FINAL

2014

Fort Campbell Green Infrastructure Plan

Improving Soldier & Family Resiliency through Multi-Modal Transportation, Open Space & Land Use Planning

Directorate of Public Works,
Master Plans Division

Fort Campbell, Kentucky

Review Page

Fort Campbell, KY Green Infrastructure Plan

Directorate of Public Works Approval

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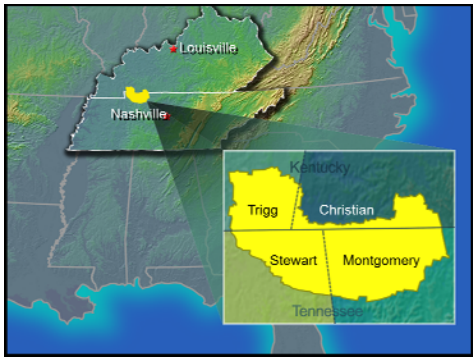
Section 1: Introduction & Methodology

1. Introduction & Methodology: The Army faces a challenge of a lack of social sustainability, or resiliency, in a population challenged by 10+ years of prolonged conflict. This lack of resiliency is evident in increasing rates of obesity, other health problems, divorce, suicides and drug abuse. The Army's *Ready and Resilient* campaign defines Resiliency as the mental, physical, emotional and behavioral ability to face and cope with adversity. Initiatives such as the *Comprehensive Soldier and Family Fitness Program* seek to improve resilience by enhancing five dimensions of strength: Social, Emotional, Family, Spiritual, and Physical health. This Green Infrastructure Plan addresses the links between health and the built environment, and how future development decisions can facilitate healthy lifestyles at Fort Campbell, KY. By providing for additional recreation and transportation alternatives, and ensuring that compact and compatible land use planning occurs, Fort Campbell will facilitate improved resiliency in Soldiers, civilians and families.

The purpose of the Green Infrastructure Plan is to develop a vision for the future of Fort Campbell and implement its *Real Property Vision Statement*, "**to create an enduring, sustainable, adaptable installation that supports mission readiness and power projection capabilities; Fort Campbell will build campus-like environments with well-connected, safe, healthy, and active communities and a defined sense of place"** (1). As discussed in the *Unified Facilities Criteria (UFC) 2-100-01, Installation Master Planning,* this plan will support the Department of Defense wide installation planning policy, "to develop a sustainable platform to support the effective execution of assigned military missions as efficiently as possible" (5) and will implement a disciplined decision making process at the individual project level which will work toward achieving the vision over time. Among other benefits, implementation of the plan may reduce air emissions, decrease fuel consumption, provide mental and physical health benefits, facilitate greater community cohesion, improve transportation accessibility, and may increase the desirability of the Fort Campbell community in support of the Garrison Vision, "***Best Soldier and Family Experience."*** This is a Network Plan in Fort Campbell's Installation Development Plan.



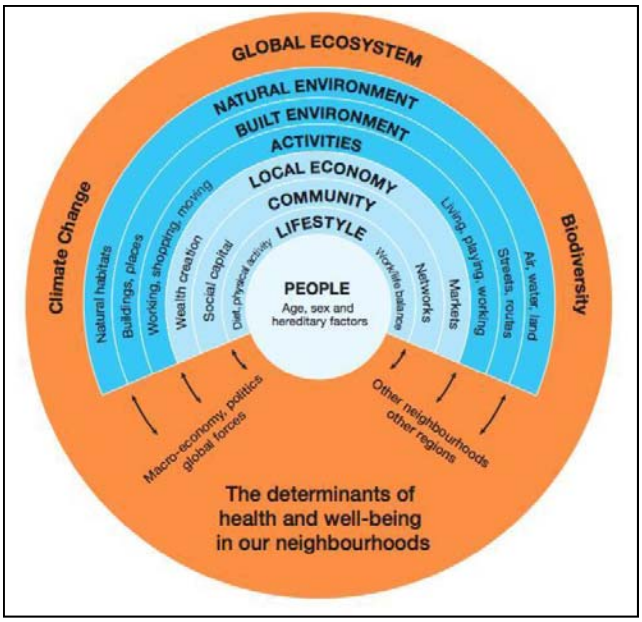
Location of Fort Campbell on the Kentucky-Tennessee state line. Map from the 2012-2017 Fort Campbell Strategic Plan, 2013.

The development of the Green Infrastructure Plan has been a multi year process that has its origins with Fort Campbell's Sustainability Conference in 2003, one of the Army's first, and gained traction in 2012 with the publication of the *Town Center Area Development Plan*, which laid out a vision for compact, mixed use development in the Town Center. The plan commenced with a charrette that included installation stake-holders, to include the use of social media to obtain input from Soldiers and families. The process highlighted that installation residents have a preference to live in compact and walkable communities. The Directorate of Public Works coordinated a series of community meetings, Town Halls and Facebook forums to gather feedback for a Multi-Modal Transportation Plan. These plans, as well as a Vision, Goals and Objectives for future development were refined in the *Real Property Vision Plan* and *Installation Planning Standards*, published in June of 2013. The Green Infrastructure Plan was circulated for on and off post community comment in 2014, with approval by installation leadership at the Real Property Planning Board in July of 2014. The plan serves as a guide for making informed decisions about the installation's land resources, and promoting resiliency and health in Soldiers, civilians and families living and working at Fort Campbell.

Section 2: Statement of the Problem

2. Statement of the Problem:

Many health professionals recognize a link between the built environment and health. Transportation methods, the availability of public and open space, and land use can, "be important environmental and social influences on health and well being" (NSW Ministry of Health, http://www.sswahs.nsw.gov.au/populationhealth/hud/heathandurban.html). The health map provided highlights links between health and the built environment.



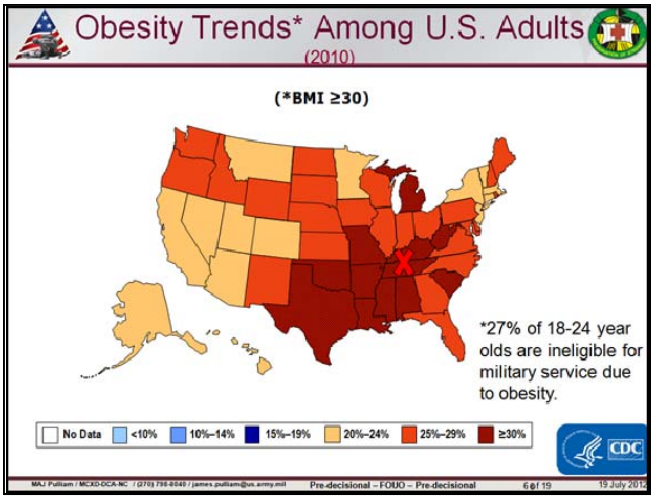
This health map highlighting the links between health and planning was included in the Journal for the Royal Society for the Promotion of Health.

a. Existing Conditions - A Community Assessment: There are many factors at play that have resulted in an a decline of social sustainability or resiliency in the population of Fort Campbell, and these trends are reflected in the overall population of the United States Army and the Nation's population at large. Despite a general perception that active-duty service members are more fit than the general population, there are trends indicating that Soldiers are at risk for becoming obese. For example, in 2011, 1,787 Fort Campbell Soldiers were enrolled in the Active Duty Weight Control Program (ADWCP) and in July of 2012, 1,115 Soldiers were flagged for exceeding body fat standards. In response to these trends, Division leadership have initiated Brigade Special Population Physical Training Programs whose intent are to counteract the number of Soldiers flagged due to weight control problems. In a 19 July 2012 briefing, *"Fort Campbell Nutrition and Fitness"* at Blanchfield Army Community Hospital (BACH), LTC James Pulliam referenced Department of Health and Human Services and Center for Disease Control (CDC) data that showed how trends towards obesity in the National population within the last twenty years are reflected in Fort Campbell's population. For example, in the 1990s, no state had more than 15% of its population identified as obese (Body Mass Index greater than or equal to 30). By 2010, not a single state had fewer than 20% of its citizens characterized as obese, with twelve states, including Kentucky and Tennessee, identified with more than 30% of their populations characterized as obese (Pulliam, 4-6).

Photo of Soldiers and civilians at Fort Campbell's Food Court, which serves primarily fast food. This contributes towards trends of obesity in the military service and the larger community. Photo by James Pulliam, 2012.

