compared that data to the Total Capacity Index in order to determine the excess capacity. The Capacity Index was calculated in accordance with the DOD Depot Maintenance Capacity and Utilization Measurement Handbook, DOD 4151.18H. As shown in Table B-14, the manufacturing centers display about 69 percent excess capacity; none of the installations are in a deficit.

<b>Armament Production</b>			
<b>Installations</b>	<b>Assets</b>	<b>Excess/Shortage</b>	<b>Summary</b>
Pine Buff Arsenal	2,341	2,341	✓ 69 % excess capacity; none of the installations are in a deficit
Rock Island Arsenal	1759	1,117	
Lima Tank Plant	867	281	
Watervliet Arsenal	641	421	
Anniston AD	379	0	
Tooele AD	105	45	
Others (2)	26	1	
Total	6,119	4,206	

**Table 60. Armament Production**

**Surge:** The Army has excess armament production capacity and can meet surge requirements through additional funding for multiple shifts.

In the opinion of the BRAC SRG, surge capacity is required due to the importance of armament production, but the Industrial JCSG will determine actual requirements.

**Implications:** The excess means that the FY03 workload at these centers was assessed and judged to be less than maximum capacity. The potential exists to reshape these manufacturing centers around the core capability and divest of excess infrastructure.

2.4.6.3. Ammunition Storage

Most Army ammunition production facilities have limited storage and distribution for ammunition. The Army has 13 Army production facilities based on the Army Stationing Strategy dated 5 August 2003. The Army has seven munitions centers: Blue Grass Army Depot, Hawthorne Army Depot, Tooele Army Depot, and the four chemical demilitarization sites, which will close at the completion of the Chem Demil mission. It should be noted that there are three other munitions centers located as tenants at Anniston Army Depot, Letterkenny Army Depot, and Red River Army Depot. The Joint Munitions Command (JMC) considers Blue Grass Army Depot, Hawthorne Army Depot, Tooele Army Depot, and the three munitions centers located at depots as storage and distribution centers. Storage and distribution includes receipt, storage, issue, maintenance, surveillance, and demilitarization of munitions.

Not counting installation level ammunition storage facilities the Army has 20 installations with ammunition storage. Two of these installations have requirements equal to assets. The remaining 18 installations have assets, 47,373KSF, which exceed the requirement of 28,178 KSF, leaving an excess of 19,195 KSF.



Ammunition Storage			
Installations	Assets	Excess/Shortage	Summary
McAlester AAP	6,925	2,686	✓ Army assets total 48,315 KSF ✓ Army requirement is 29,120 KSF ✓ Army excess totals 19,195 KSF ✓ 2 installations have requirements equal to assets. ✓ The remaining 18 installations have assets of 47,313 KSF with requirements of 28,178 KSF
Hawthorne AD	6,303	2,591	
Crane AD	4,892	1,377	
Sierra AD	4,537	3,691	
Pine Buff Arsenal	3,970	268	
Bluegrass AD	3,966	793	
Tooele AD	3,250	1,273	
Letterkenny AD	2,343	939	
Milan AAP	2,169	1,579	
Anniston AD	1,990	587	
Red River AD	1,801	598	
Pueblo CD	1,475	1,314	
Others (8)	4,694	1,500	
Total	48,315	19,195	

**Table 61. Ammunition Storage**

**Surge:** The Army has excess ammunition storage capability above the installation. Some excess should be maintained to meet unexpected surge requirements.

In the opinion of the BRAC SRG, surge capacity is required due to the importance of ammunition storage, but the Industrial JCSG will determine actual requirements.

**Implications:** The JMC goal is to be filled at 85% capacity. End state is to structure a Joint distribution network that will enhance the strategic mobility/deployability of the Warfighter, reduce the sustainment footprint, and reduce the cost of logistics while maintaining warfighting capability and readiness. These goals imply the ability to consolidate and divest of excess infrastructure.

2.4.7. *C4I/ Headquarters*

2.4.7.1. General Administrative Space

General administrative buildings provide space for all administrative functions in Tables of Organization and Equipment (TOE) and Tables of Distribution and Allowance (TDA) units not provided by other facilities. Courtrooms for maneuver units are included in this facility as well as the majority of space for the garrison staff and military school faculty. Space is provided at 162 square feet per authorized person. With permanent assets of 36,281 KSF and requirements of 34,588 KSF, the Army appears to have an excess of 1,693 KSF. The Army has fifty-one installations with excess admin space totaling 6,500 KSF and thirty-five other installations with shortages totaling 4,807 KSF. Much of the excess is at depot and industrial installations with little capability to support for maneuver units. In terms of shortage, Fort Bragg, a maneuver installation has 24 percent of the Army general admin space shortage. Most of the installations that could support additional maneuver-unit stationing are already deficient in general admin space and would require MILCON to support new missions.

General Administrative Space			
Installations	Excess /Shortage	Assets	Summary
Ft Sam Houston	766	1,692	✓ Army assets total 36,281 KSF ✓ 51 installations have excess admin space totaling 6,500 KSF; 35 installations have shortages totaling 4,807 KSF ✓ Army requirement is 34,588 KSF ✓ Army excess totals 1,693 KSF
West Point	746	903	
Ft Knox	680	1,125	
Rock Island Arsenal	547	1,573	
Ft Rucker	286	487	
Ft Stewart	-241	239	
Ft Shafter	-276	141	
Schofield Barracks	-394	282	
Redstone Arsenal	-551	2,192	
Ft Bragg	-1,132	1,437	

**Table 62. General Administrative Space**

**Surge:** Provision of general administrative space need not be able to adjust in response to probable threats or to changes in force structure. This constitutes a requirement for surge capability in the military judgment of the BRAC SRG, the deliberative body charged with the assessment.

Excess provides a government-owned surge capability. Private sector capacity is available to augment government-owned capacity, including leases, contracts, and like services.

Because these capabilities are not difficult to reconstitute, Army BRAC recommendations did not purposefully avoid reducing the quantity of assets available to the Army.

The Army can satisfy surge requirements for administrative space by diverting space from other uses, MILCON, funding for leases, and/or other contractual relationships.

**Implications:** The administrative facility carries the most demand and is also the most flexible of all facilities. The distribution of excess and shortages highlights the potential for TABS proposals to realign units to better match available capacity.

2.4.7.2. Small-Unit Headquarters

Major activity in the Army occurs at the small-unit or company level. The Army has recognized this and develops space criteria to support a wide variety of requirements. Space is provided for private counseling of soldiers by the Company Commander and First Sergeants, storage of expensive equipment used by soldiers, and additional operational usage. Though defined, these unit requirements are often not met, forcing the Company Commander and staff to work in cramped or poor conditions. Comparing a requirement of 23,593 KSF against permanent assets of 13,707 KSF, the Army has a deficit of 9,886 KSF. This deficit includes a shortage of 10,220 KSF at forty-eight installations. Excess space at nine installations totaling 334 KSF slightly reduces the shortage when aggregated. The significant deficits occur at the installations with large numbers of maneuver units. To meet current requirements, the Army must nearly double its permanent assets for small-unit headquarters. Some of these units are occupying semi-permanent or temporary assets. Other units are using space that has been diverted or created from other functions (e.g., barracks sleeping rooms for office space, using

deployment containers for storage in garrison, and storing supplies in utility rooms in the buildings they occupy).

Small Unit Headquarters			
Installations	Excess /Shortage	Assets	Summary
Ft Eustis	179	492	✓ Army assets total 13,707 KSF ✓ 48 installations have a shortage of 10,220 KSF; 9 installations have an excess of 334 KSF ✓ Army requirement is 23,593 KSF ✓ Army shortage totals 9,886 KSF
Ft Richardson	72	286	
Ft Gillem	23	53	
Ft Dix	20	92	
Walter Reed AMC	17	17	
Ft Drum	-587	407	
Ft Stewart	-685	775	
Ft Campbell	-751	1,170	
Ft Bragg	-1,651	1,644	
Ft Hood	-1,683	1,468	

**Table 63. Small Unit Headquarters**

**Surge:** Provision of small unit headquarters need not be able to adjust in response to probable threats or to changes in force structure. This constitutes a requirement for surge capability in the military judgment of the BRAC SRG, the deliberative body charged with the assessment.

Shortages in capacity exist in this functional area, thus providing no government-owned surge capability. Private sector capacity is available to augment government-owned capacity, including leases, contracts, and like services.

Because these capabilities are not difficult to reconstitute, Army BRAC recommendations did not purposefully avoid reducing the quantity of assets available to the Army. The Army could satisfy surge requirements with additional funding for leases.

**Implications:** The excess space is not located at installations with available maneuver land. Stationing for new units must include facilities for all assigned small units. A portion of this shortfall can be met with other facilities, e.g. administrative facilities. This needs to be considered during TABS analysis. Units using admin or other excess facilities to meet their requirements lessen the stated excess of other facilities.

2.4.7.3. Large-Unit Headquarters

Brigade and battalion headquarters occupy large-unit headquarter space. Space is authorized based on a step function for small, medium, and large battalions. Brigades are authorized a standard sized facility. Additional space is authorized at 160 SF per person to the staffs of the brigade or battalion headquarters that meet certain size requirements. The Army has assets of 8,035 KSF and requirements of 9,082 KSF, showing an overall shortage of 1,047 KSF. At the local level the Army is short 1,817 KSF at 33 installations. Seventeen installations have excess facilities totaling 770 KSF.

Large Unit Headquarters			
Installations	Excess /Shortage	Assets	Summary
Ft Sill	200	524	✓ Army assets total 8,035 KSF ✓ 33 installations have a shortage of 1,817 KSF; 17 installations have an excess of 770 KSF ✓ Army requirement is 9,082 KSF ✓ Army shortage totals 1,047 KSF
Ft Carson	95	383	
Ft Meade	67	98	
Ft Lewis	64	533	
Ft Benning	62	395	
Ft Drum	-124	236	
Ft Campbell	-137	577	
Ft Stewart	-154	435	
Ft Bragg	-226	1069	
Ft Hood	-561	829	

**Table 64. Large Unit Headquarters**

**Surge:** Provision of large unit headquarters need not be able to adjust in response to probable threats or to changes in force structure. This constitutes a requirement for surge capability in the military judgment of the BRAC SRG, the deliberative body charged with the assessment.

Shortages in capacity exist in this functional area, thus providing no government-owned surge capability. Private sector capacity is available to augment government-owned capacity, including leases, contracts, and like services.

Because these capabilities are not difficult to reconstitute, Army BRAC recommendations did not purposefully avoid reducing the quantity of assets available to the Army. The Army can satisfy surge requirement for large unit headquarters with other types of facilities, MILCON, and funding for leases.

**Implications:** Some of the excess is located at installations that have maneuver land and could support additional units. The installations with the greatest shortages contain large numbers of maneuver units. At these installations, units work in crowded conditions or in non-permanent facilities.

2.4.8. RDT&E

2.4.8.1. Specialized Testing Facilities

Forty-one installations responded with a list of specialized facilities (e.g., anechoic chamber, wind tunnel) used to meet current testing requirements. The installations also included data on the number of days that the specialized facility was used in FY03. Based on days used in FY03, many special test facilities show an excess of available time for testing. By adding the reported days of each facility, an aggregate availability for each installation was determined. As shown in the following table, 14 installations display an aggregate availability of more than 40 percent. Also listed in the table are the facilities that were used for less than 120 days in FY03, illustrating that the FY03 workload did not exceed the capacity at those installations.

Installation	Specialized Facilities	Availability
Ft Leonard Wood	Countermine Testing Facility	92%
Watervliet Arsenal	Pressure test facility for breech mechanisms, Breech rings, Mortar barrels, and Split rings. Gymnasticator.	82%
Detroit Arsenal	Propulsion System Laboratory	63%
Hawthorne AD	Acoustic Center, E3 Lab, Duze Development Center, Open air test range.	61%
Picatinny Arsenal	Precision munition adverse weather performance evaluation tower.	60%
Yuma PG	Drop-test facility, Direct fire ranges, Artillery test complexes, EM gun facility.	59%
Tooele AD	APE 1236 Test furnace, APE 2048 Flashing furnace.	54%
Crane AAP	AEIRCM dynamic wind stream test facility, Near IR & visible illumination measurement facility.	51%
Sierra AD	Ammo surveillance building	50%
Lima ATP	60 test slope, 100 mEv X-ray Test cell.	49%
White Sands MR	System test - PHETS facility, LC-94 and LC-96 launch complex facilities, Zumwalt test track facility, Special Weapons Assembly Building (SWAB-5), LC-32 launch complex facility used for firing missiles. Special Weapons Assembly Buildings (SWAB IV) (inactive). ARL-100 inch and 120 inch centrifuges. Navy - LC-37 gun complex, Sulf Site Missile Launch Complex, WC50 Missile and Gun launch complex, LC-34 Launch complex System. NASA Pyrovalve	46%
Red River AD	Patriot anechoic chamber, Hawk anechoic chamber, Ball bore matching facility, Crossdrive test facility, Inline test facility, Dynamometer test facility, X-ray facility, Mean time between failure chamber 100,000 class clean room	44%
Pine Bluff Arsenal	Electrodynamic shaker, Loose cargo simulator	42%
Dugway PG	Vibration facility, X-ray facility	40%

**Table 65. RDT&E Specialized Facilities**

**Surge:** The Army has sufficient land to build RDT&E specialized facilities. If establishing laboratories is not cost effective, the Army can meet its needs through leases, contracting, privatization, or additional shifts to meet short-term increases in workload.

The Army did not review specialized labs for surge capabilities; the Technical JCSG completed this review.

While, in general, the use of these facilities does not change with the level of operational activities, it is the case that the extent of availability for each of these assets indicates the presence of a surge capacity.

**Implications:** Specialized RTD&E facilities require a detailed review of requirements on a case-by-case basis. TABS will work closely with the Technical JCSG to ensure TABS considers lab requirements and will not unilaterally close or realign a specialized RTD&E facility. An initial review shows that the Army has surge capacity in its specialized facilities to meet unfolding requirements.

*2.4.9. Army-wide Level II Summary for Selected Metrics*

Table 66 summarizes the capacity metrics discussed above for Level II Army-wide capacities and Level I analysis (from the last section). As explained in the previous

section, Level II metrics at the Army-wide level do not capture the installation specific situations. In fact, Army-wide measures can be deceiving because one installation with excess (shortage) can hide numerous installations with shortage (excess) simply because Army-wide is an aggregate measure.

TABS examined installation-specific analysis for a set of metrics. Additional tables showing existing differences between permanent assets and requirements based on current stationing can be found in the material accompanying this report.

Missions	CAPACITY METRICS	Level of Analysis	Army Wide			Installation Level	
			Assets	Excess /Shortage	Unit of Measure	# of Excess	# of Shortage
Deployment	FAC 1111 Fixed Wing Runway, Surfaced	II	6,858	1,524	Thousand SY	16	10
	FAC 1131 Aircraft Apron, Surfaced	II	10,502	-2,288	Thousand SY	14	23
Mobilization	FAC 2141 Vehicle Maintenance Shop	II	12,836	-3,278	Thousand SF	27	40
	FAC 7214 Annual Training /Mobilization Barracks	II	6,308	-8,318	Thousand SF	7	46
Institutional Training and Education	FAC 1711 General Instructional Facilities	II	10,347	-948	Thousand SF	23	39
	FAC 1712 Applied Instructional Facilities	II	6,666	-1,523	Thousand SF	20	22
Well-Being	FAC 5100 Medical Center/Hospital	II	15,910	1,340	Thousand SF	17	10
	FAC 5400 Dental Facility	II	1,067	-79	Thousand SF	11	36
	FAC 7210 Enlisted Unaccompanied Personnel Housing	II	37,300	-2,518	Thousand SF	33	27
	FAC 7351 Education Center	II	1,210	-57	Thousand SF	16	21
	FAC 7371 Nursery And Child Care Facility	II	1,770	-1,365	Thousand SF	9	40
Joint Logistics	DoD Q #501, #506 Depot Maintenance	II	16,700	3,308	Thousand Hours	10	5
	DoD Q #512, #515 Armaments Production	II	6,119	4,206	Thousand Hours	6	0
	DoD Q #517 Ammunition Storage	II	48,315	19,195	Thousand SF	18	0
C4I/Headquarters	FAC 6100 General Administrative Space	II	36,281	1,693	Thousand SF	51	35
	FAC 6101 Small Unit Headquarters	II	13,707	-9,886	Thousand SF	9	48
	FAC 6102 Large Unit Headquarters	II	8,035	-1,047	Thousand SF	17	33
RDT&E	DoD Q #84 Specialized Testing Facilities	II	172,293	65,859	Thousand SF	30	1

**Table 66. Summary of Level II Excesses and Shortages**

**2.5. Additional Level II**

Section 2.4 provided an in-depth Level II analysis for a subset of metrics, this section completes the Army Level II review and includes all metrics.

The calculation of permanent assets minus requirements is shown in the following tables. Negative numbers indicate the requirement for that type of facility is more than the permanent assets at that location; this is a facility deficit. The Army total is not an indicator of installation totals. While the Army may have excess individual installations may have a deficit. The reverse is also true. Individual installations may have excess facilities, but the Army is in deficit. Each table lists one FAC group, e.g. Core, Utility, and one UM from that group. Installations may have additional semi-permanent or even

temporary assets being used by units and activities. Assets other than permanent are not being considered for stationing of new units and are not shown in the displayed data.

2.5.1. Core Assets

2.5.1.1. Core Assets measured in square feet (SF)

There are 138 different FACs with a unit of measure in square feet (SF). Thirteen of these were assigned to a group of FAC codes entitled Core. Table 67 provides the short titles and full descriptions of these thirteen FACs that are used in Table 68. These FAC types include the space most critical to supporting a maneuver element’s mission at home station. The requirements for these facilities are unit based, e.g., the make-up of a specific unit dictates what the requirements are for that unit. These include single soldier housing, unit headquarters, vehicle maintenance shops, and instructional space. The numbers shown in Table 68 are the differences between the permanent assets at the installation listed and the combined unit and installation requirements for that type of space. Negative amounts indicate a deficit in that FAC. The amounts shown are rounded to the nearest thousand square feet (KSF).

Short Title	FAC Description
GPI Bldg	General Purpose Instruction Building
AI Bldg	Applied Instruction Building
Org Clrm	Organizational Classroom
Av Maint	Aircraft Maintenance Hangar
Veh Maint	Vehicle Maintenance Shop
Gen Admin	General Administrative Building
Co HQ	Small Unit Headquarters Building
Bde/Bn HQ	Large Unit Headquarters Building
E-UPH	Enlisted Unaccompanied Personnel Housing
Stu Bks	Student Barracks
R/T Bks	Recruit/Trainee Barracks
DFAC	Dining Facility
O-UPH	Officer Unaccompanied Personnel Housing

**Table 67. Short Titles for Level II Core Table**



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FAC	6100	1717	2111	1711	6102	1712	7218	7220	7210	2141	7240	7213	6101
SHORT TITLE	Gen Admin	Org Clrm	Av Maint	GPI Bldg	Bde/Bn HQ	AI Bldg	R/T Bks	DFAC	E-UPH	Veh Maint	O-UPH	Stu Bks	Co HQ
Army Total	2,168	-742	-793	-948	-1,044	-1,523	-1,987	-2,445	-2,516	-3,241	-4,911	-6,007	-9,872
Installations with Excess	51	13	14	23	17	20	3	13	33	27	7	1	9
Installations with Shortage	35	31	16	39	33	22	6	45	27	40	35	36	48
Aberdeen PG	283	61	-161	86	-7	-33	0	-42	116	-3	-24	-184	-30
Adelphi Labs	-4	0	0	0	0	0	0	0	0	-17	0	0	0
Anniston AD	-35	0	0	0	0	0	0	-6	-4	-23	-4	0	-1
Blue Grass AD	-60	0	0	-9	-3	0	0	-22	0	-2	0	0	-10
Carlisle	-48	0	0	-53	0	0	0	0	0	0	0	0	0
Charles E Kelly SPT CTR	35	0	0	6	0	0	0	0	-5	2	-5	0	0
Corpus Christi AD	21	0	-60	0	0	0	0	-6	0	0	0	0	-1
Crane AAP	28	-2	0	0	-6	0	0	-33	0	-5	0	0	-17
Deseret Chem Plant	-27	1	0	0	0	0	0	-13	0	0	0	0	0
Detroit Arsenal	-11	9	21	-9	0	0	0	0	0	0	0	0	0
Dugway PG	-12	0	0	-1	-7	19	0	-17	37	4	28	0	-19
Ft AP Hill	27	22	4	6	9	0	5	-16	-8	-9	3	0	-18
Ft Belvoir	10	-1	97	185	-9	-32	0	5	65	100	-133	-71	-63
Ft Benning	-29	-2	124	-146	62	-130	-507	53	140	-21	-247	-429	-391
Ft Bliss	242	38	4	-203	-7	59	0	-198	217	-27	-222	-221	-303
Ft Bragg	-1,132	57	70	-245	-226	-37	-12	-49	-1,350	-896	0	-1,411	-1,651
Ft Buchanan	-69	0	-2	-1	-12	-1	0	-21	-4	-14	-35	-8	-9
Ft Campbell	-144	-114	-197	-57	-137	-6	0	2	-367	-589	-463	-61	-751
Ft Carson	53	-35	62	-4	95	0	0	-37	25	-69	-287	-12	-285
Ft Detrick	-211	0	0	-3	0	0	0	-7	-23	0	-12	0	-2
Ft Dix	-30	-3	-13	-25	3	53	0	-207	-27	-131	1	-415	20
Ft Drum	-114	-54	-18	-38	-124	-16	0	-174	-556	-146	-262	-44	-587
Ft Eustis	-67	-6	-29	-69	-47	-1,363	0	-88	132	-59	-65	-516	179
Ft Gillem	-109	0	0	8	49	10	0	-6	0	0	0	0	23
Ft Gordon	33	-25	0	-285	-72	-148	0	-94	134	-134	-155	-287	-151
Ft Hamilton	25	0	0	-5	0	0	0	3	0	0	-12	0	0
Ft Hood	-231	-202	-408	-116	-561	57	0	-240	-894	-605	-834	-133	-1,683
Ft Huachuca	122	-28	72	-9	-27	121	0	-29	-119	-92	-126	-8	-217
Ft Jackson	45	36	0	149	-6	161	-682	-70	46	-1	21	-792	-392
Ft Knox	680	-54	-105	19	22	89	-245	44	-3	205	-113	-35	-244
Ft Leavenworth	-32	0	0	-6	-7	-1	0	-75	44	-2	-153	-11	-20
Ft Lee	-8	-27	0	-160	17	-98	0	-68	29	-45	-50	-437	-130
Ft Leonard Wood	-84	-29	0	-262	-82	-174	-395	-285	-320	44	0	-12	-406
Ft Lewis	141	-1	88	37	67	53	0	-136	152	238	-435	-65	-347

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FAC	6100	1717	2111	1711	6102	1712	7218	7220	7210	2141	7240	7213	6101
SHORT TITLE	Gen Admin	Org Clrm	Av Maint	GPI Bldg	Bldg/Bn HQ	AI Bldg	R/T Bks	DFAC	E-UPH	Veh Maint	O-UPH	Stu Bks	Co HQ
Ft McCoy	-24	-7	40	65	-18	49	0	-206	-20	30	-11	-254	-124
Ft McNair	51	0	0	-31	0	-10	0	0	37	0	0	0	-8
Ft McPherson	6	-9	0	0	-13	0	0	-13	33	0	0	0	0
Ft Meade	-114	0	0	159	67	-43	0	-22	-2	10	-4	0	-15
Ft Monmouth	1	-24	0	0	0	1	0	-6	111	-3	0	0	-10
Ft Monroe	241	0	0	-21	0	1	0	7	-7	4	-44	-3	-2
Ft Myer	129	4	0	0	-15	0	0	0	232	-2	0	0	-73
Ft Polk	-137	-60	26	-17	-28	-17	0	-127	-209	-31	-181	-105	-176
Ft Richardson	40	-22	-7	-18	56	-5	0	-5	327	91	-14	14	72
Ft Riley	28	-1	60	-4	11	0	0	-78	-245	-23	-7	-3	-168
Ft Rucker	286	-19	-255	-30	37	77	0	-9	76	-6	-366	-75	-82
Ft Sam Houston	766	19	0	-32	32	-49	0	17	72	-22	0	0	10
Ft Shafter	-276	-21	0	-21	-12	0	0	-13	9	-28	-6	0	-66
Ft Sill	156	-33	84	-85	200	0	-260	1	133	-154	0	-169	-327
Ft Stewart / Hunter AAF	-241	-91	-36	23	-154	4	0	8	-930	-364	-360	-15	-685
Ft Wainwright	16	-2	-192	3	26	-2	0	23	292	-24	-78	-1	5
Hawthorne AD	96	0	0	25	0	0	0	0	30	32	31	0	1
Holston AAP	83	0	0	0	0	0	0	-6	0	0	0	0	-1
Iowa AAP	96	1	0	0	0	2	0	0	0	17	0	0	0
Kansas AAP	85	0	0	0	0	0	0	0	0	21	0	0	0
Lake City AAP	165	0	0	2	0	1	0	0	0	17	0	0	0
Letterkenny AD	-34	0	0	0	0	0	0	0	11	0	0	0	-7
Lima Tank Plant	70	0	0	0	0	8	0	0	0	52	-1	0	0
Lone Star AAP	7	0	0	0	0	0	0	0	0	16	0	0	0
McAlester AAP	24	-1	0	56	0	0	0	-6	0	31	0	-6	7
Milan AAP	61	1	0	0	0	0	0	0	0	17	0	0	0
MOT Sunny Point	0	0	0	0	-3	0	0	-17	0	-2	0	0	-6
Mississippi AAP	211	0	0	8	0	0	0	0	0	10	0	0	0
Newport CD	24	0	0	0	0	0	0	-13	0	5	0	0	0
Ft Irwin	-178	-28	-1	-32	-90	7	48	-236	-264	-492	-37	0	-447
Picatinny Arsenal	228	0	0	0	-8	0	0	0	7	-27	1	0	0
Pine Bluff Arsenal	66	0	0	-8	0	-1	0	0	9	0	-5	0	-6
Presidio of Monterey	49	0	0	-140	-7	-50	61	-8	-82	0	0	-124	0
Pueblo CD	106	0	0	0	0	0	0	0	0	106	0	0	0
Radford AAP	161	0	0	7	0	0	0	0	4	0	0	0	0
Red River AD	-45	0	0	-1	0	0	0	-6	0	3	0	0	0
Redstone Arsenal	-551	0	0	-38	-19	-12	0	0	68	-42	0	-38	-34
Riverbank AAP	12	0	0	0	0	0	0	0	0	1	0	0	0
Rock Island Arsenal	547	7	0	-1	0	77	0	0	-5	0	0	0	0
Schofield Barracks	-394	-103	-124	-22	-93	0	0	-27	387	-289	0	-10	-192
Scranton AAP	32	0	0	0	0	0	0	0	0	0	0	0	0
Sierra AD	36	0	0	2	0	0	0	0	25	-33	0	0	0
Soldier SPT CTR	-26	-2	0	0	0	0	0	0	0	0	0	0	0

FAC	6100	1717	2111	1711	6102	1712	7218	7220	7210	2141	7240	7213	6101
SHORT TITLE	Gen Admin	Org Clrm	Av Maint	GPI Bldg	Bde/Bn HQ	AI Bldg	R/T Bks	DFAC	E-UPH	Veh Maint	O-UPH	Stu Bks	Co HQ
Tobyhanna AD	-8	0	0	-2	-3	0	0	-6	0	-2	0	-10	-4
Tooele AD	-86	0	0	-3	0	0	0	-11	-6	-6	0	0	-7
Tripler AMC	-97	0	0	0	7	0	0	0	-42	0	0	-10	0
Umatilla CD	8	0	0	3	0	0	0	0	-1	23	0	0	0
USAG Selfridge	10	-4	0	0	-8	0	0	17	129	-2	0	0	0
Walter Reed AMC	44	12	0	32	13	25	0	-22	-21	11	-216	-42	17
Watervliet Arsenal	2	0	0	2	0	0	0	0	0	0	0	0	0
West Point	746	0	65	353	-3	-169	0	148	-195	29	-82	-4	-23
White Sands MR	-139	0	-2	28	-3	0	0	3	49	47	53	0	-15
Yuma PG	57	0	0	0	0	0	0	0	15	0	0	0	0
Lease - ARPERCEN	137												
Lease - Army JAG Agency	0												
Lease - Army JAG School	31												
Lease - Army Research Office	7												
Lease - Bailey's Crossroads	-46												
Lease - Crystal City Complex	97												
Lease - HQ, ATEC	3												
Lease - PEO STRICOM	4												
Lease - Rosslyn Complex	-18												
Lease - Hoffman complex	269												

Table 68. Level II Core Square Foot Table

2.5.1.2. Core Assets measured in square yards (SY)

One Core asset, Vehicle Parking Surfaced, is measured in square yards (SY). At the FAC level this includes both parking for military equipment, Organizational Vehicle Parking, and parking for privately owned vehicles, Non-Organizational Vehicle Parking. The numbers shown in Table 69 are the differences between the permanent assets at the installation listed and the combined unit and installation requirements for vehicle parking. Negative amounts indicate a deficit at that location. The amounts shown are rounded to the nearest thousand square yards (KSY).

FAC	8521	FAC	8521
FAC DESCRIPTION	Vehicle Parking, Surfaced	FAC DESCRIPTION	Vehicle Parking, Surfaced
Army Total	6,213	Ft Richardson	213
Installations with excess	32	Ft Riley	-92
Installations with shortage	47	Ft Sam Houston	184
Aberdeen PG	-130	Ft Shafter	32
Adelphi Labs	0	Ft Sill	1,236
Anniston AD	263	Ft Stewart / Hunter AAF	-119
Blue Grass AD	-73	Ft Wainwright	82
Carlisle	0	Hawthorne AD	-133
Charles E Kelly SPT CTR	-154	Holston AAP	-103
Corpus Christi AD	-287	Iowa AAP	-24
Crane AAP	-204	Kansas AAP	74
Deseret Chem Plant	-154	Lake City AAP	-31
Detroit Arsenal	-159	Letterkenny AD	0
Dugway PG	-99	Lima Tank Plant	-83
Ft AP Hill	-257	Lone Star AAP	396
Ft Belvoir	212	McAlester AAP	-248
Ft Benning	592	Milan AAP	-139
Ft Bliss	1,631	MOT Sunny Point	0
Ft Bragg	1,315	Mississippi AAP	-81
Ft Buchanan	-376	Newport CD	-150
Ft Campbell	673	Ft Irwin	223
Ft Carson	1,254	Picatunny Arsenal	-61
Ft Detrick	-4	Pine Bluff Arsenal	-7
Ft Dix	-310	Presidio of Monterey	36
Ft Drum	-198	Pueblo CD	796
Ft Eustis	766	Radford AAP	-105
Ft Gillem	4	Red River AD	924
Ft Gordon	702	Redstone Arsenal	86
Ft Hamilton	-245	Riverbank AAP	-61
Ft Hood	-3,270	Rock Island Arsenal	-18
Ft Huachuca	576	Schofield Barracks	-1,048
Ft Jackson	8	Scranton AAP	-152
Ft Knox	1,360	Sierra AD	0
Ft Leavenworth	-475	Soldier SPT CTR	0
Ft Lee	-93	Tobyhanna AD	18
Ft Leonard Wood	824	Tooele AD	-3
Ft Lewis	1,372	Tripler AMC	-256
Ft McCov	225	Umatilla CD	-4
Ft McNair	-28	USAG Selfridge	-5
Ft McPherson	-125	Walter Reed AMC	-224
Ft Meade	288	Watervliet Arsenal	0
Ft Monmouth	-322	West Point	-142
Ft Monroe	-165	White Sands MR	-8
Ft Mver	-110	Yuma PG	0
Ft Polk	136		

Table 69. Level II Core Vehicle Parking (KSY)

2.5.2. Community Assets

2.5.2.1. Community Assets measured in square feet (SF)

Twenty-four FACs measured in SF were assigned to the Community group. The requirements for these facilities are dependent on installation level allowances, not individual unit allowances. They include many quality of life facilities. The numbers shown in Table 71 are the differences between the permanent assets at the installation listed and the installation requirements for that type of space. Negative amounts indicate a deficit in that FAC. The amounts shown are rounded to the nearest thousand square feet (KSF). Due to the size of the table, only a portion of the table is shown here. The complete table can be found in the materials accompanying this report.

The short titles used in the complete table are as follows:

Short Title	FAC Description	Short Title	FAC Description
Veh Stor	Vehicle Storage, Covered	Chapel	Chapel Facility
Med Cntr	Medical Center/Hospital	Rel Ed Cntr	Religious Education Facility
Dent Fac	Dental Facility	CDC	Nursery and Child Care Facility
Clinic	Dispensary and Clinic	Fam Ctr	Family Service Center
PX Eating	Exchange Eating Facility	Hobby Cntr	Hobby and Craft Center
O'Club	Open Mess and Club Facility	Auto Craft	Automobile Craft Center
Post Off	Postal Facility	Bowling	Bowling Center
Auto	Exchange Automobile Facility	Library	Library, General Use
PX	Exchange Sales Facility	Rec Cntr	Recreation Center
Bank	Bank and Credit Union	Fit Cntr	Indoor Physical Fitness Facility
Commsy	Commissary	Theater	Auditorium and Theater Facility
Ed Center	Education Center	MWR Spt	Miscellaneous MWR Support Facility

**Table 70. Short Titles for Level II Community Table**

DEPARTMENT OF THE ARMY—BRAC 2005—ANALYSES AND RECOMMENDATIONS

FAC	5100	5500	4425	7349	7346	7431	7372	7344	7351	5400	7331	7412	7415	7345	7347	7362	7416	7411	7447	7333	7371	7421	7361	7417
SHORT TITLE	Med Cntr	Clinic	Veh Stor	Commsv	PX	Theater	Fam Cntr	Post Off	Ed Cntr	Dent/Fac	PX Eat	Auto/Craft	Bowling	PX Auto	Bank	Re Ed Cntr	Library	Hobby Cntr	MWR Spt	O Club	CD	Fir Cntr	Chapel	Rec Cntr
Army Total	1,340	1,011	256	240	108	-9	-17	-33	-57	-79	-114	-115	-136	-219	-227	-327	-354	-530	-665	-1,265	-1,365	-1,376	-1,466	-1,788
Installations with excess	17	32	19	23	19	14	17	15	16	11	13	11	13	5	4	12	7	4	6	8	9	17	10	14
Installations with shortage	10	29	13	25	42	23	23	16	21	36	43	27	34	43	49	30	45	34	58	56	40	44	38	44
Aberdeen PG	-76	-1	8	19	11	31	4	-5	-36	-2	5	1	-1	-3	-5	2	-11	-4	-5	-33	-4	25	2	17
Adelphi Labs	0	0	0	0	0	0	0	0	0	0	0	-1	0	0	0	0	0	0	0	0	0	0	0	0
Anniston AD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-7	0	0	-15	-17	0	0
Blue Grass AD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-3	0	-4	-7	0	0	0	-3
Carlisle	0	0	0	0	0	0	-2	0	0	0	0	0	0	0	0	0	4	0	0	0	-16	0	0	0
Charles E Kelly SPT CTR	0	-5	0	-3	-21	0	6	-1	0	-11	-4	-2	-5	-2	-2	0	-3	-3	-4	4	0	6	0	0
Corpus Christi AD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-28	0	0
Crane AAP	0	-11	0	-25	-31	0	0	0	0	-11	-4	0	-3	-2	-2	0	-3	0	-4	-2	0	0	0	0
Deseret Chem Plant	0	-5	0	-25	-31	0	0	0	0	-11	-4	0	-3	-2	-3	0	-3	0	-4	-11	0	0	0	0
Detroit Arsenal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-10	-24	0	0
Dugway PG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-2	0	32	8	5
Ft AP Hill	0	-7	0	-26	-24	0	0	0	0	-11	-3	-2	-3	-2	-2	0	-3	-2	-4	2	0	7	3	0
Ft Belvoir	1	30	8	90	160	13	-7	5	17	1	22	-9	3	1	-11	5	6	4	-10	-11	12	-25	-14	40
Ft Benning	-124	58	18	-6	8	-2	17	2	-44	57	-4	30	7	-17	-15	-36	-4	-13	-21	-41	-15	-98	-68	-71
Ft Bliss	234	27	0	57	123	16	16	5	7	-2	-6	3	18	-8	-13	14	-13	-28	-16	-6	-42	19	-49	-68
Ft Bragg	144	156	8	48	96	-7	8	3	47	50	3	-16	0	-20	-8	-17	-34	-65	-280	-123	-150	-141	-272	-295
Ft Buchanan	0	8	0	68	50	0	0	0	-5	-8	-3	1	14	1	-2	1	2	-6	-5	23	-2	-27	-1	-9
Ft Campbell	-79	24	0	0	-5	-27	-3	0	0	0	-3	-8	0	-15	0	-36	-28	-11	-3	-36	-139	-114	-134	-144
Ft Carson	31	25	-6	0	-7	-23	23	0	0	0	1	0	0	-9	-4	-36	-3	-26	-16	0	-69	-15	-59	-85
Ft Detrick	0	0	-2	-10	-38	-6	-7	0	-5	0	-5	0	-9	-2	-5	-2	0	0	0	-30	-5	-9	0	-13
Ft Dix	384	5	-2	-29	-21	-14	-5	0	35	-7	3	-6	0	0	-4	18	-6	0	2	19	-5	-23	6	-5
Ft Drum	0	-12	370	0	0	0	-27	0	-37	0	-2	0	0	0	6	0	0	0	0	0	0	-28	-50	-4
Ft Eustis	-34	15	0	49	63	-8	5	1	3	-3	-4	-4	-12	-3	-7	-11	-8	-10	0	-29	-18	-24	-24	-42
Ft Gillem	0	0	0	87	18	0	0	4	0	0	0	0	0	0	0	-4	0	0	0	15	0	0	-4	0
Ft Gordon	-122	52	0	23	28	21	-10	3	15	53	4	1	-9	-2	-5	-7	-9	-25	-16	-33	-37	-4	-42	-43
Ft Hamilton	0	1	0	22	16	0	3	0	2	-11	-4	-4	6	0	0	-3	-2	-6	-4	-12	0	-9	5	-7
Ft Hood	-102	-102	0	-31	-2	0	-7	-7	-60	0	-16	-14	-55	-19	-24	-24	-58	-42	-9	-178	-254	-143	-51	-266
Ft Huachuca	0	3	0	26	42	-7	-2	1	5	0	17	-5	-12	-6	-8	6	-6	-14	-2	0	-1	-11	-24	-26
Ft Jackson	-25	30	0	20	43	-17	-6	-13	-2	3	-11	-11	8	-17	-13	-30	-7	-33	-14	-63	-4	-18	-24	-80
Ft Knox	94	-6	0	43	73	12	2	9	49	20	2	16	0	-11	15	-24	-11	-9	-10	-2	-5	-47	-37	-78
Ft Leavenworth	0	0	-2	0	0	-15	0	-4	0	0	0	-5	-4	-2	-6	5	0	0	-10	-30	-16	1	-10	-47
Ft Lee	0	81	0	25	108	-13	0	3	-18	3	26	2	-12	-8	-3	-7	-18	-16	-6	-39	-5	-13	-15	-45
Ft Leonard Wood	41	0	0	-41	-8	-7	-50	1	0	0	-10	-15	0	-4	-4	2	0	-25	-17	-84	-31	-32	-46	-85
Ft Lewis	229	366	22	9	-13	22	-4	-10	55	32	3	-8	5	-8	-16	-36	-8	-45	-11	-60	-90	-90	-62	-90
Ft McCov	0	-16	0	-28	-28	7	-5	-1	-5	-11	-4	2	-1	0	-4	-3	-5	-6	-5	4	-8	-14	-5	-23
Ft McNair	0	0	0	0	-2	0	0	0	-10	0	0	0	0	0	0	-3	0	0	0	0	0	-34	-5	0
Ft McPherson	0	0	0	0	0	0	0	0	24	0	0	0	0	0	5	0	0	0	0	-23	-14	-27	0	-9
Ft Meade	0	36	0	0	12	-10	-1	1	-40	1	0	0	-13	-1	0	-1	-2	0	3	0	-36	-51	-37	-20
Ft Monmouth	105	-11	0	0	0	0	10	0	0	-9	0	0	0	0	-5	0	0	0	-9	0	0	0	-4	-16
Ft Monroe	0	26	21	-9	-5	15	3	1	-2	-7	-3	-3	3	-2	-3	26	-4	-6	-2	7	1	2	-8	-2
Ft Myer	0	40	0	0	-14	0	15	0	0	-5	-1	0	0	0	0	0	0	0	0	0	0	-28	8	-6
Ft Polk	70	15	0	25	-8	-11	-10	-6	-13	0	-5	1	-6	-9	-8	-8	-10	-11	-11	-24	-38	37	-45	-17
Ft Richardson	5	8	-212	0	-30	-4	44	0	23	0	5	-2	0	1	0	-2	5	2	-11	-18	5	-5	-2	-17
Ft Riley	0	-32	-1	0	-19	0	0	-7	1	0	0	0	0	0	0	-18	0	0	-11	-35	-25	36	-22	-89
Ft Rucker	111	-17	7	38	65	-12	-8	0	36	5	2	0	-10	-6	6	5	-4	-3	-10	-65	-15	-30	-29	-49
Ft Sam Houston	-3	0	0	0	-3	0	0	0	0	0	-1	-11	0	0	0	0	0	0	-9	-4	0	-12	-13	7
Ft Shafer	0	0	0	-34	-1	-8	-3	-3	-12	0	0	4	16	0	-6	-5	-3	6	-8	-8	-6	-3	-45	-4
Ft Sill	0	53	1	-1	-12	-5	-12	0	-8	15	-8	0	-1	-17	0	12	-8	-10	-5	-5	-78	-49	-79	-66
Ft Stewart / Hunter AAF	0	97	19	0	-37	-52	-15	-3	-48	-13	-18	-10	3	-1	-13	-45	-32	-42	-22	-103	-103	-68	-121	-84
Ft Wainwright	5	4	29	13	75	-25	7	-6	7	-1	-1	0	2	-2	0	-15	-4	-17	-1	16	24	-11	-23	-65
Hawthorne AD	0	-5	17	-25	-31	3	0	0	0	-11	-4	0	-3	-2	-2	0	-3	0	-4	-2	0	0	0	1
Holston AAP	0	-5	0	-25	-31	0	0	0	0	-11	-4	0	-3	-2	-2	0	-3	0	-4	-3	0	0	0	0
Iowa AAP	0	-5	0	-25	-31	0	0	0	0	-11	-4	0	-3	-2	-2	0	-3	0	-4	-4	0	0	0	0
Kansas AAP	0	6	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1	0	0	0	0
Lake City AAP	0	2	0	-25	-31	0	0	0	0	-11	-4	0	-3	-2	-2	0	-3	0	-4	-8	0	0	0	0
Letterkenny AD	0	0	0	0	-2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	3
Lima Tank Plant	0	-5	4	-25	-31	0	0	0	0	-11	-4	0	-3	-2	-2	0	-3	0	-4	-3	0	0	0	0
Lone Star AAP	0	-4	0	-25	-31	0	0	0	0	-11	-4	0	-3	-2	-2	0	-3	0	-4	-2	0	0	0	0
McAlester AAP	0	0	0																					

FAC	5100	5500	4425	7349	7346	7431	7372	7344	7351	5400	7331	7412	7415	7345	7347	7362	7416	7411	7447	7333	7371	7421	7361	7417
SHORT TITLE	Med Ctr	Clinic	Veh Stor	Comms	PK	Theater	Fam Ctr	Post Off	Ed Ctr	Dent Fac	PK Eat	Auto Craft	Bowling	PK Auto	Bank	Re Ed Ctr	Library	Hobby Ctr	MWR St	OClub	CC	Fit Ctr	Chapel	Rec Ctr
Miln AAP	3	-4	0	-25	-31	0	0	0	0	-11	-4	0	-3	-2	-2	0	-3	0	-4	-3	0	0	0	0
MOT Sunny Point	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mississippi AAP	0	0	2	0	0	0	0	0	0	0	0	0	0	-2	0	0	0	0	0	0	0	0	0	0
Newport CD	0	-1	0	-25	-31	0	0	0	0	-11	-4	0	-3	-2	-2	0	-3	0	-4	-3	0	0	0	0
Rt Irwin	-18	-3	11	13	-2	-18	-5	7	-15	-9	-3	-2	-6	0	-5	-12	-18	-10	-5	-12	-49	-69	-21	-42
Picatinny Arsenal	0	0	-44	0	0	0	0	-3	0	0	-3	-1	0	0	0	0	0	0	9	-4	0	-16	0	3
Pine Bluff Arsenal	0	-3	-2	0	-5	0	0	0	0	-3	0	0	0	0	0	0	0	0	0	-8	8	0	0	-2
Presidio of Monterey	0	-10	-2	72	-23	-8	-3	-2	-6	-5	-4	-9	0	8	0	-9	0	0	-5	-9	0	0	-3	-1
Pueblo CD	0	-5	0	-25	-31	0	0	0	0	-11	-4	0	-3	-2	-2	0	-3	0	-4	-1	0	2	0	2
Radford AAP	0	4	2	-25	-31	2	0	1	0	-11	-4	0	-3	-2	-2	0	-3	0	-4	-10	0	27	0	0
Red River AD	0	4	0	0	-10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
Redstone Arsenal	0	-8	-7	0	0	0	0	-4	0	0	-8	-12	0	0	0	-3	0	-14	0	0	-5	-15	11	-1
Riverbank AAP	0	12	2	0	0	0	0	0	0	0	0	0	0	-2	0	0	0	0	-1	0	0	0	0	0
Rock Island Arsenal	0	0	0	0	-1	0	0	0	3	0	0	0	0	0	0	-3	0	0	4	0	-9	1	-1	-13
Schofield Barracks	0	127	0	10	-132	45	-4	-5	-5	-1	-6	-5	17	-2	-3	-21	4	-16	-18	-86	-65	-116	-133	-42
Scranton AAP	0	1	0	0	0	0	0	0	0	0	0	0	0	0	-2	0	0	0	0	-2	0	0	0	0
Siena AD	0	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	18	0	0
Soldier SPT CTR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1	0	0	0	0	0
Tobytanna AD	3	0	-5	-1	0	0	0	0	0	0	-4	-2	0	0	0	0	-1	0	-4	0	-7	-11	0	-5
Tooele AD	0	0	-23	0	0	-4	0	0	0	0	0	0	-9	0	0	0	0	-8	-3	-10	0	-9	0	-3
Tripler AMC	-4	-8	0	0	0	0	0	0	0	-9	-5	0	-3	0	0	0	0	0	0	-17	0	-19	0	0
Umatilla CD	0	2	0	-25	-31	0	0	0	0	-11	-4	0	-3	-2	-2	0	-3	0	-4	-5	0	3	0	2
USAG Schifge	0	11	0	0	8	9	15	0	0	-11	0	0	0	-1	-2	0	1	-2	-3	-4	5	16	0	3
Walker Reed AMC	459	-8	-4	22	-8	0	0	0	-2	-12	-1	-7	-18	-1	-6	-5	-11	-4	-7	-25	-20	-14	-18	-34
Watervliet Arsenal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
West Point	8	-4	7	25	40	81	-6	0	-18	0	-7	-4	-9	-3	-6	-4	8	-12	-10	-7	-1	-89	69	194
White Sands MR	0	0	0	5	-16	17	4	0	-5	-4	6	2	5	1	-4	7	-5	9	-4	-3	-12	-5	11	36
Yuma PG	0	-10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	-1	2	13	11	0

Table 71. Level II Community, Select FACs

2.5.2.2. Community Assets measured in each (EA)

Four types of assets in the FAC group entitled Community are measured in each. The specific size of these facilities is not as important as whether they exist. The central vehicle wash facility is used to remove mud and caked on dirt from military vehicles when they return from the field. They often use high-pressure nozzles and recycle the water. The numbers shown in Table 72 are the differences between the permanent assets at the installation listed and the installation requirements for that type of space. Negative amounts indicate a deficit in that FAC.