Much has been made of the growing girth of America's population, including the fact that approximately 27% of 18-24 year olds are currently ineligible for military service because of obesity (Pulliam, 6). Army-specific statistics tell a similar story. As referenced in the BACH *Patient Administration Systems and Biostatistics Activity (PASBA)* dated March 2012, 61% of active duty personnel today have a Body Mass Index (BMI) greater than 25 (considered overweight), and 16% have a BMI over 30 (considered obese). In 2010, 6.5% (40,440) active

duty Army forces exceeded Army body fat standards. Since 1992, 26,000 Soldiers have been discharged as a result of being unable to meet body fat standards. The Army wide trends are reflected in Fort Campbell's active-duty population as well. In 2011, 36 Soldiers received Chapter 18 Discharges, Separation for Failure to Meet Army Weight Control; in July of 2012, 83 Soldiers received this discharge, a 115% trend increase. In addition, 30.11% of dependent children on Fort Campbell were also identified as overweight and obese in 2012 (Pulliam, 8-9).



This excerpt from a July 2012 Fort Campbell Nutrition and Fitness Briefing developed by Blanchfield Army Community Hospital staffer LTC James Pulliam shows obesity trends in the United States and its impacts on military service.

b. Auto-Oriented Development: A 2006 report developed by the U.S. Green Building Council (USGBC), the Congress for New Urbanism and the Natural Resources Defense Council, *Understanding the Relationship Between Public Health and the Built Environment,* linked environmental design with several categories of public health: respiratory and cardiovascular health, injuries, physical fitness, social capital and mental health. According to the report, "...the organization of the built environment affects travel, both in the form of vehicle trip generation rates and distances traveled…"(3). Today, Fort Campbell mirrors suburbia in its style of development, with crowded parking lots and heavily trafficked streets. Soldiers and their dependents often choose to take their cars to do even short distance errands. While slowly increasing, infrastructure such as sidewalks and bike paths don't exist in sufficient quantity for those who do choose alternative transportation methods. By making changes to infrastructure, such as by providing the means for installation residents to walk or bike, we can shift more of those car trips to walk or bike trips, with additional benefits resulting, such as an opportunity to reduce the use of fossil fuels, improve air quality and respiratory health, and contribute towards the physical, social, and mental well being of residents.

c. Existing Land Use: The sprawling suburban style development characteristic of many Army posts has also had an impact on the installation's population. Much of this sprawl is driven by Anti-Terrorism/Force Protection considerations which requires separation of roads and parking from facilities, and the desire to consolidate unit facilities in "unit footprints." Secondary consideration has been given for issues such as walkability and community cohesion. By making changes in the way the installation makes development decisions, such as promoting higher density development, and mixing land uses, the installation can also influence the populations' transportation decisions. In creating the Town Center and the Soldier Family One Stop, emphasis has been on siting new facilities and reutilizing existing facilities so users are able to walk or bike from their homes to their workplaces and to obtain community services. The installation also recently facilitated a land swap between the Department of Defense Education Activity and Campbell Crossing, the installation's privatized housing partner, which will allow an elementary school to be constructed in a location that will facilitate more students being able to walk to school from neighborhoods on the north side of the installation. Such efforts to better link the community can greatly improve social cohesion and quality of life on Fort Campbell.

For Campbell's rapid growth in 2003-2012 led to a loss of many open and recreational spaces on the installation. Recent emphasis has placed greater focus on this valuable resource, and has focused efforts both on maintaining existing open and recreational resources and developing new green space opportunities, as well as enhancing connectivity to existing and proposed recreational and open space resources.

Section 3: Trends

3. Trends: Fort Campbell has the opportunity to leverage leadership support to develop a more sustainable Fort Campbell. There has already been significant progress made in transitioning towards a focus on healthy living and creating a more sustainable community.

a. Socio-Economic Trends: Data from the United States' Census Bureau's American Fact Finder highlights trends in Fort Campbell's population, and is available at Appendix C. Common characteristics of military communities evident in the Census data for Fort Campbell include the residents' relative youth, the large number of families with children, and a lower median income. Of Fort Campbell residents, 1.2% of housing occupants do not have a vehicle, and 31.5% of housing occupants have only one vehicle, which means many military spouses and Soldiers do not have a vehicle to complete errands or visit recreational sites. Yet the nature of Fort Campbell's cantonment area as an independent and relatively compact community offers great opportunities to provide transportation alternatives that would allow residents to walk to the grocery store, playgrounds or community support facilities. The American Fact Finder data also indicates that 52.7% of installation residents drive to work alone in a car, truck or van. 15.5% carpool, 0% utilize public transportation, 18.5% walk, 2.3% use other means, and 10.9% work from home. The mean travel time to work for Fort Campbell residents is a short 11.6 minutes, compared to 22.9 minutes in the City of Clarksville. Providing sidewalks, bike lanes, and improving public transportation could reduce the reliance Soldiers have on using a private vehicle to get to work.

Representatives from Better Opportunities for Single Soldiers (BOSS) emphasized the importance of providing infrastructure that allowed Soldiers to walk to activities (Photo from Town Center Area Development Plan).

In the neighboring community of Clarksville, TN, Census trends for transportation show an even greater reliance on using a private vehicle to get to work. 84% of individuals ride to work alone (compared to 83% of individuals state-wide). Similar to Fort Campbell, many Clarksville streets do not have sidewalks or bike lanes and bus services are not heavily utilized. However, in recent years, Clarksville has also placed increased focus on healthy living and providing transportation alternatives. Its *2012 Annual Report Clarksville Parks + Recreation Moving Forward* shares a vision of, "a healthy community where every citizen has access to fun, safe and affordable services and facilities…" A major development has been the construction of the Clarksville Greenway, a popular Rails to Trails project, and installation of bicycle routes and sidewalks as part of road widening projects. Regionally, increased emphasis has been placed on integrating health considerations into planning.

According to Dave Ripple, Director of Planning at the Clarksville-Montgomery County Regional Planning Commission, Fort Campbell adjoins the Clarksville Urban Area Metropolitan Planning Organization (CUAMPO) Study Area. In February of 2014, the CUAMPO adopted the *2040 Metropolitan Transportation Plan*, which addresses multi-modal ground transportation routes providing access to Fort Campbell. The plan promotes improved transit services and alternative modes including bicycle, pedestrian and transit facilities in new and reconstructed roadway projects in accordance with the *Greenway Master Plan* and *Clarksville Urbanized Area Sidewalk Plan.* Clarksville's greenway is located in an abandoned Illinois Central rail bed that connects to the River Walk Trail along the Cumberland River through downtown, with potential future connections to Fort Campbell.

Participants at the April 2014 Eagle Fitness Tour Urban Orienteering Event (Photo: Fort Campbell Facebook Page)

b. Local Initiatives: In light of these trends, Army and local leadership have focused on creating an environment that promotes physical activity and health. The *Installation Management Command Campaign Plan 2012 to 2020* cites an objective of Soldier, Family and Civilian Well being, which includes providing, "Facilities, Programs and Services that support recreation, leisure, travel and single soldiers (17)." At Fort Campbell, the Senior Commander's Healthy and Active Living Program focuses on, "treating Soldiers' bodies, minds and spirits holistically." According to LTC Pulliam's briefing on "*Fort Campbell Nutrition and Fitness,"* medical professionals are focusing on improving Soldiers' health in four areas: by campaigning to improve food offered in dining facilities through the "Soldier Fueling Initiative;" by encouraging local Department of Defense Education Activity schools "to participate in (the) Healthier US School Challenge;" by partnering with the Army and Air Force Exchange Service to offer healthier franchise alternatives; and by supporting the Directorate of Public Works' efforts to plan and fund transportation alternatives. Projects to construct facilities that promote outdoor activities have recently received priority, such as sidewalks around Town Center. A nature trail has also been funded through the installation's Qualified Recycle Program. Army-wide initiatives to improve public health, such as an Army Wellness Center, and a Comprehensive Soldier and Family Fitness program are being implemented, and programs like the Civilian Wellness Program, Eagle Fitness Tour, and Soldier Challenge highlight the need for Soldiers, civilians and families to live healthier lifestyles, offering nutrition and fitness assessments and advice. Jointly, these programs represent the emphasis the Army community is placing on the area of health and fitness.