FAC	7522	7512	1496	7521	FAC	7522	7512	1496	7521
FAC DESCRIPTION	Athletic Field	Outdoor Swimming Pool	Central Vehicle Wash Facility	Outdoor Playing Court	FAC DESCRIPTION	Athletic Field	Outdoor Swimming Pool	Central Vehicle Wash Facility	Outdoor Playing Court
Army Total	-1,496	-35	-15	629	Ft Richardson	-12	-2	3	5
Installations with excess	11	14	11	44	Ft Riley	-38	0	-1	42
Installations with shortage	56	32	36	21	Ft Rucker	-11	3	0	9
Aberdeen PG	-8	1	5	65	Ft Sam Houston	0	0	-1	2
Adelphi Labs	0	0	0	0	Ft Shafter	-3	1	-1	6
Anniston AD	0	0	0	0	Ft Sill	-67	1	0	14
Blue Grass AD	0	0	-1	0	Ft Stewart / Hunter AAF	-90	-3	0	20
Carlisle	0	0	0	9	Ft Wainwright	-5	-2	3	6
Charles E Kelly SPT CTR	-3	-2	-1	0	Hawthorne AD	-3	-2	-1	-1
Corpus Christi AD	0	0	0	0	Holston AAP	-3	-2	-1	-1
Crane AAP	-3	-2	-1	-1	Iowa AAP	-3	-2	-1	-1
Deseret Chem Plant	-3	-2	-1	-1	Kansas AAP	0	0	-1	0
Detroit Arsenal	0	0	-1	0	Lake City AAP	-3	-2	0	-1
Dugway PG	-1	-1	0	0	Letterkenny AD	1	1	0	2
Ft AP Hill	-3	-1	0	11	Lima Tank Plant	-2	-2	0	-1
Ft Belvoir	-9	3	1	26	Lone Star AAP	-3	-2	-1	-1
Ft Benning	-79	6	0	22	McAlester AAP	-1	0	0	-1
Ft Bliss	-45	-3	0	5	Milan AAP	-3	-2	-1	1
Ft Bragg	-168	1	1	52	MOT Sunnv Point	0	0	1	-1
Ft Buchanan	1	-1	-1	6	Mississippi AAP	0	0	-1	0
Ft Campbell	-77	-2	0	21	Newport CD	-3	-2	-1	-1
Ft Carson	-46	1	2	19	Ft Irwin	-21	0	-4	0
Ft Detrick	-6	0	0	-1	Picatinny Arsenal	2	2	0	0
Ft Dix	-5	-1	0	13	Pine Bluff Arsenal	1	1	0	-1
Ft Drum	-31	0	0	22	Presidio of Monterey	-18	-2	0	3
Ft Eustis	-26	0	-1	-9	Pueblo CD	-1	0	-1	0
Ft Gillem	0	0	0	1	Radford AAP	-2	-2	-1	-1
Ft Gordon	-49	0	0	21	Red River AD	0	0	0	-1
Ft Hamilton	-5	2	-1	3	Redstone Arsenal	2	0	-1	4
Ft Hood	-182	3	1	-10	Riverbank AAP	0	0	-1	0
Ft Huachuca	-20	0	0	10	Rock Island Arsenal	0	0	0	0
Ft Jackson	-56	-2	-1	-3	Schofield Barracks	-68	-1	-1	28
Ft Knox	3	0	-7	25	Scranton AAP	0	0	-1	0
Ft Leavenworth	-12	0	-1	-1	Sierra AD	3	0	0	0
Ft Lee	-28	-1	-1	7	Soldier SPT CTR	0	0	0	0
Ft Leonard Wood	-83	0	1	-17	Tobvanna AD	2	0	0	0
Ft Lewis	-94	-6	10	58	Tooele AD	0	-1	-1	0
Ft McCov	2	-2	0	1	Tripler AMC	-7	1	0	4
Ft McNair	-1	0	0	9	Umatilla CD	-3	0	0	0
Ft McPherson	0	0	0	4	USAG Selfridge	2	0	-1	6
Ft Meade	-15	0	-1	22	Walter Reed AMC	-16	-2	-1	-1
Ft Monmouth	4	0	0	8	Watervliet Arsenal	0	0	0	0
Ft Monroe	-7	-1	-1	6	West Point	-27	-1	0	17
Ft Mver	-3	0	-1	12	White Sands MR	-2	-1	0	1
Ft Polk	-33	0	1	57	Yuma PG	0	0	0	0

Table 72. Level II Community measured in Each

2.5.3. Utility Assets

The following sections provide explanations of the Level II information in various other FAC groups and UM categories. The tables with the Level II information on utility assets can be found in the materials accompanying this report.



#### 2.5.3.1. Utility Assets measured in linear feet (LF)

The assets in the FAC group entitled Utilities have a variety of units of measure. Those measured in linear feet (LF) include pipelines and cables used to move utilities from one location to another outside of buildings. RPLANS does not include criteria for determining an allowance for these utility facilities. The requirements normally equal the allowances, which are set equal to the assets. The requirements for pipelines and cables are generated based on known new construction or realignment of utilities for other reasons. Excess may exist from old buildings that were demolished leaving the supporting utilities in place. Negative amounts indicate a deficit in that FAC. The amounts shown are rounded to the nearest thousand linear feet (KLF).

#### 2.5.3.2. Utility Assets measured in thousands of gallons per day (KG)

The assets in the FAC group entitled Utilities and measured in thousands of gallons per day (KG) include Army owned water sources and treatment facilities. Water treatment facilities treat potable water before it is distributed to users. A potable water well provides water for a potable water system. Non-potable water can be used for irrigation or fire fighting. RPLANS does not include criteria for determining an allowance for these utility facilities. The requirements normally equal the allowances, which are set equal to the assets. The installation acquires or provides utility capacity to meet the current demand. Occasionally the standard size of utility equipment may provide slightly more than is currently required, thus providing some excess. Requirements in these instances are all based on analysis of demands across the installation. Negative amounts indicate a deficit in that FAC. Deficits of -1 are likely caused by rounding errors. Other more substantial deficits may be met by using resources from the neighboring municipality. Conservation measures may be providing a temporary solution to the issue.

#### 2.5.3.3. Utility Assets measured in kilovolt-amperes (KV)

Substations and associated equipment are measured in kilovolt-amperes (KV). This only includes the capacity of Army owned substations and associated electrical distribution equipment such as transformers. Substations and associated equipment would be included in any contract for the privatization of the electrical distribution system at the installation. RPLANS does not include criteria for determining an allowance for these utility facilities. Requirements normally equal the allowances that are set equal to the assets. The installation provides utility capacity to meet the current demand with some slight excess for future expansion. Occasionally the standard size of a transformer may provide slightly more than is currently required, thus providing some excess. Large excesses are the result of facilities being demolished leaving the utility system in place for some future requirement. Requirements in these instances are all based on analysis of demands across the installation. Negative amounts indicate a deficit in that FAC. Differences of -1 are likely due to rounding of the totals. Larger deficits are most likely due to planned new construction that has increased the need for electrical power on post.

#### 2.5.3.4. Utility Assets measured in kilowatt (KW)

Electrical sources are measured in kilowatt (KW). These are Army owned generators burning oil or natural gas to provide primary power to part or all of an installation. Sources could also include solar. RPLANS does not include criteria for determining an

allowance for this utility. The requirements normally equal the allowances that are set equal to the assets. The installation acquires or provides utility capacity to meet the current demand with some slight excess for future expansion. Stand-by and emergency sources are normally fixed generators providing power to one or more buildings or portions of buildings in the event normal power is interrupted. Requirements in these instances are all based on analysis of demands across the installation. Examples include power for the freezers at the Commissary, power for the central communications center for the installation, and power for a central heating plant. Occasionally the standard size of a generator may provide slightly more than is currently required, thus providing some excess. Negative amounts indicate a deficit in that FAC. A deficit in back-up power indicates the installation is currently taking a risk by not having emergency power available at a particular location.

#### 2.5.3.5. Utility Assets measured in million BTUs per hour (MB)

Heat sources, boilers or furnaces, are measured in millions of BTUs per hour (MB). These heat sources could be consuming natural gas, oil, electricity, or even coal to produce the heat. Geothermal and solar heating sources are also included in this total. RPLANS does not include criteria for determining an allowance for these utility facilities. The requirements equal the allowances that are set equal to the assets. The installation normally acquires or provides utility capacity to meet the current demand with some slight excess for future expansion. Occasionally the standard size of a central boiler or group of boilers may provide slightly more than is currently required, thus providing some excess. Requirements in these instances are all based on analysis of demands across the installation. Negative amounts indicate a deficit in that FAC. Most likely this deficiency is being met by using resources from the neighboring municipality or community.

#### 2.5.3.6. Utility Assets measured in tons of refrigeration (TR)

Refrigeration and air conditioning sources are measured in tons (TR). Geothermal cooling sources are included in this total. RPLANS does not include criteria for determining an allowance for these utility facilities. The requirements equal the allowances that are set equal to the assets. The installation normally acquires or provides utility capacity to meet the current demand with some slight excess for future expansion. Occasionally the standard size of utility equipment may provide slightly more than is currently required, thus providing some excess. Large excess result from demolishing buildings connected to a central plant, and leaving the plant unchanged. Requirements in these instances are all based on analysis of demands across the installation. Negative amounts indicate a deficit in that FAC. In this category, deficits indicate central systems intended to replace numerous window A/C units or new demands. New demands could be from new buildings being built with MCA funds or from changes in the use of existing facilities where previous users did not require A/C but the current user does.

#### 2.5.3.7. Utility Assets measured millions of gallons (MG)

Large, uncovered, water storage facilities are measured in millions of gallons (MG). RPLANS does not include criteria for determining an allowance for these utility facilities. Normally requirements equal the allowances, which are set equal to the assets. The need for large open reservoirs is determined by the installation based on fire

protection needs, the ability to get water from local sources, a desire to capture rainwater for local use, or other local needs. Requirements in these instances are all based on analysis across the installation. Negative amounts indicate a deficit in that FAC.

#### 2.5.3.8. Utility Assets measured in gallons (GA)

Relatively small, covered water storage facilities are measured in gallons (GA). The amounts shown are in thousands of gallons (KGA). RPLANS has no criteria for determining an allowance for any utility facilities. The requirements equal the allowances that are set equal to the assets. Potable water storage is provided as part of the water distribution system and provides needed pressure in the system and a source of drinking water in the event of interruptions from the local supplier. Non-potable water can be used for fire protection, irrigation, or in heating and cooling distribution systems. Requirements in these instances are all based on analysis of demands across the installation. Negative amounts indicate a deficit in that FAC. Installations with potable water storage deficits are managing a risk in being able to respond to expected demands in the event of a water emergency.

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## **Annex 3. OPERATIONAL CAPACITY ANALYSIS (LEVEL III)**

### **3.1. Purpose**

Level III analysis identifies the installation's capability to support specific types and numbers of units and expansion potential with additional resources (e.g., with MILCON or acquisition of additional land).

### **3.2. Introduction**

TABS Level III capacity analysis began with the development of notional footprints; the footprints document the typical operational requirements in facilities and training lands for selected types of Army units such as Army maneuver brigades, small training schools, large training schools, administrative headquarters facilities, maintenance depots, industrial facilities, and storage facilities. By comparing the footprints to an installation's inventory of assets, the analyst can estimate the extent to which an installation could accommodate additional units. An expanded analysis will highlight the binding constraint(s) that preclude an installation from absorbing additional missions and units.

### **3.3. Approach**

#### *3.3.1. Standard Footprints*

The seven footprints include: light maneuver brigade, heavy maneuver brigade, Stryker Brigade Combat Team (SBCT), small school, large school, small admin organization, and large admin organization. The detailed footprint data used for this study is at Annex 5.

#### *3.3.2. Clean Slate Analysis*

For Clean Slate analysis, all existing permanent assets are considered empty and available to support stationing of a standard footprint unit. We calculated several capacity measurements and then merged them for a final determination of installation capacity, which highlighted the measurement that limited the ability of an installation to support standard footprint.

Clean slate analysis compared the Community group requirements for each of the three maneuver unit footprints against permanent assets. This analysis revealed that no installation had sufficient assets to support any of the standard footprint units. Some installations do not have banks in permanent facilities, other installations do not have family support centers in permanent facilities, and others have community facilities in non-permanent assets or may not provide the service at all. The RPLANS information shows that almost all installations have more requirements for these facilities than they have permanent assets or they have just enough assets to meet their current requirement. Only in few instances are there excess facilities in this FAC group.

#### *3.3.3. Add-One Unit Analysis*

The Add-One Unit analysis determines the cost to build facilities at an installation to accept one more unit. The amount of facilities remaining after satisfying the requirements of existing local units is used as the baseline. Where the amount of a

particular facility type is in deficit, the available amount is set to zero. Any excess facilities are considered available to support stationing. The requirements of one standard footprint unit are compared against the facilities available and the amount of facilities needed to support stationing of the new unit is determined. MCA cost factors from TABS RPLANS are then used to determine an estimate of the cost to build the required new facilities.

#### 3.3.3.1. Community FAC Group

As described in 4.2.1.3, TABS adjusted community FACs to account for current shortages across Army installations. These changed requirements were compared against excess permanent assets and the amount of new construction necessary to provide for the unit requirement determined. The following sections describe the reasoning used in determining the modified requirements used in calculating the additional space to add one unit to an existing fully functioning installation.

Dental Facilities: The facility size is calculated by 0.527 square feet (SF) per Soldier plus 10,801 SF. This results in a minimum facility size of approximately 11,000 SF. For those footprints showing a requirement of 12,000 SF or less, the modified requirement was set to zero. The additional Soldiers can utilize the existing facilities. For requirements above 12,000 SF, subtract the 11,000 SF base and consider only the additional space.

Dispensary and Clinic: The size is calculated by 1.207 SF per Soldier plus 4,988 SF. This results in a minimum facility size of approximately 5,000 SF. For those footprints showing a requirement of 6,000 SF or less, the modified requirement was set to zero. The additional Soldiers can utilize the existing facilities. For requirements above 6,000 SF, subtract the 5,000 SF base and consider only the additional space.

Exchange Eating Facilities: The facility size is calculated at 0.67 SF per Soldier plus 3,768 SF. This results in a minimum size of approximately 4,000 SF. For those footprints showing a requirement of 5,000 SF or less, the modified requirement was set to zero. The additional Soldiers can utilize the existing facilities. For requirements above 5,000 SF, subtract the 4,000 SF base and consider only the additional space.

Open Dining Facilities: The facility size is calculated at 4.9 SF per Soldier and civilian. While there is no minimum space for this facility type operational considerations for managing small retail facilities must be considered. Most installations with maneuver units have 12,000 SF of these facilities. Footprints with requirements less than 12,000 SF will have the requirement set to zero. For footprints showing over 12,000 SF, the requirement will be reduced by 12,000 SF.

Postal Facilities: The allowed space is determined by counting the Soldiers on the installation and using that number in a step function table. Adding 3-4,000 Soldiers to an installation is enough to move from one step to another and increase the requirement by approximately 2,000 SF. The maneuver unit footprints will reflect this amount while the large school will reflect the full requirement based on the number of people.

Exchange Service Stations: The facility size is calculated at 0.837 SF per Soldier plus 1,554 SF. This results in a minimum size of approximately 2,000 SF. For those footprints showing a requirement of 3,000 SF or less, the modified requirement is set to

zero. The additional Soldiers can utilize the existing facilities. For requirements above 3,000 SF, subtract the 2,000 SF base and consider only the additional space.

Exchange Retail Facilities: The facility size is calculated at 6 SF per Soldier plus 31,370 SF. This results in a minimum size of approximately 32,000 SF. For those footprints showing a requirement of 38,000 SF or less, the modified requirement was set to zero. The additional Soldiers can utilize the existing facilities. For requirements above 33,000 SF, subtract the 32,000 SF base and consider only the additional space.

Banks: The facility size is determined by counting the Soldiers and civilians on the installation and using that number in a step function table. A minimum size of 1,500 SF is provided for up to 1,000 people. Minimum sized facilities will not be constructed and the requirement was set to zero. The additional personnel will use the existing facilities. When the installation population is above 20,000, space is provided at 1,000 SF for every 3,000 people. Assuming that new units will not be stationed at small installations, the footprint requirements were modified using this factor.

Commissaries: The facility size is calculated at 3.7 SF per Soldier plus 25,241 SF. This results in a minimum size of approximately 25,000 SF. For those footprints showing a requirement of 30,000 SF or less, the modified requirement was set to zero. The additional Soldiers can utilize the existing facilities. For requirements above 30,000 SF, subtract the 25,000 SF base and consider only the additional space.

Education Center: The facility size is determined by counting the Soldiers on the installation and using that number in a step function table. Approximately 3,000 Soldiers associated with the large school are permanent party and most likely to use the Education center. The steps cover approximately 10,000 Soldiers and add approximately 6,000 SF per increase. Adding the units to existing installations should only add approximately 6,000 SF per footprint; footprint requirements were changed accordingly.

Chapel Facility: The facility size is determined by counting the Soldiers and family members on the installation and using that number in a step function table. For installations with populations over 20,000, each additional 1,200 people adds 3,000 SF more space. Since the installations most likely to host the additional maneuver units or large school are over 20,000 already, the requirements were modified accordingly. The few people associated with the small school and the large admin footprints can utilize existing chapels without expansion.

Religious Education Facility: The facility size is determined by counting the Soldiers and family members on the installation and using that number in a step function table. For installations with populations over 20,000, the steps cover 5,000 people and increase the space by approximately 4,000 SF. Since the installations most likely to host the additional maneuver units or large school are over 20,000 already, the additional units would increase the installation allowance by no more than 4,000 SF. The footprint requirements were modified accordingly. The requirement in the large admin footprint was changed from 3,000 SF to zero, as the increase from this unit is believed to have no impact on increasing the installation allowance to the next higher step.

Nursery and Child Care Facility: Because of the sensitivity of this service to Army families, the requirement was unchanged when adding new units on existing installations.

Family Service Center: The facility size is determined by counting the Soldiers and 25% of family members on the installation and using that number in a step function table. For installations with populations of over 15,000 people, the maximum allowed facility size is 11,900 SF. Since all the installations likely to accept the maneuver units or the large school are already over 15,000, the additional population would not increase the requirement so the footprint requirement is set to zero.

Hobby and Craft Center: The facility size is determined by counting the Soldiers and 70% of family members on the installation and using that number in a step function table. For installation populations above 30,000 the steps cover 10,000 people and increase the space by 5,000 SF. The footprints for small school and admin are not likely to change the installation population enough to require additional facilities so their requirements were set to zero. The maneuver units and large school add 3,000 to 4,500 permanent party people to the installations, which would only increase the space by 5,000 SF. The requirements for these footprints were changed accordingly.

Automobile Craft Center: The facility size is determined by counting the Soldiers and 10% of family members on the installation and using that number in a step function table. For installation populations above 20,000, the steps cover 10,000 people and increase the facility size by 6,000 SF. The small school and admin footprints will not impact the population enough to change the installation allowance so their requirements are set to zero. The maneuver units and large school add 3,000 to 4,500 permanent party people to the installations which would only increase the space by 6,000 SF; footprint requirements were changed accordingly.

Bowling Center: The facility size is determined by counting the Soldiers and 40% of family members on the installation and using that number in a step function table. The maximum installation allowance for bowling centers in CONUS is 33,100 SF for a population of approximately 10,000 people. The installations most likely to receive the additional units have populations over 10,000 and have bowling centers. Existing shortage should not be fixed by stationing an additional unit at an installation. Footprint requirements for all were set to zero.

Library, General Use: The facility size is determined by counting the Soldiers and 40% of family members on the installation and using that number in a step function table. For installations with populations over 20,000, the steps vary between 6,000 SF for an additional 6,000 people to 9,000 SF for an additional 10,000 people. The students attending the large school would most likely not be using the installation library so only the permanent party population of 3,000 was considered for this requirement. The maneuver units and the large school would increase the installation population by one step so the requirement should reflect an amount of 9,000 SF maximum. The population increase from the small school or the two admin activities was not enough to influence the installation total so their requirements were set to zero.

Recreation Center: This FAC category is made up of two FCG facility types. The youth center facility is sized based on the number of youth between 6 and 19 and using a step function table. The recreation center facility type is sized based on the number of Soldiers and 10% of family members on the installation and using that number in a separate step function table. For installations with populations over 15,000, each additional 5,000 people adds one additional 27,800 SF recreation center. The maneuver



units and the large school add less than 5,000 people to the installation total so the recreation center requirement for all four was set to 27,800 SF and zero for all others. For installations with a youth population of 4,800, each additional 600 youth adds one additional 2,414 SF youth center. The maneuver units and large school are predicted to add approximately 2,400 youth to the installation population. This would add 9,648 SF to the existing youth centers. Together these two types total to 37,000 SF of Recreation Center requirements for adding one unit to an existing installation. The light brigade requirement was left at 34,000 SF. The impact of the large admin unit was assumed to be minimal and the requirement was set to zero.

Indoor Physical Fitness Center: The facility size is determined by counting the Soldiers, 25% of family members, and 10% of civilians (only if they are more than 60% of the installation population) and using that number in a step function table. For each population increment of 5,000 above 10,000, an additional facility of approximately 31,000 SF is allowed. Since the installations likely to host additional maneuver units are probably over 10,000 each maneuver unit would increase the installation allowance by only 31,000 SF. Their requirements were changed accordingly. The large school contains approximately 4 increments of 5,000 and would be allowed 124,000 SF. The requirement was changed to reflect this. The population increases from the small school and the large admin are less than 5,000 resulting in setting the requirements for these two footprints to zero for this facility type; units will use existing facilities.

Auditorium and Theater Facilities: The facility size is determined by counting the Soldiers and 25% of family members on the installation and using that number in a step function table. Installations with populations between 5,000 and 15,000 are allowed 28,000 SF. Installations with over 15,000 are allowed 40,000 SF. Since an installation gaining one additional unit most likely already has more than 15,000 people, the additional units would not change that installation allowance; footprint requirements were set to zero.

Miscellaneous MWR Support Facility: The facility size is determined by counting the Soldiers and 25% of family members on the installation and using that number in a step function table. For installations with populations above 20,000 the table has one step at 50,000 people, with the space allowance changing from 20,500 to 30,000 SF. A quick check of installation population figures indicates only one is between 45,000 and 50,000 which could be changed by adding 4,235 people from a heavy brigade; footprint requirements were set to zero. The permanent party numbers from the large school would not impact the installation population.

Outdoor Swimming Pool: These facilities are provided at (Soldiers + 70% of Dependents) times 0.0001 plus 1.56 pool. Most installations have an allowance for 2 pools. If the footprint allowance is 2, the modified requirement can be set to zero as the installation either has enough pools or already has a shortage which will not be corrected with the additional stationing.

The numbers generated below were determined by adding one standard footprint to an installation without moving the existing units stationed at the installation; the cost to build the required facilities, either the full modified requirement or the requirement minus any excess facilities on the installation. Facilities are compared by FAC without considering that one facility type could be used in lieu of another FAC type. The costs

in the following two tables do not reflect the costs for supporting utilities, ranges, or family housing.

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Representative Unit	Light BDE	Heavy BDE	SBCT	Small School	Large School	Small Admin	Large Admin
FAC Group	All Facilities	All Facilities	All Facilities	All Facilities	All Facilities	All Facilities	All Facilities
Aberdeen PG	\$135	\$216	\$186	\$13	\$899	\$1	\$2
Adelphi Labs	\$186	\$269	\$241	\$23	\$968	\$12	\$25
Anniston AD	\$174	\$257	\$229	\$16	\$965	\$4	\$25
Blue Grass AD	\$186	\$269	\$241	\$23	\$967	\$12	\$25
Carlisle	\$186	\$269	\$240	\$23	\$966	\$12	\$25
Charles E Kelly SPT CTR	\$183	\$265	\$234	\$21	\$958	\$7	\$20
Corpus Christi AD	\$186	\$268	\$238	\$23	\$964	\$9	\$22
Crane AAP	\$186	\$268	\$238	\$23	\$963	\$8	\$21
Deseret Chem Plant	\$186	\$269	\$241	\$23	\$967	\$12	\$25
Detroit Arsenal	\$185	\$268	\$240	\$23	\$966	\$12	\$25
Dugway PG	\$172	\$255	\$227	\$23	\$949	\$12	\$25
Ft AP Hill	\$166	\$248	\$217	\$18	\$935	\$8	\$21
Ft Belvoir	\$133	\$207	\$186	\$10	\$873	\$2	\$21
Ft Benning	\$124	\$196	\$172	\$12	\$898	\$4	\$24
Ft Bliss	\$111	\$181	\$155	\$15	\$842	\$1	\$3
Ft Bragg	\$152	\$221	\$197	\$13	\$916	\$4	\$25
Ft Buchanan	\$180	\$259	\$231	\$23	\$943	\$11	\$24
Ft Campbell	\$164	\$237	\$212	\$13	\$955	\$4	\$25
Ft Carson	\$143	\$213	\$186	\$12	\$923	\$1	\$17
Ft Detrick	\$186	\$269	\$241	\$23	\$968	\$12	\$25
Ft Dix	\$176	\$256	\$229	\$17	\$936	\$11	\$24
Ft Drum	\$182	\$265	\$237	\$19	\$964	\$7	\$25
Ft Eustis	\$115	\$186	\$162	\$14	\$891	\$4	\$25
Ft Gillem	\$169	\$250	\$222	\$21	\$935	\$11	\$25
Ft Gordon	\$140	\$210	\$184	\$14	\$917	\$1	\$20
Ft Hamilton	\$177	\$259	\$228	\$22	\$956	\$8	\$21
Ft Hood	\$173	\$256	\$228	\$23	\$947	\$12	\$25
Ft Huachuca	\$162	\$233	\$207	\$8	\$887	\$1	\$7
Ft Jackson	\$164	\$244	\$214	\$17	\$875	\$6	\$18
Ft Knox	\$138	\$186	\$183	\$9	\$884	\$0	\$2
Ft Leavenworth	\$178	\$261	\$232	\$22	\$959	\$11	\$25
Ft Lee	\$174	\$254	\$226	\$23	\$900	\$12	\$24
Ft Leonard Wood	\$160	\$234	\$209	\$16	\$960	\$4	\$25
Ft Lewis	\$99	\$146	\$142	\$10	\$862	\$1	\$3
Ft McCoy	\$152	\$226	\$201	\$9	\$929	\$3	\$24
Ft McNair	\$179	\$262	\$232	\$23	\$955	\$8	\$17
Ft McPherson	\$179	\$262	\$234	\$23	\$958	\$11	\$24
Ft Meade	\$157	\$240	\$212	\$5	\$912	\$4	\$24
Ft Monmouth	\$167	\$251	\$222	\$22	\$947	\$10	\$23
Ft Monroe	\$179	\$260	\$230	\$21	\$949	\$8	\$3
Ft Myer	\$146	\$228	\$197	\$23	\$917	\$8	\$6
Ft Polk	\$148	\$220	\$196	\$16	\$938	\$4	\$24
Ft Richardson	\$80	\$157	\$132	\$11	\$882	\$1	\$18
Ft Riley	\$148	\$220	\$196	\$16	\$938	\$4	\$24
Ft Rucker	\$80	\$157	\$132	\$11	\$882	\$1	\$18
Ft Sam Houston	\$146	\$229	\$198	\$11	\$928	\$1	\$2
Ft Shafter	\$162	\$245	\$217	\$16	\$959	\$4	\$24

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Representative Unit FAC Group	Light BDE All Facilities	Heavy BDE All Facilities	SBCT All Facilities	Small School All Facilities	Large School All Facilities	Small Admin All Facilities	Large Admin All Facilities
Ft Sill	\$130	\$199	\$173	\$13	\$885	\$1	\$3
Ft Stewart / Hunter AAF	\$161	\$244	\$215	\$9	\$913	\$4	\$25
Ft Wainwright	\$111	\$191	\$162	\$12	\$890	\$3	\$21
Hawthorne AD	\$173	\$256	\$226	\$18	\$946	\$6	\$11
Holston AAP	\$186	\$268	\$238	\$23	\$961	\$8	\$13
Iowa AAP	\$183	\$266	\$235	\$23	\$958	\$8	\$11
Kansas AAP	\$178	\$261	\$230	\$20	\$954	\$5	\$13
Lake City AAP	\$182	\$265	\$234	\$23	\$957	\$8	\$3
Letterkenny AD	\$165	\$238	\$214	\$15	\$963	\$4	\$24
Lima Tank Plant	\$177	\$260	\$229	\$23	\$956	\$8	\$15
Lone Star AAP	\$166	\$247	\$219	\$16	\$962	\$3	\$24
McAlester AAP	\$177	\$260	\$229	\$20	\$948	\$8	\$22
Milan AAP	\$183	\$266	\$235	\$23	\$958	\$8	\$16
MOT Sunny Point	\$186	\$269	\$241	\$23	\$968	\$12	\$25
Mississippi AAP	\$184	\$267	\$236	\$22	\$958	\$8	\$3
Newport CD	\$185	\$268	\$237	\$23	\$963	\$8	\$22
Ft Irwin	\$174	\$257	\$229	\$16	\$955	\$4	\$25
Picatunny Arsenal	\$180	\$263	\$232	\$22	\$959	\$8	\$2
Pine Bluff Arsenal	\$181	\$264	\$233	\$22	\$958	\$8	\$13
Presidio of Monterey	\$175	\$257	\$227	\$18	\$936	\$3	\$18
Pueblo CD	\$157	\$224	\$204	\$16	\$954	\$1	\$10
Radford AAP	\$180	\$262	\$231	\$22	\$954	\$8	\$3
Red River AD	\$167	\$240	\$216	\$16	\$963	\$4	\$25
Redstone Arsenal	\$169	\$252	\$224	\$11	\$940	\$7	\$24
Riverbank AAP	\$185	\$267	\$238	\$23	\$963	\$10	\$23
Rock Island Arsenal	\$184	\$267	\$236	\$23	\$945	\$8	\$3
Schofield Barracks	\$119	\$202	\$174	\$23	\$917	\$12	\$24
Scranton AAP	\$185	\$268	\$237	\$23	\$963	\$8	\$20
Sierra AD	\$177	\$260	\$229	\$22	\$954	\$8	\$18
Soldier SPT CTR	\$186	\$269	\$241	\$23	\$968	\$12	\$25
Tobvanna AD	\$185	\$268	\$240	\$22	\$966	\$10	\$25
Tooele AD	\$186	\$269	\$241	\$23	\$968	\$12	\$25
Tripler AMC	\$184	\$267	\$239	\$23	\$966	\$12	\$25
Umatilla CD	\$181	\$264	\$235	\$23	\$961	\$10	\$24
USAG Selfridge	\$152	\$234	\$206	\$19	\$930	\$10	\$22
Walter Reed AMC	\$173	\$255	\$224	\$16	\$938	\$5	\$19
Watervliet Arsenal	\$186	\$269	\$241	\$23	\$967	\$11	\$25
West Point	\$151	\$229	\$199	\$15	\$828	\$7	\$3
White Sands MR	\$151	\$233	\$205	\$15	\$932	\$8	\$24
Yuma PG	\$177	\$260	\$229	\$23	\$952	\$8	\$16

Table 73. Costs for Community and Core Facilities to Add One Unit (\$M)

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Representative Unit FAC Group	Light BDE Core Only	Heavy BDE Core Only	SBCT Core Only	Small School Core Only	Large School Core Only	Small Admin Core Only	Large Admin Core Only
Aberdeen PG	\$113	\$185	\$157	\$12	\$796	\$0	\$0
Adelphi Labs	\$151	\$224	\$198	\$22	\$850	\$11	\$22
Anniston AD	\$139	\$212	\$186	\$15	\$848	\$3	\$22
Blue Grass AD	\$151	\$224	\$198	\$22	\$850	\$11	\$22
Carlisle	\$151	\$224	\$198	\$22	\$850	\$11	\$22
Charles E Kelly SPT CTR	\$149	\$222	\$193	\$20	\$843	\$6	\$17
Corpus Christi AD	\$151	\$223	\$195	\$22	\$847	\$8	\$19
Crane AAP	\$151	\$223	\$195	\$22	\$846	\$7	\$18
Deseret Chem Plant	\$151	\$224	\$198	\$22	\$850	\$11	\$22
Detroit Arsenal	\$150	\$223	\$197	\$22	\$849	\$11	\$22
Dugway PG	\$144	\$217	\$191	\$22	\$840	\$11	\$22
Ft AP Hill	\$133	\$205	\$176	\$17	\$820	\$7	\$19
Ft Belvoir	\$118	\$184	\$165	\$9	\$801	\$2	\$20
Ft Benning	\$94	\$157	\$135	\$11	\$791	\$3	\$22
Ft Bliss	\$86	\$148	\$124	\$14	\$757	\$0	\$0
Ft Bragg	\$124	\$186	\$164	\$12	\$828	\$3	\$22
Ft Buchanan	\$151	\$224	\$198	\$22	\$850	\$11	\$22
Ft Campbell	\$130	\$193	\$171	\$12	\$844	\$3	\$22
Ft Carson	\$111	\$171	\$146	\$11	\$811	\$0	\$14
Ft Detrick	\$151	\$224	\$198	\$22	\$850	\$11	\$22
Ft Dix	\$146	\$219	\$193	\$16	\$831	\$11	\$22
Ft Drum	\$147	\$220	\$194	\$18	\$848	\$6	\$22
Ft Eustis	\$85	\$148	\$126	\$13	\$793	\$3	\$22
Ft Gillem	\$138	\$211	\$185	\$20	\$834	\$10	\$22
Ft Gordon	\$112	\$175	\$151	\$13	\$820	\$0	\$17
Ft Hamilton	\$150	\$223	\$194	\$22	\$846	\$7	\$19
Ft Hood	\$141	\$214	\$188	\$22	\$830	\$11	\$22
Ft Huachuca	\$133	\$197	\$172	\$7	\$783	\$0	\$5
Ft Jackson	\$135	\$207	\$178	\$16	\$772	\$5	\$15
Ft Knox	\$111	\$151	\$149	\$9	\$792	\$0	\$0
Ft Leavenworth	\$143	\$216	\$190	\$21	\$842	\$10	\$22
Ft Lee	\$144	\$217	\$191	\$22	\$808	\$11	\$22
Ft Leonard Wood	\$126	\$189	\$167	\$15	\$843	\$3	\$22
Ft Lewis	\$67	\$103	\$102	\$9	\$755	\$0	\$0
Ft McCoy	\$119	\$183	\$160	\$9	\$814	\$3	\$22
Ft McNair	\$145	\$218	\$189	\$22	\$838	\$7	\$15
Ft McPherson	\$145	\$218	\$192	\$22	\$844	\$10	\$21
Ft Meade	\$126	\$198	\$173	\$5	\$803	\$3	\$22
Ft Monmouth	\$134	\$207	\$181	\$22	\$832	\$10	\$22
Ft Monroe	\$148	\$221	\$192	\$21	\$841	\$7	\$0
Ft Myer	\$113	\$186	\$157	\$22	\$806	\$7	\$3
Ft Polk	\$122	\$185	\$163	\$15	\$836	\$3	\$22
Ft Richardson	\$49	\$117	\$94	\$10	\$773	\$0	\$16
Ft Riley	\$122	\$185	\$163	\$15	\$836	\$3	\$22
Ft Rucker	\$49	\$117	\$94	\$10	\$773	\$0	\$16
Ft Sam Houston	\$114	\$186	\$158	\$10	\$813	\$0	\$0
Ft Shafter	\$130	\$203	\$177	\$15	\$843	\$3	\$22

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Representative Unit FAC Group	Light BDE Core Only	Heavy BDE Core Only	SBCT Core Only	Small School Core Only	Large School Core Only	Small Admin Core Only	Large Admin Core Only
Ft Sill	\$98	\$158	\$134	\$12	\$776	\$0	\$0
Ft Stewart / Hunter AAF	\$127	\$200	\$174	\$8	\$802	\$3	\$22
Ft Wainwright	\$87	\$159	\$132	\$11	\$794	\$2	\$20
Hawthorne AD	\$139	\$211	\$183	\$17	\$829	\$5	\$8
Holston AAP	\$151	\$223	\$195	\$22	\$844	\$7	\$10
Iowa AAP	\$148	\$221	\$192	\$22	\$841	\$7	\$9
Kansas AAP	\$144	\$217	\$188	\$19	\$839	\$4	\$10
Lake City AAP	\$148	\$221	\$192	\$22	\$841	\$7	\$0
Letterkenny AD	\$132	\$196	\$174	\$15	\$847	\$3	\$22
Lima Tank Plant	\$142	\$215	\$187	\$22	\$839	\$7	\$12
Lone Star AAP	\$131	\$202	\$176	\$15	\$845	\$2	\$21
McAlester AAP	\$144	\$217	\$188	\$19	\$833	\$7	\$19
Milan AAP	\$148	\$221	\$192	\$22	\$841	\$7	\$14
MOT Sunny Point	\$151	\$224	\$198	\$22	\$850	\$11	\$22
Mississippi AAP	\$149	\$222	\$193	\$21	\$841	\$7	\$0
Newport CD	\$150	\$223	\$194	\$22	\$846	\$7	\$19
Ft Irwin	\$141	\$214	\$188	\$15	\$840	\$3	\$22
Picatiny Arsenal	\$149	\$222	\$194	\$22	\$843	\$7	\$0
Pine Bluff Arsenal	\$149	\$222	\$193	\$22	\$842	\$7	\$12
Presidio of Monterey	\$145	\$218	\$190	\$17	\$833	\$2	\$15
Pueblo CD	\$123	\$180	\$162	\$15	\$838	\$0	\$7
Radford AAP	\$150	\$223	\$194	\$21	\$842	\$7	\$0
Red River AD	\$134	\$197	\$175	\$15	\$848	\$3	\$22
Redstone Arsenal	\$137	\$210	\$184	\$10	\$826	\$7	\$22
Riverbank AAP	\$150	\$223	\$197	\$22	\$848	\$9	\$21
Rock Island Arsenal	\$150	\$222	\$194	\$22	\$829	\$7	\$0
Schofield Barracks	\$87	\$160	\$134	\$22	\$808	\$11	\$22
Scranton AAP	\$151	\$223	\$195	\$22	\$846	\$7	\$18
Sierra AD	\$147	\$219	\$191	\$21	\$841	\$7	\$17
Soldier SPT CTR	\$151	\$224	\$198	\$22	\$850	\$11	\$22
Tobyhanna AD	\$151	\$224	\$198	\$22	\$849	\$10	\$22
Tooele AD	\$151	\$224	\$198	\$22	\$850	\$11	\$22
Tripler AMC	\$150	\$223	\$197	\$22	\$849	\$11	\$22
Umatilla CD	\$147	\$220	\$194	\$22	\$845	\$9	\$21
USAG Selfridge	\$126	\$199	\$172	\$19	\$824	\$9	\$20
Walter Reed AMC	\$139	\$212	\$183	\$15	\$824	\$4	\$16
Watervliet Arsenal	\$151	\$224	\$198	\$22	\$850	\$10	\$22
West Point	\$129	\$202	\$173	\$15	\$736	\$6	\$0
White Sands MR	\$126	\$199	\$173	\$14	\$826	\$7	\$22
Yuma PG	\$148	\$221	\$192	\$22	\$842	\$7	\$14

Table 74. Costs for Core Facilities to Add One Unit (\$M)

## **Annex 4. DEFINITIONS AND ACRONYMS**

### **4.1. Purpose**

A number of terms may be new to people not familiar with master planning as practiced within the Army. Master planners within DA have access to several automated tools which collect real property data, collect data on the number of people assigned at a particular location, record approved unit configurations, and determine how much of what type of facility is required by a particular unit at a certain location. The central tool is the Real Property Planning and Analysis System (RPLANS). This program receives information from other standard programs such as Army Stationing and Installation Plan (ASIP) which supplies the troop list and population for the installation, the Facility Planning System (FPS) which provides guidance on how much of what type of asset is allowed per person or piece of equipment, and the Integrated Facilities System (IFS) which provides installation real property inventory data or Headquarters Integrated Facilities System (HQIFS) which provides consolidated real property data to the version of Headquarters version of RPLANS used in this report, HQRPLANS.

### **4.2. Definitions**

#### *4.2.1. Force*

RPLANS uses the term Force to include population (number of people), demographics (describes people), force structure (people, equipment, organization), and mission (what units and organizations do.) The number of people includes everyone living and working on and around the installation. Demographics includes details on the people identifying them as soldiers, civilians, family members, or retirees. The force structure looks inside MTOE units and determines the staffing level of the unit, whether the unit has a first sergeant, the grade of the commander, what type of equipment it has, and how much other materiel the unit may be authorized. Force also takes into account any special mission that may be officially outlined in the MTOE documentation.

#### *4.2.2. Criteria*

RPLANS uses the term Criteria to refer to formal guidance from various sources including Federal, DOD, DA, theater/regional, and MACOM on how much of a specific facility type should be provided based on specific input information. Most Criteria information is maintained in a central HQDA database called Army Criteria Tracking System (ACTS) that is referenced by RPLANS. This database includes criteria such as 162 gross SF per person of Admin space, 366 net SF per single junior enlisted soldier of living space, and 732 net SF per single junior NCO living space. MACOM Criteria is not in the HQDA central database, but is instead recorded directly in RPLANS. This includes the criteria for warming bays for vehicle maintenance shops in Alaska. In some instances a particular facility type may not have a criteria associated. The amount and location of required utility systems is determined by ground locations. For these cases RPLANS assumes that the installation has what it needs and the Requirement equals the Allowance, which is set equal to the Permanent Assets.

4.2.3. Allowance

RPLANS uses a formula of Force times Criteria to calculate an Allowance. The Allowance may be based on a particular unit, i.e. soldier housing, or based on the total number of personnel on the installation, i.e. the Commissary. For example, a unit may have 84 single enlisted soldiers. Enlisted Unaccompanied Personnel Housing (UPH) space is provided to single enlisted soldiers at 366 square feet per person. This unit’s Allowance for Enlisted UPH space is 84 times 366 or 30,744 square feet. The allowance for parking for the soldiers living in the Enlisted UPH is 70% of the capacity of the building; 84 times .7 equals 59 spaces. The average parking lot requires 375 square feet per parking space so the Enlisted UPH would also have an allowance of 2,458 square yards of parking lot for the soldier’s vehicles. The Commissary space for an installation is calculated based on the total military population times 3.7 SF per person plus 25,241 SF.

4.2.4. Requirements

RPLANS normally sets Requirements equal to Allowances. Requirements may be changed following a local analysis by the installation and approval by IMA. The installation Master Planner downloads the Allowances for his or her installation, reviews them with the using unit, develops justifications for any changes, and forwards them through channels to the IMA Region HQ for review and possible approval. Changes in Requirements may be either increases or decreases. The installation hospital may not have an Allowance for a helipad, but analysis of the situation may result in justifying a Requirement for a paved rotary wing landing area. The installation has an Allowance for three outdoor swimming pools but after some analysis it is determined that the large water park a few blocks outside the installation is very popular with the base personnel. The installation Requirement for outdoor swimming pools is reduced to one.

4.3. Acronyms

ACRONYM	TERM
ADNL	A-weighted Day Night Level
ACTS	Army Criteria Tracking System
AR	Army Reserve
ARRM	Army Range Requirements Model
ASIP	Army Stationing and Installation Plan
AT/Mob Bks	Annual Training / Mobilization Barracks
BDE	Brigade
BUP	Barracks Upgrade Program
BL	Barrels
BRAC	Base Realignment and Closure
BRAC SRG	BRAC Senior Review Group
BCT	Brigade Combat Teams
BTU	British Thermal Unit
CAA	Center for Army Analysis
CATCD	Category Code
CDC	Child Development Center



ACRONYM	TERM
CERL	U.S. Army Construction Engineering Research Lab
CONUS	Continental United States
CTC	Combat Training Center
C4I	Command, Control, Communication, Computers and Intelligence
DA	Department of the Army
DA PAM	Department of the Army Pamphlet
DLH	Direct Labor Hours
EA	Each
EPA	Environmental Protection Agency
ESQD	Explosive Safety Quality Distance
FAC	Facility Analysis Category
FCG	Facility Category Group
FCS	Future Combat System
FP	Firing Point
GA	Gallons
HQIFS	Headquarters, Integrated Facilities System
IFS	Integrated Facilities System
IGPBS	Integrated Global Presence and Basing Strategy
JAST	Joint Action Scenario Team
JCSG	Joint Cross-Service Group
JMC	Joint Munitions Command
KLF	Thousand linear feet
KSF	Thousand square feet
KSY	Thousand square yards
KV	Kilo-volt amperes
KW	Kilowatt
LF	Linear Feet
LN	Lane
MB	Million BTUs per hour
MBE	Molecular Beam Epitaxy
MG	Million gallons
MILCON	Military Construction Appropriation
MLRS	Multiple-Launch Rocket System
MOUT	Military Operations in Urban Terrain
MSL	Mean Sea Level
MTOE	Modified Table of Organization and Equipment
MV	Military Value
NTC	National Training Center
NZ	Noise Zone
OACSIM	Office of the Assistance Chief of Staff for Installation Management
OUPH	Officer-Unaccompanied Personnel Housing
OSD	Office of the Secretary of Defense
RC	Reserve Component

<b>ACRONYM</b>	<b>TERM</b>
RD	Range Day
RDT&E	Research, Development, Testing and Engineering
RPLANS	Real Property Planning and Analysis System
RRC	Regional Readiness Center
SA	Stationing Action
SBCT	Stryker Brigade Combat Team
SGM	Sergeant Major
SRP	Service Reenlistment Program
TABS	The Army Basing Study Group
TDA	Table of Distribution and Allowance
TOE	Table of Organization and Equipment
TR	Tons of Refrigeration
TRADOC	Training and Doctrine Command
UM	Unit of Measure
UPH	Unaccompanied Personnel Housing
USMC	U.S. Marine Corps

## Annex 5. STANDARD FOOTPRINTS

### 5.1. Purpose

Instead of trying to use numerous individual unit and agency requirement lists for this macro-level capacity analysis, TABS developed standard unit footprints. TABS uses individual footprints for scenario analysis.

### 5.2. Introduction

From the many types of maneuver units and support activities, TABS selected a subset of unit types. These seven types include: light brigade, heavy brigade, Stryker Brigade Combat Team (SBCT), small school, large school, small admin organization, and large admin organization. These seven footprints were developed in detail and used for Level III analysis. CAA validated the composition of the three maneuver units. The requirements for all seven units were calculated by TABS RPLANS using the definitions outlined in the tables. Requirements were set equal to allowances for all standard footprint units. Where the UM is measured in SF, SY, AC, GA, and LF, the amount shown was rounded to the nearest thousand. The remaining UM are actual quantities.

### 5.3. Reports

#### 5.3.1. Basis

The following are the footprint names and what units their requirements are based on.

Footprint Name	Basis
Light BDE	2nd Bde 25th Lt Inf (Schofield Bks) plus customary supporting units.
Heavy BDE	3rd AR Bde 1st Cav (Ft Hood) plus customary supporting units
SBCT	Standard Army Stryker Brigade from RPLANS
Small Admin	Center for Army Analysis (CAA) at Fort Belvoir
Large Admin	Forces Command HQ (HQFORSCOM) at Fort McPherson
Small School	NCO Academy Fort Campbell
Large School	Infantry Center and School at Fort Benning

**Table 75. Footprint Names and Basis**

#### 5.3.2. Standard Footprint Details

The following requirements information was extracted from RPLANS Database Ver 13.00 for each unit.

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	Standard Footprint Names		Light BDE	Heavy BDE	SBCT	Small School	Large School	Small Admin	Large Admin
	Population		2,726	4,235	3,873	188	18,843	142	995
FAC	FAC DESCRIPTION	UM	RQMT	RQMT	RQMT	RQMT	RQMT	RQMT	RQMT
1241	Operating Fuel Storage	KGA	61	291	184	0	101	0	0
1711	General Purpose Instruction Building	KSF	0	0	0	15	471	0	0
1712	Applied Instruction Building	KSF	0	0	0	0	196	0	0
1717	Organizational Classroom	KSF	23	28	28	0	162	0	0
1718	Indoor Firing Range And Supporting Facility	KSF	8	10	9	5	28	4	5
1732	Training Aids Support Building	KSF	15	16	16	12	31	12	13
1741	Maneuver/Training Land, Light Forces	KAC	55	6	73	0	76	0	0
1742	Maneuver/Training Land, Heavy Forces	KAC	0	36	0	0	1	0	0
1751	Zero Range	FP	3	3	3	1	59	0	0
1752	Field Fire Range	FP	4	4	4	1	57	0	0
1753	Record Fire Range	FP	3	3	3	1	37	0	0
1755	Known Distance Range	FP	1	1	1	0	16	0	0
1756	Sniper Range	FP	1	1	1	0	3	0	0
1757	Pistol Range	FP	1	1	1	1	2	0	0
1758	Machinegun Range	FP	1	2	2	1	15	0	0
1761	Grenade Launcher Range	FP	1	1	1	0	1	0	0
1762	Grenade Machinegun Range	FP	1	1	1	0	1	0	0
1763	Light Antiarmor Weapon Range	FP	1	2	2	0	0	0	0
1764	Heavy Antiarmor Weapon Range	FP	1	0	1	0	29	0	0
1766	Tank Stationary Gunnery Range	FP	0	1	1	0	1	0	0
1767	Indirect Fire Range	EA	2	2	3	0	1	0	0
1768	Scaled Indirect Fire Range	FP	2	1	2	0	0	0	0
1771	Armor Vehicle Crew Training Range	FP	0	1	1	0	3	0	0
1773	Fire and Movement Range	FP	1	1	1	0	1	0	0
1775	Infantry Battle Course	FP	2	2	2	0	6	0	0
1776	Urban Combat Training Range	FP	1	1	1	0	0	0	0
1781	Live Hand Grenade Range	FP	1	1	1	0	4	0	0
1783	Light Demolition And Flame Training Range	FP	1	1			1	0	0
1792	Attack Helicopter Weapons Range	EA	0	0	0	0	1	0	0
1796	Urban Combat Training Area, Non-Fire	EA	1	1	0	0	0	0	0
1797	Hand Grenade Range, Non-Firing	FP	2	2	2	1	2	0	0
2141	Vehicle Maintenance Shop	KSF	62	207	59	0	23	0	0
4111	Bulk Liquid Fuel Storage	BL	2454	3811	3488	169	16960	128	860
4221	Ammunition Storage, Installation	KSF	2	5	2	0	25	0	0
4321	Cold Storage, Installation	KSF	0	0	0	0	60	0	0
4421	Covered Storage Building, Installation	KSF	66	108	103	3	406	0	4
4422	Covered Storage Shed, Installation	KSF	0	1	1	0	2	0	0
4423	Hazardous Materials Storage, Installation	KSF	2	3	1	0	3	0	0
5400	Dental Facility	KSF	12	13	13	11	21	11	11
5500	Dispensary And Clinic	KSF	8	10	10	5	27	5	5

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FAC	Standard Footprint Names	UM	Light BDE	Heavy BDE	SBCT	Small School	Large School	Small Admin	Large Admin
	Population		2,726	4,235	3,873	188	18,843	142	995
FAC	FAC DESCRIPTION	UM	RQMT	RQMT	RQMT	RQMT	RQMT	RQMT	RQMT
6100	General Administrative Building	KSF	6	7	25	1	45	23	150
6101	Small Unit Headquarters Building	KSF	238	259	288	8	583	0	0
6102	Large Unit Headquarters Building	KSF	72	90	89	0	177	0	0
7110	Family Housing Dwelling	KSF	2253	3588	3212	68	4085	54	497
7210	Enlisted Unaccompanied Personnel Housing	KSF	404	609	575	3	252	0	3
7213	Student Barracks	KSF	0	0	0	48	1319	0	0
7218	Recruit/Trainee Barracks	KSF	0	0	0	0	1964	0	0
7220	Dining Facility	KSF	28	30	30	0	211	0	0
7240	Officer Unaccompanied Personnel Housing	KSF	50	66	72	0	153	3	25
7331	Exchange Eating Facility	KSF	6	7	6	4	16	4	4
7333	Open Mess And Club Facility	KSF	13	21	19	1	92	1	5
7344	Postal Facility	KSF	3	3	3	0	10	0	0
7345	Exchange Automobile Facility	KSF	4	5	5	2	17	2	2
7346	Exchange Sales Facility	KSF	48	57	55	32	142	32	34
7347	Bank And Credit Union	KSF	3	4	4	2	13	2	2
7349	Commissary	KSF	35	41	40	26	94	25	27
7351	Education Center	KSF	10	15	15	0	35	0	5
7361	Chapel Facility	KSF	25	37	29	3	98	0	5
7362	Religious Education Facility	KSF	5	9	9	0	30	0	3
7371	Nursery And Child Care Facility	KSF	24	34	32	0	32	0	8
7372	Family Service Center	KSF	7	7	7	0	12	0	0
7411	Hobby And Craft Center	KSF	10	14	14	4	35	2	4
7412	Automobile Craft Center	KSF	9	9	9	2	24	2	3
7415	Bowling Center	KSF	16	20	20	5	33	3	5
7416	Library, General Use	KSF	11	12	12	3	30	3	5
7417	Recreation Center	KSF	34	48	48	0	131	0	14
7421	Indoor Physical Fitness Facility	KSF	65	65	65	28	151	0	28
7431	Auditorium And Theater Facility	KSF	0	28	28	0	40	0	0
7447	Miscellaneous MWR Support Facility	KSF	8	10	10	4	21	4	4
7512	Outdoor Swimming Pool	EA	2	2	2	2	5	2	2
7521	Outdoor Playing Court	EA	4	5	5	1	19	1	1
7522	Athletic Field	EA	18	26	17	5	81	5	6
8111	Electrical Power Source	KW	3054	4744	4338	210	21104	159	1067
8121	Electrical Power Distribution Line	KLF	294	457	418	20	2035	15	103
8131	Electrical Power Substation And Switching	KV	3817	5930	5423	263	26380	199	1337
8311	Sewage Treatment	KG	517	804	735	36	3580	27	181
8321	Sewer And Industrial Waste Line	KLF	87	136	124	6	603	5	31
8412	Water Treatment Facility	KG	764	1185	1087	52	5275	40	267
8413	Water Storage, Potable	KGA	654	1016	930	45	4522	34	229
8421	Water Distribution Line, Potable	KLF	117	182	167	8	810	6	41
8442	Water Storage, Non-Potable	KGA	480	480	480	480	480	480	480
8511	Road, Surfaced	KSY	581	777	730	251	2676	245	351
8521	Vehicle Parking, Surfaced	KSY	369	574	491	158	575	156	198

Table 76. Standard Footprint Details by FAC



**DEPARTMENT OF DEFENSE REPORT TO THE DEFENSE BASE  
CLOSURE AND REALIGNMENT COMMISSION**

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**DEPARTMENT OF THE ARMY  
ANALYSIS AND RECOMMENDATIONS  
BRAC 2005**

**Volume III**

**APPENDIX B. MILITARY VALUE ANALYSIS REPORT**

**May 2005**

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Please reference the Military Value Supporting Documentation (available electronically) for the following documents:

- Climate & Terrain Analysis
- Staging Areas Analysis
- Database Certifications
- MVI Technical Paper
- SME Certifications
- MVP Technical Paper
- ODEM Papers
- BRAC SRG Briefings
- Document Summaries
- Subject Matter Interviews
- MVA Affinity Diagrams
- SME Interview Summaries
- Supporting Technical Papers
- Consolidated MV Attribute Information

## 1.0 INTRODUCTION

### 1.1 Scope

Congress stipulated in its BRAC legislation that Military Value (MV) would be the primary consideration for BRAC 2005 decision-making.<sup>1</sup> Military Value Analysis (MVA) was the approach that the Army used to examine MV. MVA consisted of two components. The first component was an analytical foundation based on a decision-analysis approach. The second component balanced the analytics with military judgment that was informed by BRAC Principles, Objectives, and Considerations.

This appendix discusses the Army’s Military Value Analysis, and the two components within the Installation Evaluation Module (IEM) highlighted in Figure 1.

Module	IEM (Installation Evaluation Module)	
Models	MVI (MV-Installations)	MVP (MV-Portfolio)
Products	Installation Evalutaion	Portfolio Determination

**Figure 1. Installation Evaluation Module Components**

Using Multi-Objective Decision Analysis (MODA), the MVI model ranked the 87 Army installations and 10 leased sites in its BRAC 2005 study list by overall MV (called the Installation Assessment in BRAC 95).<sup>2</sup> The model’s final attributes, weighting, and results provided all of the information needed to recreate MVI results. The MVI model is available electronically and can be examined using Logical Decisions Software.

MVI products informed scenario analysis by providing the starting point for installation-level analysis (e.g., determining the installations on which to focus stationing efforts) and unit-level analysis (e.g., ascertaining improved locations for specific units).

The Military Value Portfolio analysis used an optimization model to determine the number of installations within the final Army portfolio by maximizing installation Military Value subject to a set of capacity constraints.

MVP products informed scenario analysis by identifying the portfolio of installations required to meet a given set of Army capacity requirements. The Army first determined MVI and used installation values as an input to calculate MVP. The IEM Module and other MV products are explained in the MV Supporting Documents annexes.

<sup>1</sup> Defense Base Closure and Realignment Act of 1990, Pub. L. 101-510, § 2913(b), as amended.

<sup>2</sup> Table 6, in section 2.4 of this document contains a list of the 87 installations and 10 lease sites considered during BRAC 2005.

## 1.2 Military Value Criteria

The Department of Defense provided eight selection criteria to be used while developing and analyzing BRAC proposals. Criteria 1-4 address Military Value, which is the primary consideration based on BRAC legislation. The MV criteria are:

1. The current and future mission capabilities and the impact on operational readiness of the total force of the Department of Defense, including the impact on Joint warfighting, training, and readiness.
2. The availability and condition of land, facilities and associated airspace (including training areas suitable for maneuver by ground, naval, or air forces throughout a diversity of climate and terrain areas and staging areas for the use of the Armed Forces in homeland defense missions) at both existing and potential receiving locations.
3. The ability to accommodate contingency, mobilization, surge, and future total force requirements at both existing and potential receiving locations to support operations and training.
4. The cost of operations and the manpower implications.

Through MVI analysis, the Army examined all of the above Military Value criteria, and since MVP used the MVI results as its primary input, MVP implicitly took the MV criteria into account. In addition to MVI, the portfolio analysis included the results of specific studies on climate and terrain as well as staging areas for homeland defense. These two special subject areas augmented MV by ensuring the solution supported the criterion. The solution review approach ensured these areas were considered fully, due to their uniqueness and specificity.

For climate and terrain, the Army used geo-spatial mapping techniques that enabled a review of the portfolio to ensure it maintained forces throughout a diversity of climate and terrain areas. The initial portfolio met this requirement, and therefore the Army did not place an additional constraint on the portfolio. A Climate and Terrain Analysis paper is provided as Annex 1 in the MV Supporting Document, attached separately.

Staging areas were also examined in an additional study. The Army determined that the potential closure of an installation did not decrease its aggregate capability to support staging area operations. A Staging Area Analysis paper is provided in Annex 2 in the MV Supporting Document, attached separately.

Combined with MVI results and the two special cases above, portfolio analysis suggested a set of installations best suited to meet Army requirements.

## 2.0 MVI RESULTS

### 2.1 Introduction

As in BRAC 95, the MVI for BRAC 2005 used MODA, the most appropriate technique for defining value and analyzing alternatives involving competing objectives. Unlike BRAC 95, however, the BRAC 2005 MV analysis used a capability approach (stressing an installation's potential) instead of an installation-category approach (stressing an installation's current mission). This enabled the Army to evaluate all installations across several attributes and diverse missions using a single model. Research led to the development of capabilities and capacities, which in turn helped to develop BRAC Objectives, MV attributes (installation characteristics), and MV priorities (weighting of the attributes).

### 2.2 Capabilities

Based on document research and senior leader interviews,<sup>3</sup> the Army developed Military Value capabilities and a corresponding description to expand on the meaning of each capability. The statement defined the MV capability in terms used by senior leaders and the referenced documents. The following are the Army's MV capabilities:

1. Training: Support Army and Joint Training Transformation.
2. Power Projection: Project Power for Joint Operations.
3. Materiel and Logistics: Support Army Materiel and Joint Logistics Transformation.
4. Well-Being: Enhance Soldier and Family Well-Being.
5. Cost: Achieve Cost-Efficient Installations.
6. Future: Maintain Future Stationing, Surge, and Joint Stationing Options.

MODA used the above capabilities; each capability had attributes applied to it and this served as the basic structure of the model. For example, under the "Training" capability, the Army applied the following attributes:

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<sup>3</sup> See Annex 9 & Annex 10 of the MV Supporting Document for detailed information about document research and senior leader interviews.

#	Attribute
1	Direct Fire Capability
2	Indirect Fire Capability
3	MOUT <sup>4</sup> Capabilities
4	Heavy Maneuver Area
5	Light Maneuver Area
6	Airspace
7	General Instructional Space
8	Applied Instructional Space
9	Air Quality
10	Noise Contours
11	Soil Resiliency

**Table 1. Attributes Related to Training Capability**

The capabilities were the overarching focus areas for the model. Each capability, e.g., training, represented an area of importance for the Army's ability to satisfy future military objectives. Annex 4 (Installation Military Value Approach) of this document provides a complete description of capabilities and their development.

### 2.3 Attributes

The Army used 40 attributes to determine an installation's MV.<sup>5</sup> Attributes represented characteristics that were distinguishable between installations (e.g., size of an installation's maneuver space), measurable, and derived from certified data sources. Value measures assessed how an installation supports each attribute, and a mathematical MV value function quantified the value of *returns to scale* on each value measure. Returns to scale demonstrates the relationship between increments of value; increasing returns to scale means the next increment (an installation has 101 acres vs. 100 acres) has greater value than the previous increment (the 101<sup>st</sup> acre is worth more than the 100<sup>th</sup> acre), and decreasing returns to scale refers to increments with less value than the previous increment. Weights were assigned based on the relative importance of each capability, attribute, and value measure. The installation's MVI was the sum of the products of the weights and the value for each attribute.

<sup>4</sup> Military Operations in Urban Terrain.

<sup>5</sup> Annex 14 of the MV Supporting Document contains MV Attribute data descriptions, results, and supporting materials.

2.3.1 Attribute Listing and Technical Reports

Table 2 provides the final set of Army MV attributes.

#	Attribute	#	Attribute
1	Direct Fire Capability	21	Munitions Production
2	Indirect Fire Capability	22	Ammunition Storage Cap.
3	MOUT Capability	23	Interservice & Partnering Workload
4	Heavy Maneuver Area	24	Maintenance/Manufacturing
5	Light Maneuver Area	25	Supply & Storage Index
6	Airspace	26	Crime Index
7	General Instructional Facilities	27	Employment Opportunities
8	Applied Instructional Facilities	28	Housing Availability
9	Air Quality	29	Medical Care Availability
10	Noise Contours	30	In-State Tuition Policies
11	Soil Resiliency	31	Workforce Availability
12	Water Quantity	32	Joint Facilities
13	Mobilization History	33	Area Cost Factor
14	Force Deployment	34	C2 for Focus Facilities
15	Material Deployment	35	Installation Unit Cost Factor
16	Operations/Admin Facilities	36	Buildable Acres
17	Accessibility	37	Brigade Capacity
18	Connectivity	38	Environmental Elasticity
19	RDT&E Mission Diversity	39	Urban Sprawl
20	Test Range Capability	40	Critical Infrastructure Proximity

**Table 2. BRAC 2005 MV Attributes**

A summary description of each attribute is at Annex 2. Annex 5 of the MV Supporting Document provides the subject-matter expert certifications for each attribute that states the attribute adequately supports MV.

The Army employed the support of numerous agencies to define the appropriate evaluation approach for a subset of attributes; Table 3 outlines that support.

Attribute (#)	Supporting Office
Soil Resiliency (11)	Army Environmental Center (AEC)
Deployment (14, 15)	Military Surface Deployment and Distribution Command, Transportation Engineering Agency (TEA)
Accessibility (17)	Center for Army Analysis (CAA)
Connectivity (18)	Army G-6
Work Force Availability (31)	Office of Economic and Manpower Analysis at West Point (OEMA)
Environmental Elasticity (38)	Army Environmental Policy Institute (AEPI)
Urban Sprawl (39)	Construction Engineering Research Laboratory (CERL)
Critical Infrastructure Proximity (40)	CAA
<i>Other Papers: Climate &amp; Terrain Analysis Staging Area Analysis</i>	TABS and ACSIM (GIS Group)

**Table 3. Support for MV Attribute Development**

2.3.2 *Attribute Data*

MV data came from several different sources, including the installations, institutional databases,<sup>6</sup> and the subject-matter experts for each attribute.<sup>7</sup>

2.3.3 *Weights*

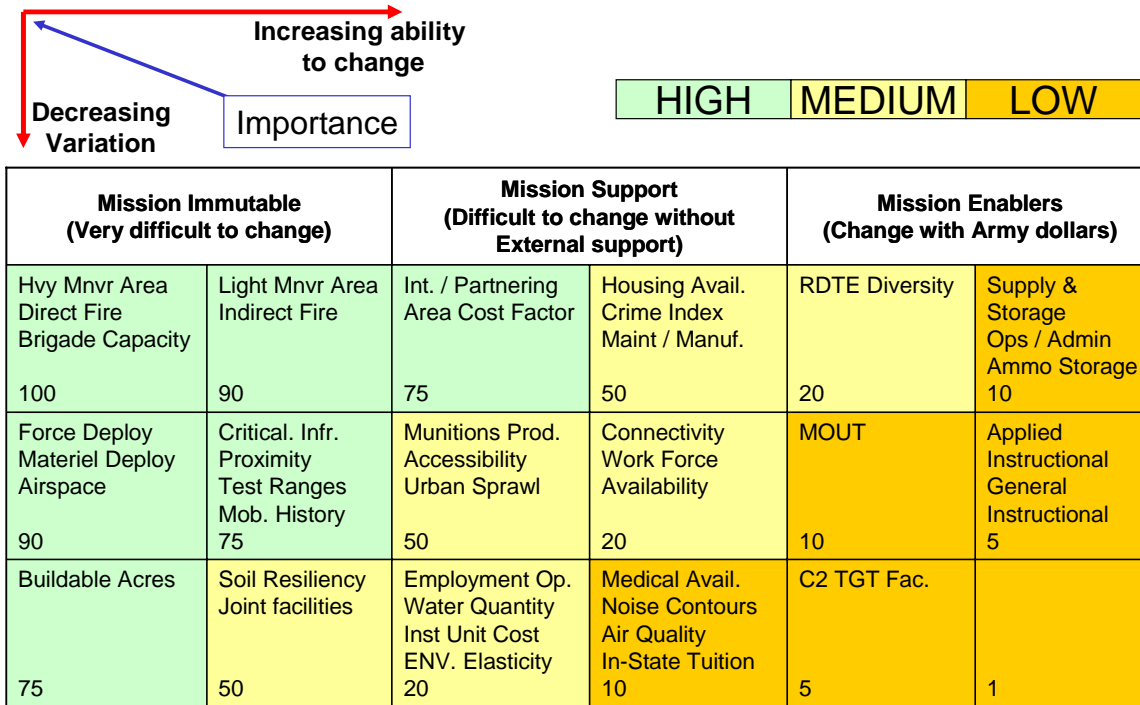
As noted above, the Army used the MODA approach to complete MVI analysis. One part of the MODA was the weighting of attributes; a technically rigorous method that provided an attribute-weighting scheme. Annex 4 and annex 6 of the MV Supporting Document describes the technical approach for MVI and MVP to include weighting.

The final weight of an attribute depended on its importance, its variability, and the Army’s ability to change or react to future requirements with respect to it. Figure 2 is the Attribute Weight Matrix; the location of an attribute in the matrix illustrates weighting.

<sup>6</sup> See Annex 3 of the MV Supporting Documents for Database Certifications.

<sup>7</sup> See Annex 5 of the MV Supporting Documents for SME information.





**Figure 2. Attribute Weight Matrix**

In the matrix above, the attributes in the upper left quadrant (e.g., Hvy Mnvr Area) were considered the most important, and, thus, weighted most heavily; attributes in the lower right quadrant were the least weighted.

The number in the corner of each matrix cell represents the matrix weight based on a 1-100 scale that each attribute received based on MODA analysis. The Army inputted the matrix weight into the Logical Decisions model,<sup>8</sup> which in turn determined the global, or “total,” weight of the attribute by summing all matrix weights and dividing each by this sum. The resulting weight associated with each attribute is listed below in Table 4 (sum of all Weights is 100 percent). For example, Heavy Maneuver Area received a matrix value of 100, which equated to an overall weight of 5.45 percent.

<sup>8</sup> Over-the counter software product; Logical Decision® for Windows™, Version 5.1

#	Attribute	Value	Weight	#	Attribute	Value	Weight
1	Direct Fire Capability	100	5.45%	21	Munitions Production	50	2.72%
2	Indirect Fire Capability	90	4.90%	22	Ammunition Storage Cap.	10	0.54%
3	MOUT Capability	10	0.54%	23	Interservice & Partnering Workload	75	4.09%
4	Heavy Maneuver Area	100	5.45%	24	Maintenance/Manufacturing	50	2.72%
5	Light Maneuver Area	90	4.90%	25	Supply & Storage Index	10	0.54%
6	Airspace	90	4.90%	26	Crime Index	50	2.72%
7	General Instructional Facilities	5	0.27%	27	Employment Opportunities	20	1.09%
8	Applied Instructional Facilities	5	0.27%	28	Housing Availability	50	2.72%
9	Air Quality	10	0.54%	29	Medical Care Availability	10	0.54%
10	Noise Contours	10	0.54%	30	In-State Tuition Policies	10	0.54%
11	Soil Resiliency	50	2.72%	31	Workforce Availability	20	1.09%
12	Water Quantity	20	1.09%	32	Joint Facilities	50	2.72%
13	Mobilization History	75	4.09%	33	Area Cost Factor	75	4.09%
14	Force Deployment	90	4.90%	34	C2 for Focus Facilities	5	0.27%
15	Material Deployment	90	4.90%	35	Installation Unit Cost Factor	20	1.09%
16	Operations/Admin Facilities	10	0.54%	36	Buildable Acres	75	4.09%
17	Accessibility	50	2.72%	37	Brigade Capacity	100	5.45%
18	Connectivity	20	1.09%	38	Environmental Elasticity	20	1.09%
19	RDT&E Mission Diversity	20	1.09%	39	Urban Sprawl	50	2.72%
20	Test Range Capability	75	4.09%	40	Critical Infrastructure Proximity	75	4.09%

**Table 4. Attributes and Weights**

The Army applied each attribute to the Military Value criteria; some attributes supported one criterion, but others supported multiple criteria. Based on the mapping to the criteria, the Army determined the percent of the total weight that applies to each criterion:

Criteria	DoD Definition	Main Points	FINAL
<b>DoD #1</b>	<ul style="list-style-type: none"> <li>Current and future mission requirements</li> <li>Impact on operational readiness, joint war fighting, and training</li> </ul>	<ul style="list-style-type: none"> <li>Train the troops for near-term readiness</li> <li>Well-being as part of near-term readiness</li> </ul>	<b>29%</b>
<b>DoD #2</b>	<ul style="list-style-type: none"> <li>Availability and condition of land, facilities, and airspace</li> <li>Throughout a diversity of climate and terrain areas</li> <li>Staging areas for homeland defense missions</li> </ul>	<ul style="list-style-type: none"> <li>Land, facilities, and condition thereof</li> <li>Well-Being from land, facilities, and condition thereof</li> </ul>	<b>29%</b>
<b>DoD #3</b>	<ul style="list-style-type: none"> <li>Contingency, mobilization, surge, and future requirements</li> </ul>	<ul style="list-style-type: none"> <li>Contingency missions</li> <li>Mitigate future risk</li> </ul>	<b>32%</b>
<b>DoD #4</b>	<ul style="list-style-type: none"> <li>Cost of operations and manpower implications</li> </ul>	<ul style="list-style-type: none"> <li>Cost of operations</li> <li>Manpower implications</li> </ul>	<b>10%</b>

**Table 5. Military Value Criteria Global Weight**

The weighting distribution in Table 5 implies that the Army determined Criterion 3 as the most important criterion, but Criteria 1 and 2 followed closely at 29 percent each. The Army determined that this weighting exemplified the current operational environment and the uncertainty inherent within this environment. Criteria 1 and 2 were very similar and complementary, while Criterion 4 was the least-weighted of all four MV criteria.

The weights in Table 5 were not dictated, they were calculated based on the weights in Table 4 and the assignment of attributes to the criteria.

## 2.4 Installation Value

MVI is the ranking of Army installations from 1 to 97 in terms of value and their ability to support current and future Army requirements. The Army ranked installations in two contexts: one is an overall ranking, and the second is the relative ranking within a capability (see Annex 1 for capability rankings). Both rankings provided a means to evaluate the installation across the different Military Value criteria.

The rankings for each installation for the overall perspective follow in Table 6. For more detail on the rankings for each individual MV capability, see Annex 1.

Installation	Rank	Overall Score				Installation	Rank	Overall Score
Ft Bliss	1	6.25	Redstone Arsenal	30	2.99	Milan AAP	59	1.92
Ft Lewis	2	5.76	Hawthorne AD	31	2.97	Mississippi AAP	60	1.91
Ft Hood	3	5.70	Crane AD	32	2.92	West Point	61	1.88
Ft Stewart / Hunter AAF	4	5.48	Ft Eustis	33	2.91	Ft Leavenworth	62	1.85
Ft Bragg	5	5.37	Ft Gordon	34	2.80	Newport Chem Depot	63	1.85
Yuma PG	6	5.31	Ft Leonard Wood	35	2.79	Pine Buff Arsenal	64	1.84
Ft Carson	7	5.26	Ft Lee	36	2.79	Ft Mc Nair	65	1.83
Dugway PG	8	5.25	Tobyhanna AD	37	2.79	Ft Myer	66	1.81
Ft Benning	9	5.24	Ft Belvoir	38	2.70	Kansas AAP	67	1.80
White Sands MR	10	5.16	Letterkenny AD	39	2.69	Ft Monroe	68	1.79
Ft Wainwright	11	5.09	Red River AD	40	2.61	Lake City AAP	69	1.78
Ft Knox	12	4.91	Sierra AD	41	2.49	Iowa AAP	70	1.78
Ft Riley	13	4.89	Tooele AD	42	2.48	Lone Star AAP	71	1.73
Ft Campbell	14	4.81	Ft Sam Houston	43	2.42	Adelphi Labs	72	1.71
Ft Drum	15	4.71	Deseret Chem Plant	44	2.36	Ft Hamilton	73	1.69
Ft Polk	16	4.67	Bluegrass AD	45	2.34	Detroit Arsenal	74	1.63
Ft Irwin	17	4.56	Walter Reed AMC	46	2.33	Carlisle	75	1.62
Aberdeen PG	18	4.18	Picatinny Arsenal	47	2.33	Lima Tank Plant	76	1.60
Ft Sill	19	4.03	Watervliet Arsenal	48	2.25	Corpus Christi ADA	77	1.59
Schofield Barracks	20	3.95	Ft Meade	49	2.25	Scranton AAP	78	1.55
Ft Huachuca	21	3.86	Ft Monmouth	49	2.25	USAG Selfridge	79	1.51
Ft AP Hill	22	3.68	Ft McPherson	51	2.22	Radford AAP	80	1.51
Ft Dix	23	3.47	Ft Gillem	52	2.20	Ft Shafter	81	1.48
Ft Mc Coy	24	3.21	Rock Island Arsenal	53	2.14	Ft Buchanan	82	1.47
Anniston AD	25	3.19	MOT Sunny Point	54	2.09	Holston AAP	83	1.44
Ft Jackson	26	3.14	Pueblo Chem Depot	55	2.03	Presidio Of Monterey	84	1.35
McAlester AAP	27	3.10	Ft Detrick	56	1.98	Umatilla Chem Depot	85	1.31
Ft Rucker	28	3.07	Soldier Support Center	57	1.96	Tripler AAP	87	1.26
Ft Richardson	29	3.00	Charles Kelley	58	1.93	Riverbank AAP	89	1.18
			Lease - HQ, ATEC	86	1.27	Lease - Hoffman complex	92	1.11
			Lease - Rosslyn Complex	88	1.20	Lease - ARPERCEN	94	1.06
			Lease - Bailey's Crossroads	90	1.16	Lease - PEO STRICOM	95	1.01
			Lease - Army Research	91	1.15	Lease - Army JAG Agency	96	0.94
			Lease - Crystal City Complex	92	1.11	Lease - Army JAG School	97	0.91

**Table 6. Installation Ranking (MVI)**



## **3.0 MVP RESULTS**

### **3.1 Introduction**

MVI provided the ranking of installations based on their inherent MV without regard to Army capacity requirements. The MVP began with the MVI ranking and distinguished installations into those that were necessary to meet requirements and those whose attributes were beyond projected Army needs. Hence, in certain instances, installations moved into the Army portfolio despite possessing a lower MV rank if the Army needed its capabilities to meet projected requirements. In other instances, installations that rank higher in MV moved out of the portfolio if their capabilities constituted an excess beyond projected Army requirements.

Unlike BRAC 95, BRAC 2005 portfolio analysis used a capability approach and an optimization model to determine the initial Army portfolio, which contained the list of installations that enabled the Army to satisfy BRAC 2005 objectives optimally. The portfolio enabled the Army to evaluate all installations across the same capabilities and capacities to compare MVI values. While BRAC 95 analysis could adequately rank installations within a subset of potential installations based on mission, it was only able to compare installations within stove pipes due to the implementation of separate rankings in each mission area based on different attributes. For BRAC 2005, the Army overcame this limitation by placing all installations within one MVI evaluation. Portfolio analysis then took advantage of assets across “types” of installations and keep installations within the portfolio because of their potential, and not necessarily their current mission.

### **3.2 Capacities**

Based on document research and senior leader interviews, the Army developed MVI attributes for each capability and used these capabilities and their attributes to determine the capacities to use for portfolio analysis. The TABS Group reviewed each attribute and built associated capacity constraints where a constraint could mathematically be determined. For example, the TABS Group developed a constraint for the amount of administrative space retained by the Army, since the Army can build and change their administrative space configurations, but no constraint was applied for the area cost factor.

Table 7 lists all of the attributes with capacity constraints within the portfolio and any general comments needed to further explain the constraint. For the direct fire attribute, for example, the portfolio ensured the Army maintains a minimum of 90 percent of the Army’s impact area. Once the portfolio is determined, the TABS Group checks the solution to ensure the constraint is met and determines the proximity to the constraint, e.g., a constraint of 90 percent and a result of 91 percent versus a result of 98 percent.

Attribute	Constraint	Unit of Measure
Direct Fire Capability	90% on Impact area	Acres
Heavy Maneuver Area	99%	Acres
Light Maneuver Area	98%	Acres
General Instructional Facilities	90%	Square feet
Applied Instructional Facilities	90%	Square feet
Munitions Production	22 of 51 Load Assembly and Pack (LAP) processes 50% of all explosive processes; 2 of 5 metal part installations	Each
Ammunition Storage Capacity	85% of the ammo storage on hand	Square feet
Ops/Admin Facilities	90%	Square feet
RDT&E Mission diversity	Set covering (a minimum of one per each mission)	Each
Maintenance/Manufacturing	Maintenance-90% of DLH Production-40% of DLH	Direct Labor Hours (DLH)
Supply & Storage Capacity	85% of supply and storage SF of what is on hand	Square feet
Buildable Acres	80%	Acre
Critical Infrastructure Proximity	Set covering (a minimum of one for each infrastructure)	Node

**Table 7. Capacities and Constraints**

Table 8 lists the attributes that contained no special constraints within MVP since compliance with one attribute’s constraints may also have suggested compliance with another attribute’s constraints; for example, the Army did not include a constraint for the Indirect Fire attribute because it had constraints for maneuver lands and knew that if it kept installations due to maneuver lands, it would also capture Indirect Fire capability.

Attribute	
Indirect Fire Capability	Housing Availability
MOUT Capabilities	Medical Care Availability
Joint Airspace	In-state Tuition Policies
Air Quality	Workforce Availability
Noise Contours	Joint Facilities
Soil Resiliency	Area Cost Factor
Water quantity	C2 for Focus Facilities
Mobilization History	Installation Unit Cost Factor

Attribute	
Force Deployment	Brigade Capacity
Materiel Deployment	Environmental Elasticity
Accessibility	Urban Sprawl
Connectivity	Crime Index
Test Range Capacity	Employment Opportunities
Inter-service/Partnership	

**Table 8. Attributes Without Constraints in MVP**

Once the first feasible portfolio was found, the Army determined the resulting capacity, the percent of the requirement met, and the excess capacity present within the portfolio.

### 3.3 Unique Capabilities

The Army did not include “unique capability” within MVI, but added these capabilities in its MVP determination as constraints if the Army had a requirement for the capability. To see if a unique capability was in fact a “binding” constraint, the Army ran the model first without the requirement to keep a particular installation. If the portfolio did not include the installation with the unique capability within the portfolio, the Army added a special constraint with a requirement to keep the unique installation.

The following table lists those installations with unique capabilities that required a special constraint to be kept within the Army portfolio; without the constraint they could not have been included.

Installation	Unique Capability
<b>Holston</b>	Sole permit holder to produce energetics
<b>Radford</b>	Sole permit holder to produce TNT
<b>Lake City</b>	Major producer of small arms ammunition
<b>Pine Bluff</b>	Sole permit holder to produce white phosphorous. Also, chemical defense equipment provider
<b>Watervliet</b>	8 unique manufacturing capabilities
<b>Sunny Point</b>	Sole east-coast, deep-water port capable of handling munitions
<b>Fort Myer</b>	Houses Arlington Cemetery and the Old Guard
<b>Fort Detrick</b>	Medical Research Mission
<b>Tripler</b>	Sole Medical Center in Pacific
<b>Walter Reed</b>	Medical Research & Congressional Medical Mission

**Table 9. Unique Capabilities**

These unique capabilities were identified by the the TABS Group subject matter experts in coordination with the JCSGs. Sunny Point and Arlington were known unique geographical capabilities; Fort Detrick, Fort Tripler, and Walter Reed Army Medical Center had unique medical facilities.

### 3.4 Army Installation Portfolio

Table 10 shows the final portfolio generated by the MVP model and approved by the BRAC SRG. The highlighted installations in Table 10 were forced into the portfolio because of a unique capability. Pine Buff Arsenal also was one of the installations identified as having a unique capability; however, it was included in the portfolio without being forced in.

Rank	Installation	Rank	Installation	Rank	Installation	Rank	Installation
1	Ft Bliss	17	Ft Irwin	33	Ft Eustis	51	Ft McPherson
2	Ft Lewis	18	Aberdeen PG	34	Ft Gordon	50	Ft Monmouth
3	Ft Hood	19	Ft Sill	35	Ft Leonard Wood	54	MOT Sunny Point
4	Ft Stewart / HAAF	20	Schofield Barracks	36	Ft Lee	56	Ft Detrick
5	Ft Bragg	21	Ft Huachuca	37	Tobyhanna AD	59	Milan AAP
6	Yuma PG	22	Ft AP Hill	38	Ft Belvoir	61	West Point
7	Ft Carson	23	Ft Dix	39	Letterkenny AD	64	Pine Buff Arsenal
8	Dugway PG	24	Ft Mc Coy	40	Red River AD	65	Ft Mc Nair
9	Ft Benning	25	Anniston AD	41	Sierra AD	66	Ft Myer
10	White Sands MR	26	Ft Jackson	42	Tooele AD	69	Lake City AAP
11	Ft Wainwright	27	McAlester AAP	43	Ft Sam Houston	77	Corpus Christi ADA
12	Ft Knox	28	Ft Rucker	45	Bluegrass AD	78	Scranton AAP
13	Ft Riley	29	Ft Richardson	46	Walter Reed AMC	80	Radford AAP
14	Ft Campbell	30	Redstone Arsenal	47	Picatinny Arsenal	83	Holston AAP
15	Ft Drum	31	Hawthorne AD	48	Watervliet Arsenal	87	Tripler AMC
16	Ft Polk	32	Crane AAP	49	Ft Meade		

BRAC SRG decision to keep in the Portfolio due to unique capability

**Table 10. Portfolio**

Table 11 shows the installations that were not included in the initial portfolio. However, the thirteen installations highlighted in Table 11 were retained based on military judgment within a BRAC SRG or JCSG deliberative session.

Rank	Installation	Rank	Installation	Rank	Installation
44	Deseret Chem Depot	70	Iowa AAP	86	Lease - HQ, ATEC
52	Ft Gillem	71	Lone Star AAP	88	Lease - Rosslyn Complex
53	Rock Island Arsenal	72	Adelphi Labs	89	Riverbank AAP
55	Pueblo Chem Depot	73	Ft Hamilton	90	Lease - Bailey's Crossroads
57	Soldier Support Center	74	Detroit Arsenal	91	Lease - Army Research Office
58	Charles Kelly Support Activity	75	Carlisle	92	Lease - Crystal City Complex
60	Mississippi AAP	76	Lima Army Tank Plant	93	Lease - Hoffman Complex
62	Ft Leavenworth	79	USAG Michigan	94	Lease - ARPERCEN
63	Newport Chem Depot	81	Ft Shafter	95	Lease - PEO STRICOM
67	Ft Monroe	82	Ft Buchanan	96	Lease - Army JAG Agency
68	Kansas AAP	84	Presidio Of Monterey	97	Lease - Army JAG School
		85	Umatilla Chem Depot		

BRAC SRG decision to keep in the Portfolio after analysis

**Table 11. Starting Point for Analysis**



If an installation was not in the Army portfolio, it was not necessarily destined for closure; similarly, an installation within the Portfolio was not ensured of being retained. For example, Fort Monmouth, NJ, Fort McPherson, GA, and Hawthorne Army Depot, NV, were in the Army portfolio; however, JCSGs developed scenarios to move functions off these installations, and the Army determined the installations could be closed. The MVP analysis was Army centric and did not account for Joint capacity available or for unique capabilities from a Joint perspective; however, these Joint aspects were considered within scenario analysis. The resulting MV portfolio was a starting point for all Army BRAC analysis.



## 4.0 BRAC SRG GUIDANCE

The MVI and MVP models provided the starting point for Army analysis in BRAC 2005. The BRAC SRG reviewed, approved, and augmented model results by asserting its military judgment into the process.

### 4.1 MVI

TABS briefed all MVI results to the Army BRAC SRG. The Army BRAC SRG provided specific guidance on changes or enhancements to the results and approved requests to continue with the analysis, given the MV baseline.

Initial MV results were briefed on 25 February 2004, which allowed the Army to start scenario development based on this initial result. At this meeting, the BRAC SRG:

- Approved the MV analytical approach
- Approved the MVI attributes (installation characteristics such as Direct Fire Capability, Light Maneuver Area, Air Quality, etc.)
- Approved the relative importance of the MV attributes (weighting)

The BRAC SRG realized that data updates could cause changes in the MVI results and on 24 August 2004, the Army provided an update on attributes, weights, and the initial ranking of installations to the BRAC SRG due to data developments. At this meeting, the BRAC SRG:

- Authorized portfolio analysis using revised MVI results

The second MVI update occurred on 19 October 2004; the Army provided an update on the ranking of installations due to updates in installation data. At this meeting, the BRAC SRG:

- Approved the updated MVI pending additional information

A third MVI update was briefed to the BRAC SRG on 22 February 2005.

The final MVI results were briefed to the BRAC SRG on 29 March 2005. The BRAC SRG approved changes to the model and the final results. Please reference BRAC 2005 SRG materials for further details.

## 4.2 MVP

The TABS Group briefed all portfolio results to the BRAC SRG, which also provided specific guidance on changes or enhancements to the interim results and approved the request to continue with the analysis, given the MV baseline.

The MVP approach was briefed on 24 August 2004. At this meeting, the BRAC SRG:

- Approved the MVP analytical approach
- Authorized portfolio analysis using initial MVI results

The second MVP update occurred on 19 October 2004. The TABS Group provided 1) an update on the ranking of installations due to updates in installation data, 2) capacity listings and unique portfolio requirements, and 3) initial Army portfolio results. At this meeting, the BRAC SRG:

- Approved the updated MVI pending new information
- Approved interim MVI and MVP results
- Extended the portfolio to include Fort Leavenworth

On 30 November, the BRAC SRG:

- Extended the portfolio to include Fort Hamilton, Adelphi Labs, and Fort Buchanan

On 7 December, the BRAC SRG:

- Extended the portfolio to include Lima Army Tank Plant

A MVP result update was provided to the BRAC SRG on 22 February 2005; BRAC SRG approved the update.

Final MVP results were briefed to the BRAC SRG on 29 March 2005; BRAC SRG approved the update. Please reference BRAC 2005 SRG materials for further details.

## ANNEX 1. CAPABILITY RESULTS

This annex contains the rank and score by capability of each Army installation studied during BRAC 2005.

Installation	Rank	Overall Score	Rank	Training Score	Rank	Future Score	Rank	PP Score	Rank	Logistics Score	Rank	Cost Score	Rank	WB Score
Ft Bliss	1	6.25	3	8.71	7	6.07	13	6.21	7	2.65	21	6.32	41	4.26
Ft Lewis	2	5.76	8	6.56	9	5.87	1	8.29	14	1.87	16	6.57	59	3.28
Ft Hood	3	5.70	10	6.19	1	7.67	5	7.04	16	1.83	38	5.74	50	3.71
Ft Stewart / Hunter AAF	4	5.48	13	5.84	2	6.95	3	7.78	17	1.83	41	5.65	89	2.27
Ft Bragg	5	5.37	9	6.30	10	5.84	2	7.81	25	1.25	35	5.81	77	2.64
Yuma PG	6	5.31	2	9.36	8	5.90	67	1.92	5	2.90	69	4.66	95	1.57
Ft Carson	7	5.26	6	7.10	20	4.35	7	7.00	19	1.80	66	4.82	51	3.62
Dugway PG	8	5.25	5	8.12	10	5.84	64	1.98	4	2.93	18	6.55	56	3.32
Ft Benning	9	5.24	7	6.57	25	4.03	4	7.50	27	1.18	34	5.84	20	5.11
White Sands MR	10	5.16	4	8.39	15	5.23	48	2.43	3	3.26	39	5.72	92	1.89
Ft Wainwright	11	5.09	1	9.71	17	4.69	57	2.14	6	2.78	97	2.50	76	2.64
Ft Knox	12	4.91	14	5.77	23	4.21	12	6.44	12	1.92	14	6.67	52	3.59
Ft Riley	13	4.89	16	5.49	3	6.43	8	6.71	30	1.15	68	4.72	82	2.40
Ft Campbell	14	4.81	17	5.10	4	6.14	6	7.03	28	1.18	59	5.08	84	2.37
Ft Drum	15	4.71	12	6.05	5	6.13	26	4.68	31	1.15	71	4.57	53	3.47
Ft Polk	16	4.67	15	5.76	6	6.11	21	5.16	31	1.15	54	5.22	87	2.28
Ft Irwin	17	4.56	11	6.18	24	4.18	38	3.76	8	2.60	83	4.00	8	5.69
Aberdeen PG	18	4.18	25	3.06	16	4.92	19	5.22	13	1.90	2	7.79	33	4.75
Ft Sill	19	4.03	18	5.03	57	2.26	9	6.62	29	1.17	53	5.30	78	2.49
Schofield Barracks	20	3.95	19	4.88	33	3.82	18	5.26	18	1.82	96	2.96	66	2.97
Ft Huachuca	21	3.86	20	4.34	19	4.54	39	3.60	38	0.99	30	5.96	42	4.22
Ft AP Hill	22	3.68	21	4.06	14	5.34	45	2.83	33	1.13	49	5.40	57	3.32
Ft Dix	23	3.47	29	2.12	34	3.74	16	5.81	64	0.16	23	6.31	4	6.08
Ft Mc Coy	24	3.21	23	3.53	35	3.65	34	3.96	41	0.72	78	4.28	68	2.95
Anniston AD	25	3.19	35	1.04	61	2.01	11	6.46	2	3.42	7	7.05	94	1.68
Ft Jackson	26	3.14	24	3.16	31	3.86	40	3.51	65	0.15	32	5.88	58	3.31
McAlester AAP	27	3.10	37	0.95	18	4.64	20	5.18	21	1.63	26	6.22	85	2.34
Ft Rucker	28	3.07	22	3.63	50	2.53	47	2.73	39	0.94	13	6.71	64	3.02
Ft Richardson	29	3.00	27	2.75	29	3.91	33	3.99	62	0.18	73	4.48	54	3.46
Redstone Arsenal	30	2.99	30	2.00	40	3.20	42	3.15	42	0.71	1	8.47	44	4.09
Hawthorne AD	31	2.97	26	2.87	12	5.56	61	1.99	35	1.11	86	3.65	83	2.39
Crane AD	32	2.92	32	1.22	27	3.97	30	4.39	9	2.38	63	4.98	86	2.31
Ft Eustis	33	2.91	43	0.77	49	2.57	10	6.55	58	0.23	27	6.17	17	5.17
Ft Gordon	34	2.80	28	2.62	30	3.88	77	1.77	54	0.33	42	5.64	26	5.01
Ft Leonard Wood	35	2.79	31	1.60	13	5.44	76	1.78	26	1.19	70	4.61	34	4.70
Ft Lee	36	2.79	49	0.59	39	3.21	14	6.08	67	0.15	37	5.74	37	4.57
Tobyhanna AD	37	2.79	69	0.36	81	1.06	32	4.38	1	4.24	6	7.29	39	4.39
Ft Belvoir	38	2.70	46	0.67	32	3.82	37	3.93	44	0.63	5	7.41	47	3.76
Letterkenny AD	39	2.69	42	0.78	36	3.63	28	4.51	34	1.13	52	5.34	48	3.75
Red River AD	40	2.61	39	0.88	60	2.02	15	5.81	24	1.31	50	5.38	73	2.67
Sierra AD	41	2.49	34	1.07	26	4.00	27	4.57	47	0.55	94	3.37	80	2.44
Tooele AD	42	2.48	40	0.87	41	3.19	31	4.38	45	0.62	46	5.54	70	2.81
Ft Sam Houston	43	2.42	33	1.21	65	1.84	44	2.97	57	0.24	3	7.78	14	5.31
Deseret Chem Plant	44	2.36	41	0.80	28	3.96	46	2.82	63	0.16	57	5.10	30	4.84
Bluegrass AD	45	2.34	53	0.43	80	1.09	17	5.54	43	0.68	56	5.12	12	5.35

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Installation	Rank	Overall Score	Rank	Training Score	Rank	Future Score	Rank	PP Score	Rank	Logistics Score	Rank	Cost Score	Rank	WB Score
Walter Reed AMC	46	2.33	81	0.31	48	2.60	35	3.93	73	0.14	9	6.94	29	4.91
Picatinny Arsenal	47	2.33	50	0.49	21	4.34	79	1.62	50	0.44	15	6.66	16	5.18
Watervliet Arsenal	48	2.25	79	0.33	63	1.96	25	4.69	53	0.33	28	6.13	43	4.11
Ft Meade	49	2.25	78	0.34	38	3.28	51	2.34	67	0.15	17	6.55	2	6.27
Ft Monmouth	49	2.25	62	0.36	58	2.20	36	3.93	48	0.53	11	6.88	46	3.80
Ft McPherson	51	2.22	83	0.30	82	0.97	22	5.10	81	0.14	12	6.75	28	4.92
Ft Gillem	52	2.20	82	0.30	83	0.92	23	5.01	61	0.18	20	6.37	13	5.32
Rock Island Arsenal	53	2.14	59	0.37	73	1.38	29	4.41	37	1.00	19	6.50	72	2.67
MOT Sunny Point	54	2.09	69	0.36	51	2.46	24	4.74	81	0.14	60	5.07	90	2.25
Pueblo Chem Depot	55	2.03	36	1.02	37	3.54	54	2.24	49	0.48	74	4.46	91	2.21
Ft Detrick	56	1.98	69	0.36	62	1.98	58	2.12	59	0.22	4	7.42	18	5.16
Soldier Systems Center	57	1.96	66	0.36	79	1.18	43	3.09	76	0.14	8	7.00	19	5.16
Charles Kelley	58	1.93	69	0.36	84	0.86	41	3.34	73	0.14	43	5.61	1	6.64
Milan AAP	59	1.92	54	0.40	55	2.36	53	2.27	15	1.86	48	5.52	93	1.87
Mississippi AAP	60	1.91	69	0.36	44	2.96	49	2.39	55	0.30	24	6.28	79	2.46
West Point	61	1.88	38	0.93	43	3.09	78	1.67	69	0.15	75	4.42	49	3.73
Ft Leavenworth	62	1.85	60	0.37	47	2.60	82	1.55	66	0.15	47	5.54	5	5.78
Newport Chem Depot	63	1.85	51	0.46	22	4.34	91	1.09	83	0.14	55	5.16	75	2.66
Pine Buff Arsenal	64	1.84	46	0.67	64	1.86	75	1.79	11	1.98	22	6.32	97	0.91
Ft Mc Nair	65	1.83	52	0.44	56	2.27	63	1.98	83	0.14	33	5.87	38	4.52
Ft Myer	66	1.81	62	0.36	59	2.12	65	1.98	76	0.14	31	5.89	27	5.00
Kansas AAP	67	1.80	45	0.68	54	2.38	97	0.74	23	1.46	36	5.81	60	3.28
Ft Monroe	68	1.79	62	0.36	70	1.57	50	2.36	73	0.14	45	5.57	10	5.48
Lake City AAP	69	1.78	66	0.36	46	2.70	93	0.91	46	0.58	51	5.37	11	5.45
Iowa AAP	70	1.78	44	0.68	45	2.73	94	0.88	20	1.66	79	4.18	55	3.37
Lone Star AAP	71	1.73	69	0.36	42	3.18	95	0.86	22	1.48	67	4.77	73	2.67
Adelphi Labs	72	1.71	56	0.37	69	1.74	60	2.00	60	0.22	44	5.59	36	4.62
Ft Hamilton	73	1.69	85	0.27	53	2.40	66	1.92	83	0.14	80	4.16	15	5.30
Detroit Arsenal	74	1.63	61	0.36	75	1.35	87	1.32	71	0.14	10	6.92	31	4.79
Carlisle	75	1.62	55	0.38	71	1.53	80	1.57	76	0.14	40	5.70	21	5.05
Lima Tank Plant	76	1.60	84	0.30	72	1.42	62	1.99	36	1.07	61	5.07	61	3.23
Corpus Christi ADA	77	1.59	62	0.36	85	0.65	90	1.18	10	2.09	25	6.26	65	3.02
Scranton AAP	78	1.55	80	0.33	68	1.75	81	1.56	51	0.41	72	4.53	35	4.63
USAG Michigan	79	1.51	69	0.36	78	1.20	89	1.28	83	0.14	29	6.04	31	4.79
Radford AAP	80	1.51	86	0.24	52	2.41	92	1.02	40	0.85	64	4.97	71	2.75
Ft Shafter	81	1.48	58	0.37	74	1.35	55	2.18	76	0.14	65	4.91	62	3.22
Ft Buchanan	82	1.47	66	0.36	89	0.32	56	2.17	69	0.15	76	4.35	3	6.23
Holston AAP	83	1.44	77	0.34	67	1.78	95	0.86	56	0.28	58	5.08	40	4.37
Presidio Of Monterey	84	1.35	56	0.37	77	1.22	52	2.33	71	0.14	81	4.11	81	2.43
Umatilla Chem Depot	85	1.31	48	0.62	66	1.78	88	1.32	76	0.14	84	3.85	88	2.27
Tripler AMC	87	1.26	69	0.36	86	0.58	58	2.12	83	0.14	77	4.34	66	2.97
Riverbank AAP	89	1.18	87	0.18	76	1.30	86	1.48	51	0.41	62	5.06	96	1.13
Lease - HQ, ATEC	86	1.27	87	0.18	87	0.58	68	1.91	88	0.00	82	4.04	22	5.02
Lease - Rosslyn Complex	88	1.20	87	0.18	88	0.48	68	1.91	88	0.00	87	3.46	22	5.02
Lease - Bailey's Crossroads	90	1.16	87	0.18	91	0.00	68	1.91	88	0.00	87	3.46	7	5.74
Lease - Army Research Office	91	1.15	87	0.18	91	0.00	68	1.91	88	0.00	87	3.46	9	5.53
Lease - Crystal City Complex	92	1.11	87	0.18	91	0.00	68	1.91	88	0.00	87	3.46	22	5.02
Lease - Hoffman complex	92	1.11	87	0.18	91	0.00	68	1.91	88	0.00	87	3.46	22	5.02
Lease - ARPERCEN	94	1.06	87	0.18	91	0.00	83	1.49	88	0.00	95	3.22	6	5.75
Lease - PEO STRICOM	95	1.01	87	0.18	90	0.29	83	1.49	88	0.00	87	3.46	45	4.02
Lease - Army JAG Agency	96	0.94	87	0.18	91	0.00	68	1.91	88	0.00	87	3.46	69	2.83
Lease - Army JAG School	97	0.91	87	0.18	91	0.00	83	1.49	88	0.00	85	3.80	63	3.07

## ANNEX 2. MV ATTRIBUTES

This annex contains a summary of the forty attributes used to calculate the Military Value of each installation for BRAC 2005. Attributes are listed with their definition, purpose, and source. Additional information about MV attributes is located in Annex 14 of the MV Supporting Document, attached separately.

### ATTRIBUTE #1: DIRECT FIRE CAPABILITY

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1. **DEFINITION:** A combination of the installation's dudded impact area size, available maneuver space and the largest direct-fire weapons system capability of an installation's range complex.
2. **PURPOSE:** Measures the ability of an installation's ranges and impact areas to support direct-fire weapons training. This measure places added Military Value to the ranges and impact areas that can be used to train larger direct-fire weapon systems.
3. **SOURCE:** Installation Capacity Data Call.

### ATTRIBUTE #2: INDIRECT FIRE CAPABILITY

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1. **DEFINITION:** A combination of stand off distance and the largest weapon system capability supported for indirect fire/non-line-of-sight weapons training.
2. **PURPOSE:** Measures the ability of the installation's ranges and impact areas to support indirect fire/non-line-of-sight weapons training.
3. **SOURCE:** Installation Capacity Data Call, MVA Data Call.

### ATTRIBUTE #3: MILITARY OPERATIONS IN URBAN TERRAIN (MOUT)

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1. **DEFINITION:** A combination of the size in acres of the facility and the quality of the buildings associated with the training site(s).
2. **PURPOSE:** Determines the installation's ability to support MOUT training.
3. **SOURCE:** Installation Capacity Data Call.