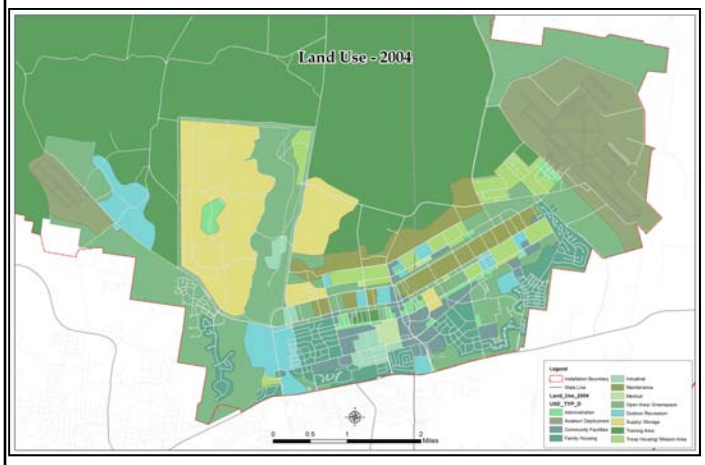
Army family members make comments at a Public Input Meeting at Jackson Elementary School (Photo: Laura Yates)

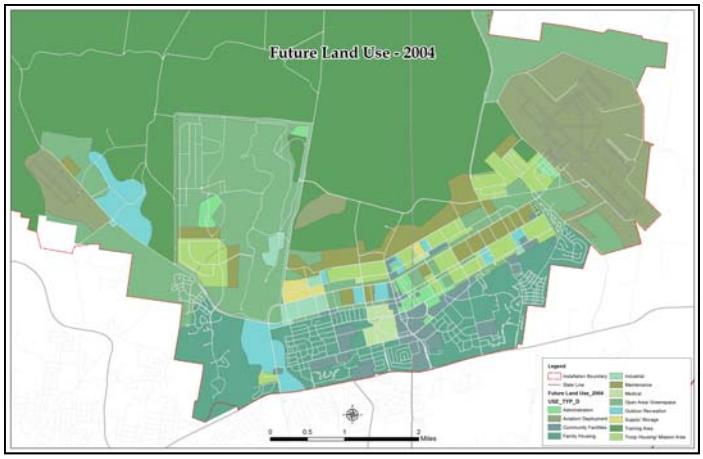
c. Community Involvement: In the past, Fort Campbell's community involvement included efforts associated with National Environmental Policy Act compliance and formal coordination with off post partners for planning efforts such as emergency services and encroachment. Fewer efforts were made to solicit the input of Soldiers and families, yet providing those stakeholders a voice is key to improving social capital in our community, a key element of community health. The report *Understanding the Relationship Between Public Health and the Built Environment* defines social capital as a feeling of belonging and that community needs will be met (93). DPW used several forums to solicit community input for recent planning efforts. In addition to seeking input through Facebook, DPW staff presented concepts for planning efforts at Town Halls and the Installation's Information Exchange. As part of the Multi-Modal Transportation Plan, DPW held two Public Information Meetings to solicit community input on a plan for sidewalks, bike-lanes and a fitness trail. The efforts to include the community in planning decisions have resulted in valuable feedback that has allowed DPW to prioritize new projects for sidewalks, parks and other facilities that contribute to improved quality of life for Soldiers and families. Community members responded positively to opportunities to provide feedback. As expressed by a family member on a meeting questionnaire: "I think it's great that you guys have opened up for public opinions!!!"

During Community Input Meetings, community residents were encouraged to identify "Trouble Spots" where they had difficulty crossing the street .

d. Environmental Trends: There has been growing focus over the years on Army installations on the importance of considering impacts on the environment when making planning decisions. Planning documents such as the *Installation Management Command Campaign Plan* focus on the importance of environmental stewardship by, "preserv(ing), protect(ing), conserv(ing) and where appropriate, restor(ing) the natural environment," and "planning to reduce environmental impacts and risk to ensure safe and healthy communities" (33). *Fort Campbell's Integrated Natural Resources Management Plan (INRMP) 2013-2017,* "implements the Army strategy for the Environment, which is to integrate environmental values into the military mission to sustain readiness, improve the Soldiers' quality of life, strengthen community relationships, and provide sound stewardship of resources" (vii). The plan addresses how the installation should plan for the impact of construction projects and related activities on the environment and discusses the process for minimizing impacts. For example, the document lays out a requirement to plan development to minimize impacts on environmentally sensitive areas (58). The installation's *Urban Forest Management Plan, 2008-2013* references Department of Defense objectives to maintain its urban forest resources, by "providing healthy, pleasant surroundings and suitable outdoor recreation facilities," and notes this is essential to the welfare and morale of personnel (4). *Fort Campbell's Integrated Cultural Resources Management Plan* discusses how the installation will, "manage and maintain cultural resources under DoD construct in a sustainable manner…" (iv). Fort Campbell is also subject to the Clean Air Act which sets National Ambient Air Quality Standards (NAAQS) for pollutants considered harmful to public health and the environment. The installation has a maintenance plan that maintains designated ozone and particulate matter levels.

Despite these commitments, in past years, the rapid pace of development from a robust Military Construction program did have impacts on Fort Campbell. A comparison of the installation's 2004 Existing Land Use Map and Future Land Use Map showed a loss of 156 acres of Recreation Space and a loss of approximately 405 acres of Open Space to planned development. Recently, however, Fort Campbell has turned a corner with its commitment to preserve open space on the installation and has focused on efforts to provide more opportunities to walk and bike. The recent Visioning proposed the development of a "green belt" of trail-connected open space. Efforts such as these provide a win-win opportunity that contributes to the health and well-being of installation residents while meeting other environmental goals, such as improving air quality, preservation of wildlife habitat, and responsible management of storm water.





Fort Campbell's Land Usage maps had last been updated in 2004. With land use changes planned at the time, the installation was anticipated to lose 156 acres of outdoor recreation space and 405 acres of open space in the installation's cantonment area. Original maps attributed to Bob Brundage with revisions by Mike Malham.

e. Sustainability: The Army has placed greater emphasis on sustainability over the last decade. The term Sustainability is most often credited to the *Report of the World Commission on Environment and Development: Our Common Future* developed by the United Nations World Commission on Environment and Development, more commonly known as the Brundtland Report. The report defines sustainable development as, "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (8). Since the publication of the report, numerous Executive Orders and laws have been passed mandating that the Federal government become more sustainable. These include *Executive Order 13514, Federal Leadership in Environmental, Energy and Economic Performance*, published October 5, 2009; *Executive Order 13423, Strengthening Federal Environmental, Energy and Transportation Management*, published January 24, 2007, the *Energy Independence and Security Act*, signed into law in 2007, and the *Energy Policy Act of 2005*. The Army has taken steps to comply; among other things, all new Army facilities are constructed so they are Leadership in Energy and Environmental Design (LEED) certified (or certifiable).

The Installation Management Command Campaign Plan parrots the goals of Army efforts. The plan highlights its installations' need to address Installation Readiness by providing, "sustainable infrastructure that is resource and energy efficient" (29). As addressed in Fort Campbell's Integrated *Natural Resource Management Plan* (INRMP), Fort Campbell implements a program called the Sustainable Installation Management System (SIMS), which, "provides a blueprint for sustainability on the installation" (6). Fort Campbell's sustainability program identifies five major initiatives to achieve sustainability: **providing sustainable infrastructure**; **implementing sustainable procurement**; **promoting sustainable regional development**; **providing sustainable training support**; and **promoting sustainable transportation** (6). Progress has been made towards these goals through several means, by incorporation of sustainable planning and design practices into new construction and repair efforts, via the establishment of Sustainability working groups, and through the development of new master planning efforts, such as Area Development Plans. Contractors constructing projects at Fort Campbell have made particular progress in the area of sustainable procurement. Despite these recent commitments, actual funding for large scale transportation sustainability improvements has not been an Army priority to date, leaving many projects in plan form only. In all, Fort Campbell is representative of the larger Army in that it is making strides towards becoming more sustainable. With continued focus, and dedicated funding to implement planning efforts, Fort Campbell has the potential to become a truly sustainable community.

Renderings of planned construction on Fort Campbell. Projects include a replacement Barkley Elementary School, a new fitness center at New Clarksville Base and a new barracks facility and sports complex. All projects will be Leadership in Energy and Environmental Design (LEED) Silver Certified.

Section 4: Vision Strategies

4. Our Vision: Fort Campbell commits to becoming a more sustainable community through various Green Infrastructure planning efforts. The term Green Infrastructure has many definitions. In their book, *Green Infrastructure Linking Landscapes and Communities*, Mark Benedict and Edward McMahon define Green Infrastructure as, "an interconnected network of natural areas and other open spaces that conserves natural ecosystem values and functions, sustains clean air and water, and provides a wide array of benefits to people and wildlife" (1). Fort Campbell's definition of Green Infrastructure planning has a similar tone, defined as **planning that considers the value of environmental and cultural resources, open and recreational space, and community resiliency and health when decisions are made about the built environment**. The installation seeks to create an interconnected network of natural and recreational open spaces, and facilitate opportunities for installation residents to access community and recreation oriented facilities from their homes and offices, without having to use a car. This section discusses goals the installation has set to become a more sustainable community.