#### **ATTRIBUTE #4: HEAVY MANEUVER AREA**

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1. **DEFINITION:** A combination of the installation's total acreage and the largest contiguous acreage for training of mechanized formations.
2. **PURPOSE:** Determines the installation's ability to support training and maneuver of mechanized forces. This attribute adds Military Value for larger contiguous areas within the overall training area.
3. **SOURCE:** Installation MVA Data Call.

#### **ATTRIBUTE #5: LIGHT MANEUVER AREA**

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1. **DEFINITION:** The acreage of the installation available for the maneuver and training of light formations.
2. **PURPOSE:** Measures the installation's ability to support training of light forces.
3. **SOURCE:** Installation Capacity Data Call.

#### **ATTRIBUTE #6: AIRSPACE**

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1. **DEFINITION:** A combination of the altitude of the airspace available for training that is a part of or controlled by the installation and the size of the associated ground footprint.
2. **PURPOSE:** Measures the ability of the Joint airspace controlled by the installation, including areas associated with a maneuver rights agreement, to support training.
3. **SOURCE:** Installation Capacity Data Call.

#### **ATTRIBUTE #7: GENERAL INSTRUCTIONAL FACILITIES**

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1. **DEFINITION:** The weighted sum (by quality condition) of the square footage of general instructional facilities on an installation.
2. **PURPOSE:** Measures the existing capability of the installation to conduct training by considering general-purpose facilities used for general instruction.
3. **SOURCE:** June 2003, HQRPLANS Version 12.50 and Installation Status Report (ISR). No installation data call is required.

#### **ATTRIBUTE #8: APPLIED INSTRUCTIONAL FACILITIES**

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1. **DEFINITION:** The weighted sum (by quality condition) of the square footage of applied instructional facilities on an installation including square footage of facilities that may be converted to applied instructional facilities. We define conversion as those facilities that are not currently instructional, but can be transformed to applied instructional facilities at a reasonable cost.
2. **PURPOSE:** Measures the existing capability of the installation to conduct training by considering special purpose facilities used for, or convertible facilities that could be used for, applied instruction.
3. **SOURCE:** June 2003, HQRPLANS Version 12.50 and Installation Status Report (ISR). No installation data call is required.

### **ATTRIBUTE #9: AIR QUALITY**

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1. **DEFINITION:** The air quality attainment status observed at an installation based on the presence of criteria pollutants.
2. **PURPOSE:** Measures the degree of air attainment quality for the *criteria pollutants*. Air attainment quality status reflects the “quality” of air above an installation. This quality is a quality-of-life issue for the soldiers and their families living there. Additionally, the attainment status places training or mission restrictions on any activities that may further degrade the quality of air.
3. **SOURCE:** Installation Capacity Data Call, DOD Question #213.

### **ATTRIBUTE #10: NOISE CONTOURS**

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1. **DEFINITION:** The number of acres off the installation that are incompatible with current land use practices due to Noise Contour Levels II and III.
2. **PURPOSE:** Measures the degree of external encroachment placed on a given installation as a result of noise contours extending off-installation. Primarily identifies areas where noise levels from military sound sources are high enough to be incompatible with "noise sensitive" areas such as housing, schools, churches, and hospitals. Attribute demonstrates the potential for military training to be adversely impacted because of incompatible land use practices.
3. **SOURCE:** Installation Capacity Data Call-1, DOD Questions #198, and #239.

## **ATTRIBUTE #11: SOIL RESILIENCY**

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1. **DEFINITION:** A measure of the installation's soils ability to sustain Army training.
2. **PURPOSE:** Measures the resiliency of an installation's training land, by using Highly Erodible Land (HEL) classification as a proxy. HEL class is a nationally recognized indicator that can be easily understood by both military trainers and natural resources managers.
3. **SOURCE:** The NRCS National Soil Information System (NASIS) provides the HEL Class for most soil map units in the country. On those soil map units without a HEL Class in the database, the value may exist in hardcopy in the NRCS Field Office Tech Guide, or, the methodology described in Part 511 of the National Food Security Act Manual will be used to determine HEL Class. No installation data call is required.

## **ATTRIBUTE #12: WATER QUANTITY**

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1. **DEFINITION:** The availability of additional water resources measured in terms of thousand acre-feet.
2. **PURPOSE:** Measures the availability of water resources within the geographic region of the installation. The availability of water, including surface water, groundwater, and purchased water, is critical to understanding the degree of sustainability of natural resources. Sufficient water may not be available to allow for expansion of missions at the installation regardless of the physical throughput of the water treatment plant.
3. **SOURCE:** Installation Military Value Data Call, DOD Questions #825 and #826.

## **ATTRIBUTE #13: MOBILIZATION**

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1. **DEFINITION:** The fifteen-year sum of the number of soldiers mobilized at an installation.
2. **PURPOSE:** Measures the installation's potential future contribution to Reserve Component mobilization and deployment capability.
3. **SOURCE:** G-3 and FORSCOM. No installation data call is required.

## **ATTRIBUTE #14: FORCE DEPLOYMENT**

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- 1. DEFINITION:** The time, in days, it takes a Unit of Action (UA) (including all assigned equipment and personnel) to deploy eastward and westward from the installation to overseas theater locations using various modes of transport.
- 2. PURPOSE:** Measures the capability of an installation to support UA deployments.
- 3. SOURCE:** Military Surface Deployment and Distribution Command Transportation Engineering Agency (MSDDCTEA) databases, and Installation Military Value Data Call.

## **ATTRIBUTE #15: MATERIEL DEPLOYMENT**

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- 1. DEFINITION:** The time, in days, it takes to deploy a notional amount of materiel from the installation eastward and westward to overseas theater locations using various modes of transport.
- 2. PURPOSE:** Measures the capability of an installation to support material deployment.
- 3. SOURCE:** Military Surface Deployment and Distribution Command Transportation Engineering Agency (MSDDCTEA) databases, Installation Military Value Data Call.

## **ATTRIBUTE #16: OPERATIONS/ADMINISTRATIVE FACILITIES**

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- 1. DEFINITION:** The weighted sum (by quality condition) of the square footage of operations and administrative facilities on an installation.
- 2. PURPOSE:** Measures the installation's current capability to accomplish operations and/or administrative missions as well as its ability to expand to accommodate additional Ops/Admin missions.
- 3. SOURCE:** Data for this attribute is from HQRPLANS and the ISR. No installation data call is required.

## **ATTRIBUTE #17: ACCESSIBILITY**

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1. **DEFINITION:** A combination of an installation's proximity to major DOD installations, major civilian airports and the number of such installations and airports within a given radii.
2. **PURPOSE:** Measures an installation's potential to conduct/support Joint and homeland defense command and control missions by assessing the ability of the installation's personnel to rapidly and efficiently travel to multiple destinations.
3. **SOURCE:** CAA, GIS; no installation data call required.

## **ATTRIBUTE #18: CONNECTIVITY**

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1. **DEFINITION:** A combination of the completeness of the on-post communications infrastructure, the installation's potential connectivity to cellular communications and commercial long haul fiber optic networks, and the level of spectrum encroachment the installation is experiencing.
2. **PURPOSE:** To measure installation's ability/capability to provide its tenant units and activities access to a robust, high capacity and expandable communications network.
3. **SOURCE:** Army G-6/ISEC (no installation data call required).

## **ATTRIBUTE #19: RDTE MISSION DIVERSITY**

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1. **DEFINITION:** A weighted sum of scores based on the execution of 13 technical capability areas on an installation and the installation's test resource categories that support RDTE.
2. **PURPOSE:** Measures the level of RDTE diversity that an installation can support.
3. **SOURCE:** Installation Capacity Data Call. No Installation Military Value Data Call required.

## **ATTRIBUTE #20: TEST RANGE CAPACITY**

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1. **DEFINITION:** A combination of total acres and total duded impact area acres at an installation that serves as a proxy for support of test and evaluation.
2. **PURPOSE:** Measures an installation's test range capability in terms of total installation size and its total duded impact areas in acres.
3. **SOURCE:** DOD Data Call #1.

## **ATTRIBUTE #21: MUNITIONS PRODUCTION CAPABILITY**

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1. **DEFINITION:** The number of munitions production sub-processes under three overarching processes (explosive, metal parts, and load-assemble-pack) that have been performed at the installation during the last two years.
2. **PURPOSE:** The variety of munitions-related industrial-base sub-processes performed at an installation provides a measure of both current capability and the capability to respond to future requirements.
3. **SOURCE:** Installation Military Value Data Call.

## **ATTRIBUTE #22: AMMUNITION STORAGE CAPACITY**

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1. **DEFINITION:** An installation's explosive and inert maximum storage capacity and unutilized capacity measured in square feet.
2. **PURPOSE:** Measures maximum storage and unutilized storage capacity at wholesale installations<sup>9</sup> to determine available capacity for current and future storage requirements.
3. **SOURCE:** Installation Capacity Data Call.

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<sup>9</sup> Wholesale installations are those that manufacture and store materials for Army use; Appendix #1, provides a list of Army installations considered to be wholesale facilities.

## **ATTRIBUTE #23: INTERSERVICE AND PARTNERING WITH INDUSTRY FLEXIBILITY**

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- 1. DEFINITION:** The amount of capacity in Direct Labor Hours (DLHs) used to perform inter-service workload and partnered workload for maintenance and manufacturing operations (less munitions). Interservice workload is defined as work being performed in support of another Service and/or work being performed for a combatant command. Partnered workload is any work being performed in support of a commercial/ private sector customer under one or more of the specific authorities listed in the attachment (MVA Data Call Questions, Army).
- 2. PURPOSE:** Demonstrates the ability of the depots and arsenals to support the other services, thus enhancing Joint operational readiness and public/private partnering.
- 3. SOURCE:** Installation Capacity Data Call and Installation Military Value (MVA) Data Call.

## **ATTRIBUTE #24: MAINTENANCE/MANUFACTURING PRODUCTION CAPACITY**

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- 1. DEFINITION:** An installation's total capacity and capacity available for additional maintenance and manufacturing workload (less munitions) measured in Direct Labor Hours (DLHs).
- 2. PURPOSE:** Measures total capacity and capacity available for additional maintenance and manufacturing workload.
- 3. SOURCE:** Installations Capacity Data Call.

## **ATTRIBUTE #25: SUPPLY AND STORAGE CAPACITY**

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- 1. DEFINITION:** The weighted sum by quality condition of the square footage of storage capacity on an installation (less ammunition and wet tank storage).
- 2. PURPOSE:** Measures total storage capacity available.
- 3. SOURCE:** June 2003, HQRPLANS Version 12.50 and Installation Status Report (ISR). No Installation Data Call is required.

## **ATTRIBUTE #26: CRIME INDEX**

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1. **DEFINITION:** The level of violent and property crimes near the installation as reported by the Uniform Crime Reporting (UCR) Program.
2. **PURPOSE:** Measures the level of crime where the highest concentrations of military families live off-post. The UCR index represents the relative safety of these locations.
3. **SOURCE:** UCR, Section II: [http://www.fbi.gov/ucr/cius\\_02/pdf/2sectiontwo.pdf](http://www.fbi.gov/ucr/cius_02/pdf/2sectiontwo.pdf). An installation data call is not required.

## **ATTRIBUTE #27: EMPLOYMENT OPPORTUNITY**

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1. **DEFINITION:** A combination of median income and unemployment rate experienced near the installation.
2. **PURPOSE:** Evaluates family employment opportunities by comparing unemployment rates with median income near the installation.
3. **SOURCE:** US Census Bureau: <http://quickfacts.census.gov/qfd/> or MSA: [http://factfinder.census.gov/servlet/GCTGeoSearchByListServlet?ds\\_name=DEC\\_2000\\_SF3\\_U&lang=en&ts=97152741547](http://factfinder.census.gov/servlet/GCTGeoSearchByListServlet?ds_name=DEC_2000_SF3_U&lang=en&ts=97152741547); Bureau of Labor Statistics, <http://www.bls.gov/data/home.htm> ; Installation Military Value Data Call.

## **ATTRIBUTE #28: HOUSING**

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1. **DEFINITION:** A combination of the number of available rental vacant units and Basic Allowance for Housing (BAH) rates.
2. **PURPOSE:** Compares the availability of rental vacancies to the amount of BAH computed for the installation, which provides a general measure of affordable housing availability.
3. **SOURCE:** US Bureau of the Census, Summary File 3 (Rental vacancies), [http://factfinder.census.gov/servlet/DTGeoSearchByListServlet?ds\\_name=DEC\\_2000\\_SF3\\_U&lang=en&ts=97750263632](http://factfinder.census.gov/servlet/DTGeoSearchByListServlet?ds_name=DEC_2000_SF3_U&lang=en&ts=97750263632); Defense Finance and Accounting Service (BAH rates, 2004), <http://www.dtic.mil/perdiem/bahform.html>. An installation data call is not required.

## **ATTRIBUTE #29: MEDICAL CARE AVAILABILITY**

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1. **DEFINITION:** The number of Primary/Specialty Care providers available per population near an installation.
2. **PURPOSE:** Indicates the ability of civilian primary and specialty care providers to accommodate the population on and adjacent to the military installation.
3. **SOURCE:** American Hospital Association Database, Office of the Surgeon General. US Census 2000, <http://quickfacts.census.gov/qfd/>. No installation data call is required.

## **ATTRIBUTE #30: IN-STATE TUITION POLICY**

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1. **DEFINITION:** A measure of the eligibility of Soldiers and family members to receive in-state educational benefits.
2. **PURPOSE:** Determines the status of state tuition education benefits for Soldiers and family members, which, in turn, provides a measure of future education affordability for Soldiers and their families at their respective installation.
3. **SOURCE:** DOD In-State website: <https://www.armyeducation.army.mil/InState/StateSummary.HTM>. Installation data call is not required.

## **ATTRIBUTE #31: WORKFORCE AVAILABILITY**

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1. **DEFINITION:** The available labor supply. Labor supply includes individuals between ages 25 and older within a 50 mile radius of each installation.
2. **PURPOSE:** This is a measure of the availability of a workforce.
3. **SOURCES:** GeoLytics Data, [www.geolytics.com](http://www.geolytics.com).



### **ATTRIBUTE #32: JOINT FACILITIES**

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- 1. DEFINITION:** A combination of the size of an installation's Total Obligation Authority (TOA) (direct and reimbursable) and the percentage of that funding an installation receives from non-Army sources to support the non-army organization's units or activities.
- 2. PURPOSE:** Provides a measure of the level of Joint activity on an installation.
- 3. SOURCE:** Installation Military Value Data Call.

### **ATTRIBUTE #33: AREA COST FACTOR (ACF)**

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- 1. DEFINITION:** A measure of an installation's military construction costs relative to the national average.
- 2. PURPOSE:** Provides a comparative index for the cost to construct, modernize or expand a notional facility at an installation.
- 3. SOURCE:** DOD Facilities Pricing Guide, March 2004 (Office of the Deputy Under Secretary of Defense for Installations and Environment (ODUSD-IE)). No installation data call is required.

### **ATTRIBUTE #34: C2 TARGET FOR FOCUS FACILITIES**

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- 1. DEFINITION:** A combination of the Assistant Chief of Staff of Installation Management (ACSIM) designated installations' total square footage and the funding required to achieve an Installation Status Report (ISR) quality rating of C2 as compared to the total square footage and funding requirements for other installations.
- 2. PURPOSE:** Measures an installation's overall facility quality, using the installation's contributions to the total cost to improve its focus facilities to a C2 grade level, as compared to other installations.
- 3. SOURCE:** ACSIM and HQRPLANS. No installation data call is required.

### **ATTRIBUTE #35: INSTALLATION UNIT COST FACTOR**

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- 1. DEFINITION:** The measure of Base Operations Support (BOS) costs required to support the installation's authorized population (military, civilian, and contractors). Cost factors do not include civilian payroll, sustainment, restoration, modernization, and family housing costs.
- 2. PURPOSE:** Measures the relative unit cost of operating an installation.
- 3. SOURCE:** BOS expenditures from the ASA (FM&C), Military/Civilian authorizations and on-board contractors from the ASIP, and the installations facility sustainment requirement from the Facility Sustainment Model. No installation data call is required.

### **ATTRIBUTE #36: BUILDABLE ACRES**

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- 1. DEFINITION:** The gross number of buildable acres on an installation based on eleven different land use categories.
- 2. PURPOSE:** Measures the degree of internal expansion available on an installation. This attribute demonstrates the degree to which an installation may expand given current physical, building, and land use constraints.
- 3. SOURCE:** Installation Capacity Data Call, DOD Question #30.

### **ATTRIBUTE #37: BRIGADE CAPACITY**

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- 1. DEFINITION:** The ability of an installation to support maneuver Brigades (light, heavy, or Stryker Brigade Combat Team (SBCT)).
- 2. PURPOSE:** Determine if an installation is currently or has the ability to support a maneuver Brigade (light, heavy, SBCT; current and expandability).
- 3. SOURCE:** ARRMS provides maneuver land requirements; the Army G3 provides the current location of Army maneuver Brigades (attached); and the Installation Capacity Data Call provides range capability.

### **ATTRIBUTE #38: ENVIRONMENTAL ELASTICITY**

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- 1. DEFINITION:** Environmental Elasticity is the ability of an installation to absorb additional personnel based on the utility resource physical capacity constraints and resource costs at capacity thresholds. The “threshold” is the point where the current infrastructure or resource delivery is limited and cannot be exceeded without significant cost or modification of infrastructure.
- 2. PURPOSE:** To compare installations based on their relative ability to absorb additional personnel, using two installation characteristics: total costs for specified resources at capacity threshold and the number of people that can be supported by the resources at capacity threshold.
- 3. SOURCE:** Installation Capacity Data Call, Installation Military Value Data Call, Army Stationing and Installation Plan (ASIP).

### **ATTRIBUTE #39: URBAN SPRAWL**

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- 1. DEFINITION:** A linear forecast to 2020 of urbanization, based on changes in land use from 10 years of historical data.
- 2. PURPOSE:** Evaluates land use changes and encroachment along the edges of military installations including a one-mile buffer around the installation.
- 3. SOURCE:** U.S. Army Corps of Engineers Research Labs (CERL). No installation data call is required.

## **ATTRIBUTE #40: CRITICAL INFRASTRUCTURE PROXIMITY**

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1. **DEFINITION:** The number of Critical Infrastructure (CI) nodes located within 150 miles of the installation.
2. **PURPOSE:** Measures the installation's potential capability to support consequence management and homeland defense missions, including military assistance for civil disturbance, natural disasters, CBRN&E accidents, terrorist incidents, and military assistance to civil law enforcement agencies.
3. **SOURCES:**
  - a. Power Generating Reactors: U.S. Nuclear Regulatory Commission 2003 Information Digest, Appendix A.  
<http://www.nrc.gov/reactors/operating/list-power-reactor-units.html>.
  - b. Major Dams: National Inventory of Dams, US Army Corps of Engineers (DOD) <http://crunch.tec.army.mil/nid/webpages/nid.cfm>.
  - c. Federal Reserve Banks: The Federal Reserve Board of Governors Website <http://www.federalreserve.gov/otherfrb.htm>.
  - d. Ports: National Geospatial Intelligence Agency, (DOD) United States Port Protection Graphic, Version 1.
  - e. Top 25 Most Dangerous Chemical Plants: National Geospatial Intelligence Agency (DOD) NRDC - Top 25 Most Dangerous Chemical Facilities, Version 2
  - f. Refineries: National Geospatial Intelligence Agency (DOD), United States Crude Oil Pipelines and Refineries, Version 2
  - g. Census data and GIS.
  - h. No installation data call is required

## **ANNEX 3. MV INSTALLATION ATTRIBUTE INPUTS & OUTPUTS**

Below is an index of the 40 MV attributes used to assess the military value of installations for BRAC 2005. This annex contains each installation's score across the 40 attributes. The first section contains the model's inputs and the second section contains the model's outputs.

- A 1: Direct Fire Capability**
- A 2: Indirect Fire Capability**
- A 3: MOUT Capabilities**
- A 4: Heavy Maneuver Area**
- A 5: Light Maneuver Area**
- A 6: Airspace**
- A 7: General Instructional Facilities**
- A 8: Applied Instructional Facilities**
- A 9: Air Quality**
- A 10: Noise Contours**
- A 11: Soil Resiliency**
- A 12: Water Quantity**
- A 13: Mobilization**
- A 14: Force Deployment**
- A 15: Materiel Deployment**
- A 16: Operations / Administrative Facilities**
- A 17: Accessibility**
- A 18: Connectivity**
- A 19: RDT&E Mission Diversity**
- A 20: Test Range Capability**
- A 21: Munitions Production Capability**
- A 22: Ammunition Storage Capacity**
- A 23: InterService / Partnering Workload Flexibility**
- A 24: Maintenance / Manufacturing Capability**
- A 25: Supply and Storage Capacity**
- A 26: Crime Index**
- A 27: Employment Opportunity**
- A 28: Housing Availability**
- A 29: Medical Care Availability**
- A 30: In-State College Tuition Policies**
- A 31: Workforce Availability**
- A 32: Joint Facilities Cost Sharing**
- A 33: Area Cost Factor**
- A 34: C2 Target Focus Facilities**
- A 35: Installation Unit Cost Factor**
- A 36: Buildable Acres**
- A 37: Brigade Capacity**
- A 38: Environmental Elasticity**
- A 39: Urban Sprawl**
- A 40: Critical Infrastructure**

## Section 1: Model Inputs

Installations	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10
Aberdeen PG	Label 0	Label 5	Label 6	Label 0	1992	Label 9	232286	447792	0	Label 1
Adelphi Labs	Label 0	Label 1	Label 0	Label 0	0	Label 0	0	864	0	Label 10
Anniston AD	Label 0	Label 2	Label 0	Label 0	283	Label 5	4263	6720	0	Label 10
Bluegrass AD	Label 0	Label 0	Label 0	Label 0	0	Label 0	948	0	0	Label 10
Carlisle Barracks	Label 0	Label 0	Label 0	Label 0	0	Label 0	110315	4773	0	Label 10
Charles Kelly Support Activity	Label 0	Label 0	Label 0	Label 0	0	Label 0	0	0	0	Label 10
Corpus Christi ADA	Label 0	Label 0	Label 0	Label 0	0	Label 0	5548	11286	0	Label 10
Crane AAP	Label 0	Label 0	Label 0	Label 0	63000	Label 0	0	0	0	Label 2
Deseret Chem Plant	Label 0	Label 0	Label 0	Label 1	0	Label 0	0	357	0	Label 10
Detroit Arsenal	Label 0	Label 0	Label 0	Label 0	0	Label 0	2118	24629	0	Label 10
Dugway PG	Label 9	Label 10	Label 6	Label 10	100000	Label 9	827	13673	0	Label 10
Ft AP Hill	Label 6	Label 6	Label 2	Label 1	71003	Label 5	8643	16501	5	Label 10
Ft Belvoir	Label 0	Label 0	Label 0	Label 0	3734	Label 1	432973	0	5	Label 10
Ft Benning	Label 6	Label 6	Label 9	Label 8	63694	Label 9	312327	123306	0	Label 4
Ft Bliss	Label 9	Label 11	Label 5	Label 10	100000	Label 8	400520	282964	20	Label 10
Ft Bragg	Label 6	Label 6	Label 9	Label 8	43090	Label 9	270708	224618	0	Label 5
Ft Buchanan	Label 0	Label 0	Label 0	Label 0	0	Label 0	937	1820	0	Label 10
Ft Campbell	Label 6	Label 6	Label 6	Label 0	66424	Label 9	17719	60091	5	Label 4
Ft Carson	Label 6	Label 6	Label 9	Label 10	57467	Label 9	0	27117	5	Label 7
Ft Detrick	Label 0	Label 0	Label 0	Label 0	0	Label 0	0	2146	0	Label 10
Ft Dix	Label 3	Label 2	Label 2	Label 1	8506	Label 5	237500	58490	10	Label 2
Ft Drum	Label 6	Label 6	Label 3	Label 5	66320	Label 9	14997	18960	0	Label 10
Ft Eustis	Label 1	Label 0	Label 0	Label 0	4178	Label 0	119460	596043	5	Label 10
Ft Gillem	Label 0	Label 0	Label 0	Label 0	0	Label 0	4786	24216	10	Label 10
Ft Gordon	Label 2	Label 2	Label 1	Label 5	5217	Label 5	284135	518286	5	Label 10
Ft Hamilton	Label 0	Label 0	Label 0	Label 0	0	Label 0	0	578	15	Label 10
Ft Hood	Label 6	Label 6	Label 6	Label 9	17413	Label 9	233512	60640	0	Label 10
Ft Huachuca	Label 2	Label 5	Label 0	Label 0	66310	Label 9	268857	291220	0	Label 10
Ft Irwin	Label 9	Label 6	Label 9	Label 10	0	Label 9	21821	4938	5	Label 10
Ft Jackson	Label 3	Label 3	Label 0	Label 1	20257	Label 6	295695	362086	5	Label 10
Ft Knox	Label 9	Label 6	Label 6	Label 6	9184	Label 9	286806	332273	0	Label 4
Ft Leavenworth	Label 0	Label 0	Label 0	Label 0	0	Label 0	222558	6648	5	Label 10
Ft Lee	Label 1	Label 0	Label 0	Label 0	2046	Label 0	383925	399690	0	Label 3
Ft Leonard Wood	Label 2	Label 2	Label 6	Label 2	8822	Label 3	494939	505800	0	Label 2
Ft Lewis	Label 6	Label 6	Label 9	Label 9	40612	Label 9	57329	100073	10	Label 10
Ft Mc Coy	Label 3	Label 6	Label 1	Label 5	3500	Label 6	66536	45201	0	Label 5
Ft Mc Nair	Label 0	Label 0	Label 0	Label 0	0	Label 0	455023	0	0	Label 10
Ft McPherson	Label 0	Label 0	Label 0	Label 0	0	Label 0	7251	6861	10	Label 10
Ft Meade	Label 0	Label 0	Label 0	Label 0	0	Label 0	232000	5553	10	Label 10
Ft Monmouth	Label 0	Label 0	Label 0	Label 0	0	Label 0	10976	6529	0	Label 10
Ft Monroe	Label 0	Label 0	Label 0	Label 0	0	Label 0	14616	5659	0	Label 10
Ft Myer	Label 0	Label 0	Label 0	Label 0	0	Label 0	0	22397	0	Label 10
Ft Polk	Label 6	Label 7	Label 9	Label 7	0	Label 9	32272	24781	0	Label 5
Ft Richardson	Label 3	Label 2	Label 3	Label 5	19873	Label 5	34237	21414	0	Label 10
Ft Riley	Label 6	Label 6	Label 9	Label 8	3007	Label 9	19020	49827	0	Label 6
Ft Rucker	Label 6	Label 2	Label 0	Label 0	38745	Label 8	191138	154481	0	Label 10
Ft Sam Houston	Label 1	Label 0	Label 6	Label 1	12959	Label 0	463861	184415	0	Label 10
Ft Shafter	Label 0	Label 0	Label 0	Label 0	0	Label 0	67967	0	0	Label 10
Ft Sill	Label 6	Label 6	Label 0	Label 5	6425	Label 9	471630	149431	0	Label 10
Ft Stewart / Hunter Army Airfield	Label 6	Label 6	Label 9	Label 9	3017	Label 9	21819	27729	0	Label 7
Ft Wainwright	Label 9	Label 11	Label 9	Label 10	100000	Label 9	4669	17279	10	Label 9
Hawthorne AD	Label 2	Label 5	Label 0	Label 0	68268	Label 2	24524	0	0	Label 10
Holston AAP	Label 0	Label 0	Label 0	Label 1	127	Label 0	0	0	5	Label 10
Iowa AAP	Label 0	Label 0	Label 0	Label 0	1299	Label 0	0	0	0	Label 10
Kansas AAP	Label 0	Label 0	Label 0	Label 0	0	Label 0	0	0	0	Label 10

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Installations	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10
Lake City AAP	Label 0	Label 0	Label 0	Label 0	0	Label 0	2465	0	0	Label 10
Letterkenny AD	Label 0	Label 0	Label 0	Label 0	4815	Label 1	0	0	5	Label 10
Lima Tank Plant	Label 0	Label 0	Label 0	Label 0	0	Label 0	0	8147	10	Label 10
Lone Star AAP	Label 0	Label 0	Label 0	Label 0	0	Label 0	0	0	0	Label 10
McAlester AAP	Label 0	Label 0	Label 0	Label 0	923	Label 0	66778	0	0	Label 10
Milan AAP	Label 0	Label 0	Label 6	Label 1	0	Label 0	0	257	0	Label 2
Mississippi AAP	Label 0	Label 0	Label 0	Label 0	0	Label 0	0	0	0	Label 10
MOT Sunny Point	Label 0	Label 0	Label 0	Label 0	0	Label 0	0	0	0	Label 10
Newport Chem Depot	Label 0	Label 0	Label 0	Label 0	6598	Label 0	0	0	0	Label 10
Picatinny Arsenal	Label 0	Label 0	Label 5	Label 0	46	Label 0	12669	1606	10	Label 10
Pine Buff Arsenal	Label 0	Label 0	Label 0	Label 0	0	Label 0	11694	3299	0	Label 10
Presidio Of Monterey	Label 0	Label 0	Label 0	Label 0	0	Label 0	232659	28434	5	Label 10
Pueblo Chem Depot	Label 0	Label 0	Label 0	Label 0	11000	Label 0	0	0	0	Label 10
Radford AAP	Label 0	Label 0	Label 0	Label 0	0	Label 0	0	0	0	Label 3
Red River AD	Label 0	Label 0	Label 0	Label 0	6803	Label 0	48846	0	0	Label 10
Redstone Arsenal	Label 0	Label 2	Label 6	Label 0	7460	Label 6	191522	193338	0	Label 2
Riverbank AAP	Label 0	Label 0	Label 0	Label 0	0	Label 0	0	0	30	Label 10
Rock Island Arsenal	Label 0	Label 0	Label 0	Label 0	0	Label 0	10532	63571	0	Label 10
Schofield Barracks	Label 9	Label 2	Label 3	Label 2	20504	Label 9	17217	10079	0	Label 10
Scranton AAP	Label 0	Label 0	Label 0	Label 0	0	Label 0	0	0	5	Label 10
Sierra AD	Label 1	Label 0	Label 1	Label 0	4013	Label 0	7303	221	0	Label 10
Soldier Systems Support Center	Label 0	Label 0	Label 0	Label 0	0	Label 0	2460	520	0	Label 10
Tobyhanna AD	Label 0	Label 0	Label 0	Label 0	0	Label 0	0	0	0	Label 10
Tooele AD	Label 0	Label 0	Label 0	Label 0	5191	Label 2	0	0	0	Label 3
Tripler AMC	Label 0	Label 0	Label 0	Label 0	0	Label 0	0	0	0	Label 10
Umatilla Chem Depot	Label 0	Label 0	Label 0	Label 1	5133	Label 4	0	0	0	Label 10
USAG Selfridge	Label 0	Label 0	Label 0	Label 0	0	Label 0	0	0	0	Label 10
Walter Reed AMC	Label 0	Label 0	Label 0	Label 0	0	Label 0	55513	28770	10	Label 10
Watervliet Arsenal	Label 0	Label 0	Label 0	Label 0	0	Label 0	1525	176	5	Label 10
West Point	Label 2	Label 1	Label 1	Label 0	14101	Label 2	524332	18798	10	Label 3
White Sands MR	Label 9	Label 11	Label 9	Label 4	100000	Label 9	12222	0	0	Label 10
Yuma PG	Label 9	Label 11	Label 9	Label 9	100000	Label 9	37039	0	5	Label 10
Lease - ARPERCEN	Label 0	Label 0	Label 0	Label 0	0	Label 0	0	0	0	Label 1
Lease - Army JAG Agency	Label 0	Label 0	Label 0	Label 0	0	Label 0	0	0	0	Label 1
Lease - Army JAG School	Label 0	Label 0	Label 0	Label 0	0	Label 0	0	0	0	Label 1
Lease - Army Research Office	Label 0	Label 0	Label 0	Label 0	0	Label 0	0	0	0	Label 1
Lease - Bailey's Crossroads	Label 0	Label 0	Label 0	Label 0	0	Label 0	0	0	0	Label 1
Lease - Crystal City Complex	Label 0	Label 0	Label 0	Label 0	0	Label 0	0	0	0	Label 1
Lease - Hoffman Complex	Label 0	Label 0	Label 0	Label 0	0	Label 0	0	0	0	Label 1
Lease - HQ, ATEC	Label 0	Label 0	Label 0	Label 0	0	Label 0	0	0	0	Label 1
Lease - PEO STRICOM	Label 0	Label 0	Label 0	Label 0	0	Label 0	0	0	0	Label 1
Lease - Rosslyn Complex	Label 0	Label 0	Label 0	Label 0	0	Label 0	0	0	0	Label 1
Ideal Installation	Label 9	Label 11	Label 9	Label 10	100000	Label 9	524332	596043	0	Label 10

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Installations	A11	A12	A13	A14	A15	A16	A17	A18	A19	A20
Aberdeen PG	54399	6192	2611	54	51	1993226	Label 12	9	88	Label 7
Adelphi Labs	0	2289	0	180	365	262049	Label 12	8	10	Label 1
Anniston AD	3157	5257	0	21	15	260892	Label 8	10	0	Label 1
Bluegrass AD	2461	1380	0	30	31	76259	Label 8	8	0	Label 1
Carlisle Barracks	0	2688	0	180	365	91488	Label 8	8	0	Label 1
Charles Kelly Support Activity	0	555	0	58	71	45711	Label 10	8	0	Label 1
Corpus Christi ADA	0	2476	0	101	365	171177	Label 4	7	0	Label 1
Crane AAP	0	11720	0	52	46	43029	Label 8	6	0	Label 1
Deseret Chem Plant	18958	4340	0	35	365	51494	Label 11	5	0	Label 1
Detroit Arsenal	0	0	0	180	227	495154	Label 10	9	0	Label 1
Dugway PG	0	9340	0	90	182	129012	Label 7	8	44	Label 9
Ft AP Hill	30146	0	471	58	365	93989	Label 12	7	0	Label 5
Ft Belvoir	5950	7280	1074	33	349	1808610	Label 12	10	60	Label 1
Ft Benning	93060	0	26874	17	41	1172139	Label 7	8	4	Label 5
Ft Bliss	31073	25000	10531	17	44	1552619	Label 10	9	4	Label 9
Ft Bragg	154573	0	22723	17	41	2951971	Label 8	9	10	Label 5
Ft Buchanan	0	0	6415	114	89	207573	Label 0	5	0	Label 1
Ft Campbell	32452	11660	13250	15	22	1629531	Label 10	9	0	Label 5
Ft Carson	109141	2592	18323	29	31	1177632	Label 8	9	0	Label 6
Ft Detrick	0	0	0	180	365	335915	Label 12	10	10	Label 1
Ft Dix	30801	3993	32471	44	179	348593	Label 12	6	0	Label 1
Ft Drum	90176	3744	10983	31	75	819115	Label 4	5	0	Label 5
Ft Eustis	7991	11037	5084	29	28	717864	Label 12	9	10	Label 1
Ft Gillem	0	1217	5	45	37	327415	Label 8	10	0	Label 1
Ft Gordon	50087	25000	3573	93	333	780384	Label 4	10	22	Label 1
Ft Hamilton	0	25000	0	180	365	148295	Label 12	7	0	Label 1
Ft Hood	193219	4458	20360	20	39	2242007	Label 7	8	0	Label 6
Ft Huachuca	56276	7464	1912	59	118	692191	Label 8	10	34	Label 2
Ft Irwin	0	0	695	57	79	205599	Label 8	6	0	Label 9
Ft Jackson	31034	5659	5045	35	365	377431	Label 8	9	0	Label 1
Ft Knox	31190	7897	8999	15	26	1015622	Label 10	7	10	Label 8
Ft Leavenworth	0	5438	6	94	365	428003	Label 7	8	0	Label 1
Ft Lee	4852	0	4378	26	53	586606	Label 12	9	0	Label 1
Ft Leonard Wood	9249	19169	7013	90	365	672784	Label 4	6	14	Label 1
Ft Lewis	227850	25000	19246	18	22	1841343	Label 12	9	0	Label 6
Ft Mc Coy	49460	6461	25111	33	346	226336	Label 2	9	0	Label 2
Ft Mc Nair	0	12008	0	180	365	175430	Label 12	8	0	Label 1
Ft McPherson	0	2956	1224	45	37	884378	Label 8	9	0	Label 1
Ft Meade	0	0	2439	180	365	807480	Label 12	10	0	Label 1
Ft Monmouth	0	0	264	72	99	1047040	Label 12	10	48	Label 1
Ft Monroe	0	3863	0	102	365	375428	Label 12	9	0	Label 1
Ft Myer	0	25000	0	180	365	113119	Label 12	8	0	Label 1
Ft Polk	163905	25000	15332	16	111	774509	Label 3	8	0	Label 5
Ft Richardson	10668	5327	0	10	365	418437	Label 11	4	0	Label 1
Ft Riley	52490	25000	12494	17	26	1136371	Label 4	10	0	Label 5
Ft Rucker	18986	4996	4764	89	107	571211	Label 4	8	20	Label 4
Ft Sam Houston	15337	0	4841	101	283	1500102	Label 12	10	10	Label 1
Ft Shafter	0	1543	0	104	365	404829	Label 12	6	0	Label 1
Ft Sill	49950	0	9800	14	36	1682971	Label 7	8	0	Label 5
Ft Stewart / Hunter Army Airfield	301766	2299	32161	21	54	994297	Label 8	8	0	Label 6
Ft Wainwright	1008045	25000	0	26	365	539951	Label 0	4	21	Label 9
Hawthorne AD	64243	5493	0	101	100	0	Label 4	3	10	Label 2
Holston AAP	0	25000	0	180	365	0	Label 4	7	0	Label 1
Iowa AAP	11902	0	0	180	311	1134	Label 4	6	0	Label 1
Kansas AAP	12835	1524	0	180	365	0	Label 4	5	10	Label 1
Lake City AAP	0	16344	0	178	365	0	Label 10	7	0	Label 1
Letterkenny AD	13235	0	0	54	44	208821	Label 8	8	0	Label 1



DEPARTMENT OF THE ARMY—BRAC 2005—ANALYSES AND RECOMMENDATIONS

Installations	A11	A12	A13	A14	A15	A16	A17	A18	A19	A20
Lima Tank Plant	0	4985	0	158	174	0	Label 8	7	10	Label 1
Lone Star AAP	0	719	0	180	365	0	Label 4	7	0	Label 1
Louisiana AAP	0	1138	0	180	49	107469	Label 10	7	0	Label 1
McAlester AAP	28858	172	0	35	30	118854	Label 8	5	0	Label 1
Milan AAP	2690	10714	0	158	132	0	Label 8	7	0	Label 1
Mississippi AAP	0	0	0	82	365	0	Label 12	7	0	Label 1
MOT Sunny Point	0	772	0	63	26	33283	Label 8	9	0	Label 1
Newport Chem Depot	0	4962	0	111	365	1600	Label 4	7	0	Label 1
Picatinny Arsenal	4731	4481	0	180	365	648748	Label 8	8	36	Label 1
Pine Buff Arsenal	12297	12192	0	149	250	174403	Label 11	9	24	Label 1
Presidio Of Monterey	0	1167	0	60	365	146064	Label 8	7	0	Label 1
Pueblo Chem Depot	22808	138	0	144	221	0	Label 12	7	0	Label 1
Radford AAP	0	25000	0	141	365	156332	Label 4	8	0	Label 1
Red River AD	17273	2414	0	16	20	128857	Label 4	7	0	Label 1
Redstone Arsenal	23299	25000	191	67	89	2146202	Label 4	9	60	Label 1
Riverbank AAP	0	5410	0	180	365	0	Label 8	7	0	Label 1
Rock Island Arsenal	0	0	0	30	44	1229752	Label 2	9	20	Label 1
Schofield Barracks	27990	409	0	48	37	928120	Label 12	7	0	Label 8
Scranton AAP	0	557	0	180	365	33000	Label 8	8	0	Label 1
Sierra AD	30557	4558	0	38	32	73879	Label 10	7	0	Label 1
Soldier Systems Support Center	0	652	0	112	87	181068	Label 8	9	0	Label 1
Tobyhanna AD	0	356	0	53	52	270135	Label 11	9	0	Label 1
Tooele AD	15979	1595	0	63	35	74598	Label 11	7	20	Label 1
Tripler AMC	0	224	0	104	365	0	Label 12	6	0	Label 1
Umatilla Chem Depot	105	3522	0	85	365	35975	Label 4	7	0	Label 1
USAG Selfridge	0	1024	0	101	365	79820	Label 10	8	0	Label 1
Walter Reed AMC	0	25000	1075	85	77	371142	Label 12	8	0	Label 1
Watervliet Arsenal	0	0	0	33	37	61108	Label 10	8	0	Label 1
West Point	2296	1001	0	180	365	574961	Label 8	9	0	Label 1
White Sands MR	1113928	25000	0	68	365	643251	Label 8	10	84	Label 9
Yuma PG	756231	8200	0	145	133	116707	Label 7	7	39	Label 9
Lease - ARPERCEN	0	0	0	180	365	0	Label 8	7	0	Label 0
Lease - Ballston Complex	0	0	0	180	365	0	Label 12	7	0	Label 0
Lease - Army JAG Agency	0	0	0	180	365	0	Label 12	7	0	Label 0
Lease - Army JAG School	0	0	0	180	365	0	Label 8	7	0	Label 0
Lease - Army Research Office	0	0	0	180	365	0	Label 12	7	0	Label 0
Lease - Bailey's Crossroads	0	0	0	180	365	0	Label 12	7	0	Label 0
Lease - Crystal City Complex	0	0	0	180	365	0	Label 12	7	0	Label 0
Lease - Hoffman Complex	0	0	0	180	365	0	Label 12	7	0	Label 0
Lease - HQ, ATEC	0	0	0	180	365	0	Label 12	7	0	Label 0
Lease - PEO STRICOM	0	0	0	180	365	0	Label 8	7	0	Label 0
Lease - Rosslyn Complex	0	0	0	180	365	0	Label 12	7	0	Label 0
Ideal Installation	1113928	25000	32471	10	15	2951971	Label 12	10	88	Label 9

DEPARTMENT OF THE ARMY—BRAC 2005—ANALYSES AND RECOMMENDATIONS

Installations	A21	A22	A23	A24	A25	A26	A27	A28	A29	A30
Aberdeen PG	0	0	0	0	1593008	5124	Label 5	Label 6	0.0037	Label 2
Adelphi Labs	0	0	0	0	58131	4047	Label 6	Label 3	0.0020	Label 2
Anniston AD	0	2137	906	3786	5275816	5841	Label 2	Label 7	0.0017	Label 2
Bluegrass AD	0	4164	203	176	2501595	2903	Label 3	Label 8	0.0035	Label 3
Carlisle Barracks	0	0	0	0	33890	2563	Label 3	Label 8	0.0028	Label 2
Charles Kelly Support Activity	0	0	0	0	57494	2772	Label 2	Label 9	0.0033	Label 2
Corpus Christi ADA	0	0	454	3435	68485	6385	Label 1	Label 8	0.0023	Label 3
Crane AAP	13	5236	0	0	5032245	3750	Label 2	Label 7	0.0000	Label 0
Deseret Chem Plant	0	0	0	0	437348	4452	Label 6	Label 8	0.0020	Label 3
Detroit Arsenal	0	0	0	0	75874	4298	Label 5	Label 6	0.0028	Label 0
Dugway PG	0	0	0	0	99628	4452	Label 6	Label 7	0.0000	Label 3
Ft AP Hill	0	0	0	0	115266	3140	Label 5	Label 5	0.0003	Label 0
Ft Belvoir	0	0	0	0	511744	4047	Label 2	Label 3	0.0032	Label 0
Ft Benning	0	0	0	0	391684	5042	Label 9	Label 8	0.0019	Label 3
Ft Bliss	0	0	0	0	614631	4228	Label 2	Label 8	0.0016	Label 3
Ft Bragg	0	0	2	0	813340	6217	Label 1	Label 8	0.0017	Label 2
Ft Buchanan	0	0	0	0	89772	2353	Label 2	Label 9	0.0000	Label 0
Ft Campbell	0	0	0	0	882725	4945	Label 1	Label 7	0.0014	Label 3
Ft Carson	0	0	0	0	384569	4713	Label 2	Label 8	0.0019	Label 2
Ft Detrick	0	0	0	0	74092	4047	Label 5	Label 6	0.0020	Label 2
Ft Dix	0	0	0	8	320089	3024	Label 6	Label 3	0.0071	Label 3
Ft Drum	0	0	0	0	398139	2804	Label 5	Label 7	0.0019	Label 2
Ft Eustis	0	0	0	0	294478	4478	Label 1	Label 9	0.0023	Label 0
Ft Gillem	0	0	0	0	804169	4639	Label 3	Label 6	0.0023	Label 3
Ft Gordon	0	0	0	0	190877	4406	Label 6	Label 8	0.0035	Label 3
Ft Hamilton	0	0	0	0	12072	2804	Label 2	Label 3	0.0048	Label 3
Ft Hood	0	0	0	0	998051	5190	Label 1	Label 8	0.0029	Label 3
Ft Huachuca	0	0	0	0	226040	1663	Label 2	Label 7	0.0009	Label 3
Ft Irwin	0	0	0	0	280788	4236	Label 2	Label 9	0.0015	Label 2
Ft Jackson	0	0	0	0	253499	5959	Label 1	Label 8	0.0030	Label 3
Ft Knox	0	0	0	118	360447	2903	Label 2	Label 7	0.0011	Label 3
Ft Leavenworth	0	0	0	0	193709	4087	Label 3	Label 9	0.0027	Label 0
Ft Lee	0	0	0	0	124610	3140	Label 2	Label 8	0.0031	Label 2
Ft Leonard Wood	7	0	0	0	286560	320	Label 5	Label 7	0.0010	Label 2
Ft Lewis	0	0	0	24	1502915	5107	Label 6	Label 5	0.0021	Label 2
Ft Mc Coy	0	0	0	0	86571	3253	Label 2	Label 7	0.0037	Label 0
Ft Mc Nair	0	0	0	0	13232	4047	Label 5	Label 3	0.0020	Label 3
Ft McPherson	0	0	0	0	18665	4639	Label 3	Label 6	0.0023	Label 2
Ft Meade	0	0	1	0	126692	5124	Label 9	Label 6	0.0037	Label 3
Ft Monmouth	0	0	0	0	219446	3024	Label 6	Label 2	0.0045	Label 0
Ft Monroe	0	0	0	0	56851	4478	Label 5	Label 9	0.0023	Label 0
Ft Myer	0	0	0	0	39739	3140	Label 5	Label 3	0.0020	Label 3
Ft Polk	0	0	0	0	393382	5098	Label 3	Label 7	0.0017	Label 2
Ft Richardson	0	0	0	0	700881	5115	Label 9	Label 1	0.0029	Label 3
Ft Riley	0	0	0	0	409407	4087	Label 1	Label 7	0.0012	Label 2
Ft Rucker	0	0	0	173	150218	4465	Label 5	Label 7	0.0022	Label 3
Ft Sam Houston	0	0	0	0	364264	5190	Label 2	Label 9	0.0028	Label 2
Ft Shafter	0	0	0	0	47364	6360	Label 2	Label 3	0.0029	Label 3
Ft Sill	0	0	0	15	562949	5103	Label 2	Label 7	0.0018	Label 3
Ft Stewart / Hunter Army Airfield	0	0	0	60	440887	4507	Label 2	Label 7	0.0005	Label 2
Ft Wainwright	0	0	0	0	435759	4310	Label 2	Label 4	0.0020	Label 3
Hawthorne AD	0	6951	0	0	15591	4498	Label 4	Label 4	0.0016	Label 3
Holston AAP	1	242	0	0	12320	3664	Label 1	Label 8	0.0014	Label 3
Iowa AAP	11	1302	0	0	9334	3448	Label 2	Label 7	0.0018	Label 3
Kansas AAP	9	1008	0	0	822	4087	Label 6	Label 7	0.0017	Label 2
Lake City AAP	3	942	0	0	3315	4602	Label 1	Label 9	0.0027	Label 2
Letterkenny AD	0	2578	194	1417	1764136	2957	Label 5	Label 7	0.0015	Label 3

DEPARTMENT OF THE ARMY—BRAC 2005—ANALYSES AND RECOMMENDATIONS

Installations	A21	A22	A23	A24	A25	A26	A27	A28	A29	A30
Lima Tank Plant	0	0	586	656	10456	3662	Label 2	Label 7	0.0016	Label 3
Lone Star AAP	9	947	93	93	4675	4847	Label 2	Label 7	0.0022	Label 3
Louisiana AAP	1	0	0	0	418300	6136	Label 2	Label 8	0.0037	Label 3
McAlester AAP	6	7597	0	0	6253847	4743	Label 1	Label 7	0.0000	Label 3
Milan AAP	12	2564	0	0	134600	5019	Label 1	Label 7	0.0008	Label 2
Mississippi AAP	1	132	0	0	301184	4159	Label 2	Label 7	0.0006	Label 2
MOT Sunny Point	0	0	0	0	28485	6574	Label 1	Label 8	0.0028	Label 0
Newport Chem Depot	0	0	0	0	6800	3750	Label 2	Label 7	0.0004	Label 2
Picatinny Arsenal	0	43	0	0	367698	3024	Label 5	Label 3	0.0032	Label 3
Pine Buff Arsenal	6	4037	333	725	1751174	7046	Label 1	Label 7	0.0020	Label 2
Presidio Of Monterey	0	0	0	0	71047	3463	Label 4	Label 1	0.0017	Label 2
Pueblo Chem Depot	0	1804	0	0	4722600	4999	Label 2	Label 7	0.0025	Label 2
Radford AAP	5	496	0	0	457352	3140	Label 2	Label 7	0.0011	Label 0
Red River AD	0	1950	12	1849	4160051	4847	Label 2	Label 7	0.0022	Label 3
Redstone Arsenal	0	0	0	0	1922069	4244	Label 3	Label 8	0.0021	Label 2
Riverbank AAP	2	0	0	0	8880	6027	Label 1	Label 4	0.0016	Label 2
Rock Island Arsenal	0	0	281	980	969649	4016	Label 2	Label 7	0.0019	Label 2
Schofield Barracks	0	0	0	0	801068	6360	Label 5	Label 3	0.0029	Label 2
Scranton AAP	2	0	0	0	3300	2541	Label 1	Label 8	0.0021	Label 2
Sierra AD	0	5460	0	0	2867224	3944	Label 1	Label 7	0.0009	Label 2
Soldier Systems Support Center	0	0	0	0	46101	2920	Label 6	Label 3	0.0045	Label 0
Tobyhanna AD	0	0	1313	3157	1398847	2957	Label 2	Label 8	0.0003	Label 2
Tooele AD	0	3568	1	118	2054998	4452	Label 5	Label 7	0.0000	Label 3
Tripler AMC	0	0	0	0	0	6360	Label 5	Label 3	0.0029	Label 2
Umatilla Chem Depot	0	0	0	0	47826	4868	Label 1	Label 7	0.0000	Label 3
USAG Selfridge	0	0	0	0	7403	4298	Label 5	Label 6	0.0028	Label 0
Walter Reed AMC	0	0	0	0	53760	4047	Label 9	Label 3	0.0020	Label 0
Watervliet Arsenal	0	0	63	326	110490	2804	Label 3	Label 5	0.0028	Label 2
West Point	0	0	0	0	99784	2804	Label 6	Label 1	0.0034	Label 2
White Sands MR	0	0	0	0	326994	5078	Label 1	Label 7	0.0014	Label 2
Yuma PG	0	0	0	7	182288	6386	Label 1	Label 7	0.0011	Label 3
Lease - ARPERCEN	0	0	0	0	0	4602	Label 9	Label 6	0.0029	Label 0
Lease - Ballston Complex	0	0	0	0	0	7046	Label 3	Label 3	0.0032	Label 2
Lease - Army JAG Agency	0	0	0	0	0	7046	Label 6	Label 3	0.0032	Label 0
Lease - Army JAG School	0	0	0	0	0	3140	Label 2	Label 4	0.0071	Label 0
Lease - Army Research Office	0	0	0	0	0	4721	Label 9	Label 6	0.0013	Label 0
Lease - Bailey's Crossroads	0	0	0	0	0	4047	Label 9	Label 3	0.0032	Label 3
Lease - Crystal City Complex	0	0	0	0	0	4047	Label 9	Label 3	0.0032	Label 0
Lease - Hoffman Complex	0	0	0	0	0	4047	Label 9	Label 3	0.0032	Label 0
Lease - HQ, ATEC	0	0	0	0	0	4047	Label 9	Label 3	0.0032	Label 0
Lease - PEO STRICOM	0	0	0	0	0	5710	Label 3	Label 6	0.0021	Label 0
Lease - Rosslyn Complex	0	0	0	0	0	4047	Label 9	Label 3	0.0032	Label 0
Ideal Installation	13	7597	1313	3786	6253847	320	Label 9	Label 9	0.0071	Label 3

DEPARTMENT OF THE ARMY—BRAC 2005—ANALYSES AND RECOMMENDATIONS

Installations	A31	A32	A33	A34	A35	A36	A37	A38	A39	A40
Aberdeen PG	2000000	Label 6	0.88	Label 2	11046	2920	0	Label 3	8829	23
Adelphi Labs	2000000	Label 0	1.02	Label 0	18762	5	0	Label 7	36989	15
Anniston AD	676247	Label 5	0.74	Label 7	9080	1445	0	Label 2	16477	4
Bluegrass AD	569534	Label 1	0.95	Label 7	15345	504	0	Label 4	47612	6
Carlisle Barracks	1293068	Label 1	0.93	Label 7	8466	45	0	Label 5	79192	13
Charles Kelly Support Activity	2000000	Label 1	1.05	Label 0	9841	32	0	Label 5	50358	7
Corpus Christi ADA	293579	Label 5	0.90	Label 7	10524	11	0	Label 2	379425	5
Crane AAP	372151	Label 5	1.05	Label 0	67557	5512	0	Label 4	2509	4
Deseret Chem Plant	892267	Label 0	1.01	Label 0	9058	8084	0	Label 5	0	1
Detroit Arsenal	2000000	Label 6	1.15	Label 7	11656	21	0	Label 5	29444	11
Dugway PG	5091	Label 8	1.05	Label 7	15978	50000	1	Label 8	5	1
Ft AP Hill	1543766	Label 1	0.98	Label 7	30255	1698	1	Label 5	2127	16
Ft Belvoir	2000000	Label 6	1.02	Label 1	2093	2784	0	Label 8	29302	18
Ft Benning	386967	Label 2	0.80	Label 2	3980	3016	1	Label 3	12293	3
Ft Bliss	485396	Label 5	0.92	Label 4	4740	11241	1	Label 3	212	2
Ft Bragg	779011	Label 2	0.88	Label 2	2994	2870	3	Label 3	6527	7
Ft Buchanan	1601828	Label 0	1.36	Label 2	9433	0	0	Label 5	26777	0
Ft Campbell	429224	Label 2	1.05	Label 7	3795	4123	3	Label 3	13019	6
Ft Carson	467587	Label 2	1.11	Label 2	5500	1520	2	Label 3	7874	0
Ft Detrick	2000000	Label 6	1.02	Label 7	7566	81	0	Label 5	15963	14
Ft Dix	2000000	Label 5	1.15	Label 1	12994	1001	0	Label 2	8043	21
Ft Drum	144711	Label 2	1.13	Label 4	4859	5643	2	Label 3	2896	4
Ft Eustis	1181602	Label 3	0.94	Label 2	6051	562	0	Label 3	23619	13
Ft Gillem	2000000	Label 2	0.93	Label 7	6942	70	0	Label 3	147613	6
Ft Gordon	391579	Label 2	0.84	Label 1	7046	4949	0	Label 3	18434	9
Ft Hamilton	2000000	Label 1	1.49	Label 4	9132	0	0	Label 2	45237	18
Ft Hood	471839	Label 2	0.85	Label 2	2766	8592	5	Label 3	2647	10
Ft Huachuca	132637	Label 6	1.11	Label 0	5156	745	1	Label 3	4819	10
Ft Irwin	27394	Label 2	1.27	Label 1	5130	1000	1	Label 2	12	6
Ft Jackson	638800	Label 2	0.83	Label 1	2675	32696	0	Label 7	20029	10
Ft Knox	924853	Label 6	1.05	Label 2	4485	1737	1	Label 3	13072	6
Ft Leavenworth	1339267	Label 2	1.05	Label 2	5419	1813	0	Label 3	22126	8
Ft Lee	945208	Label 2	0.94	Label 7	4536	2063	0	Label 5	14038	15
Ft Leonard Wood	176540	Label 2	1.13	Label 2	3446	29797	0	Label 3	1587	12
Ft Lewis	1759413	Label 5	1.06	Label 1	4726	6185	2	Label 3	15498	4
Ft Mc Coy	254517	Label 2	1.16	Label 1	22670	1402	1	Label 2	12600	4
Ft Mc Nair	2000000	Label 1	1.02	Label 7	4436	0	0	Label 5	86921	18
Ft McPherson	2000000	Label 3	0.93	Label 7	5609	11	0	Label 3	114193	6
Ft Meade	2000000	Label 4	1.02	Label 7	1585	1270	0	Label 6	11176	15
Ft Monmouth	2000000	Label 6	1.16	Label 7	12389	160	0	Label 2	48949	21
Ft Monroe	1059450	Label 1	0.94	Label 7	5208	93	0	Label 7	147691	13
Ft Myer	2000000	Label 1	1.02	Label 7	2689	0	0	Label 7	21283	12
Ft Polk	132986	Label 2	0.93	Label 2	6308	5224	1	Label 5	3466	10
Ft Richardson	193632	Label 8	1.68	Label 2	15364	1067	1	Label 5	1748	1
Ft Riley	131558	Label 2	1.08	Label 2	5343	3278	2	Label 8	457	5
Ft Rucker	257017	Label 5	0.77	Label 4	3705	1093	0	Label 3	4539	3
Ft Sam Houston	1094333	Label 8	0.90	Label 1	3377	1243	0	Label 3	40104	8
Ft Shafter	580558	Label 8	1.66	Label 4	4525	43	0	Label 5	4937	1
Ft Sill	181582	Label 2	0.92	Label 2	5096	838	0	Label 3	2898	3
Ft Stewart / Hunter Army Airfield	358554	Label 2	0.84	Label 1	4807	10695	2	Label 3	189	8
Ft Wainwright	48263	Label 2	1.69	Label 2	13568	1683	1	Label 8	182	0
Hawthorne AD	12159	Label 4	1.16	Label 0	92709	10552	1	Label 7	407	2
Holston AAP	596281	Label 1	0.87	Label 0	34076	1031	0	Label 7	300595	5
Iowa AAP	225045	Label 1	1.10	Label 0	26938	2806	0	Label 7	14490	8
Kansas AAP	215129	Label 7	1.01	Label 0	57719	528	0	Label 4	3836	8
Lake City AAP	1204722	Label 2	1.03	Label 0	15602	244	0	Label 5	4806	9
Letterkenny AD	973322	Label 2	0.99	Label 0	17638	2183	0	Label 5	6521	15

DEPARTMENT OF THE ARMY—BRAC 2005—ANALYSES AND RECOMMENDATIONS

Installations	A31	A32	A33	A34	A35	A36	A37	A38	A39	A40
Lima Tank Plant	512152	Label 2	0.98	Label 0	20413	156	0	Label 5	142375	10
Lone Star AAP	207627	Label 1	0.89	Label 0	35461	3786	0	Label 4	10161	8
Louisiana AAP	342826	Label 7	0.89	Label 0	43445	63	0	Label 7	17354	8
McAlester AAP	122634	Label 5	0.84	Label 7	21870	28347	0	Label 8	2277	10
Milan AAP	320023	Label 4	0.87	Label 0	37893	1848	0	Label 7	20255	5
Mississippi AAP	799660	Label 7	0.84	Label 0	92709	1558	0	Label 7	9824	13
MOT Sunny Point	270718	Label 0	0.87	Label 7	26169	2000	0	Label 2	15090	8
Newport Chem Depot	457384	Label 2	0.98	Label 0	10457	6095	0	Label 7	1447	8
Picatinny Arsenal	2000000	Label 6	1.20	Label 1	12845	2800	0	Label 2	10702	21
Pine Buff Arsenal	458424	Label 5	0.90	Label 7	13678	27	0	Label 5	17677	9
Presidio Of Monterey	285978	Label 0	1.21	Label 1	5554	114	0	Label 8	132119	9
Pueblo Chem Depot	377339	Label 1	0.96	Label 0	49067	14122	0	Label 7	1821	0
Radford AAP	534834	Label 0	0.94	Label 0	21289	343	0	Label 7	6259	6
Red River AD	216479	Label 2	0.89	Label 7	13010	413	0	Label 5	12139	9
Redstone Arsenal	573111	Label 9	0.85	Label 1	3452	3335	0	Label 3	18577	5
Riverbank AAP	1021362	Label 4	1.17	Label 0	27138	25	0	Label 7	126689	10
Rock Island Arsenal	447085	Label 6	1.02	Label 7	7698	306	0	Label 5	27982	9
Schofield Barracks	580558	Label 2	1.67	Label 2	7655	107	2	Label 3	3271	1
Scranton AAP	852591	Label 0	1.05	Label 0	41241	1	0	Label 4	46275	17
Sierra AD	174846	Label 1	1.29	Label 7	43804	5668	0	Label 5	821	4
Soldier Systems Support Center	2000000	Label 6	1.12	Label 0	6701	46	0	Label 7	87130	11
Tobyhanna AD	1380275	Label 8	1.07	Label 4	11774	721	0	Label 5	20185	1
Tooele AD	858514	Label 4	1.05	Label 7	20045	12503	0	Label 5	10133	1
Tripler AMC	580558	Label 7	1.69	Label 0	9587	43	0	Label 5	20588	1
Umatilla Chem Depot	187242	Label 0	1.19	Label 0	26393	0	0	Label 7	1282	2
USAG Selfridge	2000000	Label 4	1.12	Label 7	15301	110	0	Label 5	78283	10
Walter Reed AMC	2000000	Label 5	1.02	Label 7	4013	3	0	Label 5	19397	16
Watervliet Arsenal	900707	Label 5	1.02	Label 7	16639	6	0	Label 2	67454	20
West Point	2000000	Label 0	1.40	Label 2	12064	24	0	Label 2	7387	22
White Sands MR	50251	Label 5	1.00	Label 4	10458	9369	1	Label 2	8078	2
Yuma PG	10535	Label 5	1.30	Label 4	12289	24871	1	Label 8	985	3
Lease - ARPERCEN	0	Label 0	1.09	Label 0	92709	0	0	Label 1	379425	0
Lease - Ballston Complex	0	Label 0	1.02	Label 0	92709	0	0	Label 1	379425	0
Lease - Army JAG Agency	0	Label 0	1.02	Label 0	92709	0	0	Label 1	379425	0
Lease - Army JAG School	0	Label 0	0.92	Label 0	92709	0	0	Label 1	379425	0
Lease - Army Research Office	0	Label 0	1.02	Label 0	92709	0	0	Label 1	379425	0
Lease - Bailey's Crossroads	0	Label 0	1.02	Label 0	92709	0	0	Label 1	379425	0
Lease - Crystal City Complex	0	Label 0	1.02	Label 0	92709	0	0	Label 1	379425	0
Lease - Hoffman Complex	0	Label 0	1.02	Label 0	92709	0	0	Label 1	379425	0
Lease - HQ, ATEC	0	Label 0	0.85	Label 0	92709	0	0	Label 1	379425	6
Lease - PEO STRICOM	0	Label 0	1.02	Label 0	92709	0	0	Label 1	379425	3
Lease - Rosslyn Complex	0	Label 0	1.02	Label 0	92709	0	0	Label 1	379425	5
Ideal Installation	2000000	Label 9	0.74	Label 9	1585	50000	5	Label 9	0	23

## Section II: Model Outputs

Installation	Overall	A1	A2	A3	A4	A5	A6	A7	A8
Aberdeen PG	4.18	0.00	1.70	5.80	0.00	0.20	10.00	4.43	7.51
Adelphi Labs	1.71	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.01
Anniston AD	3.19	0.00	1.00	0.00	0.00	0.03	2.63	0.08	0.11
Bluegrass AD	2.34	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00
Carlisle Barracks	1.62	0.00	0.00	0.00	0.00	0.00	0.00	2.10	0.08
Charles Kelly Support Activity	1.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Corpus Christi ADA	1.59	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.19
Crane AAP	2.92	0.00	0.00	0.00	0.00	6.30	0.00	0.00	0.00
Deseret Chem Plant	2.36	0.00	0.00	0.00	0.08	0.00	0.00	0.00	0.01
Detroit Arsenal	1.63	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.41
Dugway PG	5.25	10.00	5.42	5.80	10.00	10.00	10.00	0.02	0.23
Ft AP Hill	3.68	5.95	3.03	0.95	0.08	7.10	2.63	0.17	0.28
Ft Belvoir	2.70	0.00	0.00	0.00	0.00	0.37	0.26	8.26	0.00
Ft Benning	5.24	5.95	3.03	10.00	6.09	6.37	10.00	5.96	2.07
Ft Bliss	6.25	10.00	10.00	2.77	10.00	10.00	5.82	7.64	4.75
Ft Bragg	5.37	5.95	3.03	10.00	6.09	4.31	10.00	5.16	3.77
Ft Buchanan	1.47	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.03
Ft Campbell	4.81	5.95	3.03	5.80	0.00	6.64	10.00	0.34	1.01
Ft Carson	5.26	5.95	3.03	10.00	10.00	5.75	10.00	0.00	0.46
Ft Detrick	1.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04
Ft Dix	3.47	3.30	1.00	0.95	0.08	0.85	2.63	4.53	0.98
Ft Drum	4.71	5.95	3.03	2.12	3.20	6.63	10.00	0.29	0.32
Ft Eustis	2.91	0.30	0.00	0.00	0.00	0.42	0.00	2.28	10.00
Ft Gillem	2.20	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.41
Ft Gordon	2.80	1.03	1.00	0.23	3.20	0.52	2.63	5.42	8.70
Ft Hamilton	1.69	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
Ft Hood	5.70	5.95	3.03	5.80	7.57	1.74	10.00	4.45	1.02
Ft Huachuca	3.86	1.03	1.70	0.00	0.00	6.63	10.00	5.13	4.89
Ft Irwin	4.56	10.00	3.03	10.00	10.00	0.00	10.00	0.42	0.08
Ft Jackson	3.14	3.30	2.22	0.00	0.08	2.03	5.30	5.64	6.08
Ft Knox	4.91	10.00	3.03	5.80	4.25	0.92	10.00	5.47	5.58
Ft Leavenworth	1.85	0.00	0.00	0.00	0.00	0.00	0.00	4.24	0.11
Ft Lee	2.79	0.30	0.00	0.00	0.00	0.21	0.00	7.32	6.71
Ft Leonard Wood	2.79	1.03	1.00	5.80	0.23	0.88	2.24	9.44	8.49
Ft Lewis	5.76	5.95	3.03	10.00	7.57	4.06	10.00	1.09	1.68
Ft Mc Coy	3.21	3.30	3.03	0.23	3.20	0.35	5.30	1.27	0.76
Ft Mc Nair	1.83	0.00	0.00	0.00	0.00	0.00	0.00	8.68	0.00
Ft McPherson	2.22	0.00	0.00	0.00	0.00	0.00	0.00	0.14	0.12
Ft Meade	2.25	0.00	0.00	0.00	0.00	0.00	0.00	4.43	0.09
Ft Monmouth	2.25	0.00	0.00	0.00	0.00	0.00	0.00	0.21	0.11
Ft Monroe	1.79	0.00	0.00	0.00	0.00	0.00	0.00	0.28	0.10
Ft Myer	1.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.38
Ft Polk	4.67	5.95	5.42	10.00	5.15	0.00	10.00	0.62	0.42
Ft Richardson	3.00	3.30	1.00	2.12	3.20	1.99	2.63	0.65	0.36
Ft Riley	4.89	5.95	3.03	10.00	6.09	0.30	10.00	0.36	0.84
Ft Rucker	3.07	5.95	1.00	0.00	0.00	3.88	5.82	3.65	2.59
Ft Sam Houston	2.42	0.30	0.00	5.80	0.08	1.30	0.00	8.85	3.09
Ft Shafter	1.48	0.00	0.00	0.00	0.00	0.00	0.00	1.30	0.00
Ft Sill	4.03	5.95	3.03	0.00	3.20	0.64	10.00	9.00	2.51
Ft Stewart / Hunter Army Airfield	5.48	5.95	3.03	10.00	7.57	0.30	10.00	0.42	0.47
Ft Wainwright	5.09	10.00	10.00	10.00	10.00	10.00	10.00	0.09	0.29
Hawthorne AD	2.97	1.03	1.70	0.00	0.00	6.83	1.01	0.47	0.00
Holston AAP	1.44	0.00	0.00	0.00	0.08	0.01	0.00	0.00	0.00
Iowa AAP	1.78	0.00	0.00	0.00	0.00	0.13	0.00	0.00	0.00
Kansas AAP	1.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

DEPARTMENT OF THE ARMY—BRAC 2005—ANALYSES AND RECOMMENDATIONS

Installation	Overall	A1	A2	A3	A4	A5	A6	A7	A8
Lake City AAP	1.78	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00
Letterkenny AD	2.69	0.00	0.00	0.00	0.00	0.48	0.26	0.00	0.00
Lima Tank Plant	1.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.14
Lone Star AAP	1.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Louisiana AAP	1.79	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
McAlester AAP	3.10	0.00	0.00	0.00	0.00	0.09	0.00	1.27	0.00
Milan AAP	1.92	0.00	0.00	5.80	0.08	0.00	0.00	0.00	0.00
Mississippi AAP	1.91	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MOT Sunny Point	2.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Newport Chem Depot	1.85	0.00	0.00	0.00	0.00	0.66	0.00	0.00	0.00
Picatiny Arsenal	2.33	0.00	0.00	2.77	0.00	0.01	0.00	0.24	0.03
Pine Buff Arsenal	1.84	0.00	0.00	0.00	0.00	0.00	0.00	0.22	0.06
Presidio Of Monterey	1.35	0.00	0.00	0.00	0.00	0.00	0.00	4.44	0.48
Pueblo Chem Depot	2.03	0.00	0.00	0.00	0.00	1.10	0.00	0.00	0.00
Radford AAP	1.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Red River AD	2.61	0.00	0.00	0.00	0.00	0.68	0.00	0.93	0.00
Redstone Arsenal	2.99	0.00	1.00	5.80	0.00	0.75	5.30	3.65	3.24
Riverbank AAP	1.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rock Island Arsenal	2.14	0.00	0.00	0.00	0.00	0.00	0.00	0.20	1.07
Schofield Barracks	3.95	10.00	1.00	2.12	0.23	2.05	10.00	0.33	0.17
Scranton AAP	1.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sierra AD	2.49	0.30	0.00	0.23	0.00	0.40	0.00	0.14	0.00
Soldier Systems Support Center	1.96	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.01
Tobyhanna AD	2.79	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tooele AD	2.48	0.00	0.00	0.00	0.00	0.52	1.01	0.00	0.00
Tripler AMC	1.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Umatilla Chem Depot	1.31	0.00	0.00	0.00	0.08	0.51	1.00	0.00	0.00
USAG Selfridge	1.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Walter Reed AMC	2.33	0.00	0.00	0.00	0.00	0.00	0.00	1.06	0.48
Watervliet Arsenal	2.25	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00
West Point	1.88	1.03	0.08	0.23	0.00	1.41	1.01	10.00	0.32
White Sands MR	5.16	10.00	10.00	10.00	1.95	10.00	10.00	0.23	0.00
Yuma PG	5.31	10.00	10.00	10.00	7.57	10.00	10.00	0.71	0.00
Lease - ARPERCEN	1.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lease - Ballston Complex	0.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lease - Army JAG Agency	0.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lease - Army JAG School	0.91	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lease - Army Research Office	1.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lease - Bailey's Crossroads	1.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lease - Crystal City Complex	1.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lease - Hoffman Complex	1.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lease - HQ, ATEC	1.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lease - PEO STRICOM	1.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lease - Rosslyn Complex	1.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

DEPARTMENT OF THE ARMY—BRAC 2005—ANALYSES AND RECOMMENDATIONS

Installation	Overall	A9	A10	A11	A12	A13	A14	A15	A16
Aberdeen PG	4.18	10.00	0.00	8.48	5.11	0.80	3.61	6.85	6.75
Adelphi Labs	1.71	10.00	10.00	0.00	2.28	0.00	0.00	0.00	0.89
Anniston AD	3.19	10.00	10.00	1.04	4.54	0.00	7.74	10.00	0.88
Bluegrass AD	2.34	10.00	10.00	0.82	1.44	0.00	6.30	8.49	0.26
Carlisle Barracks	1.62	10.00	10.00	0.00	2.63	0.00	0.00	0.00	0.31
Charles Kelly Support Activity	1.93	10.00	10.00	0.00	0.60	0.00	3.29	5.49	0.16
Corpus Christi ADA	1.59	10.00	10.00	0.00	2.44	0.00	1.11	0.00	0.58
Crane AAP	2.92	10.00	1.50	0.00	7.60	0.00	3.75	7.23	0.15
Deseret Chem Plant	2.36	10.00	10.00	4.82	3.91	0.00	5.65	0.00	0.17
Detroit Arsenal	1.63	10.00	10.00	0.00	0.00	0.00	0.00	0.89	1.68
Dugway PG	5.25	10.00	10.00	0.00	6.70	0.00	1.46	1.57	0.44
Ft AP Hill	3.68	8.33	10.00	6.48	0.00	0.15	3.30	0.00	0.32
Ft Belvoir	2.70	8.33	10.00	1.86	5.72	0.33	5.82	0.05	6.13
Ft Benning	5.24	10.00	0.64	9.60	0.00	8.28	8.61	7.62	3.97
Ft Bliss	6.25	3.33	10.00	6.59	10.00	3.24	8.62	7.34	5.26
Ft Bragg	5.37	10.00	2.23	9.95	0.00	7.00	8.45	7.64	10.00
Ft Buchanan	1.47	10.00	10.00	0.00	0.00	1.98	0.77	4.53	0.70
Ft Campbell	4.81	8.33	0.64	6.75	7.58	4.08	9.00	9.28	5.52
Ft Carson	5.26	8.33	1.41	9.77	2.54	5.64	6.41	8.49	3.99
Ft Detrick	1.98	10.00	10.00	0.00	0.00	0.00	0.00	0.00	1.14
Ft Dix	3.47	6.67	1.50	6.56	3.66	10.00	4.56	1.64	1.18
Ft Drum	4.71	10.00	10.00	9.56	3.47	3.38	6.22	5.30	2.78
Ft Eustis	2.91	8.33	10.00	2.42	7.36	1.57	6.48	8.73	2.43
Ft Gillem	2.20	6.67	10.00	0.00	1.28	0.00	4.40	7.91	1.11
Ft Gordon	2.80	8.33	10.00	8.24	10.00	1.10	1.37	0.11	2.64
Ft Hamilton	1.69	5.00	10.00	0.00	10.00	0.00	0.00	0.00	0.50
Ft Hood	5.70	10.00	10.00	9.99	3.99	6.27	8.01	7.76	7.60
Ft Huachuca	3.86	10.00	10.00	8.58	5.82	0.59	3.14	3.30	2.35
Ft Irwin	4.56	8.33	10.00	0.00	0.00	0.21	3.31	5.05	0.70
Ft Jackson	3.14	8.33	10.00	6.59	4.79	1.55	5.61	0.00	1.28
Ft Knox	4.91	10.00	0.64	6.61	6.04	2.77	8.94	8.93	3.44
Ft Leavenworth	1.85	8.33	10.00	0.00	4.65	0.00	1.32	0.00	1.45
Ft Lee	2.79	10.00	3.39	1.55	0.00	1.35	6.97	6.72	1.99
Ft Leonard Wood	2.79	10.00	1.50	2.74	9.33	2.16	1.48	0.00	2.28
Ft Lewis	5.76	6.67	10.00	10.00	10.00	5.93	8.31	9.31	6.24
Ft Mc Coy	3.21	10.00	2.23	8.20	5.27	7.73	5.94	0.06	0.77
Ft Mc Nair	1.83	10.00	10.00	0.00	7.69	0.00	0.00	0.00	0.59
Ft McPherson	2.22	6.67	10.00	0.00	2.85	0.38	4.40	7.91	3.00
Ft Meade	2.25	6.67	10.00	0.00	0.00	0.75	0.00	0.00	2.74
Ft Monmouth	2.25	10.00	10.00	0.00	0.00	0.08	2.32	4.07	3.55
Ft Monroe	1.79	10.00	10.00	0.00	3.56	0.00	1.06	0.00	1.27
Ft Myer	1.81	10.00	10.00	0.00	10.00	0.00	0.00	0.00	0.38
Ft Polk	4.67	10.00	2.23	9.97	10.00	4.72	8.84	3.56	2.62
Ft Richardson	3.00	10.00	10.00	3.09	4.58	0.00	10.00	0.00	1.42
Ft Riley	4.89	10.00	4.53	8.38	10.00	3.85	8.53	8.93	3.85
Ft Rucker	3.07	10.00	10.00	4.82	4.36	1.47	1.50	3.71	1.94
Ft Sam Houston	2.42	10.00	10.00	4.12	0.00	1.49	1.11	0.38	5.08
Ft Shafter	1.48	10.00	10.00	0.00	1.60	0.00	1.02	0.00	1.37
Ft Sill	4.03	10.00	10.00	8.23	0.00	3.02	9.14	8.02	5.70
Ft Stewart / Hunter Army Airfield	5.48	10.00	1.41	10.00	2.29	9.91	7.86	6.62	3.37
Ft Wainwright	5.09	6.67	6.82	10.00	10.00	0.00	6.92	0.00	1.83
Hawthorne AD	2.97	10.00	10.00	8.92	4.69	0.00	1.10	4.02	0.00
Holston AAP	1.44	8.33	10.00	0.00	10.00	0.00	0.00	0.00	0.00



DEPARTMENT OF THE ARMY—BRAC 2005—ANALYSES AND RECOMMENDATIONS

Installation	Overall	A9	A10	A11	A12	A13	A14	A15	A16
Iowa AAP	1.78	10.00	10.00	3.38	0.00	0.00	0.00	0.21	0.00
Kansas AAP	1.80	10.00	10.00	3.59	1.58	0.00	0.00	0.00	0.00
Lake City AAP	1.78	10.00	10.00	0.00	8.82	0.00	0.01	0.00	0.00
Letterkenny AD	2.69	8.33	10.00	3.68	0.00	0.00	3.55	7.38	0.71
Lima Tank Plant	1.60	6.67	10.00	0.00	4.36	0.00	0.14	1.73	0.00
Lone Star AAP	1.73	10.00	10.00	0.00	0.78	0.00	0.00	0.00	0.00
Louisiana AAP	1.79	10.00	10.00	0.00	1.20	0.00	0.00	7.02	0.36
McAlester AAP	3.10	10.00	10.00	6.32	0.19	0.00	5.61	8.56	0.40
Milan AAP	1.92	10.00	1.50	0.89	7.24	0.00	0.14	2.80	0.00
Mississippi AAP	1.91	10.00	10.00	0.00	0.00	0.00	1.79	0.00	0.00
MOT Sunny Point	2.09	10.00	10.00	0.00	0.83	0.00	2.88	8.87	0.11
Newport Chem Depot	1.85	10.00	10.00	0.00	4.34	0.00	0.83	0.00	0.01
Picatinny Arsenal	2.33	6.67	10.00	1.51	4.01	0.00	0.00	0.00	2.20
Pine Buff Arsenal	1.84	10.00	10.00	3.47	7.75	0.00	0.22	0.64	0.59
Presidio Of Monterey	1.35	8.33	10.00	0.00	1.23	0.00	3.09	0.00	0.50
Pueblo Chem Depot	2.03	10.00	10.00	5.46	0.15	0.00	0.28	0.95	0.00
Radford AAP	1.51	10.00	3.39	0.00	10.00	0.00	0.31	0.00	0.53
Red River AD	2.61	10.00	10.00	4.50	2.39	0.00	8.81	9.55	0.44
Redstone Arsenal	2.99	10.00	1.50	5.54	10.00	0.06	2.61	4.52	7.27
Riverbank AAP	1.18	0.00	10.00	0.00	4.63	0.00	0.00	0.00	0.00
Rock Island Arsenal	2.14	10.00	10.00	0.00	0.00	0.00	6.29	7.40	4.17
Schofield Barracks	3.95	10.00	10.00	6.21	0.45	0.00	4.16	7.96	3.14
Scranton AAP	1.55	8.33	10.00	0.00	0.61	0.00	0.00	0.00	0.11
Sierra AD	2.49	10.00	10.00	6.53	4.07	0.00	5.24	8.39	0.25
Soldier Systems Support Center	1.96	10.00	10.00	0.00	0.71	0.00	0.81	4.63	0.61
Tobyhanna AD	2.79	10.00	10.00	0.00	0.39	0.00	3.70	6.79	0.92
Tooele AD	2.48	10.00	3.39	4.25	1.64	0.00	2.90	8.08	0.25
Tripler AMC	1.26	10.00	10.00	0.00	0.25	0.00	1.02	0.00	0.00
Umatilla Chem Depot	1.31	10.00	10.00	0.04	3.30	0.00	1.68	0.00	0.12
USAG Selfridge	1.51	10.00	10.00	0.00	1.09	0.00	1.09	0.00	0.27
Walter Reed AMC	2.33	6.67	10.00	0.00	10.00	0.33	1.68	5.18	1.26
Watervliet Arsenal	2.25	8.33	10.00	0.00	0.00	0.00	5.88	7.93	0.21
West Point	1.88	6.67	3.39	0.77	1.06	0.00	0.00	0.00	1.95
White Sands MR	5.16	10.00	10.00	10.00	10.00	0.00	2.59	0.00	2.18
Yuma PG	5.31	8.33	10.00	10.00	6.18	0.00	0.26	2.77	0.40
Lease - ARPERCEN	1.06	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lease - Ballston Complex	0.93	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lease - Army JAG Agency	0.94	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lease - Army JAG School	0.91	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lease - Army Research Office	1.15	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lease - Bailey's Crossroads	1.16	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lease - Crystal City Complex	1.11	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lease - Hoffman Complex	1.11	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lease - HQ, ATEC	1.27	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lease - PEO STRICOM	1.01	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lease - Rosslyn Complex	1.20	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

DEPARTMENT OF THE ARMY—BRAC 2005—ANALYSES AND RECOMMENDATIONS

Installation	Overall	A17	A18	A19	A20	A21	A22	A23	A24
Aberdeen PG	4.18	10.00	9.00	10.00	4.36	0.00	0.00	0.00	0.00
Adelphi Labs	1.71	10.00	8.10	1.12	0.54	0.00	0.00	0.00	0.00
Anniston AD	3.19	7.18	10.00	0.00	0.54	0.00	2.81	4.51	10.00
Bluegrass AD	2.34	7.18	8.10	0.00	0.54	0.00	5.48	0.53	0.47
Carlisle Barracks	1.62	7.18	8.10	0.00	0.54	0.00	0.00	0.00	0.00
Charles Kelly Support Activity	1.93	3.30	8.10	0.00	0.54	0.00	0.00	0.00	0.00
Corpus Christi ADA	1.59	3.01	6.90	0.00	0.54	0.00	0.00	1.47	9.07
Crane AAP	2.92	7.18	6.10	0.00	0.54	10.00	6.89	0.00	0.00
Deseret Chem Plant	2.36	6.74	4.90	0.00	0.54	0.00	0.00	0.00	0.00
Detroit Arsenal	1.63	3.30	9.10	0.00	0.54	0.00	0.00	0.00	0.00
Dugway PG	5.25	4.48	8.10	4.96	10.00	0.00	0.00	0.00	0.00
Ft AP Hill	3.68	10.00	6.90	0.00	4.36	0.00	0.00	0.00	0.00
Ft Belvoir	2.70	10.00	10.00	6.74	0.54	0.00	0.00	0.00	0.00
Ft Benning	5.24	4.48	8.30	0.47	4.36	0.00	0.00	0.00	0.00
Ft Bliss	6.25	3.30	9.10	0.47	10.00	0.00	0.00	0.00	0.00
Ft Bragg	5.37	7.18	9.20	1.12	4.36	0.00	0.00	0.00	0.00
Ft Buchanan	1.47	0.00	4.80	0.00	0.54	0.00	0.00	0.00	0.00
Ft Campbell	4.81	3.30	9.10	0.00	4.36	0.00	0.00	0.00	0.00
Ft Carson	5.26	7.18	9.10	0.00	6.86	0.00	0.00	0.00	0.00
Ft Detrick	1.98	10.00	10.00	1.12	0.54	0.00	0.00	0.00	0.00
Ft Dix	3.47	10.00	6.30	0.00	0.54	0.00	0.00	0.00	0.02
Ft Drum	4.71	3.01	5.00	0.00	4.36	0.00	0.00	0.00	0.00
Ft Eustis	2.91	10.00	9.20	1.12	0.54	0.00	0.00	0.00	0.00
Ft Gillem	2.20	7.18	10.00	0.00	0.54	0.00	0.00	0.00	0.00
Ft Gordon	2.80	3.01	10.00	2.54	0.54	0.00	0.00	0.00	0.00
Ft Hamilton	1.69	10.00	6.90	0.00	0.54	0.00	0.00	0.00	0.00
Ft Hood	5.70	4.48	8.40	0.00	6.86	0.00	0.00	0.00	0.00
Ft Huachuca	3.86	7.18	10.00	3.84	2.76	0.00	0.00	0.00	0.00
Ft Irwin	4.56	7.18	6.30	0.00	10.00	0.00	0.00	0.00	0.00
Ft Jackson	3.14	7.18	9.10	0.00	0.54	0.00	0.00	0.00	0.00
Ft Knox	4.91	3.30	7.10	1.12	6.86	0.00	0.00	0.00	0.31
Ft Leavenworth	1.85	4.48	8.10	0.00	0.54	0.00	0.00	0.00	0.00
Ft Lee	2.79	10.00	9.10	0.00	0.54	0.00	0.00	0.00	0.00
Ft Leonard Wood	2.79	3.01	6.30	1.59	0.54	5.39	0.00	0.00	0.00
Ft Lewis	5.76	10.00	9.20	0.00	6.86	0.00	0.00	0.00	0.06
Ft Mc Coy	3.21	0.43	8.80	0.00	2.76	0.00	0.00	0.00	0.00
Ft Mc Nair	1.83	10.00	7.90	0.00	0.54	0.00	0.00	0.00	0.00
Ft McPherson	2.22	7.18	9.20	0.00	0.54	0.00	0.00	0.00	0.00
Ft Meade	2.25	10.00	10.00	0.00	0.54	0.00	0.00	0.00	0.00
Ft Monmouth	2.25	10.00	10.00	5.44	0.54	0.00	0.00	0.00	0.00
Ft Monroe	1.79	10.00	9.10	0.00	0.54	0.00	0.00	0.00	0.00
Ft Myer	1.81	10.00	7.90	0.00	0.54	0.00	0.00	0.00	0.00
Ft Polk	4.67	1.62	7.50	0.00	4.36	0.00	0.00	0.00	0.00
Ft Richardson	3.00	6.74	4.20	0.00	0.54	0.00	0.00	0.00	0.00
Ft Riley	4.89	3.01	10.00	0.00	4.36	0.00	0.00	0.00	0.00
Ft Rucker	3.07	3.01	8.30	2.25	2.68	0.00	0.00	0.00	0.46
Ft Sam Houston	2.42	10.00	10.00	1.12	0.54	0.00	0.00	0.00	0.00
Ft Shafter	1.48	10.00	6.20	0.00	0.54	0.00	0.00	0.00	0.00
Ft Sill	4.03	4.48	8.30	0.00	4.36	0.00	0.00	0.00	0.04
Ft Stewart / Hunter Army Airfield	5.48	7.18	8.30	0.00	6.86	0.00	0.00	0.00	0.16
Ft Wainwright	5.09	0.00	3.80	2.43	10.00	0.00	0.00	0.00	0.00
Hawthorne AD	2.97	3.01	2.80	1.12	2.76	0.00	9.15	0.00	0.00
Holston AAP	1.44	3.01	6.90	0.00	0.54	0.77	0.32	0.00	0.00
Iowa AAP	1.78	3.01	6.30	0.00	0.54	8.46	1.71	0.00	0.00
Kansas AAP	1.80	3.01	4.90	1.12	0.54	6.92	1.33	0.00	0.00

DEPARTMENT OF THE ARMY—BRAC 2005—ANALYSES AND RECOMMENDATIONS

Installation	Overall	A17	A18	A19	A20	A21	A22	A23	A24
Lake City AAP	1.78	3.30	6.90	0.00	0.54	2.31	1.24	0.00	0.00
Letterkenny AD	2.69	7.18	8.10	0.00	0.54	0.00	3.39	0.50	3.74
Lima Tank Plant	1.60	7.18	6.90	1.12	0.54	0.00	0.00	2.14	1.73
Lone Star AAP	1.73	3.01	6.90	0.00	0.54	6.92	1.25	0.22	0.24
Louisiana AAP	1.79	3.30	6.90	0.00	0.54	0.77	0.00	0.00	0.00
McAlester AAP	3.10	7.18	4.80	0.00	0.54	4.62	10.00	0.00	0.00
Milan AAP	1.92	7.18	6.90	0.00	0.54	9.23	3.38	0.00	0.00
Mississippi AAP	1.91	10.00	6.90	0.00	0.54	0.77	0.17	0.00	0.00
MOT Sunny Point	2.09	7.18	8.50	0.00	0.54	0.00	0.00	0.00	0.00
Newport Chem Depot	1.85	3.01	6.90	0.00	0.54	0.00	0.00	0.00	0.00
Picatiny Arsenal	2.33	7.18	8.10	4.02	0.54	0.00	0.06	0.00	0.00
Pine Buff Arsenal	1.84	6.74	9.00	2.72	0.54	4.62	5.31	0.97	1.92
Presidio Of Monterey	1.35	7.18	6.90	0.00	0.54	0.00	0.00	0.00	0.00
Pueblo Chem Depot	2.03	10.00	6.90	0.00	0.54	0.00	2.37	0.00	0.00
Radford AAP	1.51	3.01	7.80	0.00	0.54	3.85	0.65	0.00	0.00
Red River AD	2.61	3.01	6.90	0.00	0.54	0.00	2.57	0.03	4.88
Redstone Arsenal	2.99	3.01	9.20	6.74	0.54	0.00	0.00	0.00	0.00
Riverbank AAP	1.18	7.18	6.90	0.00	0.54	1.54	0.00	0.00	0.00
Rock Island Arsenal	2.14	0.43	9.10	2.25	0.54	0.00	0.00	0.78	2.59
Schofield Barracks	3.95	10.00	7.00	0.00	6.86	0.00	0.00	0.00	0.00
Scranton AAP	1.55	7.18	8.10	0.00	0.54	1.54	0.00	0.00	0.00
Sierra AD	2.49	3.30	6.90	0.00	0.54	0.00	7.19	0.00	0.00
Soldier Systems Support Center	1.96	7.18	9.00	0.00	0.54	0.00	0.00	0.00	0.00
Tobyhanna AD	2.79	6.74	8.80	0.00	0.54	0.00	0.00	10.00	8.34
Tooele AD	2.48	6.74	6.90	2.25	0.54	0.00	4.70	0.00	0.31
Tripler AMC	1.26	10.00	6.00	0.00	0.54	0.00	0.00	0.00	0.00
Umatilla Chem Depot	1.31	3.01	6.90	0.00	0.54	0.00	0.00	0.00	0.00
USAG Selfridge	1.51	3.30	8.10	0.00	0.54	0.00	0.00	0.00	0.00
Walter Reed AMC	2.33	10.00	8.10	0.00	0.54	0.00	0.00	0.00	0.00
Watervliet Arsenal	2.25	3.30	8.10	0.00	0.54	0.00	0.00	0.15	0.86
West Point	1.88	7.18	9.10	0.00	0.54	0.00	0.00	0.00	0.00
White Sands MR	5.16	7.18	10.00	9.53	10.00	0.00	0.00	0.00	0.00
Yuma PG	5.31	4.48	7.10	4.38	10.00	0.00	0.00	0.00	0.02
Lease - ARPERCEN	1.06	7.18	7.00	0.00	0.00	0.00	0.00	0.00	0.00
Lease - Ballston Complex	0.93	10.00	7.00	0.00	0.00	0.00	0.00	0.00	0.00
Lease - Army JAG Agency	0.94	10.00	7.00	0.00	0.00	0.00	0.00	0.00	0.00
Lease - Army JAG School	0.91	7.18	7.00	0.00	0.00	0.00	0.00	0.00	0.00
Lease - Army Research Office	1.15	10.00	7.00	0.00	0.00	0.00	0.00	0.00	0.00
Lease - Bailey's Crossroads	1.16	10.00	7.00	0.00	0.00	0.00	0.00	0.00	0.00
Lease - Crystal City Complex	1.11	10.00	7.00	0.00	0.00	0.00	0.00	0.00	0.00
Lease - Hoffman Complex	1.11	10.00	7.00	0.00	0.00	0.00	0.00	0.00	0.00
Lease - HQ, ATEC	1.27	10.00	7.00	0.00	0.00	0.00	0.00	0.00	0.00
Lease - PEO STRICOM	1.01	7.18	7.00	0.00	0.00	0.00	0.00	0.00	0.00
Lease - Rosslyn Complex	1.20	10.00	7.00	0.00	0.00	0.00	0.00	0.00	0.00

DEPARTMENT OF THE ARMY—BRAC 2005—ANALYSES AND RECOMMENDATIONS

Installation	Overall	A25	A26	A27	A28	A29	A30	A31	A32
Aberdeen PG	4.18	2.55	2.86	2.22	7.66	5.15	4.33	10.00	5.42
Adelphi Labs	1.71	0.09	4.46	5.81	4.72	2.87	4.33	10.00	0.00
Anniston AD	3.19	8.44	1.80	1.14	1.11	2.40	4.33	3.38	3.65
Bluegrass AD	2.34	4.00	6.16	2.58	4.81	4.95	10.00	2.85	0.02
Carlisle Barracks	1.62	0.05	6.67	2.58	4.81	3.88	4.33	6.47	0.02
Charles Kelly Support Activity	1.93	0.09	6.36	1.14	10.00	4.63	4.33	10.00	0.02
Corpus Christi ADA	1.59	0.11	0.99	0.00	4.81	3.24	10.00	1.47	3.65
Crane AAP	2.92	8.05	4.90	1.14	1.11	0.00	0.00	1.86	3.65
Deseret Chem Plant	2.36	0.70	3.86	5.81	4.81	2.85	10.00	4.46	0.00
Detroit Arsenal	1.63	0.12	4.09	2.22	7.66	3.94	0.00	10.00	5.42
Dugway PG	5.25	0.16	3.86	5.81	1.11	0.00	10.00	0.03	7.19
Ft AP Hill	3.68	0.18	5.81	2.22	2.52	0.38	0.00	7.72	0.02
Ft Belvoir	2.70	0.82	4.46	1.14	4.72	4.43	0.00	10.00	5.42
Ft Benning	5.24	0.63	2.98	10.00	4.81	2.64	10.00	1.94	0.79
Ft Bliss	6.25	0.98	4.19	1.14	4.81	2.30	10.00	2.43	3.65
Ft Bragg	5.37	1.30	1.24	0.00	4.81	2.39	4.33	3.90	0.79
Ft Buchanan	1.47	0.14	6.98	1.14	10.00	0.00	0.00	8.01	0.00
Ft Campbell	4.81	1.41	3.13	0.00	1.11	1.91	10.00	2.15	0.79
Ft Carson	5.26	0.62	3.47	1.14	4.81	2.67	4.33	2.34	0.79
Ft Detrick	1.98	0.12	4.46	2.22	7.66	2.87	4.33	10.00	5.42
Ft Dix	3.47	0.51	5.98	5.81	4.72	10.00	10.00	10.00	3.65
Ft Drum	4.71	0.64	6.31	2.22	1.11	2.64	4.33	0.72	0.79
Ft Eustis	2.91	0.47	3.82	0.00	10.00	3.22	0.00	5.91	2.03
Ft Gillem	2.20	1.29	3.58	2.58	7.66	3.16	10.00	10.00	0.79
Ft Gordon	2.80	0.31	3.93	5.81	4.81	4.90	10.00	1.96	0.79
Ft Hamilton	1.69	0.02	6.31	1.14	4.72	6.74	10.00	10.00	0.02
Ft Hood	5.70	1.60	2.76	0.00	4.81	4.10	10.00	2.36	0.79
Ft Huachuca	3.86	0.36	8.00	1.14	1.11	1.28	10.00	0.66	5.42
Ft Irwin	4.56	0.45	4.18	1.14	10.00	2.17	4.33	0.14	0.79
Ft Jackson	3.14	0.41	1.62	0.00	4.81	4.15	10.00	3.19	0.79
Ft Knox	4.91	0.58	6.16	1.14	1.11	1.58	10.00	4.62	5.42
Ft Leavenworth	1.85	0.31	4.40	2.58	10.00	3.76	0.00	6.70	0.79
Ft Lee	2.79	0.20	5.81	1.14	4.81	4.37	4.33	4.73	0.79
Ft Leonard Wood	2.79	0.46	10.00	2.22	1.11	1.41	4.33	0.88	0.79
Ft Lewis	5.76	2.40	2.89	5.81	2.52	2.93	4.33	8.80	3.65
Ft Mc Coy	3.21	0.14	5.64	1.14	1.11	5.26	0.00	1.27	0.79
Ft Mc Nair	1.83	0.02	4.46	2.22	4.72	2.87	10.00	10.00	0.02
Ft McPherson	2.22	0.03	3.58	2.58	7.66	3.16	4.33	10.00	2.03
Ft Meade	2.25	0.20	2.86	10.00	7.66	5.15	10.00	10.00	2.23
Ft Monmouth	2.25	0.35	5.98	5.81	1.07	6.34	0.00	10.00	5.42
Ft Monroe	1.79	0.09	3.82	2.22	10.00	3.22	0.00	5.30	0.02
Ft Myer	1.81	0.06	5.81	2.22	4.72	2.87	10.00	10.00	0.02
Ft Polk	4.67	0.63	2.90	2.58	1.11	2.41	4.33	0.67	0.79
Ft Richardson	3.00	1.12	2.88	10.00	0.00	4.12	10.00	0.97	7.19
Ft Riley	4.89	0.66	4.40	0.00	1.11	1.68	4.33	0.66	0.79
Ft Rucker	3.07	0.24	3.84	2.22	1.11	3.07	10.00	1.29	3.65
Ft Sam Houston	2.42	0.58	2.76	1.14	10.00	3.96	4.33	5.47	7.19
Ft Shafter	1.48	0.08	1.03	1.14	4.72	4.12	10.00	2.90	7.19
Ft Sill	4.03	0.90	2.89	1.14	1.11	2.49	10.00	0.91	0.79
Ft Stewart / Hunter Army Airfield	5.48	0.71	3.78	1.14	1.11	0.68	4.33	1.79	0.79
Ft Wainwright	5.09	0.70	4.07	1.14	0.32	2.75	10.00	0.24	0.79
Hawthorne AD	2.97	0.03	3.79	0.35	0.32	2.22	10.00	0.06	2.23
Holston AAP	1.44	0.02	5.03	0.00	4.81	1.94	10.00	2.98	0.02
Iowa AAP	1.78	0.02	5.35	1.14	1.11	2.55	10.00	1.13	0.02
Kansas AAP	1.80	0.00	4.40	5.81	1.11	2.34	4.33	1.08	5.90