Fort Campbell staff, including members from DPW and the Community Health Promotion Office toured the installation by bike to identify installation resources and gaps in the installation's transportation network.

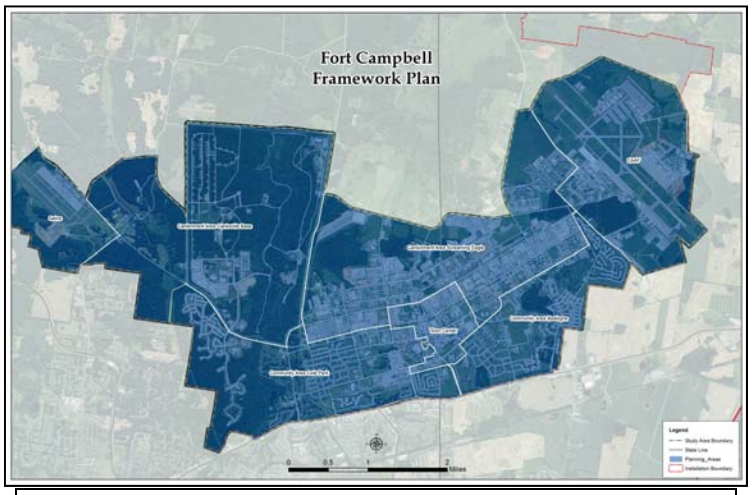
a. Vision Statement: Fort Campbell's current Master Planning Vision supports the Garrison Vision of, "**Best Soldier and Family Experience,**" and the vision and goals of the *Fort Campbell Strategic Plan, 2012-2017.* The Master Planning Vision and its Guiding Principles were revised in Fall of 2011 to address some issues related to sustainability. According to the November 8th 2011 Real Property Planning Board (RPPB) slides, the existing Master Planning Vision is to, **"create an enduring, sustainable installation that supports mission readiness for U.S. Army expeditionary forces and power projection capabilities by building world class communities in which Soldiers, Families, Civilians, Retirees, and others on Fort Campbell are excited to work and live. Protect, integrate and develop adaptable complexes that improve functional efficiency and can expand to accommodate new missions and equipment. Sustain a cohesive master plan through uniformity of color and architectural style, and development of campus-like environments that encourage healthy activities, facilitate optimal land use, and improve traffic circulation."**

Guiding principles to the Vision include the following:

- Support the Mission of Fort Campbell's troops and Power Projection capabilities;
- Footprints are the foundation of the long-range master plan;
- Maintain the long range Master Plan vision – balance today's needs with flexibility for future requirements;
- Building communities and health-promoting environments; and
- Integrate sustainability into all aspects of the Master Plan (9-10).

In December of 2012, Fort Campbell participated in a Visioning session that proposed a revised Real Property Vision. The new vision, included in *Fort Campbell's Real Property Vision Plan* is, "**to create an enduring, sustainable, adaptable installation that supports mission readiness and power projection capabili-**

ties. Fort Campbell will build campus-like environments, with well-connected, safe, healthy and active communities and a defined sense of place" (1). The new vision was developed as part of a charrette process that involved installation and Directorate leadership, as well as planners, environmental staff, and other stakeholders, and is consistent with DoD efforts to promote healthy community planning. The installation also approved a Growth Boundary (cantonment area boundary) and development Districts as part of a Framework Plan. Staff from the Directorate of Public Works' Master Plans and Housing Divisions and the Community Health Promotion Office also toured the installation to identify gaps in the transportation and green infrastructure network. Findings from the tour established a baseline from which to measure goal completion.



Districts were identified within Fort Campbell's cantonment area as part of the development of the Real Property Vision Plan. Future cantonment area growth will also be limited within these areas. Map edits by Mike Malham.

i. Community Participation: Input from the community has been gathered through various forums, on Facebook, at three housing area Town Halls, at the installation's Information Exchange, and at Public Information Meetings. These events have highlighted the importance that the community places on safety and health, providing alternatives for active lifestyles, and creating a sense of community or place on the installation. In an August 2nd, 2012 Fort Campbell Courier article by Yvette Smith, *Multi-Modal Transportation Plan Receives Community Input,* Fort Campbell family member Amy Sutton stated, "I think it's fantastic…Not only can we get out and do our fitness routines in other places, it's also trying to promote and encourage Families to get out and use different modes of transportation to go do their shopping, go to work, go to the PX, run to the barber shop, or whatever it might be. That encourages the children…This is exciting" (fortcampbellcourier.com).

A Fort Campbell military spouse provides comments on the Transportation Plan at a August 2012 Community Input Meeting, Fort Campbell Courier, 2 Aug 12

b. Recommended Strategies: Fort Campbell has a limited infrastructure allowing for transportation alternatives that provides access to recreational resources. These existing resources establish a benchmark that influence our way-ahead as we develop plans for a more sustainable Fort Campbell. Below, we discuss strategies to add to our multi-modal transportation network, protect and grow our open space network, and make land use decisions that facilitate healthy lifestyles. An implementation matrix at the end of this report summarizes strategies for desired actions.

i. Strategy 1: Promote Multi-Modal Transportation: Fort Campbell currently has limited resources available that provide for transportation alternatives. Multi-modal transportation can include transportation by rail, water, air and highway, as well as improved pedestrian, bicycle and mass transit access. For purposes of this report, we will focus on four categories: Fitness Trails, Bicycle Lanes, Sidewalks, and Bus Routes. Combining existing resources and plans to improve upon them will help us reach our long term vision of ***100 new miles of trail, sidewalk and bike lanes on Fort Campbell, and includes a commitment to fund a $500K trail project annually and focus 2% of the SRM budget annually for sidewalk and bicycle infrastructure.***

1. Method: Build our Fitness Trail Network: Fort Campbell has around 36 miles of trail infrastructure. One recent addition to its inventory of resources is a 1 mile rubberized fitness loop around the Blanchfield Army Community Hospital (BACH). This trail includes fitness stations, water fountains, seating, and connections to the hospital and other adjacent BACH facilities, such as the Warrior in Transition campus. The trail receives regular use by employees, patrons and residents. Fort Campbell hopes to provide a connection from existing sidewalks on Screaming Eagle to this track as part of the on-going hospital addition project. In the Clarksville Base Historic District, once a separate Naval Weapons Station, an old road used to patrol the fence-line of the installation called Fence Patrol Road, today serves as a resource used for walking and running. The road, approximately 10' in width, approximates the width of a modern multi-use trail and meanders along the edge of a wooded area. Today, security restrictions around the installation's munitions storage area prevent the 8 mile loop from being fully utilized; only 4 miles can formally be designated for this purpose today. However, a 2014 Quality Recycle Program (QRP) project is planned to expand this area into a more formal nature trail.

A 2.5 mile fitness trail, also used for walking, running and biking is located outside of the 160th Special Operation Aviation Regiment's compound near Campbell Army Airfield; used primarily by 160th Soldiers, it is also used by those working in facilities at the nearby Destiny Heliport. Another existing trail goes around the high school practice field, down Bastogne and along 16th Street, but requires maintenance. Small paved pathways also exist in Lee Park, near Gate 1 off of Lee Road, and at Wilkes Park inside Gate 6 on Morgan Road. Though constructed as access roads, these resources are used by military dependents as walking routes. Finally, a 15 mile gravel trail, used for military road marches, is located in the rear of the installation off of Range Control Road; it is also used for recreational purposes and can be connected to future trail infrastructure. The Division also recently developed a 101 Kilometer bike route through Fort Campbell's range areas along existing roads.

Fort Campbell has developed a concept for a Soldier and Family Fitness Trail, also known as the Active Living Greenway, which would form a 13.1 mile loop around the installation. According to the report *Understanding the Relationship between Public Health and the Built Environment,* access to recreation and leisure activities correlates to higher levels of physical activity. Providing better infrastructure to access recreational facilities also encourages more active travel (81). The intent of the proposed Soldier and Family Fitness Trail is to provide connections between existing open space and recreational resources including parks and playgrounds, neighborhoods and commercial areas. Another goal of the trail is to make it possible for those living and working on the installation to get around post without having to use their cars. The route for the greenway was developed by a team of individuals including the Directorate of Public Works, the Community Health Promotion Officer, and a staff member from the Installation Housing office, and was finalized with the support of a large group of individuals representing the Directorate of Family Morale, Welfare and Recreation, the Installation Safety Office, and the Directorate of Emergency Services. The route was presented to the community during two Community Input Meetings and the initial concept has been approved by the Senior Commander. Connections to the route are intended to improve access to the existing trail around new Clarksville Base and to housing areas and barracks.