DEPARTMENT OF THE ARMY—BRAC 2005—ANALYSES AND RECOMMENDATIONS

Installation	Overall	A25	A26	A27	A28	A29	A30	A31	A32
Lake City AAP	1.78	0.01	3.64	0.00	10.00	3.76	4.33	6.02	0.79
Letterkenny AD	2.69	2.82	6.08	2.22	1.11	2.06	10.00	4.87	0.79
Lima Tank Plant	1.60	0.02	5.03	1.14	1.11	2.20	10.00	2.56	0.79
Lone Star AAP	1.73	0.01	3.27	1.14	1.11	3.14	10.00	1.04	0.02
Louisiana AAP	1.79	0.67	1.36	1.14	4.81	5.26	10.00	1.71	5.90
McAlester AAP	3.10	10.00	3.43	0.00	1.11	0.00	10.00	0.61	3.65
Milan AAP	1.92	0.22	3.02	0.00	1.11	1.14	4.33	1.60	2.23
Mississippi AAP	1.91	0.48	4.30	1.14	1.11	0.84	4.33	4.00	5.90
MOT Sunny Point	2.09	0.05	0.71	0.00	4.81	3.95	0.00	1.35	0.00
Newport Chem Depot	1.85	0.01	4.90	1.14	1.11	0.57	4.33	2.29	0.79
Picatiny Arsenal	2.33	0.59	5.98	2.22	4.72	4.53	10.00	10.00	5.42
Pine Buff Arsenal	1.84	2.80	0.01	0.00	1.11	2.75	4.33	2.29	3.65
Presidio Of Monterey	1.35	0.11	5.33	0.35	0.00	2.39	4.33	1.43	0.00
Pueblo Chem Depot	2.03	7.55	3.05	1.14	1.11	3.51	4.33	1.89	0.02
Radford AAP	1.51	0.73	5.81	1.14	1.11	1.57	0.00	2.67	0.00
Red River AD	2.61	6.65	3.27	1.14	1.11	3.14	10.00	1.08	0.79
Redstone Arsenal	2.99	3.07	4.17	2.58	4.81	2.89	4.33	2.87	10.00
Riverbank AAP	1.18	0.01	1.52	0.00	0.32	2.29	4.33	5.11	2.23
Rock Island Arsenal	2.14	1.55	4.51	1.14	1.11	2.66	4.33	2.24	5.42
Schofield Barracks	3.95	1.28	1.03	2.22	4.72	4.12	4.33	2.90	0.79
Scranton AAP	1.55	0.01	6.70	0.00	4.81	2.99	4.33	4.26	0.00
Sierra AD	2.49	4.59	4.62	0.00	1.11	1.25	4.33	0.87	0.02
Soldier Systems Support Center	1.96	0.07	6.14	5.81	4.72	6.27	0.00	10.00	5.42
Tobyhanna AD	2.79	2.24	6.08	1.14	4.81	0.48	4.33	6.90	7.19
Tooele AD	2.48	3.29	3.86	2.22	1.11	0.00	10.00	4.29	2.23
Tripler AMC	1.26	0.00	1.03	2.22	4.72	4.12	4.33	2.90	5.90
Umatilla Chem Depot	1.31	0.08	3.24	0.00	1.11	0.00	10.00	0.94	0.00
USAG Selfridge	1.51	0.01	4.09	2.22	7.66	3.94	0.00	10.00	2.23
Walter Reed AMC	2.33	0.09	4.46	10.00	4.72	2.87	0.00	10.00	3.65
Watervliet Arsenal	2.25	0.18	6.31	2.58	2.52	3.88	4.33	4.50	3.65
West Point	1.88	0.16	6.31	5.81	0.00	4.74	4.33	10.00	0.00
White Sands MR	5.16	0.52	2.93	0.00	1.11	1.96	4.33	0.25	3.65
Yuma PG	5.31	0.29	0.99	0.00	1.11	1.49	10.00	0.05	3.65
Lease - ARPERCEN	1.06	0.00	3.64	10.00	7.66	4.05	0.00	0.00	0.00
Lease - Ballston Complex	0.93	0.00	0.01	2.58	4.72	4.43	4.33	0.00	0.00
Lease - Army JAG Agency	0.94	0.00	0.01	5.81	4.72	4.43	0.00	0.00	0.00
Lease - Army JAG School	0.91	0.00	5.81	1.14	0.32	10.00	0.00	0.00	0.00
Lease - Army Research Office	1.15	0.00	3.46	10.00	7.66	1.89	0.00	0.00	0.00
Lease - Bailey's Crossroads	1.16	0.00	4.46	10.00	4.72	4.43	10.00	0.00	0.00
Lease - Crystal City Complex	1.11	0.00	4.46	10.00	4.72	4.43	0.00	0.00	0.00
Lease - Hoffman Complex	1.11	0.00	4.46	10.00	4.72	4.43	0.00	0.00	0.00
Lease - HQ, ATEC	1.27	0.00	4.46	10.00	4.72	4.43	0.00	0.00	0.00
Lease - PEO STRICOM	1.01	0.00	1.99	2.58	7.66	2.90	0.00	0.00	0.00
Lease - Rosslyn Complex	1.20	0.00	4.46	10.00	4.72	4.43	0.00	0.00	0.00

DEPARTMENT OF THE ARMY—BRAC 2005—ANALYSES AND RECOMMENDATIONS

Installation	Overall	A33	A34	A35	A36	A37	A38	A39	A40
Aberdeen PG	4.18	8.92	0.95	0.00	8.96	6.37	3.63	5.42	10.00
Adelphi Labs	1.71	7.85	0.00	0.00	8.12	0.02	0.80	0.77	6.52
Anniston AD	3.19	10.00	2.84	0.00	9.18	3.94	0.35	3.19	1.74
Bluegrass AD	2.34	8.39	2.84	0.00	8.49	1.60	0.39	0.37	2.61
Carlisle Barracks	1.62	8.54	2.84	0.00	9.25	0.16	1.49	0.04	5.65
Charles Kelly Support Activity	1.93	7.62	0.00	0.00	9.09	0.11	1.49	0.31	3.04
Corpus Christi ADA	1.59	8.77	2.84	0.00	9.02	0.04	0.35	0.00	2.17
Crane AAP	2.92	7.62	0.00	0.00	2.76	8.52	0.39	8.40	1.74
Deseret Chem Plant	2.36	7.92	0.00	0.00	9.18	9.39	1.49	10.00	0.44
Detroit Arsenal	1.63	6.85	2.84	0.00	8.90	0.07	1.49	1.30	4.78
Dugway PG	5.25	7.62	2.84	5.00	8.42	10.00	3.45	10.00	0.44
Ft AP Hill	3.68	8.15	2.84	5.00	6.85	4.45	1.49	8.63	6.96
Ft Belvoir	2.70	7.85	0.07	0.00	9.94	6.19	3.45	1.31	7.83
Ft Benning	5.24	9.54	0.95	5.00	9.74	6.48	3.63	4.27	1.30
Ft Bliss	6.25	8.62	0.95	5.00	9.65	9.80	3.63	9.85	0.87
Ft Bragg	5.37	8.92	0.95	8.94	9.85	6.30	3.63	6.36	3.04
Ft Buchanan	1.47	5.23	0.95	0.00	9.14	0.00	1.49	1.56	0.00
Ft Campbell	4.81	7.62	2.84	8.94	9.76	7.61	3.63	4.06	2.61
Ft Carson	5.26	7.15	0.95	7.59	9.57	4.10	3.63	5.79	0.00
Ft Detrick	1.98	7.85	2.84	0.00	9.34	0.28	1.49	3.31	6.09
Ft Dix	3.47	6.85	0.07	0.00	8.75	2.93	0.35	5.73	9.13
Ft Drum	4.71	7.00	0.95	7.59	9.64	8.59	3.63	8.18	1.74
Ft Eustis	2.91	8.46	0.95	0.00	9.51	1.77	3.63	1.95	5.65
Ft Gillem	2.20	8.54	2.84	0.00	9.41	0.24	3.63	0.00	2.61
Ft Gordon	2.80	9.23	0.07	0.00	9.40	8.20	3.63	2.79	3.91
Ft Hamilton	1.69	4.23	0.95	0.00	9.17	0.00	0.35	0.44	7.83
Ft Hood	5.70	9.15	0.95	10.00	9.87	9.49	3.63	8.32	4.35
Ft Huachuca	3.86	7.15	0.00	5.00	9.61	2.28	3.63	7.16	4.35
Ft Irwin	4.56	5.92	0.07	5.00	9.61	2.93	0.35	9.99	2.61
Ft Jackson	3.14	9.31	0.07	0.00	9.88	10.00	0.80	2.50	4.35
Ft Knox	4.91	7.62	0.95	5.00	9.68	4.52	3.63	4.04	2.61
Ft Leavenworth	1.85	7.62	0.95	0.00	9.58	4.67	3.63	2.16	3.48
Ft Lee	2.79	8.46	2.84	0.00	9.68	5.11	1.49	3.78	6.52
Ft Leonard Wood	2.79	7.00	0.95	0.00	9.80	10.00	3.63	8.96	5.22
Ft Lewis	5.76	7.54	0.07	7.59	9.66	8.83	3.63	3.42	1.74
Ft Mc Coy	3.21	6.77	0.07	5.00	7.69	3.85	0.35	4.18	1.74
Ft Mc Nair	1.83	7.85	2.84	0.00	9.69	0.00	1.49	0.02	7.83
Ft McPherson	2.22	8.54	2.84	0.00	9.56	0.04	3.63	0.00	2.61
Ft Meade	2.25	7.85	2.84	0.00	10.00	3.56	6.39	4.61	6.52
Ft Monmouth	2.25	6.77	2.84	0.00	8.81	0.54	0.35	0.34	9.13
Ft Monroe	1.79	8.46	2.84	0.00	9.60	0.32	0.80	0.00	5.65
Ft Myer	1.81	7.85	2.84	0.00	9.88	0.00	0.80	2.29	5.22
Ft Polk	4.67	8.54	0.95	5.00	9.48	8.36	1.49	7.86	4.35
Ft Richardson	3.00	2.77	0.95	5.00	8.49	3.09	1.49	8.86	0.44
Ft Riley	4.89	7.39	0.95	7.59	9.59	6.79	3.45	9.69	2.17
Ft Rucker	3.07	9.77	0.95	0.00	9.77	3.15	3.63	7.30	1.30
Ft Sam Houston	2.42	8.77	0.07	0.00	9.80	3.50	3.63	0.62	3.48
Ft Shafter	1.48	2.92	0.95	0.00	9.68	0.15	1.49	7.10	0.44
Ft Sill	4.03	8.62	0.95	0.00	9.62	2.52	3.63	8.18	1.30
Ft Stewart / Hunter Army Airfield	5.48	9.23	0.07	7.59	9.65	9.75	3.63	9.87	3.48
Ft Wainwright	5.09	2.69	0.95	5.00	8.69	4.42	3.45	9.88	0.00
Hawthorne AD	2.97	6.77	0.00	5.00	0.00	9.74	0.80	9.72	0.87
Holston AAP	1.44	9.00	0.00	0.00	6.43	3.00	0.80	0.00	2.17
Iowa AAP	1.78	7.23	0.00	0.00	7.22	6.22	0.80	3.66	3.48
Kansas AAP	1.80	7.92	0.00	0.00	3.84	1.67	0.39	7.67	3.48

DEPARTMENT OF THE ARMY—BRAC 2005—ANALYSES AND RECOMMENDATIONS

Installation	Overall	A33	A34	A35	A36	A37	A38	A39	A40
Lake City AAP	1.78	7.77	0.00	0.00	8.46	0.81	1.49	7.17	3.91
Letterkenny AD	2.69	8.08	0.00	0.00	8.24	5.31	1.49	6.36	6.52
Lima Tank Plant	1.60	8.15	0.00	0.00	7.93	0.53	1.49	0.00	4.35
Lone Star AAP	1.73	8.85	0.00	0.00	6.28	7.31	0.39	4.95	3.48
Louisiana AAP	1.79	8.85	0.00	0.00	5.41	0.22	0.80	3.00	3.48
McAlester AAP	3.10	9.23	2.84	0.00	7.77	10.00	3.45	8.54	4.35
Milan AAP	1.92	9.00	0.00	0.00	6.02	4.73	0.80	2.46	2.17
Mississippi AAP	1.91	9.23	0.00	0.00	0.00	4.17	0.80	5.06	5.65
MOT Sunny Point	2.09	9.00	2.84	0.00	7.30	5.00	0.35	3.51	3.48
Newport Chem Depot	1.85	8.15	0.00	0.00	9.03	8.79	0.80	9.05	3.48
Picatinny Arsenal	2.33	6.46	0.07	0.00	8.76	6.21	0.35	4.76	9.13
Pine Buff Arsenal	1.84	8.77	2.84	0.00	8.67	0.09	1.49	2.94	3.91
Presidio Of Monterey	1.35	6.39	0.07	0.00	9.56	0.39	3.45	0.00	3.91
Pueblo Chem Depot	2.03	8.31	0.00	0.00	4.79	9.93	0.80	8.81	0.00
Radford AAP	1.51	8.46	0.00	0.00	7.84	1.12	0.80	6.48	2.61
Red River AD	2.61	8.85	2.84	0.00	8.75	1.34	1.49	4.31	3.91
Redstone Arsenal	2.99	9.15	0.07	0.00	9.80	6.85	3.63	2.76	2.17
Riverbank AAP	1.18	6.69	0.00	0.00	7.20	0.09	0.80	0.00	4.35
Rock Island Arsenal	2.14	7.85	2.84	0.00	9.33	1.01	1.49	1.44	3.91
Schofield Barracks	3.95	2.85	0.95	7.59	9.33	0.36	3.63	7.97	0.44
Scranton AAP	1.55	7.62	0.00	0.00	5.65	0.00	0.39	0.41	7.39
Sierra AD	2.49	5.77	2.84	0.00	5.37	8.60	1.49	9.45	1.74
Soldier Systems Support Center	1.96	7.08	0.00	0.00	9.44	0.16	0.80	0.02	4.78
Tobyhanna AD	2.79	7.46	0.95	0.00	8.88	2.21	1.49	2.47	0.44
Tooele AD	2.48	7.62	2.84	0.00	7.97	9.87	1.49	4.95	0.44
Tripler AMC	1.26	2.69	0.00	0.00	9.12	0.15	1.49	2.40	0.44
Umatilla Chem Depot	1.31	6.54	0.00	0.00	7.28	0.00	0.80	9.15	0.87
USAG Selfridge	1.51	7.08	2.84	0.00	8.50	0.37	1.49	0.04	4.35
Walter Reed AMC	2.33	7.85	2.84	0.00	9.73	0.01	1.49	2.61	6.96
Watervliet Arsenal	2.25	7.85	2.84	0.00	8.35	0.02	0.35	0.09	8.70
West Point	1.88	4.92	0.95	0.00	8.85	0.08	0.35	5.99	9.57
White Sands MR	5.16	8.00	0.95	5.00	9.03	9.61	0.35	5.71	0.87
Yuma PG	5.31	5.69	0.95	5.00	8.83	10.00	3.45	9.34	1.30
Lease - ARPERCEN	1.06	7.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lease - Ballston Complex	0.93	7.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lease - Army JAG Agency	0.94	7.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lease - Army JAG School	0.91	8.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lease - Army Research Office	1.15	7.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lease - Bailey's Crossroads	1.16	7.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lease - Crystal City Complex	1.11	7.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lease - Hoffman Complex	1.11	7.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lease - HQ, ATEC	1.27	9.15	0.00	0.00	0.00	0.00	0.00	0.00	2.61
Lease - PEO STRICOM	1.01	7.85	0.00	0.00	0.00	0.00	0.00	0.00	1.30
Lease - Rosslyn Complex	1.20	7.85	0.00	0.00	0.00	0.00	0.00	0.00	2.17

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## 1.0 INTRODUCTION

*“This much is certain: From this experience [Iraq], our experience in Afghanistan as well, we're learning lessons that will affect how the United States of America, how the Department of Defense and the Services will organize, will train and will equip, lessons that will impact budgets and procedures, training and doctrine, and affect the future success of our country for many years to come.”*

*- Secretary of Defense Donald H. Rumsfeld  
Doha, Qatar, 28 April 2003*

*“Recent world events have not altered the need to transform the military infrastructure to meet future needs. In fact, these recent events have exacerbated the need to rapidly accomplish transformation and reshaping. ... Excess infrastructure does exist and is available for reshaping or needs to be eliminated. ... Only a comprehensive BRAC analysis can determine the exact nature or location of potential excess. In preparing a list of realignment and closure recommendations in May 2005, the Department will conduct a thorough review of its existing infrastructure in accordance with the law and Department of Defense BRAC 2005 guiding procedures, ensuring that all military installations are treated equally and evaluated on their continuing military value to our nation.”*

*- Secretary of Defense Rumsfeld*

**Report Required by Section 2912 of the Defense Base Closure and Realignment Act of 1990, as amended through the National Defense Authorization Act for Fiscal Year 2003**

**23 March 2004**

The Army is transforming to better support future Joint training and war-fighting. Army installations are a part of this transformation, and BRAC 2005 is a transformation enabler for installations. The Army Basing Study (TABS) Group conducted research, interviewed senior Army leaders and subject matter experts (SMEs) to identify BRAC priorities, challenges, and opportunities. The findings reinforced the Army's objective to integrate BRAC with other Army Transformation initiatives.

DOD has undergone four previous BRAC rounds – in 1988, 1991, 1993, and 1995, which resulted in 97 major domestic base closures, 55 major realignments, and 235 minor installations being either closed or realigned.<sup>10</sup> Even with the infrastructure reductions achieved in the previous four rounds, DOD determined that excess capacity still existed and requested authorization for another BRAC round. Congress enacted legislation in 2001 that called for a BRAC round to occur in 2005. Seeking a realignment of force structure, BRAC 2005 focuses not only on removal of excess capacity but also on DOD Transformation.

As in previous BRAC rounds, each Service developed its own BRAC 2005 installation assessment approach. In addition to Services' efforts, seven functionally aligned Joint

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<sup>10</sup> Major and minor closure/realignments are in accordance with DOD announcements of BRAC actions.

Cross-Service Groups (JCSGs) also prepared assessment models of individual functions. The TABS Group has the responsibility for performing all Army BRAC analysis and recommending BRAC actions to Army leadership for submission to DOD. This paper describes the TABS installation assessment approach, known as Military Value Analysis.

## 1.1 Scope

### 1.1.1 Installations

The definition of a "military installation" used in this analysis is specified by the Defense Base Closure and Realignment Act<sup>11</sup>:

*“A military installation means a base, camp, post, station, yard, center, homeport facility for any ship, or other activity under the jurisdiction of the Department of Defense, including any leased facility.”*

Under the Congressional definition, military installations do not include any facility used primarily for civil works, river and harbor projects, flood control, or other projects not under the primary jurisdiction or control of DOD.

Section 2687 of title 10 requires that Congress be notified prior to closure of "any military installation at which at least 300 civilian personnel are authorized to be employed" or any realignment "involving a reduction by more than 1000, or by more than 50%, in the number of civilian personnel to be employed" at the time of notification.

Section 2909 of the BRAC Law mandates that, for the period November 5, 1990 to April 15, 2006, that it will be "the exclusive authority for selecting for closure or realignment, or for carrying out any closure or realignment of, a military installation inside the United States" except where the limitations of "section 2687 of title 10, United States Code, is not applicable."

Therefore, for BRAC 2005, installations above that authorized employment or "threshold" level may only be closed or realigned through a BRAC recommendation. Neither Title 10 nor the BRAC law limits BRAC or non-BRAC actions on installations below the threshold.

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11 National Defense Authorization Act for Fiscal Year 1991, U.S. Code , vol. 10, sec. 2687, (1990).

### 1.1.2 Army Stationing Strategy

Army Military Value (MV) analysis was required to consider the Army's stationing principles set forth by the Army G3 in the "Army Stationing Strategy."<sup>12</sup> Below is the Army Stationing Vision, stated in the strategy:

*"Army forces with a Joint and Expeditionary Mindset positioned to provide relevant and ready combat power to Combatant Commanders from a portfolio of installations that projects power, trains, sustains and enhances the well-being of the Joint Team."*

This strategy is dually important to any installation assessment. First, selected metrics must, in the aggregate, support the above strategy and the DOD BRAC selection criteria. Second, an installation's ability to meet specific requirements within the Stationing Strategy should increase the installation's Military Value.

The Army Stationing Strategy groups installations into categories using the installation's primary mission of currently assigned units as the defining factor. The installation categories formed the basis for the BRAC 95 installation assessment categories. An alternative approach, and the one adopted for BRAC 2005 and discussed in detail in Chapter 3, keeps the value of installations *independent* of their *current* installation category. This allows TABS to investigate an installation's potential unconstrained by category characteristics.

The 13 primary installation categories as defined in the Army Stationing Strategy are listed at Tab 1.

### 1.1.3 Installation Study List

The TABS installation assessment includes the CONUS Army Active Component, the Army Reserve, and the Army National Guard installations that meet the BRAC 2005 threshold as defined in BRAC Law.<sup>13</sup> The law also permits the Services to examine additional installations not constrained by the requirements of Section 2687. In addition to Army-owned installations, BRAC 2005 analysis includes major leased facilities as well.

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<sup>12</sup> Army Stationing Strategy, Army G3, August 14, 2003.

<sup>13</sup> 10 USC Section 2687, Base Closures and Realignment.

## 1.2 Purpose

In the legislation, Congress stipulated that Military Value (MV) would be the primary consideration for BRAC 2005 decision-making. Thus, one of the first steps in the analysis was to determine the MV of each installation.

This annex serves as an introduction to the Military Value Analysis (MVA) approach, which supports the BRAC Senior Review Group's (BRAC SRG) review of Army installations. It explains MV and the approach that TABS followed to develop MV models, including document research, Army leader and subject matter expert (SME) interviews, and decision-analysis techniques. Chapter 2 provides an overview of MV analysis and includes developmental work on MVA. Chapter 3 provides background information on BRAC 95 MV and the rationale for enhancing the Army's past installation MV assessment methods. Chapter 4 provides the research and senior leader interview findings. Chapters 5 through Chapter 7 address the Military Value of Installations (MVI) and the Military Value Portfolio (MVP). Conclusions in Chapter 8 provide a summary.

The Office of the Deputy Assistant Secretary of the Army for Infrastructure Analysis (DASA (IA)), the Center for Army Analysis (CAA), West Point's Systems Engineering Department, and the United States Military Academy, prepared this annex for the DASA (IA).

## 2.0 MILITARY VALUE AND MVA

### 2.1 Description

MV analysis is considered in every stage of analysis as indicated in the TABS Analytical Framework (TAF). MV analysis consists of two modules (IEM and ODEM), four models (MVI, MVP, OVM, and OPM), and four distinct products (Installation Evaluation, Portfolio Determination, Scenario Value, and Options Evaluation).

The Installation Evaluation Module (IEM) results in the MV of installations and a portfolio of BRAC installations that satisfy Army requirements. The Option Development and Evaluation Module (ODEM) uses the IEM and other model results (e.g., COBRA) to determine different combinations of Army scenarios to package into Options.<sup>14</sup>

#### 2.1.1 IEM

The IEM, as shown in Figure 1, includes the MVI and MVP models, which provides products that inform scenario analysis at the starting point for installation-level analysis (e.g., the installation to focus stationing efforts) and unit-level analysis (e.g., improved locations for specific units).

Module	IEM (Installation Evaluation Module)	
Models	MVI (MV-Installations)	MVP (MV-Portfolio)
Products	Installation Evaluation	Portfolio Determination

**Figure 2. IEM Components**

Using Multi-Objective Decision Analysis (MODA), MVI develops a 1-to-97 ranking of each installation’s overall MV (called the Installation Assessment in BRAC 95). Given a future Army force structure requirements and other Army needs (e.g., total maneuver space required), MVP uses optimization techniques to identify the best (highest Military Value) portfolio. Sensitivity analysis helps to determine the portfolio of installations that provide the greatest future stationing flexibility. Flexibility is defined as the Army’s ability to absorb additional units while still meeting the unit’s requirements and satisfying potential surge requirements.

MVI and MVP components are described in Figure 2. MVI determines the MV of these installations; once developed, the MVI remains constant throughout BRAC.

<sup>14</sup> Figure 3 outlines the IEM and ODEM components.

<b>MVI</b>	<b>MILITARY VALUE OF INSTALLATIONS</b>
<b>Purpose</b>	Determines the MV of an installation based on 40 attributes <sup>15</sup> .
<b>Products</b>	- Installation MV ranking - <b>A ranking of installations from 1 to 97</b>
<b>Use</b>	- Provides input for MV-Portfolio (MVP) analysis - Assists with scenario analysis
<b>Method</b>	Multiple Objective Decision Analysis (MODA)
<b>Description</b>	The MVI is the first step in determining the MV of BRAC-related actions or products. The MVI provides the installation MV and is derived from 40 attributes. MVI does not consider unit stationing nor does it consider costs of implementation actions or requirements.
<b>MVP</b>	<b>MILITARY VALUE PORTFOLIO</b>
<b>Purpose</b>	Determines the portfolio of installations that maximizes the MV of a portfolio or set of Army installations, subject to meeting a set of requirements.
<b>Product</b>	<b>A portfolio, or set of installations</b> (subset of the 97 installations)
<b>Use</b>	Provides TABS a starting point for installation and unit-level analysis. Installations not in the portfolio are the first installations under review for possible stationing actions.
<b>Method</b>	Optimization: MVP uses outputs from MVI and maximizes the MV of the portfolio of installations that the model recommends, subject to the needs of the Army.
<b>Description</b>	MVP provides a means to include requirements within MV analysis. The MVP uses MVI as an input to an optimization model as well as requirements, which are the basis for model constraints. The MVP is the MV of a set of installations, but still does not consider unit stationing and costs of implementation.

**Figure 3. IEM Components**

<sup>15</sup> The primary building block for MVI is the attribute. An attribute is an installation characteristic that helps the model distinguish installations from each other.



This annex focuses only on Military Value (MV) analyses; this is the first MVA Module indicated in Figure 3. A second paper addresses the Option Development and Evaluation Module (ODEM)<sup>16</sup>, indicated to the right of the shaded column. A Scenario Analysis can only be performed after these two modules are completed.

<b>Module</b>	IEM (Installation Evaluation Module)		<b>Scenario Analysis</b>	ODEM (Option Development and Evaluation Module)	
<b>Models</b>	MVI (MV-Installations)	MVP (MV-Portfolio)		OVM (Option Value Model)	OPM (Option Portfolio Model)
<b>Products</b>	Installation Evaluation	Portfolio Determination		Scenario Value	Option Evaluation

**Figure 4. MVA Modules**

In addition to these aforementioned modules, TABS also conducted other types of analyses to develop and support BRAC recommendations. These include Capacity Analysis<sup>17</sup>, Optimal Stationing of Army Forces Model (OSAF), team discussions, and integration of, when appropriate, JCSG and JAST insights.

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<sup>16</sup> See Annex 7 of the MV Supporting Document for the ODEM Technical Paper.

<sup>17</sup> See Appendix A of the 2005 BRAC Report.

2.1.2 ODEM

The ODEM Module includes the OVM and OPM models; each is described within Figure 4.

OVM	OPTION VALUE MODEL
<b>Purpose</b>	Determines the value of different scenarios. The scenarios are evaluated for their value relative to each other based on the installations involved within the scenario.
<b>Product</b>	A ranking of scenarios from 1 to n.
<b>Use</b>	- Provides input for OPM analysis - Assists with scenario prioritization
<b>Method</b>	MODA
<b>Description</b>	The TABS Group develops multiple scenarios based on MVI, MVP, capacity analysis, and other analyses. Once the scenario is built, overall value with OVM is determined. OVM includes the MVI inputs (MVI never changes within any analyses), but we <sup>18</sup> introduce unit stationing and implementation costs.
OPM	OPTION PORTFOLIO MODEL
<b>Purpose</b>	Determines the set of scenarios that maximizes the value of an option subject to meeting a budget constraint.
<b>Product</b>	An option that consists of multiple scenarios.
<b>Use</b>	Provides a set of options that TABS can use as a basis for recommendations.
<b>Method</b>	Optimization: OPM uses outputs from OVM and maximizes the value of a set of scenarios subject to implementation cost. The options differ depending on the additional constraints applied to the model (e.g., constraints can force particular scenarios into the final option).
<b>Description</b>	TABS will combine scenarios into options and needs a way to determine the value of each option. OPM uses the inputs from OVM and determines the value of a set of scenarios subject to a budget constraint. OPM allows TABS to maximize value while ensuring the option’s scenarios can be funded. Funding constraints are notional, but provide a means to distinguish between possible options.

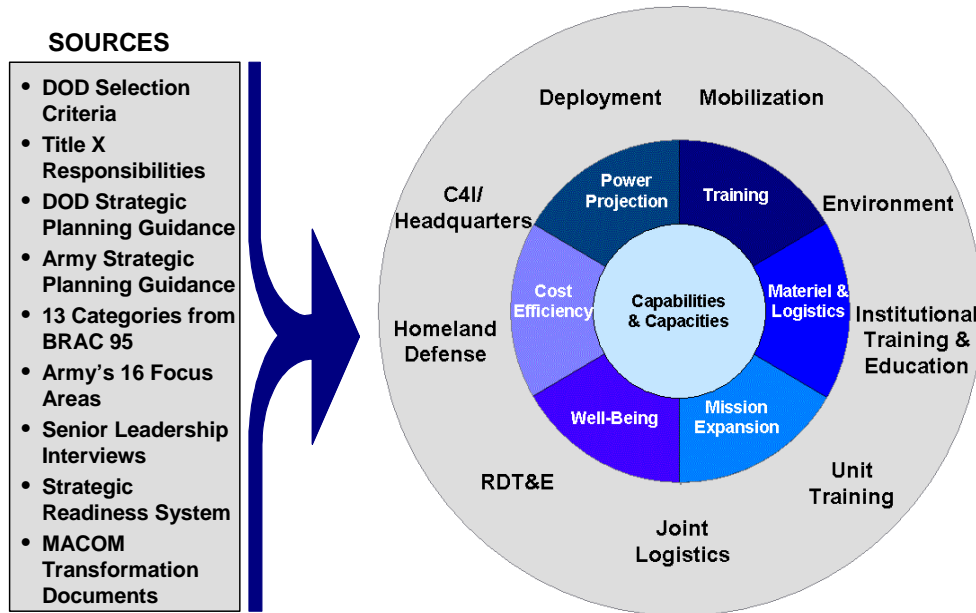
Figure 5. MVA Modules

2.2 Capabilities and Military Value

As in BRAC 95, MVI for BRAC 2005 uses MODA, the most appropriate technique for defining value and analyzing alternatives involving competing objectives. Unlike BRAC 95, however, the 2005 MV uses a capability approach instead of an installation-category approach. This allows the Army to evaluate all installations in a single group using one model. Figure 5 illustrates the first two tiers of the MV qualitative framework, which we

<sup>18</sup> “We” refers to the authors of this paper, the TABS Group.

define as installation capabilities and capacities (inner circle), and missions (outer circle) to meet these capabilities. Numerous sources led to the development of capabilities and capacities, which in turn helped TABS develop BRAC Objectives, MVI attributes (installation characteristics), and MVI priorities (weighting).



**Figure 6. Installation Capabilities and Capacities**

### 2.3 Attributes

TABS uses 40 attributes to determine an installation’s MV for BRAC 2005. Attributes are specified for each of the missions in Figure 5 and represent characteristics that are, distinguishable between installations (e.g., size of the installation’s maneuver space), measurable, and derived from certified data sources. These attributes determine the MV of an installation. For each attribute, value measures assess how an installation supports the attribute and a mathematical MV function quantifies the value of returns to scale on each value measure. Returns to scale demonstrate the relationship between increments of value, e.g., increasing returns mean the next increment has greater value than the last, and decreasing returns refers to increments with less value than the previous increment. Weights are assigned based on the relative importance of each capability, attribute, and value measure. The installation’s MVI is the sum of the products of the weights and the score for each value measure across each attribute that the installation supports.

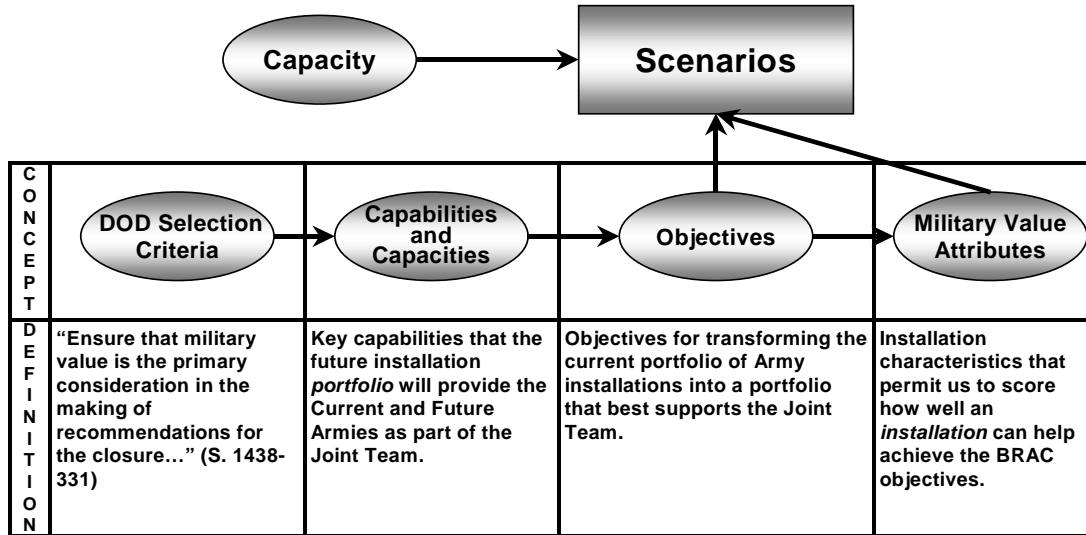


Figure 7. Attribute Relations

As shown above, the attributes are related to BRAC Objectives, Capabilities and Capacities, and the DOD BRAC selection criteria. TABS uses MV, and also capacity analysis, to inform scenario development.

#### 2.4 MVI and BRAC 95

Primary enhancements to the Army’s BRAC 95 MV approach include:

CHANGE	DISCUSSION
<b>Fewer Attributes (40 vs. 57)</b>	- Fewer attributes enables focus on important characteristics.
<b>Focus (current and future vs. mostly current)</b>	- Increases focus on an installation’s potential missions. - Permits examination for Army Transformation.
<b>Categories (1 group vs. 13 categories)</b>	- BRAC 95’s 13 stove-pipes prevented analysis across categories. - One group of installations allows stationing of units across all installations.
<b>Weighting (bottom-up vs. top-down)</b>	- BRAC 95: military judgment at multiple levels for 13 categories. - BRAC 2005: bottom-up approach determines a weight for each attribute, and then all other weights are calculated up to and including the Military Value criteria weighting. A top down weighting approach weights all aspects and layers of the model including the criterion weight and attribute weighting.

Figure 8. MVI & BRAC 95

## 3.0 BACKGROUND

### 3.1 Military Value Assessment in BRAC 95

The Army's 1995 BRAC MV Installation Assessment (MV-IA) was considered successful. The Government Accountability Office (GAO) reported that the "Army's process and recommendations were generally sound."<sup>19</sup> A 2001 RAND study also noted some strength, finding that the Army approach was appropriately derived from the National Military Strategy and directly linked to the eight DOD BRAC selection criteria, while being both "explicit and auditable."<sup>20</sup>

The BRAC 95 MV analysis began with candidate installations being assigned to one of 13 categories such as Maneuver Grounds, training schools, ammunition production, depots, ports, etc.

Army installations could support units with missions in numerous categories, but the installation would fall into one category based on the installation's primary mission.

Each installation's MV was assessed within its respective category using a sub-set of 57 measurable attributes. These attributes are linked to one of the four DOD selection criteria used to define MV. Each installation within an installation category was evaluated using the same attributes; however, no category includes all 57 attributes. In fact, the numbers of attributes used in each category ranged from a high of 23 (maneuver) to a low of 12 (commodity).

These attributes were weighted with regard to their relative value within each category, with each category's total points summing to 1000. These weightings were determined by using military judgment.

An installation's MV was derived by multiplying the normalized raw attribute scores by the weights assigned, summing the products, and ranking the raw scores from highest to lowest of all installations within the category. This list became the initial ranking of installations.

For each installation category, TABS applied requirements to determine its BRAC "study list." Those installations not on the study list represented the initial set or "portfolio" of installations needed to meet Army requirements. The study list became the starting list for BRAC actions in 1995.

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<sup>19</sup>Government Accounting Office, Military Bases, Analysis of DOD's 1995 Process and Recommendations for Closure and Realignment, April 1995.

<sup>20</sup>RAND Corporation, Taking Stock of the Army's Base Realignment and Closure Selection Process, 2001.

## 3.2 Need for Change

Since the Army's overall BRAC 95 selection approach was "generally sound," it would seem suitable to use the same modeling approach for BRAC 2005. However, the Army determined that reasons existed to modify the BRAC 95 MV assessment model. This section examines the need for change by looking at BRAC 95 analysis reviews, evolving defense environments, DOD and Army Transformation, and BRAC law perspectives.

### 3.2.1 BRAC 95 Analysis Reviews

Changing DOD BRAC selection criteria, CAA, GAO, and RAND reviews were the catalysts for investigating refinement of the Army's MV assessment. The RAND Corporation echoed GAO's positive assessment to some degree, but it also identified significant shortcomings that limited the BRAC 95 MV's potential effectiveness. RAND recommended that the Army address these issues in future BRAC MV analyses.

One cited problem was the Army's decision to separate installations into 13 distinct categories and limit MV comparisons to installations within a given category. RAND found that the Army ranked its "installations without regard to their value for the missions of other commands"<sup>21</sup> and that this "stove-piping" of the analysis precluded the Army from considering bold consolidations of functions onto "fewer, large, multifunctional installations"<sup>22</sup> both among its MACOMs as well as with "the installations of other Services as potential sites for inter-Service consolidation."<sup>23</sup> A 2001 Center for Army Analysis (CAA) study also found that "stove-piping decreases stationing possibilities" and that "stove-piping decreases the potential savings by over 30 percent...."<sup>24</sup> Such a decrease in stationing possibilities and savings was due to limiting analysis across different unit types, which, in turn, limited stationing opportunities.

RAND also stated that the Army Stationing Strategy incorrectly linked "the importance of activities on an installation with the importance of the installation itself."<sup>25</sup> This limited BRAC options since an installation with a low standing on the MV order of merit list could be included in the Army's portfolio solely because its main function was necessary. In other words, the main function was dependent on the installation to which units were assigned, instead of being dependent on the units uniquely. This is significant because, when the main function is dependent on units, and not installations, then units can more easily be assigned to other locations based on more favorable installation characteristics and future Army objectives.

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<sup>21</sup> RAND Report, "Taking Stock of the Army's Base Realignment and Closure Selection Process," 2001.

<sup>22</sup> Ibid.

<sup>23</sup> Ibid.

<sup>24</sup> CAA Report, "Optimal Stationing of Army Forces," 2001.

<sup>25</sup> RAND Report, "Taking Stock of the Army's Base Realignment and Closure Selection Process," 2001.

### 3.2.2 *Defense Environment Changes*

Changes within the Army, the DOD, the United States, and the world during the 10 years between BRAC 95 and BRAC 2005 were key catalysts for continuing the evaluation of the validity of previous BRAC MV methodologies.

The terrorist attacks of 11 September 2001 dramatically and permanently changed the security posture of the continental United States. The nation's Armed Forces, which previously focused almost exclusively on defending the U.S. from abroad, were now integrated into homeland defense. This momentous change in Army strategy strongly influences stationing analysis and, consequently, the BRAC study.

The past 10 years have also seen changes in the organization, manning, and location of U.S. forces overseas as these adjusted to world changes. The Army is adopting a strategy that returns much of the capability now stationed "permanently" in Europe and other OCONUS locations back to the U.S. The Integrated Global Presence and Basing Strategy (IGPBS) locates these forces at CONUS installations and deploys units forward as needed. The potential impacts of the stationing of these additional forces through IGPBS on CONUS installations must be accounted for in BRAC analysis.

Military readiness, economic necessity, and the defense environment are driving DOD strategy toward Joint stationing; the ability to train and deploy as a Joint force is a force multiplier. If each Service retained 100 percent of its infrastructure, then the under-utilized capacity would require additional resources to sustain. Joint basing is one way to maximize capacity utilization and increase efficiency. The use of more capable Joint installations helps DOD minimize the necessary resource outlays for investment in force transformation and other higher priorities.

The Global War on Terrorism, increased deployments, other military commitments, and the ensuing operations tempo (OPTEMPO) places an increased burden on Soldiers and their families and adds a greater emphasis on well-being. OPTEMPO, combined with increasingly technical armed forces and the need to compete with the private sector, makes recruitment and retention of highly qualified Soldiers more and more difficult. A contributor to the Army's ability to attract and retain Soldiers is its ability to foster the well-being of Soldiers and their families. Soldier and family well-being depends on the quality of Army installations and their communities, including the availability of quality housing, spousal employment opportunities, and service quality. Therefore, retaining and investing in installations that best enhance the force's well-being becomes an issue of military readiness and needs to be considered in MV analysis.

Encroachment on and around Army installations, already a problem in 1995, constrains Army training. Encroachment impacts the types of training allowed and the times when land is available for such training, thus becoming a consideration in the re-stationing of forces. However, urban development near installation perimeters also provides military families with more access to employment opportunities, better education, and higher morale and welfare. Combined with longer assignment tours for Army Soldiers and greater share of training that will be conducted off-post under the unit-manning concept, the fact that a military installation is within certain urban centers could provide well-being benefits that somewhat soften encroachment's negative impacts.

Technological and economic factors that have emerged during the past 10 years are also influencing the Army and influencing MV development. Since 1995, information technology (IT) has progressed from its infancy and now permeates every aspect of life. IT impacts how the Army trains, where it bases units, and increases the installation space required to exercise new equipment. Like IT, the movement to privatize non-core functions has grown significantly, and with privatization comes a change in both how much infrastructure is needed as well as how and where the infrastructure is “stationed.”

### *3.2.3 Defense and Army Transformation*

Another factor that forced a change to the BRAC 95 MV approach was DOD and Army Transformation. The DOD, in its desire to adapt with technology, launched an extensive program of preparing its future forces to fight the next battle, rather than making the common mistake of improving its capability to re-win the last war.

Transformation has driven DOD to look to 2025 as a means of determining what changes are needed in today’s forces so that they will be ready to fight and win future conflicts. Some key “truths” about this future force are already evident. Future combat systems will dramatically transform the way the Army trains, deploys, and supports Joint war-fighting. The increasing importance of IT is seen in the development of the Future Combat System (FCS) and in the increasing potential and reliance on reach-back to home-station operations centers. Future forces will be seamlessly Joint and therefore will need to train Jointly. Though the platforms (tanks, planes, ships) from which it fights will remain important, the future force must achieve “decision superiority” by shifting its focus from “platform-centric” to “information-centric” power. These changes will have a direct impact on how much and what type of CONUS installation infrastructure is retained and where future forces are located.

Given its timing relative to DOD’s transformation effort, BRAC 2005 became a transformation enabler. Transformation will impact the configuration and location of installations and affect their roles as deployment platforms and C2 centers. The need to support transformational needs and the opportunity afforded by BRAC to make bold infrastructure changes made BRAC 2005 pivotal to the DOD transformation effort.

Part of transformation is the re-stationing of forces from outside of the U.S. and changes in the structure of those forces. This activity has an impact on MV owing to the additional emphasis it places on CONUS resources and the need to maintain a hedge to address uncertainties regarding future changes in force structure and Army requirements.



### 3.2.4 Changes in BRAC Law

BRAC 2005 legislation, enacted in late 2001, contained specific guidance that MV would serve as the primary consideration in the selection process. The legislation also directed special considerations for DOD and the Services in the development of their MV analysis.

Section 2912(a)(3)(B) directs DOD to consider “any efficiencies gained from Joint tenancy by more than one branch of the armed forces at a military installation.” The legislation also includes a provision that the armed forces’ installation MV assessments include, as a primary consideration, the retention of installations and infrastructure that would support current and future homeland defense missions. Homeland defense was not included in the BRAC 95 law.

Section 2913(b)(1-5), states that “the selection criteria prepared by the Secretary [of Defense] shall ensure that Military Value is the *primary consideration* in the making of recommendations for closure or realignment.”<sup>26</sup> The law specifies that MV shall include at a *minimum*:

1. Preservation of training areas suitable for maneuver by ground, naval, or air forces to guarantee future availability of such areas to ensure the readiness of the Armed Forces;
2. Preservation of military installations in the United States as staging areas for the use of the Armed Forces in homeland defense missions;<sup>27</sup>
3. Preservation of military installations throughout a diversity of climate and terrain areas in the United States for training purposes;<sup>28</sup>
4. The impact on Joint war-fighting, training, and readiness;
5. Contingency, mobilization, and the future total force requirements at both existing and potential receiving locations to support operations and training.

As with previous BRACs, 2005 legislation dictates that DOD base its BRAC analysis on two key documents: a force structure plan and a congressionally-approved set of selection criteria. BRAC 2005 law, however, directs that the force structure plan be based on an assessment of probable threats to national security during the twenty-year period beginning with fiscal year 2005. In 1995, the law stipulated that the force structure reflect probable threats for only six years. This extended timeframe impacted how value was assigned to installation characteristics; immutable installation characteristics (those that adapt very slowly if at all to changing requirements) increased in value while existing infrastructure (that is, facilities that can be readily adapted to changing force structure requirements over a 20-year period) fell in value.

DOD directed that BRAC 2005 not only address the reduction in excess capacity, but also serve as a transformation enabler. The assessment had to use attributes that best assessed an installation’s MV for a 2025 force. This ensured MV analysis would not

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<sup>26</sup> Defense Base Closure and Realignment Act of 1990, as amended through FY02 Authorization Act.

<sup>27</sup> See Annex 2 in the MV Supporting Document for the Staging Area Analysis paper.

<sup>28</sup> See Annex 1 in the MV Supporting Document for the Climate & Terrain Analysis paper.

solely assess an installation based on existing infrastructure and current characteristics, as had been done in previous BRACs. Instead, an installation’s potential to support transformation through 2025 was valued.

### 3.2.5 *Changes in DOD BRAC Selection Criteria*

There are eight DOD BRAC selection criteria. DOD directed that Criteria 1-4 (shown below) be used to determine MV. The bold italics represent changes to BRAC 95 criteria.

1. The current and future mission capabilities and the impact on operational readiness of the total force of the Department of Defense, ***including the impact on Joint war-fighting, training, and readiness.***
2. The availability and condition of land, facilities ***and associated airspace (including training areas suitable for maneuver by ground, naval, or air forces throughout a diversity of climate and terrain areas and staging areas for the use of the Armed Forces in homeland defense missions)*** at both existing and potential receiving locations.
3. The ability to accommodate contingency, mobilization, ***surge***, and future total force requirements at both existing and potential receiving locations ***to support operations and training.***
4. The cost ***of operations*** and ***the*** manpower implications.

MV implications of Military Value criteria changes:

1. **Criterion 1.** Places focus on Joint war-fighting, training, and readiness. BRAC actions that foster Joint basing, Joint use of facilities, Joint training, and deployment as a Joint force are meant to have a higher MV.
2. **Criterion 2.** Adds a “Joint” requirement in terms of retaining training areas for “maneuver by ground, naval and air forces” and specifies that these training areas be “throughout a diversity of climate and terrain areas”, which in previous Army BRAC analyses had been brought into the MV assessment in terms of stationing imperatives contained in the Army’s Stationing Strategy. The last new provision requires retention of staging areas for homeland defense.
3. **Criterion 3.** Emphasizes operations and training requirements. This criterion addresses the future and the fact that uncertainties would exist in future missions. This criterion coupled with a 2025 force profile has a high level of importance within MV. The immutable (e.g., location, terrain, etc.) characteristics of an installation – those that could not be changed by merely changing Army funding priorities – became more important to long-term MV relative to existing facilities, which could be upgraded and/or replaced during a 20-year planning horizon.

Installation MV analysis was required to be based on the final BRAC 2005 Military Value criteria, and attributes selected for analysis had to be linked to these criteria. Thus, the BRAC 2005 model placed greater MV on Joint aspects of stationing.

### 3.3 Summary

The factors described above are the basis for TABS to enhance the Army's previous installation MV approach for BRAC 2005. TABS responded to valid criticism of the BRAC 95 analysis and benefited from the flexibility the adapted approach provided toward the development of ideas to support Army Transformation. Significant developments in the past ten years, such as IT, encroachment, and homeland defense are now incorporated into BRAC 05 analysis. Specifically, the analysis had to enable BRAC 2005 to support Defense and Army Transformation, especially Joint basing, training, and operations. Finally, changes were made to the BRAC law and DOD BRAC selection criteria, including a 20-year planning horizon. As a result of these factors, TABS assessed each installation's MV based on contributions to future Army Transformational objectives and not by "stove-piped" installation categories as was the case in BRAC 95.

## 4.0 RESEARCH

The impact of changes within the Army and its environment on potential approaches needed to be understood, before TABS developed the BRAC 2005 MV assessment. TABS personnel, along with support from the Center for Army Analysis (CAA), and the West Point’s Systems Engineering Department embarked on a research effort that included document reviews and interviews with senior leaders and subject matter experts (SMEs) to develop an understanding of ongoing changes and their possible impacts on MV. This chapter provides a summary and conclusions from this research and interviews.

### 4.1 Document Research

The team reviewed Army, DOD, Joint, and military-related documents (e.g., GAO, RAND, etc.), focusing specifically on transformation, stationing, and BRAC. Key concepts relating to the future of Army stationing emerged, and the team attempted to mold them into the MV changes for BRAC 2005. The team developed document summaries outlining the transformational or institutional changes that impact the value of Army installations and warranted changes to the BRAC 95 MV-IA. Selected summaries are provided at in the Military Value Supporting Document, attached separately.

Among the documents reviewed were:

DOCUMENTS	
Joint Vision 2020 (DOD)	DOD Transformation Planning Guidance
Objective Force in 2015 White Paper (Army)	The Army Plan 2005-2020
Objective Force White Paper (Army)	2003 Army Stationing Strategy
G8 U/A U/E Stationing Analysis (Army)	BRAC 95 Installation Assessment
The Army Power Projection Master Plan	FM 1, The Army
2005 BRAC Legislation	FM 3-0, Operations
TRADOC Pam 5252-3-35 (draft), Force Projection	Future Force in 2020 White Paper (Army)
Concept for Future Joint Operations – Expanding on Joint Vision 2015	GAO Report: “Encroachment on Training Ranges”
RAND Report: “Taking Stock of the Army’s Base Realignment and Closure Selection Process”	GAO Report: “Analysis of DOD’s 1995 Process and Recommendations for BRAC”
Army Campaign Plan	

**Figure 9. Documents Reviewed<sup>29</sup>**

<sup>29</sup> See the bibliography for a complete listing of references .

Listed below are several overarching themes derived from document research:

THEME	IMPACT ON MV
The Future Force will tactically occupy greater operational space, move faster, and shoot farther than the Current Force and much more than the 1995 Force.	Maneuver space required for training will increase and thus have greater value in the future.
Information and other technologies, when applied to the Army’s sustaining base of operations, will reduce its footprint in theater and in CONUS.	Decreases the need for future support facilities and places an emphasis on IT capabilities.
The Future Force will need to deploy faster and from more points in order to converge into the area of operations as a Joint team, and early-deploying forces must be trained and ready.	The need for training significant numbers of Reserve Component (RC) personnel at large AC deployment platforms and training areas was a part of the BRAC 95 MV-IA; deployment and mobilization remain in the BRAC 2005 analysis.
Soldier well-being is critical to Army readiness.	Well-being was not a significant part of the BRAC 95 IA, but will be included in 2005.
Force protection and homeland security (defense) are considerations in future stationing actions.	Neither was explicitly a part of the BRAC 95 MV-IA, but will be included in 2005.
The Live-Virtual Construct, supported by the Global Information Grid (GIG), when applied to training and command and control, could revolutionize functions and alter CONUS installation characteristics needed to support them.	IT was not a major factor in 1995, but will have a greater importance in 2005.

**Figure 10. Overarching Themes**

**4.2 Senior Leader Interviews**

To complement document research, TABS conducted interviews with senior Army and DOD leaders to obtain their views on transformational priorities, challenges, and opportunities as they pertained to BRAC 2005. Interviews provided a hierarchy of concepts that directly influenced MV components and values. TABS considered key studies related to BRAC 2005 recommended by leaders during the interview process. The results validated the document research and provided further insights not found in any reference.

TABS interviewed 36 senior Army leaders across several organizations. Organizations that contributed to our analysis are listed below in Figure 10:

After meeting with senior leaders, TABS met with subject matter experts (SMEs)<sup>30</sup> from various organizations to follow-up on issues raised during interviews to determine how concepts raised during interviews could impact MV. Basically, senior leaders raised issues while the SMEs assisted with details. The team met with SMEs from the following organizations:

ORGANIZATIONS		
ASA (FM&C)	G3, Force Management	G4, Transformation
ASA (M&RA)	G3, Force Protection	G4, Force Projection
ASA (ALT)	G3, Stationing	G4, Sustainment
G1, Well-being	G3, Training Simulations	G4, Resource Management.
ACSIM	G3, Transformation	G6, Info. Infrastructure
IMA	G3, War Plans	G8, Modernization Div
MEDCOM	G3, Institutional Training	G8, PA&E
NGB	G3, Deploy. & Mobilization	G8, CAA
OCAR	Objective Force Task Force	RAND
		GAO

Figure 11. Subject Matter Expert Organizations<sup>31</sup>

### 4.3 Research and Interview Findings – Six Installation Capabilities

The following section outlines the major interview findings, which helped the Team develop a structure for the modeling effort. The results are grouped into six capabilities that we define in Section 4.

#### 1. SUPPORT ARMY AND JOINT TRAINING TRANSFORMATION

##### 1.1. There are significant Joint training opportunities.

*“I think we will use more Joint training going forward – things like NTC and Twenty Nine Palms.”*

*“For future training, we must eliminate these distinctions and move towards multi-use, multi-Service Joint bases. Bases that can train, test, evaluate, and field all at the same time.”*

##### 1.2. The Future Force Unit of Action (U/A) will need more, not less, training land.

*“My major concern is training areas – both maneuver land and ranges. We still have to have ranges; simulation will only get us so far. How else are we going to do collective training without land and ranges? Different caliber weapons,*

<sup>30</sup> See Annex 5 in the MV Supporting Document for a complete listing of SME certifications.

<sup>31</sup> SMEs interviewed are listed in the Military Value Supporting Document.

*longer range weapons, and a more distributed battle space all indicate that we will be fighting in a larger area.”*

*“The U/A maneuver box is significantly larger than the maneuver box for a traditional maneuver brigade. We will need additional maneuver space. As we transform, we will need installations that can grow.”*

## **2. PROJECT POWER FOR JOINT OPERATIONS**

### **2.1. The Army should approach BRAC 2005 from a “Total Force” (AC/RC/NG) perspective.**

*“We need to have the Reserves on a ‘Train, Alert, Deploy’ mode, not ‘Alert, Train, Deploy’ as it is now. During current operations, we gave some units only one week’s notice before they were gone on missions. We will lose Soldiers and employer support if we keep doing this.”*

*“The Reserve’s ‘perspective’ is not different than the Army’s. We have no constituency other than the Army, unlike the Guard, which is a more complete force.”*

### **2.2. The Mobilization mission should be a significant BRAC consideration.**

*“We don’t have enough places to mobilize people from right now.”*

*“Time at mobilization stations is important. We need sufficiently large cantonment areas. We also must have access to all four (transportation components): land, sea, air, and rail.”*

### **2.3. Power Projection is an increasingly important BRAC consideration.**

*“Being near good transport is what’s important – the ability to project forces. A worst-case stationing scenario would be to have to put several brigades in an area that is not accessible. Reasonable proximity to a seaport or a place with good rail is what you want to keep.”*

*“The Stryker brigades may be lighter but they’re not that much lighter, ships are still a good thing. The bulk of our most recent deployment was done by ship and it will continue to be done this way in the foreseeable future.”*

*“The ability to project power is becoming more and more important.”*

## **3. SUPPORT ARMY MATERIEL AND LOGISTICS TRANSFORMATION**

### **3.1. The Industrial Base provides substantial BRAC opportunities.**

*“AMC is doing a lot of work in this area. There is room for efficiencies. In my mind, the area that is ripe for consolidation is logistics. Private industry went to school on the military, now it’s our turn to go to school on private industry – Wal-Mart, Sears, etc. They have distribution systems that are efficient.”*

*“Industrial base (depots, ammo, and arsenals) is 50+ years old; we haven’t invested in it. We need to modernize it. ... However, there are things like links for ammo that we can’t privatize because no one wants to do it and there are others, like some material and packing fibers that no one else does. ...I am concerned about what we have left organically from the industrial base when this*

*is over. The folks who say we should contract everything out or go to private industry have not looked at everything carefully enough.”*

#### **4. ENHANCE SOLDIER AND FAMILY WELL-BEING**

##### **4.1. Soldier and family well-being is an important BRAC consideration.**

*“We must maintain a quality force. To do this, we must address Soldier well-being issues, e.g. housing.”*

*“Well-being should be addressed, even though it is not an OSD criterion.”*

#### **5. ACHIEVE COST EFFICIENT INSTALLATIONS**

##### **5.1. BRAC funding enhances installation transformation and may help to alleviate under-funded accounts such as BOS and SRM.**

*“We are too big, we have too many places, too much infrastructure. It shows in our ability to pay bills and keep our quality of life at sufficient levels. We have an infrastructure for a 780,000 person Army versus a 480,000 person Army. The excess installations are in the following areas: logistics, depots, arsenals, training, National Guard.”*

*“We need to improve how we divest ourselves of property.”*

##### **5.2. DOD installation management may be more cost efficient for geographic areas with multiple installations.**

*“I’m afraid we won’t take advantage of all of our potential Joint opportunities. I’m not opposed to Joint bases, I think it’s a good thing.”*

*“We should look at situations like Ft. Bragg and Pope AFB, but we need to determine whether there is going to be a Joint installations command or whether we will give a particular Service the responsibility of running a mega-installation.”*

##### **5.3. The Army should continue to capitalize on Joint stationing agreements and pursue additional efficiencies.**

*“I would be disappointed if we were not co-located at a number of areas. Why can’t we have an Air Force wing at Ft. Hood? Co-location of Air Force and Army assets gives you an advantage”*

*“When there is a situation where it doesn’t really matter where a unit is stationed, then it should be Joint if possible.”*

##### **5.4. Privatization provides opportunities for BRAC.**

*“There ought to be an analysis of each installation to see if privatization is beneficial there. Maybe have a ‘score’ for each installation. Either way, a comprehensive cost-benefit analysis needs to be done.”*

*“We must continue to pursue privatization where economically sound; it reduces costs.”*



**5.5. Environmental costs have a major impact on BRAC funding and implementation.**

*“The environmental costs worry me, define ‘Pristine’ to me! The issue isn’t that nobody wants the land, it’s the condition that they want the land in that’s the problem.”*

*“We keep getting more environmental bills.... Earlier rounds did not consider environment as a part of cost.”*

**5.6. MILCON funding is a concern.**

*“MILCON bothers me. Once you put it somewhere, it’s a 50-year decision. Let’s not commit MILCON to places that are going away; let’s be smart about it.”*

*“I am also concerned about IT MCA projects that are already programmed. I don’t want to see us build something on an installation that we end up closing.”*

**6. MAINTAIN FUTURE STATIONING OPTIONS (MISSION EXPANSION)**

**6.1. The Army must synchronize BRAC with major Army initiatives.**

*“BRAC ’05 is not an independent activity. To get BRAC ’05 right, you must capture results from other major Army initiatives and studies. BRAC ’05 is integral, but it is a function of all of the other things and must be done in partnership.”*

*“We have a one-time shot to do everything synchronized and do it right. Everything seems to be tracking on its own lane – encroachment, Objective Force, moving forces from Europe – we need to synchronize.”*

**6.2. BRAC 2005 is the first OSD/Joint BRAC and this provides the Army an opportunity to capitalize on Joint opportunities.**

*“OSD is going to play in this one, in the past they just stamped what the Services did. The JCSGs are new, OSD is going to look at Joint and Joint will trump what the Services want. The Services have a tendency to not look across the fence.*

*“The functional JCSG are a new approach which adds a new dimension to the analysis.”*

*“I think Mr. Rumsfeld has this right, we need to do this together, otherwise you end up with four ‘Service BRACs’. At places like Pope-Bragg they shouldn’t be separated by a fence. I’ve seen in Texas and Hawaii where attempts were made to merge operations but it didn’t work because we didn’t do it right. We don’t need a bunch of small installations that take up people and resources.”*

**6.3. The Homeland Security mission has not yet been clearly defined, and requirements have not yet been established.**

*“Homeland Security is more of an RC/NG role with the AC as a back-up. The training requirements for it are a little different. We don’t need large land areas but we do need regional MOUT sites.”*

*“If there has been any impact on installations from the Homeland Security mission, I’m not aware of it, other than the establishment of CBRN Teams and a*

*heightened desire for force protection. If the Guard and Reserves are going to have a role in it that needs to be taken into stationing considerations.”*

#### **4.4 Research and Interview Summary**

Document research provided the analysis team with a better understanding of the impact of major DOD and Army initiatives (e.g., transformation, unit-manning, modularity) and provided both a basis for the initial MV modeling effort and a sound foundation for conducting senior leader interviews.

The senior leader interviews contributed to the refinement of our research conclusions (and MV) for several reasons. Interviews:

1. Validated the research done to date. Senior leader interview results were consistent with those of the document research.
  - Joint stationing and Joint training are important operationally and fiscally.
  - Due to increased mobility, the Future Force will require more, not less, training space.
  - BRAC needs to consider current and future mobilization issues.
  - The ability to project power will become increasingly more important.
  - Due to its impact on recruitment, retention, and readiness, Soldier well-being is becoming increasingly more important.
2. Provided insights not found in documentation, but essential to understanding the direction in which the Army’s senior leadership believes the Army is going.
  - The Army needs an aggressive BRAC to enable Army Transformation and free up funds for transformation. The current Army infrastructure is too large and has been under-funded for too long. BRAC provides a unique opportunity to “catch up.”
  - The Army needs to continue privatization initiatives to free up resources for use in its military core competencies.
3. In some instances, interviews tempered the research findings.
  - Though most of the transformational documents strongly suggest that the new Train-Alert-Deploy paradigm will eliminate most post-mobilization training, more than one senior leader inferred that this was not going to happen to the extent expressed without fundamental changes in funding and roles.
  - Homeland defense within CONUS would be less of a task for the active duty forces, but could become a viable RC mission. They believe the active force performs its homeland defense role outside U.S. shores. As far as stationing, they did not believe active forces should be re-stationed against this task.
  - Some doubt the extent to which the Live-Virtual Construct (GIG and simulations) would reduce the pressure for training lands.

Combined, the document research and senior leader interviews provided a solid foundation for MV model development. Documents highlighted issues, concerns, goals, and objectives, while Senior Leader interviews helped to prioritize these concepts. Document research also highlighted major transformational activities and Senior Leaders helped to put these activities into a BRAC context. Both the prioritization and BRAC context findings helped TABS develop the MV model.

## 5.0 THE MILITARY VALUE OF INSTALLATION MODEL (MVI)

The fundamental objective of the BRAC 2005 MVI model is to determine the MV of an Army installation.<sup>32</sup> This chapter describes the development of the Military Value of Installations model (MVI), in accordance with BRAC Law, BRAC selection criteria, and insights obtained from research and interviews. We first identify the MVI development criteria used to ensure the final model had the best possible structure. Second, we describe MODA, the operations research approach we employed to develop MVI.<sup>33</sup> Third, we describe the steps we undertook to develop the qualitative MVI framework. Finally, this chapter describes the attributes, their supporting value measures, and functions used for MVI calculations.

### 5.1 Development Criteria

The model's fundamental objective is to determine the MV of an installation. This is done by first identifying screening criteria to satisfy the minimum standard necessary to assess the final MV model, and then cross-referencing these criteria with an evaluation criteria list in order to determine which qualitative values to use in the final model determination.

#### 5.1.1 Screening Criteria

Prior to initiating the development of MVI, TABS determined the screening criteria essential for model viability. Screening criteria are listed below:

1. *Meet Legal Requirements* – For the BRAC Commission to recommend an action for approval, recommendations must be consistent with MV requirements outlined by BRAC law.
2. *Ensure Auditability* – The MVI is a major component of the BRAC analysis, which needs to withstand an audit.
3. *Be Future-Oriented* – The law and DOD guidance stipulate that BRAC analysis be oriented toward the 2025 force structure; therefore, the attributes used to assess an installation's MV must reflect Army goals.
4. *Provide Army Perspective* – Though much of the Reserve Component (RC) installation infrastructure is below the BRAC threshold, the critical role of these installations in regional support and in the RC's use of AC installations, makes the incorporation of RC requirements, missions, and assets a key to a successful MVI.
5. *Meet Army Stationing Principles* – BRAC will prompt the re-stationing of forces and activities through realigning and closing installations. Therefore, the MVI should reflect the stationing guidance set forth in the Army Stationing Strategy and approved by the Army G3.

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<sup>32</sup> The MV referred to in the rest of the paper is value based on a set of 40 attributes as applied to installations. MV is calculated once in the MVI model, but later applied to portfolios, scenarios, and options.

<sup>33</sup> There are several recent examples of MODA being used within the Army; for example, BRAC 95 and recent unit-manning analysis.

6. *Be Consistent with Joint Cross-Service Groups* – MVI should be as consistent in principle with JCSG MV assessments as possible. Consistency requires coordination and integration – but not duplication – across group efforts.
7. *Be Traceable to BRAC 95* – The BRAC 95 MV IA met the requirements of the BRAC 95 law; therefore, any departure from that process should be supported and documented.
8. *Balance Requirements and Cost* – Since there will not be sufficient funds to execute 100 percent of the desired BRAC scenarios, the model must identify BRAC scenarios with the highest potential to meet Army Objectives.

Each model considered was evaluated against the above eight screening criteria to determine its viability as the basis for MVI. The final model will satisfy these criteria.

#### 5.1.2 Evaluation Criteria

As mentioned previously, the screening criteria ensured a minimum standard for the final model and evaluation criteria guided our selection of the best qualitative value models. Based on research and interviews, we established the following six evaluation criteria that the MV model needed to satisfy:

1. *Satisfy DOD BRAC Selection Criteria* - Satisfy the requirements of the final selection criteria so that the Commission can consider recommendations effectively.
2. *Build on BRAC 95 Methods* - Build on lessons learned to improve the Army's successful BRAC 95 methods. A major lesson was that the analysis should focus on installation capabilities and not installation categories.
3. *Define Capabilities for Army Installations* - Define the capabilities for the set of enduring installations; installations with high value should support these capabilities.
4. *Emphasize Transformation* - Emphasize how Army installations can support DOD and Army Transformation, adapt to Joint stationing, and reflect the Army Stationing Strategy.
5. *Incorporate Well-Being of Soldiers and their families* – Ensure that the location of Army installations and the quality of Army and civilian facilities contribute to the well-being of Soldiers and their families.
6. *Be Analytically Credible* - Provide a simple and clear model that uses credible data, is auditable, distinguishable by installation, and analytically defensible.

## 5.2 Multiple Objective Decision Analysis

The most appropriate operations research approach when encountering complex decisions, multiple objectives, and uncertainty is decision analysis. Decision analysis has been a recognized operations research discipline since 1968, when the first decision analysis book was published [Raiffa]. A contemporary text used in many academic programs is Clemen's [Clemen, 1996]. Within decision analysis, the technique that focuses on multiple conflicting objectives is MODA, which is also called "Multiple Attribute Utility Theory" and "Multiple Attribute Value Theory." The first MODA book was published in 1976 [Keeney and Raiffa]. An excellent contemporary text was written by Kirkwood [Kirkwood, 1997]. MODA techniques were used for BRAC 95 MV analysis.

### 5.2.1 Multiple Objective Decision Analysis Definitions

Several definitions will be useful to help follow model development. The following terminology is based on theory, but placed in a MV context:<sup>34</sup>

- *Capabilities*: In some applications, especially those involving many decisions, it is useful to define evaluation considerations in terms of Objectives (e.g., provide maneuver areas for Joint training). TABS uses "Capabilities and Capacities" to represent MVI Objectives.
- *Attributes*: Installation characteristics that distinguish the Army's 87 installations from each other (e.g., size of the installation's maneuver space). An attribute discriminates between installations, has an auditable data source, and is linked to Capabilities as well as Military Value criteria. TABS uses attributes to determine an installation's MV.
- *Value Measure*: A scale used to assess an installation's score with respect to an attribute (e.g., square miles of maneuver space). Alternative terms for value measures are evaluation measures, measures of effectiveness, measures of merit, and metrics.
- *Value Function*: A mathematical function that assigns value to a value measure score. Quantitatively, value is defined as the returns-to-scale on a value measure.
- *Weights*: Weights reflect relative preference for the different installation's characteristics. The weight assigned to a value measure depends on its importance, the range or variation of the value measure, and how easy the Army can change the attribute to meet new Army requirements. Weights must sum to one at each tier within the model.

An understanding of these terms facilitates discussion about the mathematical models MODA uses to evaluate alternatives.

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<sup>34</sup> Kirkwood, 1997.

### 5.2.2 Mathematics<sup>35</sup>

In BRAC 2005, we use MODA to quantitatively assess the trade-offs among competing capabilities by evaluating each installation's total value from all attributes and the importance of each. MODA uses many mathematical equations to evaluate alternatives. The most commonly used and the simplest model is the additive value model. The additive value model uses the following equation to calculate the value of each installation:

$$v(x) = \sum_{i=1}^n w_i v_i(x_i)$$

where

$i = 1$  to  $n$  is the number of attributes in the model,

$v(x)$  is the installation's total value,

$x_i$  is the score of the installation for the  $i^{\text{th}}$  attribute,

$v_i(x_i)$  is the value of the installation at a score of  $x_i$  for attribute  $i$ ,

$w_i$  is the weight of the  $i^{\text{th}}$  attribute,

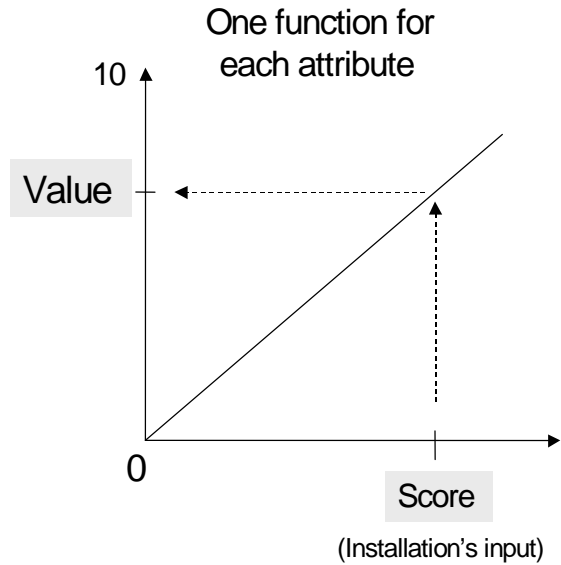
and the model requires  $\sum_{i=1}^n w_i = 1$  where all weights sum to one.

As in BRAC 95, our MVI will use the "additive value" technique, which simply means that the value of an installation is the sum of all weighted values for all attributes. Figure 11 lists the steps TABS used to calculate MV.

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<sup>35</sup> See Annex 4 of the MV Supporting Document for a technical explanation of the MVI model..

- Process steps include
  - Select Attribute  $i$
  - Select weight  $w_i$
  - Assign Attribute  $i$  to DoD Criteria 1-4
- To calculate MV
  - Find the score for an attribute
  - Convert the score to a value
  - Sum the weight of each attribute multiplied by the value for each attribute



**Figure 12. MV Calculations<sup>36</sup>**

A crucial part of the attribute development is a mapping of each attribute to the Military Value criteria. This mapping does not require a unique attribute – criterion relationship, some attributes may be mapped to multiple criteria if they in fact support those criteria.

The installation’s input is reflected in a score (x-axis) and this score is then translated to the associated value for the attribute (y-axis) using a value function, which transforms the score into a value from 0 to 10.

To calculate the MV score, TABS determines the sum-product of all installation values for each attribute and the attributes’ weights. The result is the installation’s total score, which can range from 0 to 10.

### 5.3 MVI Model Development

The first step in developing the MVI model was to identify its structure. Initially, TABS evaluated several *existing* frameworks for acceptability against screening criteria such as the Title 10 missions, DOD BRAC selection criteria, BRAC 95 installation categories and Army Stationing Strategy principles. None of these frameworks met all of the screening criteria.

In order to fully satisfy the screening criteria, the analysis team used a decision-analysis technique known as *affinity diagramming*<sup>37</sup> to identify the functions that installations must support and, in turn, used these key functions to develop installation capabilities.<sup>38</sup> The affinity diagramming technique had two major benefits.

<sup>36</sup> The mapping to DOD BRAC selection criteria 1-4 is required for assessing the relative importance of the four selection criteria, but has no impact on MV for the installations.

<sup>37</sup> See Annex 11 in the MV Supporting Document for further information about Affinity Diagrams.

<sup>38</sup> See Parnell, et al, 1998, for the development of value models using affinity diagramming.



- First, affinity groups are mutually exclusive and collectively exhaustive. (“Mutually exclusive” means that every function is different. “Collectively exhaustive” means we have identified all of the necessary functions.)
- Second, affinity diagramming usually identifies groupings that fit the Objectives of the unique model being developed.

An affinity diagram is a technique that collects large amounts of data (ideas, opinions, issues) and organizes them into groupings based on their natural relationships<sup>39</sup>. The affinity diagram is a good way to get people to work creatively to identify new relationships. It may be used in situations that are unknown or unexplored by a team, or in circumstances that seem confusing or disorganized, such as when people with diverse experiences form a new team, or when members have incomplete knowledge of the area of analysis. In its simplest form, the affinity diagram can be used to group ideas of a few individuals generated by brainstorming. In a more complex form, the affinity can be used to group ideas generated by thorough research and the interview work that we have used for BRAC 2005. In our application, we use affinity diagrams to develop the qualitative description of our MVI model.

The affinity exercise consists of the following six steps:

1. Identify the key documents addressing future Army functions that Army installations must support.
2. List all of the major activities (e.g., train maneuver forces, provide information hub, etc.) that constitute the functions.
3. Group the activities into functions through the affinity process (similar activities are grouped together).
4. Divide the function groupings into sub-functions by affinity.
5. Use the insights from senior leader interviews to define capabilities for each function.
6. Refine the MVI hierarchy based on input from senior leaders and subject matter experts.

The following sections describe the above six steps.

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<sup>39</sup> “Affinity Diagrams”, Module 4, The Tools of Total Quality, <http://www.hq.navy.mil/RBA/text/tools.html>

5.3.1 Key MVI Source Documents

Based on initial research and interviews, we used the following source documents as our key references.<sup>40</sup>

REFERENCE	ABBREVIATION
Title 10	T
BRAC Law	L
DOD BRAC Selection Criteria	D
JCSG Planning Documents, April 2003	J
Joint Vision 2020	2020
DOD Transformation Planning Guidance	DODTPG
The Army Plan 2005-2020	TAP
Objective Force in 2015	OF15
Objective Force White Paper	OFWP
Army Stationing Strategy 2003	S
G8 U/A U/E Stationing Analysis	G
ACSIM Installation Functions	A
BRAC 95 Categories	B
The Army Basing Study Principles	TABS

Figure 13. Key Source Documents

5.3.2 List Activities that Describe Installation Functions

The analysis team examined research documents and extracted key words (or activities) that define the functions that future Army installations must support. Several words are found in multiple references; A sample list of these key words is provided in Figure 13. Additionally the corresponding references are provided as a means of documenting their relevance.

KEY WORD (ACTIVITY)	REFERENCE
Train	S,T,J,D,G
Airspace	S
Maneuver	B
Simulations	OF15
Ranges	J, S
Education	J
Info Hubs	A, OF15
Info Superiority	2020
Network centric	DODTPG

Figure 14. Key Words and References

For example, references to training were found in multiple documents. Initially these key words were not limited or grouped, they were simply noted.

<sup>40</sup> Not meant to be exhaustive; the bibliography lists all references.

5.3.3 *Group Activities into a Single Capability*

The analysis team, using its collective military experience and modeling expertise, began an iterative process of developing affinity diagrams by grouping similar activities and then selecting an overall term that best characterized the groupings. The affinity exercise helped to define model capabilities. The following is an example of the affinity diagram for the “Training” capability:

KEY WORD	REFERENCE	KEY WORD	REFERENCE
Train	S,T,J,D,G	Maneuver	B
MTA	B	Simulations	OF15
Support	TABS,S	Availability	D
Joint Training	D	Ranges	J, S
Readiness/TF	D,L	Education	J
Objective Force	OFWP	Info Hubs	A, OF15
Environment	OFWP	Info Superiority	2020
LOS	S	Network centric	DODTPG
Schools	B	UAV awareness	OFWP
Joint/TF	L, D, DODTPG	Smaller/faster	OFWP
Airspace	S	Joint Prof Schools	DODTPG
Diversity	S,L	Individual	B
Impact area	B	Collective/Unit	B

**Figure 15. Affinity Diagram for “Train”**

After several iterations, the analysis team arrived at what it believed was the best value hierarchy. The titles of each of these diagrams became the capabilities in the hierarchy: Train, Project Power, Materiel and Logistics, Well-Being, Cost, and Future. Next, we describe the approach used to group sub-capabilities, which represent descriptors for each capability. The complete list of affinity diagrams is in the Military Value Supporting Materials document in the section titled, MVA Affinity Diagrams.

5.3.4 *Capabilities*

TABS refined its explanation of each capability based on document research and senior leader interviews: These explanatory revisions are as follows:

1. Train: Support Army and Joint Training Transformation
2. Project Power: Project Power for Joint Operations
3. Materiel and Logistics: Support Army Materiel and Joint Logistics Transformation
4. Well-Being: Enhance Soldier and Family Well-Being
5. Cost: Achieve Cost-Efficient Installations
6. Future: Maintain Future and Joint Stationing Options

### 5.3.5 *Build Missions*

The same iterative affinity diagramming used to develop capabilities was also used to group the activities within each capability into sub-capabilities, or missions. This combination of capabilities and missions became the initial MVI hierarchy.

The model was checked against all screening and evaluation criteria and its capabilities and missions were mapped to The Military Value criteria, the Army Stationing Strategy, and the BRAC 95 installation categories. Affinity diagramming provided the completeness the team needed by including all of the activities listed in these documents and allowed a mapping or a reference to each.

The initial model provided a basis for coordination and integration of interview concepts and subject matter expert discussions. The evolution of the model is discussed throughout this document.

### 5.3.6 *Refine the MVI Hierarchy*

Subsequent to the development of the initial MVI hierarchy, the model was refined based on additional research by both the TABS Modeling and Mission teams and findings from additional key leader interviews. These refinements included numerous changes at all levels under the major installation capabilities.

Once the MVI value hierarchy had been developed, the analysis team's next step was to identify the model attributes and the value measures for each attribute. Prior to completing this step in the model development, the team needed inputs from the TABS Group on the stationing objectives that would help the Army transform its current infrastructure arrangement into a set of installations or "portfolio" that best supports the future Army. These inputs became the BRAC Objectives. The BRAC Objectives established TABS analytical priorities and highlighted essential requirements for the final portfolio of Army installations. They helped the analysis team with attribute development because the Objectives provided the connection or intent that the attributes needed to measure within each capability.

## 5.4 **Attributes**

Attributes are installation characteristics that permit TABS to score how well an *installation* could help meet BRAC selection criteria and achieve BRAC Objectives.<sup>41</sup> Attributes distinguished the MV of an installation, were measurable, and had credible data available for analysis.

The primary sources of potential BRAC 2005 attributes included BRAC 95 attributes, document research, recent stationing studies, JCSG efforts, and interviews with subject matter experts. TABS relied heavily on the expanded library of references and the interviews conducted with senior leaders and subject matter experts within their functional areas. Along with developing the attributes needed to evaluate a given capability, the TABS subject matter experts documented supporting measures and their source.

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<sup>41</sup> As defined in the TABS Analytical Framework.

As an example, the “Training” Capability and its attributes are shown below:

CAPABILITY	ATTRIBUTES	
Training	Direct Fire Capability	General Instructional Facilities
	Indirect Fire Capability	Applied Instructional Facilities
	MOUT Capabilities	Air Quality
	Heavy Maneuver Area	Noise Contours
	Light Maneuver Area	Soil resiliency
	Airspace	

**Figure 16. Training Attributes**

The complete list of attributes and value functions is provided in the Military Value Supporting Document.

**5.5 Value Measures**

For each attribute, TABS developed a value measure in order to measure the attribute’s impact. For example, in Figure 15, the Training Capability has 11 attributes. The Direct Fire Capability attribute measures an installation’s ability to support Direct Fire and the value measure is a matrix that accounts for the impact area on the installation and the installation’s ability to support different types of weapons. This matrix is called a multi-dimensional constructed scale and represents the value measure TABS uses to evaluate an installation’s ability to support Direct Fire capabilities.

TABS developed a “direct” value measure whenever possible. Direct value measures illustrate a relationship between the attribute and measure that is directly correlated. For example, a direct measure for the Heavy Maneuver attribute is the number of maneuver acres or for the General Instructional Space it is the square feet of space. The matrix used for Direct Fire, on the other hand, is a multi-dimensional constructed scale, which combines multiple metrics within one measure.

Indirect Fire and MOUT Capabilities are other examples of constructed scales. Several attributes also employ “proxy” measures. A proxy supports the attribute, but the relationship between the attribute and measure is not direct. For example, we do not have a direct measure for encroachment; instead we use a proxy that includes the developed densities of the property around the installation at two different time periods and forecasts future growth.

## 5.6 Value Functions

In BRAC 2005, MODA was used to quantitatively assess the trade-offs between competing capabilities. In an additive value model, we use value functions and weights to make these trade-offs. The purpose of the value function is to help answer the question “How much is enough?” for each of the value measures.

Value functions measure returns-to-scale on the value measures.<sup>42</sup> There are four basic value function shapes: linear, concave, convex, and S-Curve (Figure 16). The linear value function has constant returns-to-scale – each increment of the value measure is equally valuable. The other functions have differing returns to scale that we use depending on the value added by each additional increment.

In BRAC 95, the Army assumed linear value functions that imposed constant returns-to-scale.<sup>43</sup> This was a critical assumption associating capability and value. In BRAC 2005, the analysis team developed value functions that best reflected the returns-to-scale for each measure. The linear value function was used unless a different return to scale model was justified.

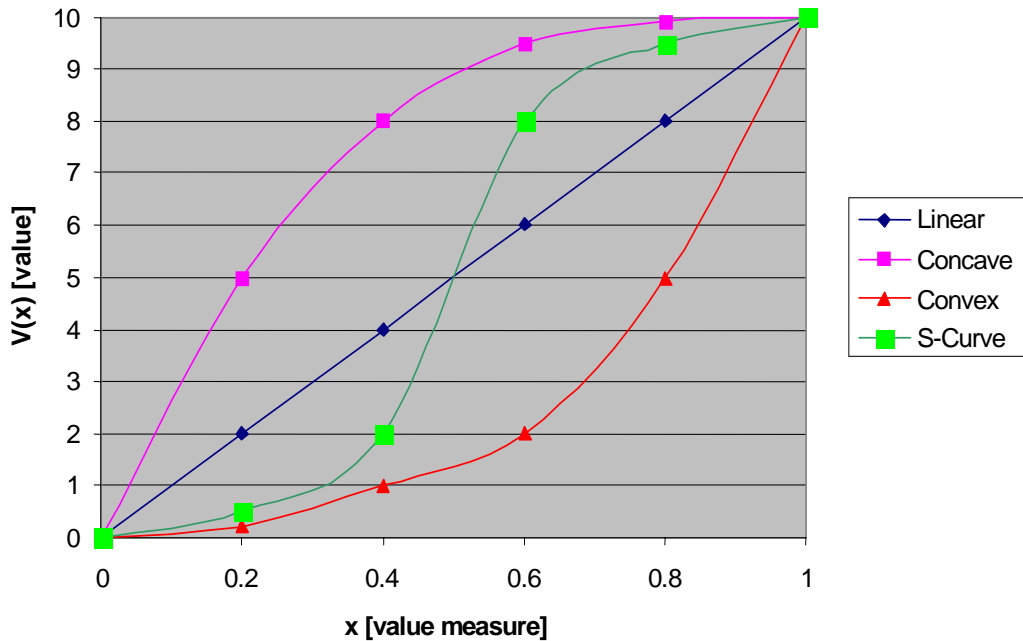
There were several techniques available to develop value curves.<sup>44</sup> The analysis team followed a three-step approach: first the SMEs determined the shape of the value curve (linear, concave, convex or S-curve) based on their experiences and coordination; next, the team determined several points on the value curve; and third, we plotted a curve through the points.

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<sup>42</sup> Kirkwood, 1997.

<sup>43</sup> “BRAC 95 Reference Volume II,” Department of the Army, Installation Assessment (IA) Process and Supporting Data.

<sup>44</sup> Kirkwood, 1997.



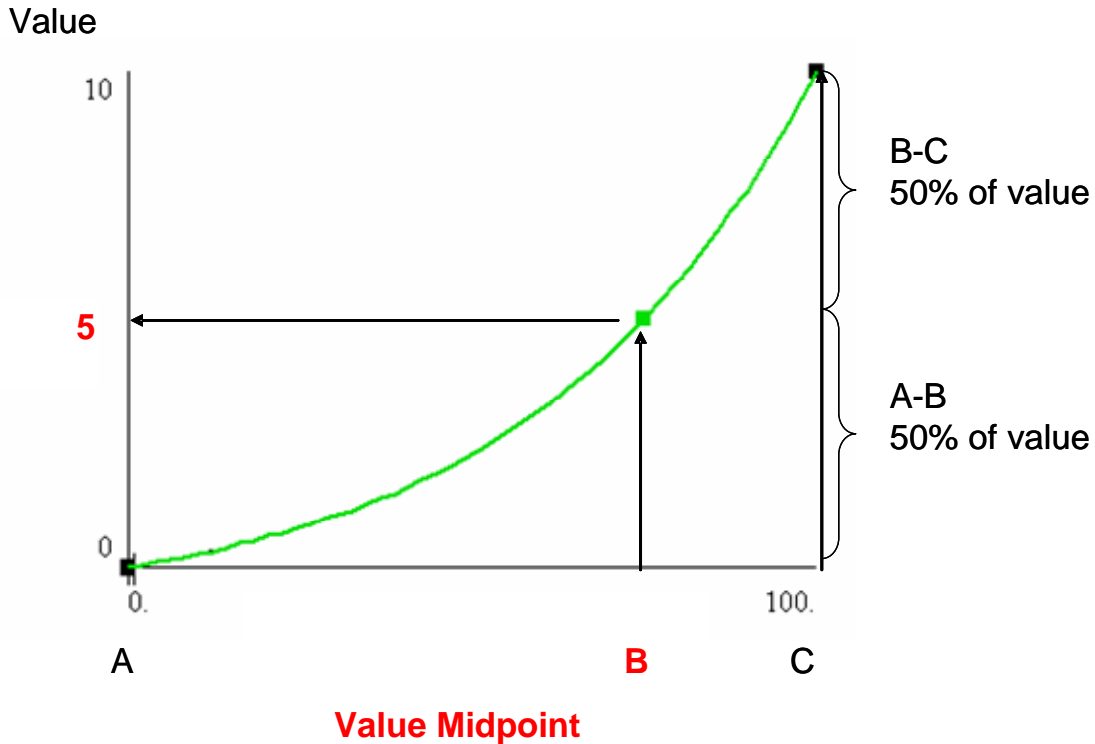
**Figure 17. Four Types of Value Function Curves**

For each attribute, the team developed the definition, purpose, and value functions along with the necessary data sources and references. All attribute descriptions are provided in the Military Value Supporting Document. The following two sections illustrate the assessment techniques used by the analysis team for the single and multiple-dimensional value functions.

#### 5.6.1 Single-Dimension Value Function Assessment

For all single-dimensional value functions (e.g., attributes that use a unit of measure such as number of acres), the analysis team initially assumed that the value function was linear; however, if the SME justified a deviation from a linear value function, the analysis team used the mid-point method to establish the shape of the value function’s curve. Figure 17 illustrates the mid-point method and questions we asked of the SME to determine the curvature. For example, point B is where the SME was indifferent between the change in level between A to B and B to C.

Logical Decisions for Windows software (LDW) calculated a curve that represented the SME’s preference between points A-B and B-C. LDW calculated the resulting curve shown in Figure 17, which illustrates that the B level received the midpoint value of 5 (between 0 and 10).



**Figure 18. Single-Dimensional Value Function Example**

As part of the required information, the team developed the MV function (the equation for the line in Figure 17), which illustrated the returns to scale for the attribute. In this case, the line expressed by the value function is almost linear, but the slight dip in the middle of the curve provides increasing returns to scale, i.e., each additional increment an installation has is worth more than the preceding increment.

*5.6.2 Multiple-Dimension Value Function Assessment*

As an example of a two-dimensional constructed measure, we use the Joint Airspace attribute. This attribute represents the volume of airspace available for training that was a part of or controlled by the installation. The column dimension (Figure 18) of the attribute measures the maximum altitude in feet above ground level (FT AGL, higher is better), and the row dimension measures total square miles of the maneuver land “footprint,” i.e., airspace controlled by the installation including areas associated with a maneuver rights agreement.

Each cell in the matrix received a value based on the installation’s airspace and ground footprint. To help us explain these values we used *Labels* to define the cells within the matrix. The following matrix shows the Label definitions for this particular two-dimensional constructed measure.



Ground Footprint (SQ MI)	Airspace (FT AGL)		
	< 5000	< 20000	>=20000
< = 25	Label 1	Label 2	Label 3
25< and< = 100	Label 4	Label 5	Label 6
>100	Label 7	Label 8	Label 9

**Figure 19. Two Dimensional Value Function Example**

For example, Label 1 indicates that the installation had an airspace clearance below 5000 FT AGL with a ground footprint that was less than or equal to 25 SQ MI. An installation that did not have a ground footprint or available airspace received no value for this attribute, which was categorized as Label 0 (not shown in Figure 18).

To establish the value given for each Label (or “assess” the value of the two-dimensional value function), we used the Adjusted Analytical Hierarchy Process (AHP)<sup>45</sup> contained within LDW. We used the Adjusted AHP approach because it allowed us to make comparisons between pairs of Labels as to their relative performance between the two measures – in this case, ground footprint and airspace.

The Adjusted AHP assessment consisted of a series of pair-wise comparisons between Labels. The SME picked a value between 1 and 9 to represent the preference between Labels, where a comparison of “1” indicated that preferences between the Labels were the same. A “9” indicated that the preference of one Label to another was extreme.

Figure 19 provides the Adjusted AHP assessment for our Joint Airspace example. LDW used the SME’s inputs, which were entered into the table to compute a value based on the two measures. The value is found at the intersection of the Labels (gray).

C.R. = 0.014	Label 0	Label 1	Label 2	Label 3	Label 4	Label 5	Label 6	Label 7	Label 8	Label 9
Label 0	0	0.50	0.33	0.25	0.50	0.25	0.20	0.33	0.20	0.14
Label 1	2	0.26	0.50	0.33	0.50	0.33	0.20	0.33	0.20	0.14
Label 2	3	2	1.01	0.50	1.00	0.50	0.33	0.50	0.25	0.17
Label 3	4	3	2	2.24	2.00	1.00	0.50	0.50	0.33	0.25
Label 4	2	2	1	0.50	1.00	0.50	0.33	0.50	0.33	0.20
Label 5	4	3	2	1	2	2.63	0.50	1.00	0.50	0.33
Label 6	5	5	3	2	3	2	5.30	2.00	1.00	0.50
Label 7	3	3	2	2	2	1	0.50	2.85	0.50	0.33
Label 8	5	5	4	3	3	2	1	2	5.82	0.50
Label 9	7	7	6	4	5	3	2	3	2	10

**Figure 20. Adjusted AHP Assessment Example for Joint Airspace**

For example (refer to column 3 in Figure 19), the SME indicated that Label 9 was *extremely* (scores a 7) preferred over Label 1, and Label 5 was *moderately* (scores a 5) preferred over Label 1.

<sup>45</sup> The Adjusted AHP is a variation on the traditional AHP approach where the computed values are adjusted to range between 0 and 10, rather than sum to 1 as in the traditional AHP method.

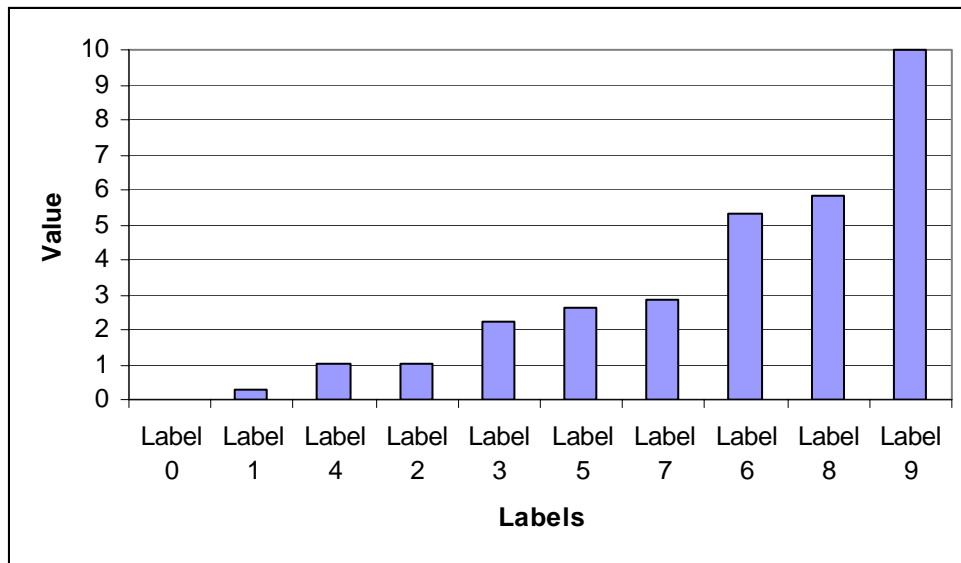
This assessment example has a consistency ratio (CR) of 0.041, which indicates that the pair-wise comparisons were consistent across all Labels. A CR < 0.1 is considered adequate. For example, a consistent ranking between Labels would mean that if A>B and B>C, then A>C. However if A<C, then the ranking would have been considered less consistent and would have resulted in a high CR.

The values associated with each Label were obtained from the previous AHP assessment matrix by recording the values along the diagonal of the matrix (gray cells). For ease of exposition, we show values for each Label in the following matrix:

Ground Footprint (SQ MI)	Airspace (FT AGL)		
	< 5000	< 20000	>=20000
< = 25	0.26	1.01	2.24
25< and< = 100	1.00	2.63	5.30
>100	2.85	5.82	10.00

**Figure 21. Label Values for Two-Dimensional Value Function Example**

With these values, we can now read the value that an installation receives directly from the matrix. Note that some cells have nearly the same value, meaning the SME was indifferent between several combinations of ground footprints and airspace.



**Figure 22. Multi-Dimensional Value Function Histogram**

The assessment for the value functions was essential for quality evaluations because they help to ensure consistent weighting among cells. The next section examines how TABS developed the weights for the attributes.

## 5.7 Weights

TABS determined the level of importance or “weight” for each attribute and then added attribute weights to determine the weighting for capabilities and Military Value criteria; this is referred to as “bottoms-up” weighting. All other calculations concerning weights are simply mathematical products of the attributes’ weights. The bottoms-up approach in contrast also provides the benefit of improving the ability to audit MV with only one level of weighting; hence, the bottoms-up approach provides one level of subjectivity. The “top-down” alternative is an alternative weighting method, which includes multiple levels of subjectivity because each level of weighting is qualitatively determined instead of mathematically derived.

MVI determines the value of an installation by evaluating an installation’s contributions (scores) for each attribute (x-axis in Figure 11) and then multiplying by the attribute’s weight. Thus, the installation’s value is equal to the sum-product of all attribute values and weights.

An attribute’s weight depends on its importance and the range on the x-axis of each attribute (known as the attribute’s value-measure scale), which is one measure of the variation in the scores among installations. If we hold all attribute ranges (x-axis limit) constant and then reduce an attribute’s range, then the relative weight for one attribute amongst other attributes would decrease. This scale-weight relationship is an integral part of a successful MODA and is revisited if a value measure’s range changed during analysis.

We used the following procedure to determine the attribute weights:

1. TABS developed a weighting matrix construct that presented the two most important factors in determining the weights: relative importance among attributes and the range of variation in installation scores.

For MV, the “importance” depended on the inherent characteristics of the installation. An installation with characteristics difficult to change was afforded greater importance during MV analysis. For example, the Army has little ability to change maneuver lands (high importance), requires state and local coordination for environmental considerations (medium importance), and could obtain money to build or lease administrative facilities (low importance) (Figure 22).

IMPORTANCE	ATTRIBUTE AREA	ABILITY TO CHANGE
High	Maneuver lands	Cannot change
Medium	Environmental Considerations	State and local coordination
Low	Administrative facilities	Can change with dollars

**Figure 23. Example of Ability to Change**

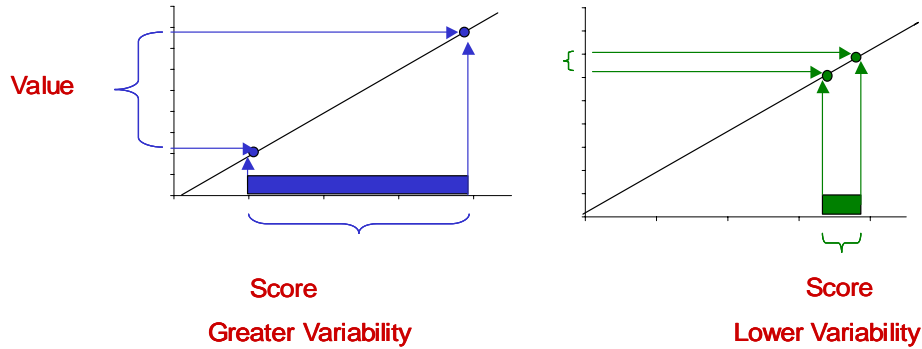
2. Based on the ability to change an attribute, TABS divided the “importance” dimension into three categories with two subcategories each. This allowed TABS to group similar attributes in terms of unit of measure, ability to change, in order

to distinguish the importance of each attribute. Below is a more flushed out explanation of Figure 22 above:

- a. Immutable (Very Difficult to Change):
    - i. High Flexibility: The characteristic enabled multiple uses.
    - ii. Lower Flexibility: The characteristic enabled one primary use.
  - b. Difficult to Change Without External Support:
    - i. National and/or State action is required.
    - ii. Local Community action is required.
  - c. “Easy” to Change: Changes Requiring Army Dollars:
    - i. High Dollars are required to change the installation characteristic.
    - ii. Low Dollars are required to change the installation characteristic.
3. The variation dimension in the matrix construct is the amount of variation of the value measure among installations. In this step we defined three subcategories for variation between installations: Large, Medium and Small.

For MV, the “variation” depended on the length of the x-axis for each attribute. Variation cannot be easily compared across attributes with different units of measure. The MV attributes have multiple units of measure, but the ability to change test has the tendency to bucket attributes with similar units of measure (e.g., all attributes based on square feet are together), which helped in the variation evaluation. At times, TABS applied military judgment to assess variation.

In general, the more variation an attribute displays, the higher its weight should be. The maneuver space value measure is an example of large variation among installations. If there is little variation among installations, then there is little reason to weigh the attribute heavily because the attribute will not help discriminate between installations. The most obvious example is when there was no variation among the installations’ scores. In this case the attribute received “0” weight, because the attribute did not help distinguish between installations and was, consequently, dropped (would be similar to adding a constant to each installation’s value). Variation is relative to attributes within the same ability-to-change category (as defined above) and not across categories mainly due to unit of measure.



- Variability is a screen for discrimination – if all installations have exactly 1000 square feet of xx then xx is not a discriminator.
- Attributes with low variability are candidates to drop from the analysis, regardless of importance.

**Figure 24. Variation Example**

Figure 23 provides an example of two attributes with different variation. In the left chart there is a wide range in the values (x-axis) found on the installation – high variation. In the right chart there is low variation; a much smaller range in values. The attribute represented by the high variation chart is better suited for discriminating between installations and should in general have a greater weight.

Regardless of variation, the level of importance of an attribute derived through military judgment can trump a strict mathematical interpretation of variation simply because math does not capture nuances about attributes that military judgment tells us we need to consider.

4. In this step we placed attributes in the matrix in a cell that best represented its characteristics in terms of ability to change and variation between installations. To start, we identified the value measure that was the most immutable and had the most variation among value measures – Heavy Maneuver Capability. TABS assigned this measure a weighting factor of 100. Then identified the easiest value measure to change with the lowest variation among installations and gave this attribute a value of 1.