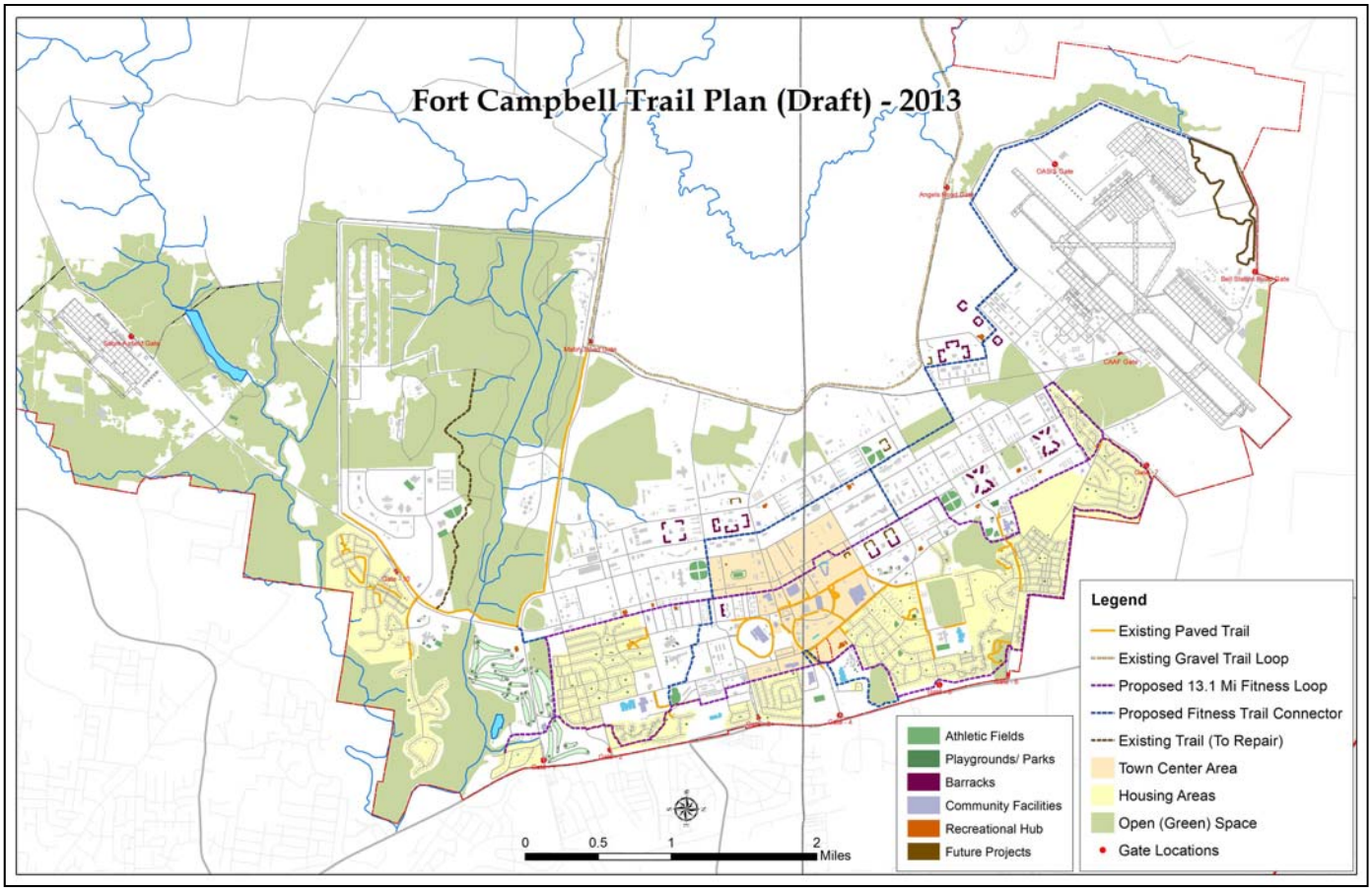
A depiction of the fitness trail in Fort Campbell's Town Center Area Development Plan

Trail segments are visualized as a 10' wide asphalt, with options for materials, such as permeable or porous asphalt, decomposed granite, or gravel. The segments would include lighting, signage, emergency call boxes, water fountains, seating, and fitness equipment. A Scope of Work for the trail has been developed, but funding is not currently available to execute the design. Portions of the trail will be completed as part of infrastructure for new Military Construction projects. Other trail segments run along the path of sidewalks in the military housing areas; Memorandums of Understanding between Campbell Crossing and DPW will be needed to secure real property instruments to complete these sections or improve existing assets. The trail will include hubs with restrooms, parking, and bike storage at Lee Park and Wilkes Park, and at a proposed hub at Building 2699, the potential site for a future Army Wellness Center.

A photo of the nearby Clarksville Greenway. The City's concept for Greenway expansion would connect to Fort Campbell's Multi-Modal network.

The Multi-Modal Transportation map shows the route of the trail and connections that will provide access to housing areas, barracks, and fitness resources. The trail could also one day connect to the City of Clarksville's planned Greenway extension; Fort Campbell planners met with city officials in 2012 to discuss this potential connection. The plan for trails on the installation also calls for the refurbishment of a maintenance road in Old Clarksville Base into a Nature Trail. This Nature Trail would connect to the existing 4 miles of Fence Patrol Road and could someday form a 5-7 mile loop through a forested area. The route would connect to Fort Campbell's newest fitness center in New Clarksville Base, and could eventually connect to a larger 20 mile trail network as well as other existing unpaved trails. An Air Force tenant recently proposed self-funding the construction of a fitness trail which could also connect to the larger network, near a dog park and memorial on the north side of the installation. ***Commitment: The Directorate of Public Works and partners will promote the development of a network of 20 more miles of fitness trails on the installation to provide transportation alternatives and facilitate healthy living. Complete and usable trail segments will be constructed as part of projects as discussed in Section 5.***

2. Method: Create Complete Streets (Bike Lanes): Fort Campbell currently has limited bike infrastructure, with one approximately 9' marked lane being located on Bastogne Avenue between 16th Street and Carentan Road that requires maintenance. The lane provides approximately .8 of a mile of marked, separated bike lane. The lane does not include compliant *Manual on Uniform Traffic Control* markings or signage, and is too narrow for both pedestrians and bicyclists, which poses a hazard near intersections and driveways. As part of the development of the Multi-Modal Transportation Plan, Fort Campbell leaders and citizens on the installation expressed interest in developing a plan for additional bike infrastructure. According to *Ft Campbell's Real Property Vision Plan*, "bike lanes provide a more sustainable alternative for transportation between (areas of the installation), and by connecting these trails to the (installation's entrance) gates, a more sustainable commute is also possible on and off post. In addition, this network of bike lanes can serve as the backbone of a network of active recreation activities, both on and off post" (Vision, 23). Through a series of planning events, such as the Visioning, Town Center Area Development Plan and Community Input Meetings, installation experts, residents and officials developed a plan for shared and separated bicycle lanes. The lanes are high-lighted on the Multi-Modal Transportation Plan map, which is excerpted from the *Fort Campbell Real Property Vision Plan.* Many Fort Campbell roads could benefit from a "road diet," as they are wide enough for immediate restriping to add bike lanes. Such efforts could be an easy win to kick off the development of a bicycle network.



Fort Campbell's Draft Trail Plan, showing the location of proposed trails in relation to housing, open and green space, recreational and community facilities. Map by Chris Brown, 2013.

Fort Campbell's Installation Planning Standards lay out standards for different types of bike infrastructure. For example, on street lanes striped and designed for exclusive use by bicycles will be a 4' width at minimum and will include a 6" white strip adjacent to the bike lane (IPS, 24-25). In some areas 4' may not be wide enough, depending on traffic. In high trafficked areas and where the posted speed limit is equal to or greater than 35 mph, the *Planning Standards* suggest a buffered bike lane with 2' buffer zones between bicycles and vehicle travel lanes (28). A separated lane is appropriate in areas such as Bastogne and Wickham Avenues and is the preferred method to provide bike infrastructure installation-wide for safety reasons. Safety at intersections is a particular concern. Lane symbols and markings compliant with the *Manual on Uniform Traffic Control* were recently added as options to the installation paving contract.

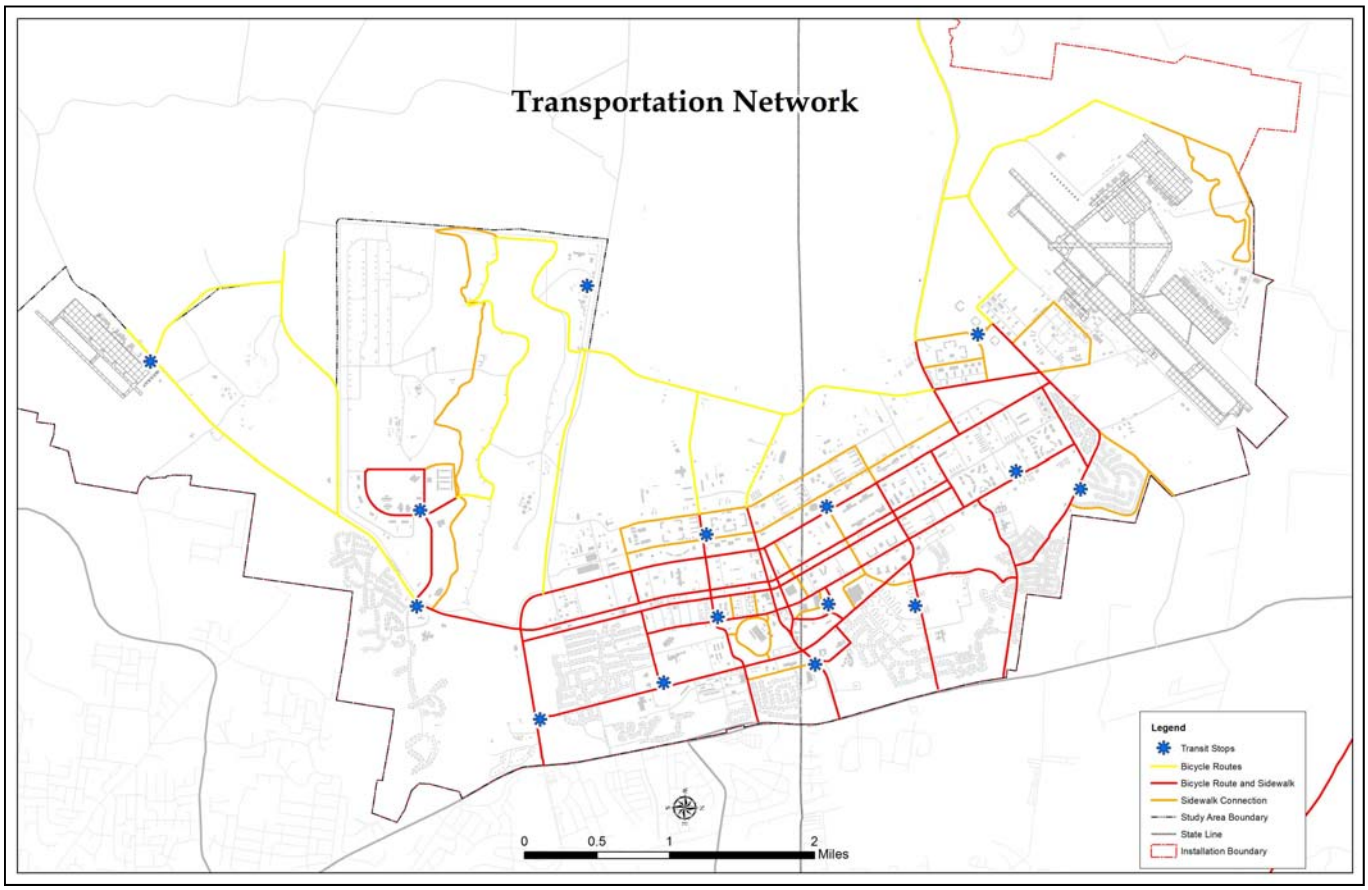
Installation officials propose routes for bicycle infrastructure at Fort Campbell's Visioning Charrette, Fort Campbell Real Property Vision Plan, 2013

Shared bicycle lanes or Sharrows, which include, "road markings indicating a shared lane environment for bicycles and vehicles" will be proposed for areas with slower speeds (less than 25 mph) or areas with low vehicle counts (such as housing areas, or Mabry and Angels Road leading to the ranges). Sharrows should also be marked along Georgia and Ohio Roads in Old Clarksville Base. Roads in this area also require repairs to fill potholes. Lights and panic boxes can be added to improve this area. After a bicycle network is constructed,

consider installing Bike-share stations, where installation residents can rent a bike and return it at identified destinations. A similar effort has been launched in downtown Nashville, but would likely not be successful on Fort Campbell until the bicycle network is fully developed. The proposed network can use existing infrastructure, such as latrines that were recently constructed near Fort Campbell's golf course. During network development, the installation should pay adequate care to ensuring proper signage, pavement markings and reflectors, and other infrastructure is in place, especially at intersections (right turn lanes, bike boxes, signal activators, etc). As part of the development of new bike routes, the installation should also include development of focal points at main entries or ends of streets. Bike route maps should be published once the network is in place.

Bike lanes are proposed exiting the installation at Gates 1 - 6. The installation will work with the Tennessee Department of Transportation and Kentucky Transportation Cabinet in the hopes that improvements (such as a 8'-10' separated bike lane) can be made to the main road accessing Fort Campbell, 41A, to provide safe access for commuting bicyclists, as a growing population of Soldiers and civilians ride their bikes to work. Installation officials met with City of Clarksville planners in 2012 and requested the City consider extending its Greenway Network to Gate 1. If constructed, bike lanes at Gate 1 could link the installation to miles of Greenway trail within the city. Funding mechanisms for development of the bike network will be discussed in Section 5.

An implementation table at the end of this report details projects proposed to include more than 55 miles of future bike lanes and stand-alone bike routes. ***Commitment: The Directorate of Public Works and partners will promote the development of a bicycle network on the installation to provide transportation alternatives and facilitate healthy living. Project Managers shall include painting, marking and signing of bicycle lanes or Sharrows as part of transportation improvement and construction projects where roads will be impacted.***



Excerpted from the installation's Real Property Vision Plan, this map shows the location of proposed bicycle routes, sidewalks and transit stops. Map edits by Mike Malham.

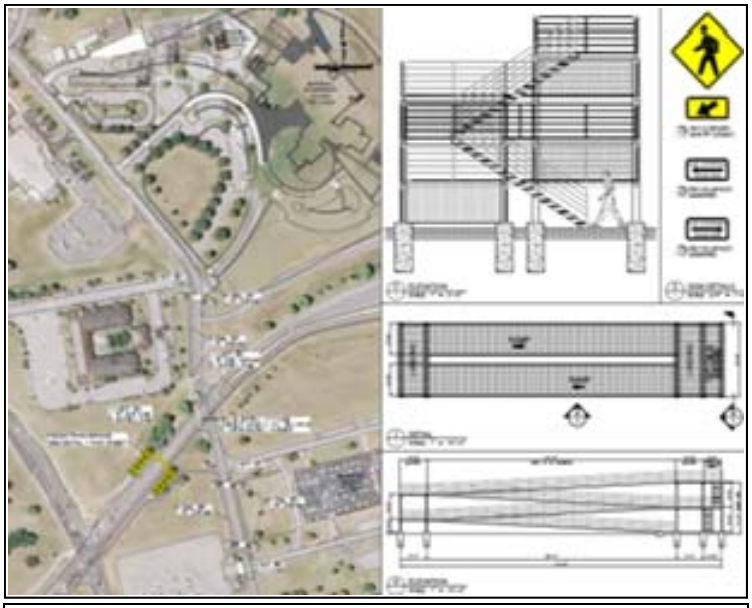
3. Method: Create Complete Streets (Sidewalks): According to *Understanding the Relationship Between Public Health and the Built Environment,* more than a quarter of trips are easily walkable if the infrastructure exists to safely do so (71). According to the *Public Health and the Built Environment* report, 70% of people will walk to a destination if it is 500' away or less; 40% will walk 1000', and 10% of people will walk to a destination that is .5 miles away (27). Unfortunately, Fort Campbell's sidewalk network is limited. Fort Campbell currently has 311.38 miles of sidewalks, but most exist within housing areas or are disjointed on building sites. Although in planning since 2003, the installation lacks an interconnected network of sidewalks that allow Soldiers, families and civilians to reach primary destination points without a car, a point that was reemphasized by the community during various recent planning efforts. In addition, many sidewalks, such as those in the housing areas, are too narrow, and not compliant with the *Americans with Disabilities Act (ADA) Accessibility Guidelines* and require upgrades. There are also many street intersections that have poor visibility or are difficult for pedestrians to cross, such as Screaming Eagle Blvd, 1st and TN Avenues, Bastogne and Lee Rd, and areas where sidewalks are lacking, such as Indiana Ave near the barracks and at the crossing of Airborne Street, along the perimeter of Werner Park on Airborne, near LaPointe housing, along Polk Road near Barker's Court, and on Kentucky Ave. Many traffic signals lack pedestrian crossing lights and should be upgraded.