The steps TABS followed to determine an attribute’s location in the matrix included:

- a. Determined the Army’s ability to change the attribute, and then placed each attribute in a location representative of its difficulty-to-change as described above. This allowed us to compare attribute variation relative to other attributes in their respective location.
- b. Assessed the variation of the attributes at each level of difficulty:
  - i. Completed a data plot for each attribute by placing the value for each attribute on an EXCEL spreadsheet. If the data showed a complete lack of variation then a recommendation was made to drop the attribute. For example, if every installation had a score of two, we would drop the

attribute. We would also drop an attribute if it was correlated to another attribute's data.

- ii. Compared the variation in terms of the data range, the dispersion, and the grouping of the data. Attributes with the largest range, the greatest dispersion, and least grouping or clusters of data were evaluated as high variation. Attributes with high range, dispersed data, and some clustering were considered medium variation. Attributes with less variation, less dispersion, and some clustering were considered low variation.
- c. Assessed the positioning of attributes and used military judgment to determine the attribute's impact on mission accomplishment. Attributes considered high-impact moved up in the variation continuum. Other attributes with low-impact moved down in the variation continuum.

- After assigning the value measures we compared the variation as well as the ability to change in order to assign a weighting factor to each matrix cell.<sup>46</sup>

The completed weighting matrix structure is shown in Figure 24. Final weights and the attribute distribution are published in Appendix B. Military Value Results.

As indicated in Figure 24, the attributes with the highest importance are found in the green location on the matrix, which equates to the hardest attributes to change while attributes with lower importance are in the amber area. The first row on the chart represents the attributes with the greatest variation and the last row includes (in general) the attributes with less variation.

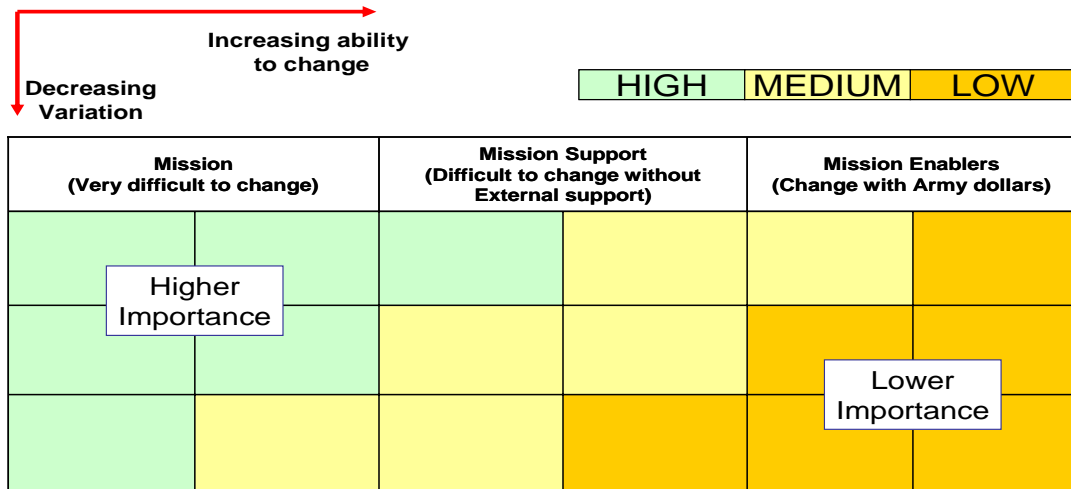


Figure 25. BRAC 2005 Weighting Matrix

An attribute’s global weight was then calculated using the following equation:

$$w_i = \frac{f_i}{\sum_{i=1}^n f_i}$$

where

$f_i$  the local weighting factor for the  $i^{th}$  attribute

$i = 1$  to  $n$  is the number of the attribute,

$w_i$  the global weight of the  $i^{th}$  attribute,

and the model requires  $\sum_{i=1}^n w_i = 1$  where all weights summed to one.

<sup>46</sup> This approach follows the value measure approach per Kirkwood and the LDW Smart method.

TABS conducted sensitivity analysis to see if changes in the attributes’ weights led to significant changes in an installation’s overall ranking, e.g., having an installation move between the first and third quartile in rankings. Sensitivity analysis showed that the chosen attribute weights were very robust, i.e., no large changes in the solution, which indicates that a small change in an attribute’s weight does not induce an exceptionally large change in value.

**5.8 Meeting the Development Criteria**

Earlier in this chapter we described basic screening and evaluation criteria that the final MVI must satisfy. We now demonstrate how the model meets these screening and evaluation criteria.

*5.8.1 Screening Criteria*

- 1. Meets Legal Requirements:** The DOD selection criteria were developed specifically to codify the tenets of the BRAC law. They were developed and approved by Congress after the passage of the original law. Thus, mapping to the selection criteria provides the connection to the law.

Our linkage was based on TABS’ interpretation of the intent for each criterion. Figure 25 maps the MVI capabilities to DOD BRAC selection criteria 1-4, which were the four criteria designated to assess installation MV. Each attribute was also mapped to the criteria; See TAB 2 of this report for further information about attribute mapping.

CAPABILITY	DOD CRITERIA
Support Army and Joint Training Transformation	1, 2, 3
Project Power for Joint Operations	1, 2, 3
Support Army Materiel and Joint Logistics	1, 2, 3, 4
Enhance Soldier and Family Well-being	1, 2, 4
Achieve Cost Efficient Installations	1, 2, 4
Maintain Future and Joint Stationing Options	1, 2, 3

**Figure 26. Summary Mapping BRAC Selection Criteria to MVI Capabilities**

- 2. Ensures Auditability:** Use of the MVI model and MODA ensures auditability. The MVI model uses key documents and interview findings to form the basis of model development. Similarly, MODA’s mathematics ensures that the alternative rankings are auditable. A key element of an auditable model is the data, which TABS certified before using for MVI calculation.
- 3. Is Future-Oriented:** MVI is future-oriented based on key documents that describe Army Transformation plans and objectives. In addition, the senior leader interviews include discussions of future Army Objectives. The model’s capabilities, attributes, value measures, value functions, and weights reflect this future orientation.
- 4. Provides Army Perspective:** Total force considerations are explicitly included in the key documents and senior-leader interviews that form the foundation for MVI.



- 5. **Meets Army Stationing Principles:** The Army Stationing Strategy outlines Stationing Principles and is one of the fundamental documents used in the development of the MVI model.
- 6. **Is Consistent with Joint Cross-Service Groups:** The JCSGs focused on specific functions, and their MV analyses are limited to those functions. The Army’s MV analysis was installation-focused and encompassed not only the functions assigned to the JCSGs for study, but all other functions and characteristics of the installations. Therefore this linkage ensured that one or more of the Army 2005 MVI capabilities and value functions addressed the JCSG functions.

JCSG FUNCTION	2005 MVI CAPABILITIES
Industrial	Support Army Material and Joint Logistics Transformation
Supply and Storage	Support Army Material and Joint Logistics Transformation
Education and Training	Support Army and Joint Training Transformation
Technical	Support Army Material and Joint Logistics Transformation
HQs & Support	Project Power for Joint Operations Achieve Cost Efficient Installations
Medical	Enhance Soldier and Family Well-being
Intelligence	Specific Intelligence capability not included

**Figure 27. JCSG Functions to MVI Capabilities Crosswalk**

With the exception of the “Intelligence,” JCSG, the functions of the seven JCSGs mapped to the 2005 MVI capabilities. Intelligence JCSG was considered too specialized and a considerable number of Intelligence characteristics and locations are classified; therefore the Intelligence omission seemed tolerable.

- 7. **Is Traceable to BRAC 95:** BRAC 95 structured its MVI model on 13 installation categories that were grouped according to the main mission performed by units stationed on an installation. These functions map to the 2005 MVI model’s primary functions.

The mapping of categories (Figure 27), JCSGs (Figure 26), and criteria (Figure 25) illustrates that each MVI capability used in BRAC 2005 incorporated these previous concepts. For example, each BRAC 95 installation type maps to at least one BRAC 2005 capability. This characteristic of multiple mapping was acceptable and strengthens MVI results.

	Support Army and Joint Training Transformation	Project Power for Joint Operations	Support Army Materiel and Joint Logistics Transformation	Enhance Soldier and Family Well-Being	Achieve Cost Efficient Installations	Maintain Future & Joint Stationing Options
	DoD 1, 2, 3	DoD 1, 2, 3	DoD 1, 2, 3, 4	DoD 1, 3	DoD 1, 2, 4	DoD 1, 2, 3
Prof Schools	X				X	
Training Schools	X				X	
Maneuver	X	X			X	X
Major Trng. Areas	X	X			X	X
C2/Admin		X			X	
Ports		X	X		X	
Proving Grounds			X		X	
Ammo storage			X		X	
Ammo Production			X		X	
Commodity			X		X	
Depots			X		X	
Industrial			X		X	
Medical centers				X	X	

**Figure 28. BRAC 2005 mapping to BRAC 95**

In addition to the above mapping, the modeling team mapped the 57 attributes from BRAC 95’s IA to the six capabilities in the BRAC 2005 MVI; the complete mapping is available in TAB 2 & TAB 3 of this paper.

- 8. Balances requirements and cost:** MODA methods were the ideal approach to identify the BRAC options with the highest potential to meet Army capabilities. As noted above, BRAC 2005 used all four types of value functions to help address trade-offs and determine an installation’s MV.

5.8.2 *Evaluation Criteria*

- 1. Satisfies the DOD BRAC 2005 Selection Criteria:** In the previous section, we showed the direct linkage of MVI to the DOD BRAC selection criteria.
- 2. Builds on BRAC 95 Methods:** We built on lessons learned from the successful Army BRAC 95 methods. Specifically, we continued to use the MODA approach but did not limit the value functions to linear shapes. Our approach allows the Army to better capture the returns to scale of different value measures.
- 3. Defines Capabilities for Army Installations:** We defined the capabilities for military installations; MV is the ability of the installation to meet these capabilities as reflected in the selection criteria.
- 4. Emphasizes Transformation:** The approach shows how Army installations support DOD and Army Transformation, Joint stationing, and the Army Stationing Strategy as reflected in the selection criteria.
- 5. Incorporates Well-Being:** We assessed the installation’s contribution to the well-being of Soldiers and their families by adding specific attributes to the model that measure well-being (e.g., Crime Index, Medical Availability, Housing Availability, In-state Tuition Policy, and Employment Opportunities).

- 6. Is Analytically Credible:** Our approach used MODA to provide a simple and clear model that used credible data, was auditable, distinguishable by installation, and analytically defensible. TABS based all analysis on approved methods and conducted sensitivity analysis to ensure model robustness.

## **5.9 Summary**

This chapter developed the TABS BRAC 2005 installation MVI model, described the MODA approach, identified criteria that the MVI model was required to meet, described the MVI model development process and the final model. This section also proved that the model met the development criteria. In the next chapter, we describe how the MVI model was used to inform BRAC 2005 decision-making through an example.

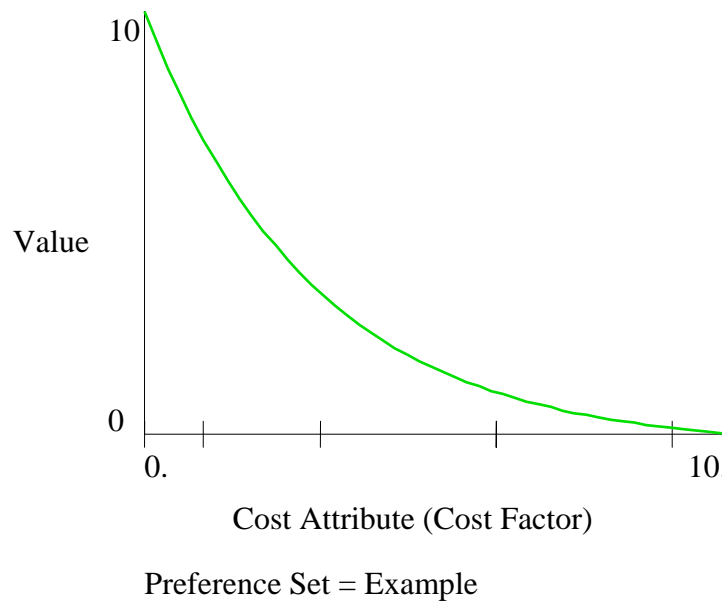
## 6.0 MILITARY VALUE OF INSTALLATIONS MODEL (MVI)

BRAC law requires the Army to assess the MV of each installation. This chapter describes the BRAC 2005 MVI and provides illustrative results through an example model using five notional installations and nine notional attributes.

### 6.1 Example Model

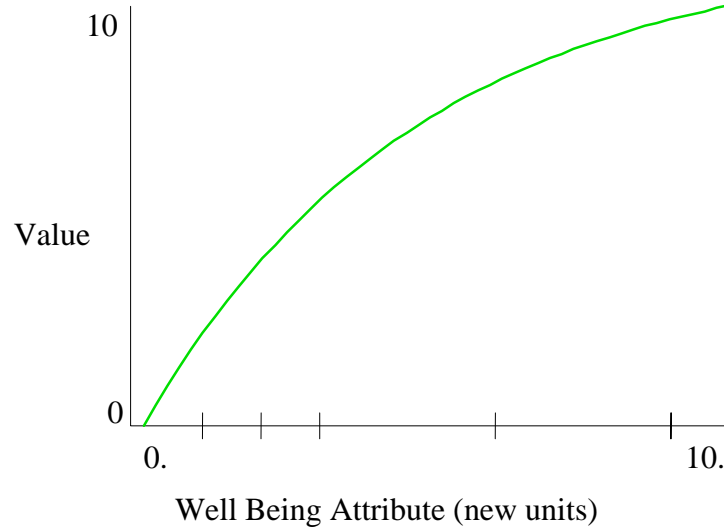
This example has attributes to determine the installation’s MV and value functions to transform the installations’ scores into a value from 0 to 10. The value functions also measure the returns-to-scale of the value measures. What follows is a discussion of the attributes, their value functions, and a description of what the function means in terms of returns to scale.

The first value function is for a Cost attribute and is shown in Figure 28. We assume this attribute is best described by a convex function that exhibits decreasing returns-to-scale (i.e., for each incremental increase in cost, there is a correspondingly smaller decrease in value). This function gives much greater value to installations with low cost factors and then decreases value quickly over the cost factor range.



**Figure 29. Cost Attribute Value Function**

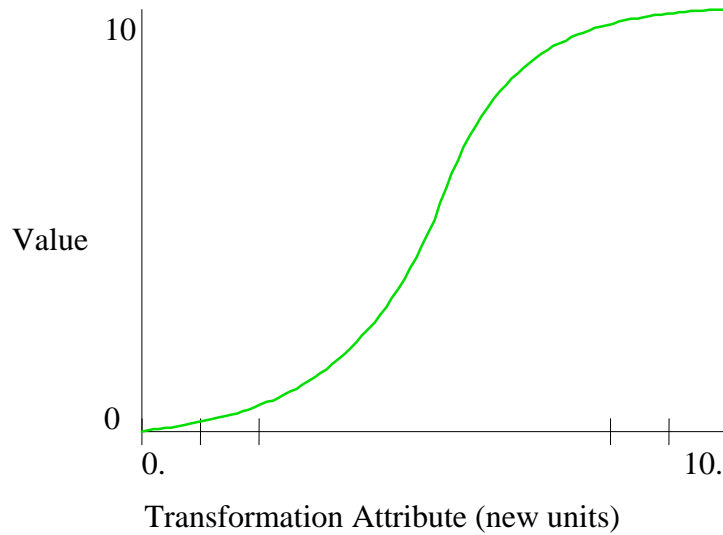
The value function for the Well-being attribute (Figure 29), on the other hand, is best described by a concave function that exhibits decreasing returns-to-scale (i.e., for each incremental increase in the well-being measure, there is a correspondingly smaller increase in value).



**Figure 30. Well-being Attribute Value Function**

This concave function is the opposite of the convex function displayed in Figure 28. In this case, for each incremental reduction in cost, there is a corresponding increase in value.

We demonstrate a more complex value function for a Transformation attribute shown in Figure 30. The S-Curve function in our example demonstrates the characteristics of both convex and concave functions (i.e., for each incremental increase in the Transformation measurement, there is initially a correspondingly larger increase in value, but after the inflection point – approximately 5 on the X-axis – there is a correspondingly decreasing return in value).



**Figure 31. Transformation Attribute Value Function**

The S-curve represents an attribute that has little value until a certain quantity exists, and then the value increases rapidly up to a point where additional quantities have limited additional value.

For the example that follows we will use six *additional* value functions with increasing linear functions (not shown). Linear functions assume that each additional unit has the same value as the prior unit. We weight the attributes using the same method explained in Chapter 5 to weight the model components.

We generated data for six notional installations (i.e., Installations #1 through # 6) and an *Ideal Installation*. The Ideal Installation is used for output analysis and as a point of reference.

Attributes									
	Power Projection	Well Being #1	Well Being #2	Transformation #1	Transformation #2	Transformation #3	Future Options	Material Support	Cost
Ideal Installation	10	10	10	10	10	10	10	10	0
Installation #1	7	5	3	4	8	6	8	1	3
Installation #2	2	2	9	9	2	3	4	5	9
Installation #3	5	8	2	8	0	8	9	3	1
Installation #4	6	2	9	2	1	1	3	8	10
Installation #5	4	10	6	10	9	7	2	2	6
Installation #6	8	8	1	3	10	5	9	5	6

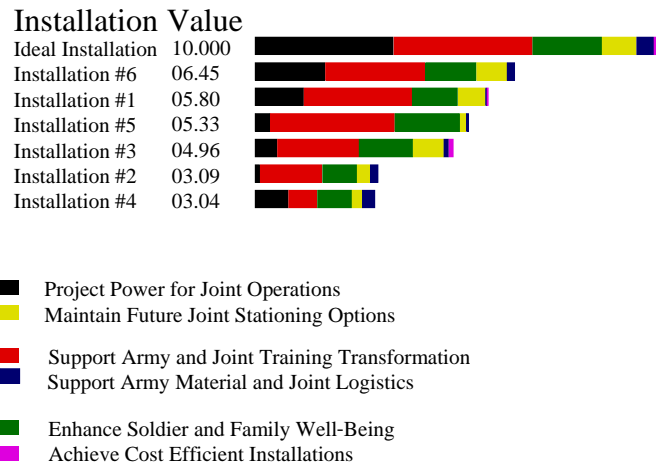
**Figure 32. Notional Data for the Example Model**

The rows of Figure 31 contain the installations, while the columns contain the nine attributes, for example, “Transformation #1” and “Transformation #2” are two of the nine. To simplify the example, the data ranges for all of the attributes are between zero and ten. The range for the value, as shown in Figures 28 through 30, is between zero and 10. The rest of this chapter illustrates, through the use of this example, some of the output and sensitivity analysis that is possible using the MVI. .

### 6.2 Compare Installation Overall Military Value

We used the additive value model equation that we explained in Chapter 5 to obtain 1-to-n rankings for the overall installation MV. Figure 32 provides an illustrative MV for the six notional installations. The LDW Stacked Bar Chart shows the total value and the contribution to value for each of the six capabilities. The Ideal Installation is displayed to allow comparison. The length of each stacked bar in the Ideal Installation is the weight of that capability multiplied by 1 (the maximum score). Installations #6, #1, and #5 have the highest MV, respectively. Installations #3, #2, and #4 have the lowest MV. According to the model assumptions, Installation #6 is the Army installation with the highest MV.

Ranking for Determine Military Value of Army Installation Goal



**Figure 33. Installation MV (largest value is best)**

While this ranking gave some initial insights, TABS examined each capability, and sometimes individual missions, to obtain information that identified possible BRAC 2005 alternatives.

6.2.1 Compare Installation Military Value by Capability

The MVI model enables TABS to conduct other analyses to inform the analyst. For example, we can obtain a 1-to-n ranking for the MV by capability. Figure 33 provides the ranking for *Support Army and Joint Training Transformation*, one of the six MVI capabilities. The LDW Stacked Bar Chart shows the total value for this capability and includes a contribution to total value from the *Education* mission (includes two attributes) and the Transformation #1 (shown in black and red, respectively). Figure 33 shows that these two model elements combined sum to the MV for the *Supporting and Joint Training Transformation* capability. The Ideal Installation is displayed for comparison with the six notional installations. The length of each stacked bar in the Ideal Installation is the weight of that sub-goal multiplied by 10. We see that the rankings of Installations #5 and #6 are transposed for the *Support Army and Joint Training Transformation Capability* (See Figure 32) compared to the total value analysis because one evaluation uses the full model and the second is for a specific capability.

The ideal installation identifies the shortfall across all installations and provides a baseline for comparison purposes. The histograms in Figure 32 and 33 help the analyst compare installations in total, or across different capabilities or attributes.

Ranking for Support Army and Joint Training Transformation Goal

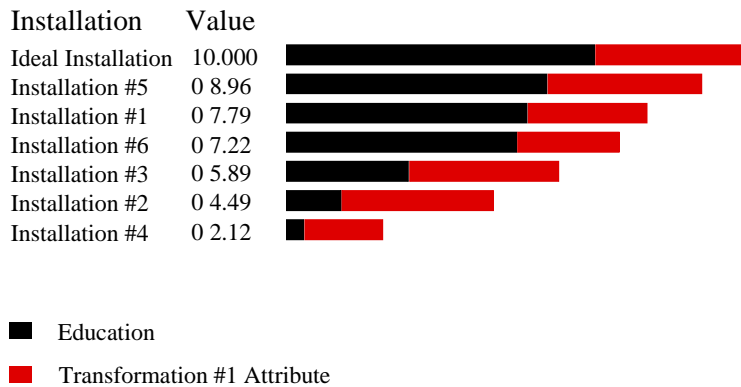


Figure 34. MV for the “Support Army and Joint Training Transformation” Capability

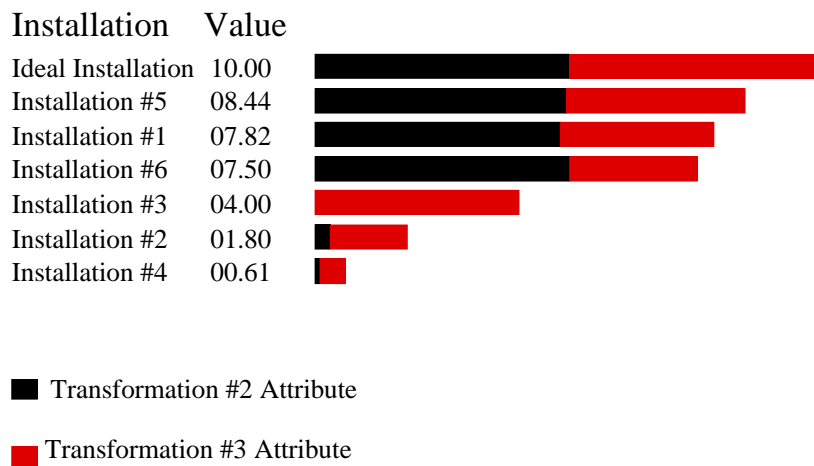


### 6.3 Compare Installation Military Value by Mission

As with capabilities, TABS was able to use LDW to obtain a 1-to-n MV ranking by mission, and individual attributes. Figure 34 shows the ranking for the *Education* mission. Again, the LDW Stacked Bar Chart shows the total value and the contribution to value for each of the related attributes.

In our example, Transformation #2 and Transformation #3 represent education; therefore, we add the values for these two attributes to get each installation’s overall education value.

Ranking for Education Mission



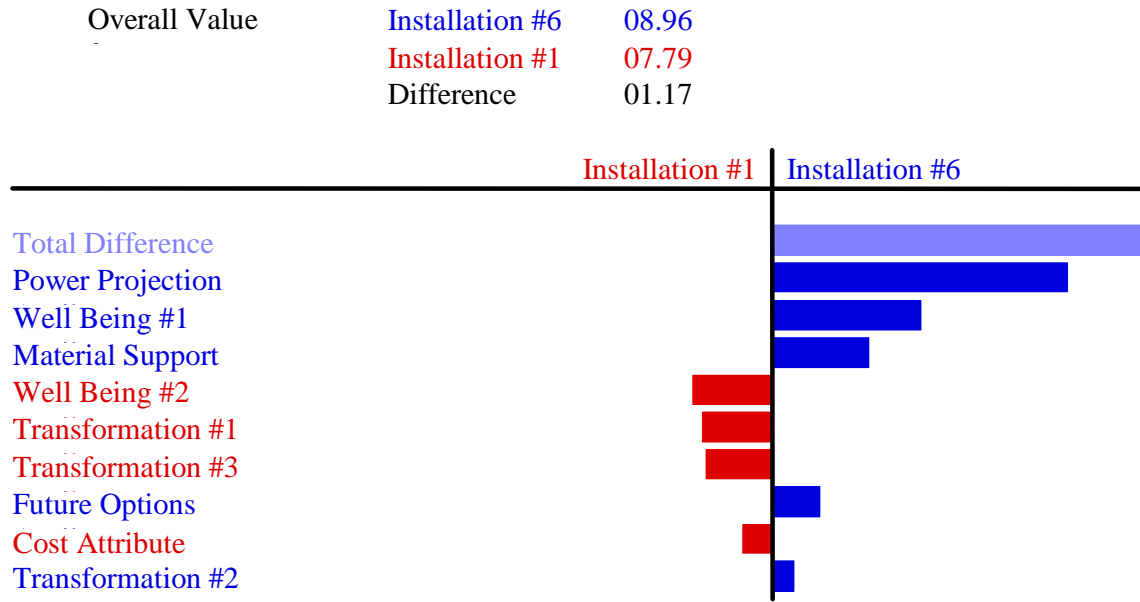
**Figure 35. Installation Military Value by Education Mission**

Installation #5 received the highest value for the most robust education facilities, while Installation #4 received little value for education. We also note that Installation #3 received no value for the Transformation #2 attribute (not part of a bar in Figure 34). The “no value” result became a common characteristic for the MVI because of the numerous installations that currently conduct a small number of missions. For example, an industrial-focused installation may not have any maneuver lands. Each installation was evaluated using all attributes, which were designed to evaluate numerous missions.

### 6.4 Sensitivity Analysis

TABS used sensitivity analysis to test the model’s robustness and assist the analyst. For example, Figure 32 showed which capabilities contributed to Installation #6’s greater MV, but we also used other output results from LDW to “drill” down to see the impact of an individual attribute’s score on value. Figure 35 shows the comparison of Installation #6 (highest MV) and Installation #1 (second highest MV).

On the left part of the stacked bar chart are the attributes that installation #1 did better than installation #6 and on the right are the attributes installation #6 dominated.

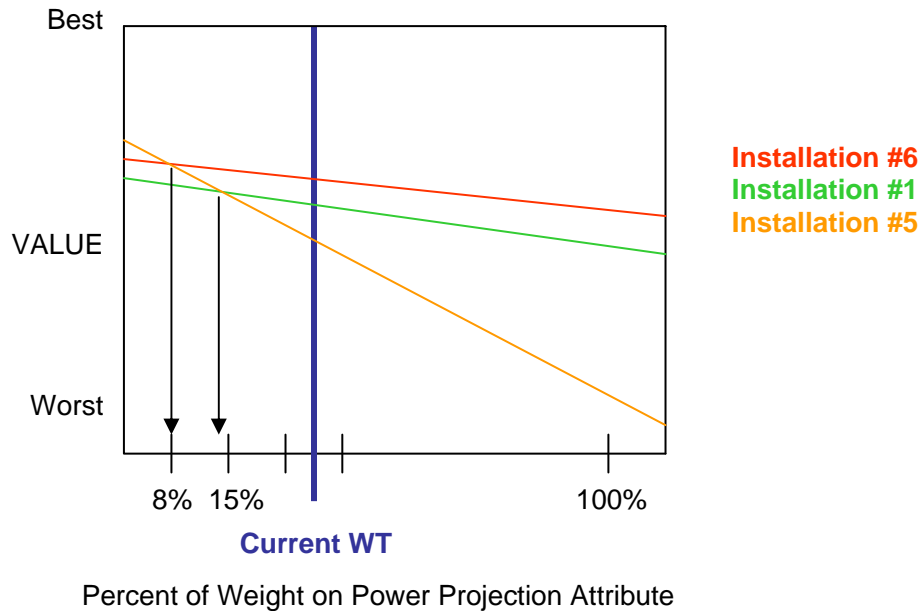


**Figure 36. Installation Comparison by Attributes.**

The lengths of the bars show the difference in value that the corresponding attributes contributed to the installation’s overall MV with respect to the other installation. For this example, the Red and Blue bars correspond to Installation #1 and Installation #6, respectively. Note that the Power Projection attribute offered the most relative value difference for Installation #6. Installation #1 actually had a higher value on four of the attributes.

A key modeling performance measure is the robustness of the rank ordering of the installations with respect to small changes in the weights. If small changes in weights produce no or minor changes in rank ordering, then the model is thought to be “robust” and trustworthy. If small changes in weights cause large swings in rank orderings, then the model is not robust and probably not as useful.

We can examine the robustness of this solution by examining the weight sensitivity for the Power Projection attribute. Figure 37 illustrates the effect that the weight on the Power Projection attribute had on the overall MV for three installations (Installation #6, Installation #1, and Installation #5). The figure shows that no matter how we weight the Power Projection attribute, the rank order between Installations #6 and #1 does not change (the lines never cross); however, if we reduced the relative weight on the Power Projection attribute to less than 15%, then Installation #5 would replace Installation #1 in the MV rank order (#5 and #1 cross at this point). If we continued to decrease the weight on the Power Projection attribute to less than 8%, then Installation #5 would replace Installation #6 and become the top-ranked installation. With this analysis we conclude that our example model was robust in terms of the Power Projection attribute, where small changes in this attribute’s weight did not result in changes to the overall solution.



**Figure 37. Sensitivity Analysis of the Power Projection Attribute Weight**

Sensitivity analysis tools helped TABS test the model’s sturdiness across all attributes. Ideally, the model would not experience large shifts in installation rankings due to reasonable and minor weight changes.

### 6.5 Using MVI

TABS used the full-scale MVI model to:

1. Rank the overall MV for 97 installations, which we refer to as the MV-Installation assessment, or MVI. The MVI model generated a starting point for analysts to conduct BRAC analysis. This starting point was a relative ranking of installations using a set of weighted attributes, which provided the MVI for each Army installation.
2. Support analysts with scenario development and/or sensitivity analysis. If desired, TABS could generate a ranking by capability, mission, or a small subset of attributes.
3. Conduct model-sensitivity analysis, which enabled testing the model’s robustness and provided confidence in the model.
4. Use the MVI output as an input to the MVP to determine the portfolio of installations that satisfied a set of requirement constraints while maximizing the Military Value of the installations in that portfolio.
5. Use MVI as the basis for the OVM and OPM models.

### 6.6 Summary

MVI was based on Multiple Objective Decision Analysis theory, which was used by past TABS groups for earlier BRAC MV analysis. The final MVI and results are included in

Appendix B. Military Value Results. In the following section, we illustrate how TABS used the second MV model, MVP, to generate multiple installation *Portfolios*.

## 7.0 THE MILITARY VALUE PORTFOLIO (MVP) DECISION SUPPORT MODEL

In Chapter 5 and Chapter 6 provided an example of how TABS used MVI to assess individual installations. In this section, we consider the other decision-support model within the IEM module, the Military Value Portfolio (MVP).<sup>47</sup> The MVP is simply the next step of MV analysis; the MVP model is used to identify the best “portfolio,” or minimum-sized set of Army installations, with the highest MV that meets future Army needs.

The MVP is a linear integer program that maximizes the MV of a set of Army installations subject to certain constraints. This ensures the model provides a set of installations capable of meeting defined needs.<sup>48</sup>

BRAC Objectives, Considerations, and MV Capabilities helped TABS define requirements that the portfolio needs to satisfy. An example shows this relationship:

**Objective:** Provide Army units and activities with sufficient, sustainable maneuver and training space in a wide variety of geographic, topographic, and climatic conditions in support of Joint training, testing, experimentation and Homeland Defense.

**Consideration:** Provide sustainable maneuver land for 43 brigades.

**MVP Constraint:** The sum of the maneuver land on all installations in the portfolio has to be  $\geq$  the maneuver land requirement for 43 brigades.

All installations have some MV; TABS measured the value based on installation and community characteristics. In the event an installation’s assets are deemed non-essential to the Army (because other installations with higher MV can satisfy the same missions), then closing that installation and using the associated savings for other priorities will increase Army’s overall MV.

### 7.1 Army BRAC 2005 Objectives and Considerations

BRAC Objectives are organized into twelve missions. The list of BRAC Objectives for Training is provided here as an example. The full list of BRAC Objectives can be found in Appendix E in the TAF.

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<sup>47</sup> MVP is analogous to the “Navy Optimization” model that OSD has directed the JCSGs to employ.

<sup>48</sup> A technical explanation of the MVP model is located in Annex 6 of the MV Supporting Document.

### *7.1.1 BRAC Objectives*

#### **7.1.1.1 Institutional Training & Education**

- Provide sufficient area and facilities (with varied terrain, climate, and airspace) to support institutional training, combat development, and doctrine development.
- Consolidate, collocate, or disperse training to enhance coordination, doctrine development, training effectiveness and improve operational and functional efficiencies.
- Optimize the capacity to train the entire range of military and civilian skills.

#### **7.1.1.2 Unit Training**

- Provide Army units and activities with sufficient, sustainable maneuver and training space in a wide variety of geographic, topographic, and climatic conditions in support of Joint training, testing, and experimentation and Homeland Defense.
- Locate Army units and activities to enhance home-station training, force stabilization policies, and Joint interoperability and readiness.
- Locate Special Operations Forces in locations that best support SOF specialized training needs, training with other-Service SOF units, and the unit and materiel deployment requirements of wartime regional alignments.

### *7.1.2 Army BRAC Considerations*

The Army developed Considerations for each Objective. A partial listing of Considerations is provided here for an example:

#### **7.1.2.1 Education and Training Considerations**

- Retain capacity to receive, station, train, and sustain forces reassigned from overseas.
- The Army must retain the capability to produce land warfare leaders capable of decisive action.

## **7.2 Apply BRAC Objectives and Considerations to Assess Installation Portfolios**

Given future Army force structure and other Army requirements for each MV attribute (e.g. total maneuver space required), we developed a model that identified the best (highest MV) portfolio of Army installations to support future Army force structure requirements. We used Army unit requirements for capacity-related attributes in MV and other unique requirements as constraints in the model. For example, the Army requires at least one installation for cold weather training and one installation for jungle training; these requirements could be represented in the model through a constraint that required the portfolio of Army installations to have at least one installation of each type. Unique

capabilities tend to make reconstituting assets difficult, but are needed to meet various surge requirements for the asset.

Figure 37 shows the example model with the cold weather and jungle training constraints.

	Installation #6	Installation #1	Installation #5	Installation #3	Installation #2	Installation #4	Current Solution		Constraint
Decision Variables	1	1	1	1	1	1	6	≤	4
Military Value of Army Installation	6.5	5.8	5.3	5.0	3.1	3.0	28.7		
Cold Weather Training	1			1		1	3	=	1
Jungle Training			1		1		2	≥	1

**Figure 37. Initial State of the Example Optimization Model**

The first column contains the row headers identifying the decision variables: Military Value for each installation, cold weather training, and jungle training. The following six columns represent the decision variables and parameters for the installations. For example, under “Installation #6” is a “1”, which means Installation #6 is in the portfolio, if there was a “0” in this spot, then Installation #6 would not be in the portfolio. Under the “1” is the MV for Installation #6, in this case 6.5. Under the MV is a “1” in yellow or a blank box. The “1” signifies that Installation #6 can satisfy the cold weather requirement and the blank box signifies that Installation #6 cannot satisfy the jungle requirement. The model determines the “1” or “0” and thus what installations are in the Army portfolio using the cold weather and jungle capability to satisfy the Army requirement to keep at least one installation with each capability. The next column represents the current solutions (six installations are chosen) and the last column represents the example constraints (e.g., keep ≤ 4 installations, the Army’s requirement for = 1 installation for cold weather training, > = 1 installation where the Army can conduct jungle training).

Each installation’s MV (represented in the bright green boxes) corresponds to the values found using the example model. The *decision variables* (represented in the light gray boxes) represent an installation’s inclusion in the Installation Portfolio, i.e., if the decision variable is “1,” then the corresponding installation is included. Note that the current solution (denoted in red) equals 28.7. This is the highest MV possible for the portfolio because we include all possible installations in the portfolio.

For our example, we want to select the best four installations (this constraint is designated in the second row), i.e., the four installations that, when combined, offer the most MV while meeting our notional Army requirements. We assume that Installation #6, #3, and #4 offers cold weather training, and that Installations #5 and #2 offer jungle training (yellow). In our example, the Army requires *exactly* “one” cold weather installation, and *at least* “one” jungle training center (light green). Our initial solution exceeds our current capabilities or resources (light yellow); we currently have a portfolio that contains six installations, and we want a portfolio that contains no more than four. We currently have three installations that offer cold weather training, but the Army wants only one. We meet the Army’s current requirement for one or more jungle training installations.

Figure 38 shows the results after we run the MVP model and obtain the *best* portfolio of installations that satisfies the Army’s BRAC Objectives for cold weather and jungle training. TABS found the set of installations that yield the greatest total MV, while also meeting the Army’s requirements represented within the model’s constraints.

	Installation #6	Installation #1	Installation #5	Installation #3	Installation #2	Installation #4	Current Solution		Constraint
Decision Variables	1	1	1	0	1	0	4	<=	4
Determine Military Value of Army Installation Goal	6.5	5.8	5.3	5.0	3.1	3.0	20.7		
Cold Weather Training	1			1		1	1	=	1
Jungle Training			1		1		2	>=	1

**Figure 38. Solution for the Example MVP Model**

MVP selected four installations for our portfolio: Installations #6, #1, #5, and #2. Within the optimal set, we included one installation that offers cold weather training and both of the jungle-training installations. The MV for the Installation Portfolio was 20.7, which was less than if we had taken the top four installations as rank ordered by MV. In fact, in this example, the model *could not* have chosen the top 4 installations (4 in this case was a modeling constraint) without breaking a constraint because 2 of the top 4 installations had cold-weather capability, and the constraint stipulated that the portfolio have only one such installation (the “=1” in row 4). In this case, 20.7 is the **best** MV the Army could achieve while meeting its minimum requirements **and** disposing of excess. The lower MV is expected because **all** installations have value; closing an installation will always result in a “lower” overall MV. The portfolio must satisfy all requirements, and thus the final MV is acceptable.

This result was expected because the constrained solution could never be *better* than the unconstrained solution, i.e., the total MV of all 1-to-n installations would be greater than (or equal to) the installations contained in the portfolio.

We developed constraints using the BRAC Objectives, Considerations, and MACOM inputs to define unique requirements or special installation characteristics. These characteristics were often not included within the MVI, and if they were unique or somewhat limited in their application to installations, they were purposefully *not* included in the MVI. An installation with a unique characteristic was placed in the portfolio of installations if the Army had a requirement for the characteristic and we identified the requirement within an MVP constraint.



### 7.3 MVP Mathematical Formulation

The following is the mathematical formulation of the MVP model. The objective function maximizes the overall MV of installations within the portfolio. The constraint sets ensure that the portfolio of installations can satisfy each Army requirement.

Indices :

$j$  = installation

$c$  = Army requirement

Parameters :

$v_j$  = MV for installation  $j$  [MV units]

$g_{jc}$  = installation's  $j$  capacity for Army requirement  $c$  [square feet, acres - days]

$K_c$  = Army capability for requirement  $c$  [square feet, acres - days]

$N_{\min}$  = the minimum number of installations that satisfy Army capacity requirement  $c$

Decision Variable :

$$x_j = \begin{cases} 1, & \text{if installation } j \text{ is contained in the portfolio} \\ 0, & \text{otherwise.} \end{cases}$$

Objective Function :

$$\max \sum_j v_j x_j \quad (1)$$

$$\text{s.t. } \sum_j g_{jc} x_j \geq K_c \quad (2)$$

$$\sum_j x_j \leq N_{\min} \quad (3)$$

$$x_j \in \{0,1\} \quad \forall j.$$

The value for each installation,  $V_j$ , is generated with MVI. The model requires

$$\sum_{i=1}^n w_i = 1$$

where all weights sum to one.

Since all installations have value, the model will keep all installations if allowed to maximize that value. To force the model to limit the number of installations within the portfolio, i.e., dispose of excess, we limit the number of installations through the second constraint where the sum of all open installations is  $\leq N$ . In all cases the model will have  $N$  installations in the portfolio. TABS determined the minimum  $N$  to satisfy all constraints.

One subset of constraints ensures “unique” installations are retained. TABS ran MVP without these unique constraints and determined the portfolio, then ascertained if the unique installations were within the portfolio. If these installations were already retained, then the unique constraint for that installation was not included. This made for a much stronger argument to maintain an installation because the installation helped to satisfy an overall Army requirement as opposed to a unique one. After this initial portfolio, TABS reran the MVP with these additional unique requirement constraints; this produced the final portfolio.

TABS performed sensitivity analysis to the constraint assumptions, which involved several “runs” of the MVP model using the different assumptions. For example, the Army has a requirement for  $x$  square feet of general instructional space. TABS developed a portfolio requiring at least  $x$ -sf on the installations within the portfolio. With sensitivity analysis, TABS changed the  $x$ -sf to  $\pm 10\%$  of  $x$ -sf and determined the impact on the portfolio (e.g., identified what installations would come out or enter the portfolio). These sensitivities provide insights into the robustness of the portfolio, determines changes to the size of the portfolio with differing requirements, and helps decision makers with their risk assessments.

## 8.0 SUMMARY

The Army is transforming to support future Joint training and war-fighting requirements. Army installations must support this transformation, and BRAC MV analysis captures installation characteristics that will support that transformation. TABS conducted research and interviewed senior Army leaders to identify BRAC challenges and transformational opportunities.

### 8.1 MV Approach Satisfies Six Criteria

Based on this research and interviews, TABS established six criteria that the installation MVA methodology had to satisfy. The final MVI satisfied these criteria:

- **Satisfies the DOD BRAC 2005 Selection Criteria** – We have shown a direct linkage to the selection criteria.
- **Builds on BRAC 95 Methods** – We built on lessons learned from the successful Army BRAC 95 MV analysis. MVI focused on installation functions and not installation categories; we also used multiple-value functions.
- **Defines Capabilities for Army Installations**– We defined a set of capabilities for installations; MV is the ability of an installation to meet these capabilities.
- **Emphasizes Transformation** – Our approach showed how Army installations support DOD and Army Transformation, Joint stationing, and the Army Stationing Strategy.
- **Incorporates Well-Being** – We assessed the installation’s contribution to the well-being of Soldiers and their families.
- **Is Analytically Credible** – MVI used Multiple Objective Decision Analysis to provide a simple and clear model that used credible data, is auditable, distinguishable by installation, and analytically defensible.

### 8.2 Approach Assesses MV of Installations and Portfolios

MVI supports BRAC decision-making and was used to evaluate individual installations and installation portfolios. Using MODA, MVI developed a 1-to-n ranking for an installation’s overall MV and the MV of each capability (e.g., Support Army and Joint Training Transformation). In addition, given a future Army force structure and the total Army requirements for each Army attribute (e.g., total maneuver space required), TABS uses MVP to identify the best (highest MV) portfolio of Army installations to support future Army force structure requirements. Sensitivity analysis helped TABS to examine alternative portfolios and to produce the portfolio that provided the most flexibility for future stationing.

## TAB 1. ARMY INSTALLATION CATEGORIES

Below are the 13 primary installation categories as defined in the Army Stationing Strategy are:

- ***Acquisition, Logistics, and Technology Oriented Facilities*** include integrated centers for research, development, test and evaluation, and engineering; fielding and sustainment of weapon systems; laboratories; National Inventory Control Points; and acquisition.
- ***Ammunition Production Facilities*** manufactures, receive issue, store, renovate, test and demilitarize conventional and chemical ammunition; provide quality assurance for special ammunition; and depot storage for ammunition and strategic materials.
- ***Collective Training*** provides the facilities to conduct large-scale unit training for active and Reserve Components but vary in terms of characteristics, capabilities, and organization.
- ***Command & Control and Administrative Support Facilities*** provide facilities through which the Army exercises command, control and management of the organizations that generate and sustain forces.
- ***Individual Training Locations*** are the home for the institutional component of the Army training system. These installations house the schools for each Army branch where doctrine is written; functional training occurs for officers, noncommissioned officers and enlisted personnel; leader development is accomplished; new organizations are designed; and modernization requirements are developed. These installations also include facilities for initial entry training.
- ***Maintenance Centers*** perform a variety of missions – maintenance, supply, and storage. Depots overhaul, rebuild, modify, convert, repair and fabricate Army equipment; support the sustainability of the force by replenishing Army equipment stocks; and provide on-site technical assistance to field units.
- ***Maneuver Installations*** are Army power projection platforms that provide the facilities and resources to house, sustain, maintain, train and deploy major combat forces to meet the demands of the DPG. Regionally, these installations support both Active Army and Reserve Component forces that do not have ready access to required services or training areas. Additionally, maneuver installations are used as training and mobilization stations for the Reserve Components.
- ***Manufacturing Facilities*** include manufacturing plants that receive, store, and incorporate raw materials and sub-components into the manufacturing process for end items of equipment and components. These installations also perform quality assurance and conduct acceptance testing of their respective products.
- ***Military Medical/Dental Treatment Facilities*** provide patient care, graduate medical/dental education, practical clinical training, and medical/dental research for the Army and for the Department of Defense.
- ***Munitions Centers*** receive, store, maintain, demilitarize and outload conventional and special ammunition, forming the wholesale base for the Army as well as other

services in its role as the Single Manager for Conventional ammunition. This includes other commodities such as missiles, including the Army's and other services support through inter-service support agreements (ISSAs).

- ***Professional Development Facilities*** provide professional military education that emphasizes flexibility and adaptability for officers, both Active Army and Reserve Component, Department of the Army civilian employees, members of sister services and other DOD agencies, and our allies.
- ***Ports*** are a special category of industrial facilities that includes ocean terminals and ammunition terminals that support deployment of CONUS-based forces.
- ***Proving Grounds*** support developmental tests to evaluate the battlefield application of new technologies over a wide range of terrain and climatic conditions. Testing includes all types of equipment and munitions, including specialized weapon systems.

**TAB 2. LIST OF BRAC 2005 ATTRIBUTES AND VALUE MEASURES**

The following tables illustrate the capabilities defined for BRAC 2005. Each capability is divided into sub-capabilities (a sub grouping) and has attributes that are mapped to the sub-capabilities. The MV attributes are described in detail in Annex 14 of the MV Supporting Document.

Capability	Sub-Capability	Attribute
<b>Training</b>	Impact Areas and Ranges	Direct Fire Capability
		Indirect Fire Capability
		MOUT Capabilities
	Maneuver / Air Space	Heavy Maneuver Area
		Light Maneuver Area
		Airspace
	Institutional Education	General Instructional Facilities
		Applied Instructional Facilities
	Environment / Encroachment Restrictions	Air Quality
		Noise Contours
		Soil Resiliency

Capability	Sub-Capability	Attribute
<b>Project Power</b>	Power Projection Platforms	Mobilization History
		Force Deployment
		Materiel Deployment
	C2 / Administrative	Operations/Admin Facilities
		Accessibility
		Connectivity
<b>Materiel and Logistics</b>	RDT & E	RDT&E Mission Diversity
		Test Ranges
	Logistics	Munitions Production Capability
		Maintenance/Manufacturing
		Inter-service and Partnering with Industry Flexibility
		Supply and Storage Facility
		Ammunition Storage Capacity

Capability	Sub-Capability	Attribute
Well - Being	Local Community	Crime Index
		Medical Availability
		Housing Availability
		In-State Tuition Policies
		Employment Opportunities
Cost Efficient	Manpower	Workforce Availability
	Installation / Facilities	Area Cost Factor
		Joint Facilities
		C2 TGT for Facilities
		Variable Cost Factor
Future Options	Mission Expansion Capability	Buildable Acres
		Brigade Capacity
	Mission Expansion Factors	Environmental Elasticity
		Urban Sprawl
		Critical Infrastructure Proximity
		Water



### **TAB 3. MAPPING**

In section 5.8, TABS validated the final MVI by illustrating how it met the screening and evaluation criteria. These included mapping the MVI's capabilities to the DOD BRAC selection criteria, the JCSG functions, and the installation categories from the BRAC 95 Military Value Installation Assessment (MV-IA). This annex provides a detailed mapping, at the attribute level, to the selection criteria.

The mappings and abbreviated descriptions are provided below. More detailed descriptions of the BRAC 95 attributes can be found in "The Army Basing Study, Base Closure and Realignment 1995. Volume II." The BRAC 05 attributes are described in detail in the Military Value Results document (Appendix B of the 2005 BRAC report).

Capabilities	Attribute	DOD 1: Readiness	DOD 2: Facilities	DOD 3: Surge	DOD 4: Cost	
Training	Direct Fire Capability	1	1	1		
	Indirect Fire Capability	1	1	1		
	MOUT Capabilities	1	1	1		
	Heavy Maneuver Area	1	1	1		
	Light Maneuver Area	1	1	1		
	Airspace	1	1	1		
	General Instructional Facilities	1	1			
	Applied Instructional Facilities	1	1			
	Air Quality	1	1	1		
	Noise Contours	1	1	1		
	Soil resiliency	1	1	1		
	Project Power	Mobilization History		1	1	
		Force Deployment	1	1	1	
Materiel Deployment		1	1	1		
Operations/Admin Facilities			1			
Accessibility		1	1	1		
Connectivity		1	1	1		
Logistics (IND. Base)		RDTE Mission Diversity		1	1	
	Test Ranges		1	1		
	Munitions Production Capability	1	1	1		
	Int. Service/Joint workload	1	1	1	1	
	Maintenance/Manufacturing		1		1	
	Supply and Storage Facility	1	1	1		
	Ammunition Storage Capacity	1	1	1		
Well Being	Crime Index	1				
	Medical Availability	1		1		
	Housing Availability	1				
	In-state Tuition Policies	1				
	Employment Opportunities	1				
Cost Efficient	Workforce Availability	1			1	
	Area Cost Factor				1	
	Joint Facilities		1		1	
	C2 TGT for facilities	1			1	
	Inst. Unit Cost Factor				1	
Future Options	Buildable acres		1	1		
	Brigade Capacity	1	1	1		
	Environmental Elasticity			1		
	Urban Sprawl	1		1		
	Critical infrastructure proximity			1		
	Water	1	1	1		