Recently constructed sidewalk near Fort Campbell's Town Center

In 2011, Fort Campbell constructed 1.5 miles of sidewalks in the area immediately surrounding the installation's Town Center, and in early 2013, a second mile of sidewalk was constructed connecting the Town Center to the new Commissary. As shown on the Multi-Modal Transportation Plan map, there are plans for additional sidewalks co-located with bike lanes along major thoroughfares, as well as sidewalk connections that intersect with the fitness trail. As part of Fort Campbell's recent Visioning process, participants were asked to identify the streets on the installation that were highest priority for retrofitting, with priority being assigned to areas with the greatest potential for foot traffic and risk for conflict with vehicle traffic. Projects were developed to address community comments, such as sidewalks on Morgan Road, around Town Center, on Lee Road, and along major gateway corridors like Screaming Eagle, Forest and Polk Roads. The Garrison Commander's Top 10 sidewalk projects correspond with the projects prioritized by the community. The Top 10 sidewalk projects are identified in the Implementation Section of this report. Other smaller sidewalk projects are also planned, such as a desired connection between the hospital's walking track and Screaming Eagle (as part of the hospital additional project), addressing sidewalk gaps in New Clarksville Base, and providing sidewalk connections from the Family Resource Center to nearby neighborhoods.

Constructed sidewalks will comply with the three types of sidewalks defined in the *Fort Campbell Installation Planning Standards*, which include Primary, Secondary, and Tertiary sidewalks. Primary sidewalks (see *Streetscapes* sidewalk design around Town Center) should be sized to accommodate the anticipated pedestrian use and should have a minimum width of 6' and a maximum width of 10 –12' in high use areas. Secondary sidewalks provide access between other activity centers and housing/barracks areas and should have a minimum width of 4' and a maximum width of 10-12' in high use areas. Tertiary walkways provide pedestrian use for recreational purposes. These walkways may be provided in a meandering and curvilinear alignment. Such walkways should have a minimum width of 4' and unpaved walkways should have a minimum width of 3'. If these walkways are for shared use with bicycles, the widths should be increased by 3' for one way routes and 6 feet for two way routes (21). In all cases appropriate lighting, trees, and pedestrian crossings should be provided.

The *Installation Planning Standards* lay out standards for sidewalks, to include buffers for both attached and detached sidewalks, streetscape amenities and pedestrian crossings. An implementation table at the end of this report details the roadways proposed to include bicycle lanes and sidewalks, and connector sidewalks. 55 miles of new sidewalk are proposed as part of this plan. A long term proposal is a plan to construct a pedestrian overpass over Screaming Eagle Blvd near Gate 4. This project would allow students walking to Department of Defense Education Activity schools the opportunity to walk vs. bike to school. A project to develop an initial design for this overpass was completed in late 2013. As Fort Campbell's sidewalk network is improved, the installation should further publicize walking and bike riding events to make residents aware of the new infrastructure.



Conceptual Bridge over Screaming Eagle Blvd, from the report, Fort Campbell Pedestrian Overpass: Misc Traffic Quick Studies, Nov 2013

The Directorate of Public Works and partners will promote the development of a sidewalk network on the installation in order to provide transportation alternatives and facilitate healthy living (one new sidewalk project annually). Planners and engineers shall include sidewalks as part of transportation improvement and construction projects. Specifications for sidewalks can be found in the Installation Planning Standards.

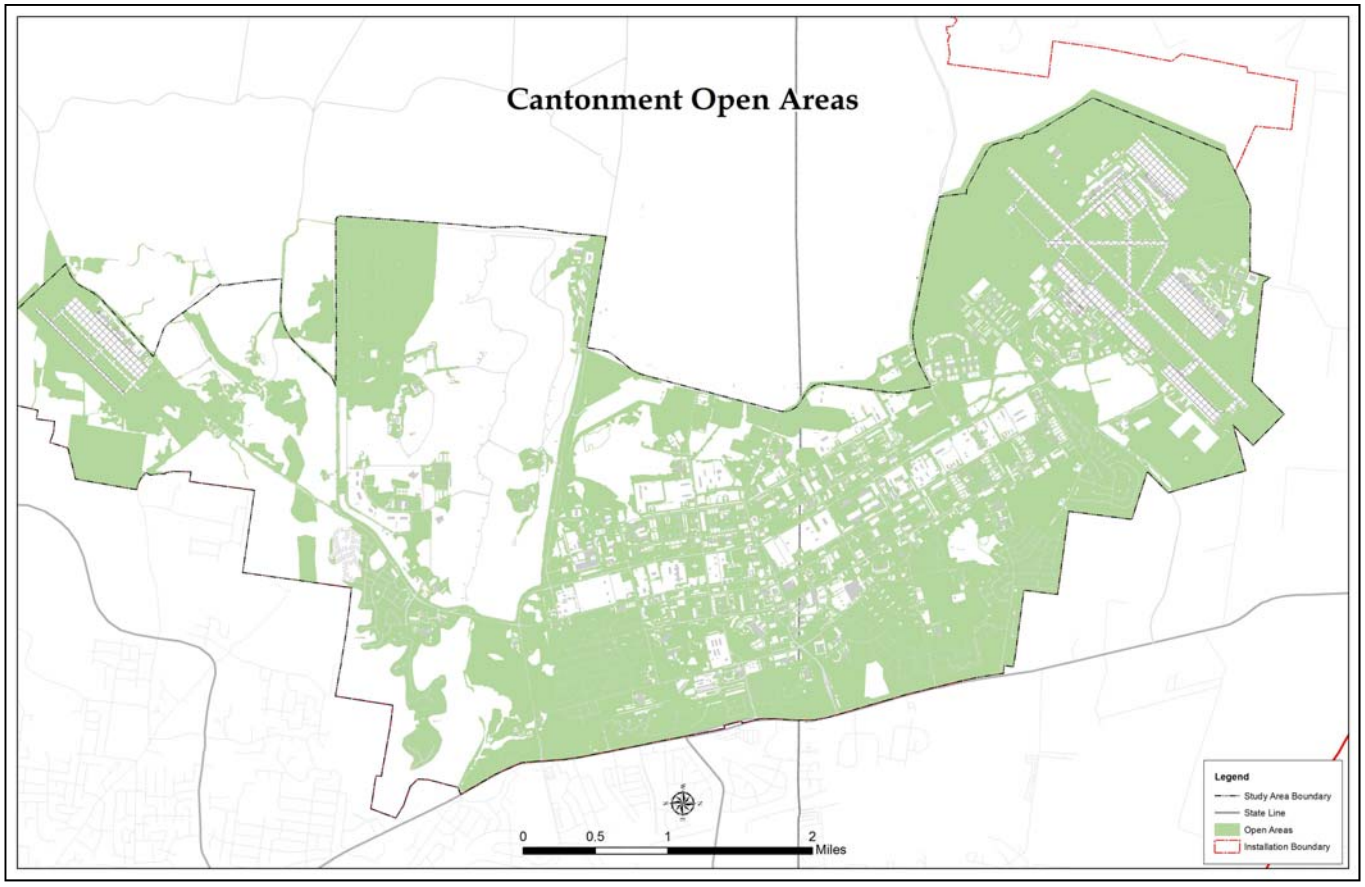
4. Method: Improve Mass Transportation Service: Fort Campbell currently has bus service facilitated by the Clarksville Transit Authority. Stops are located at the Education Center on Bastogne Ave, at the Town Center near the future Soldier Support Center, and near the Commissary and Post Exchange. Service appears to be sufficient at this time. However, should development expand as shown in the *Town Center Area Development Plan*, the route and stops may need to be re-evaluated. The Warrior in Transition Battalion (WTB) also runs a shuttle service for wounded warriors, serving the WTB facilities, the Soldier and Family Assistance Center, and the hospital. During the charrette process for *Fort Campbell's Real Property Vision Plan* the Garrison Commander identified a preference to develop an installation bus service with additional stops serving Fort Campbell facilities. The proposed service, which would be operated by DFMWR, would utilize existing buses purchased to serve the Youth Center. The Multi-Modal Transportation Plan Map shows proposed stops for the installation bus service which would intersect with the off-post service at the Town Center stop. The proposed stops would be located at transit hubs in high-density areas near commercial areas and housing to make efficient utilization of services more feasible. The proposed stop in Town Center would be co-located with the Clarksville Transit System stop in order to provide for interconnect-ability between the two systems. In the future, it may be appropriate to consider including alternative energy infrastructure (i.e. solar panels) on top of bus shelters to provide additional energy alternatives to the installation. Specifications for bus stop infrastructure can be found in the Installation Planning Standards.

The Directorate of Morale, Welfare & Recreation will work with other installation representatives to develop an on-installation bus service to provide transportation alternatives and reduce the reliance of Soldiers and families on using their cars to get around the installation. The Directorate of Public Works (Master Plans Division) will partner with the off-post community to expand future bus service, if needed.

ii. Strategy 2: Make Open Space a Priority:

A second focus area in Fort Campbell's Green Infrastructure Plan is preserving open space, to include passive open space (woodlands, agricultural fields, wetlands, and floodplains), areas used for the management of storm water, and recreational space. As discussed in the *American Planning Association's Planning and Urban Design Standards*, there are many economic and environmental benefits to the preservation of open space, to include bio-diversity protection, storm water management, scenic and recreational value, and prevention of sprawl, or land preservation (616). Preservation of open space plays a key role in pollution prevention as forested areas are effective storm water management tools. Fort Campbell recognizes that the acreage of open space has declined to the detriment of installation quality of life.

There are several regulations that Army installations must comply with whose directives contribute towards the preservation of open space, to include *ASHRAE Standard 189.1, Standard for the Design of High Performance Green Buildings,* and the *UFC 3-210-10, Low Impact Development*. Fort Campbell is also subject to provide green infrastructure for storm water management while meeting its *National Pollutant Discharge Elimination System* (NPDES) permit requirements for the states of Kentucky and Tennessee. In accordance with Federal Regulation, all of Fort Campbell's new construction is Leadership in Energy and Environmental Design (LEED) Certified or certifiable. According to the *LEED Reference Guide for Green Building Design and Construction,* the process of constructing a LEED Certified building includes considerations such as avoiding sensitive land when selecting a building site (i.e. avoiding prime farmland, floodplains, habitat for endangered species, wetlands, parklands and previously undeveloped land). At the individual building site level, LEED credits are

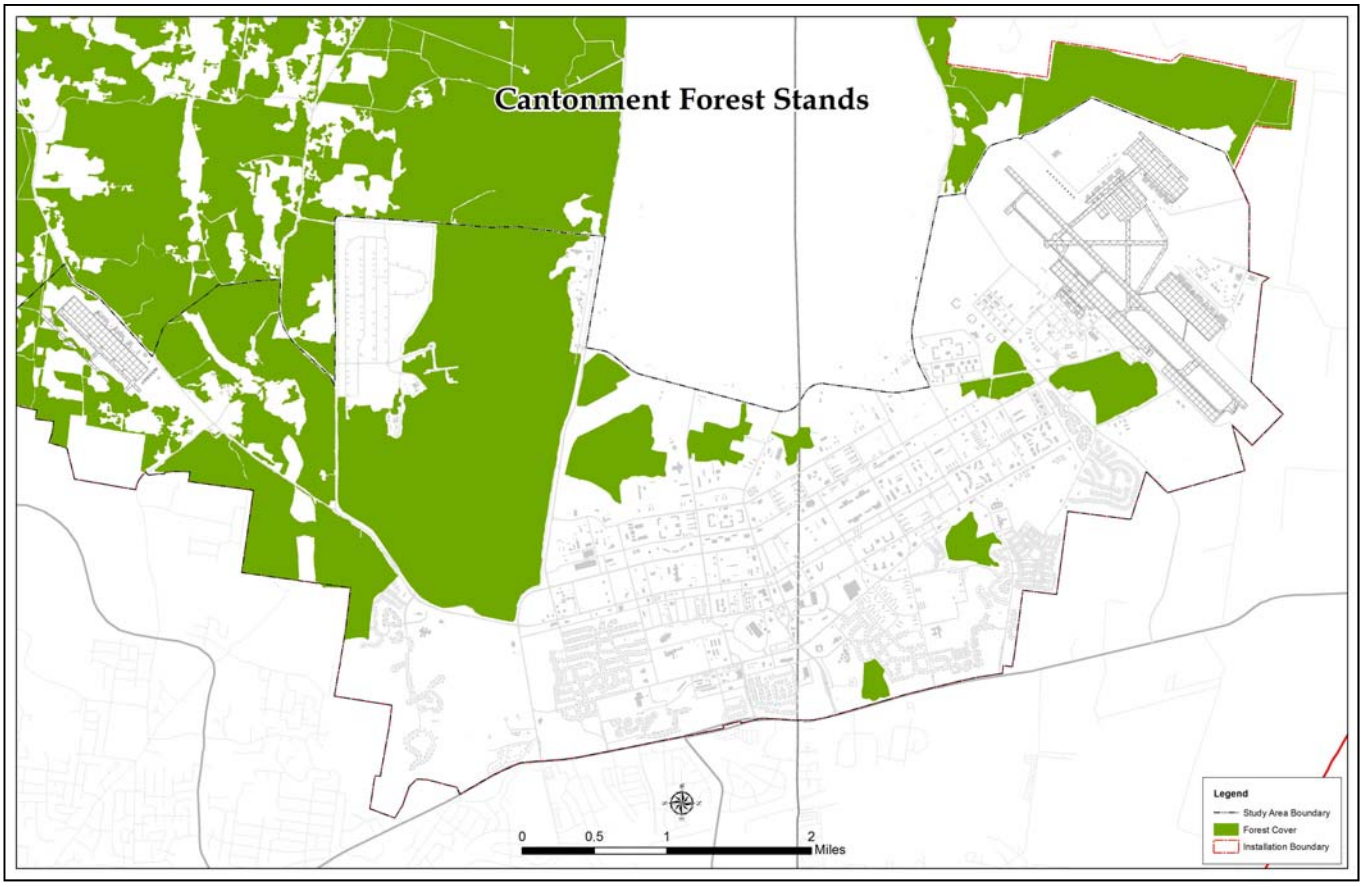


Original map by Rick Zimmer with edits by Mike Malham, 2013

also obtained for avoiding Greenfield sites (sites that have not been previously developed), maximizing open space on building sites, and reducing impervious cover as it relates to storm-water runoff and contaminants.

The *UFC-4-010-01, DoD Minimum Antiterrorism Standards for Buildings* requires that setbacks be provided between building sites and parking areas to protect newly constructed buildings and their occupants from terrorist threats. Crime Prevention Through Environmental Design methods such as Natural Surveillance, Natural Access Control, Territorial Reinforcement and Maintenance are utilized as part of defensible planning efforts. Unfortunately, the *UFC 4-010-01* in many ways forces installations to take up more developable space in order to comply with setbacks, but this required space should be utilized as well as possible for the dual purpose of creating human-scale common space with clearly identifiable uses (courtyards, plazas, picnic areas, etc). Mandatory setbacks can also help a project earn *Leadership in Energy and Environmental Design* points for Maximizing Open Space. ***Fort Campbell's vision is to work towards a goal of 60% open space in the cantonment area, focusing on redevelopment of existing sites versus construction on Greenfield sites.***

1. Preservation of Trees and Passive Open Space: *Fort Campbell's Integrated Natural Resources Management Plan (INRMP)* manages natural resources on Fort Campbell and implements the Army Strategy for the Environment, "which is to integrate environmental values into the military mission to sustain readiness, improve the soldier's quality of life, strengthen community relationships, and provide sound stewardship of resources" (vii). Today, there are limited undeveloped areas on Fort Campbell's cantonment, to include 3,943 acres of forested areas, 609 acres of wetlands, 722 acres of floodplain, and 6,917 acres of terrestrial habitat or open areas. Fort



Original map by Rick Zimmer with edits by Mike Malham, 2013

Campbell's *INRMP* defines these areas based on their plant communities; they include native grassland barrens, old fields, agricultural fields, and forest (39). Much of the forested and wetland/floodplain areas are centered around the Little West Fork Creek sub watershed near Clarksville Base and the Dry Fork East Creek sub watershed near Campbell Army Airfield. The maps highlight the location of these open space areas.

Though much of the focus of Fort Campbell's *INRMP* is focused on training areas, some of the plan's goals relate to land in the cantonment, to include a commitment to:

- Ensure the long-term sustainability of the lands to support the military mission;
- Maximize integration among natural resources programs, and integration of those resource management strategies with military operations;
- Ensure that all Fort Campbell activities, including natural resource management activities, comply with federal and state laws, DoD Instructions (DoDI), Army Regulations, and Fort Campbell Policy related to natural resources;
- Manage natural resources according to an ecosystem management approach to maintain a healthy natural environment;
- Maintain or increase the abundance and diversity of native species;
- Maintain effective reimbursable programs;
- Provide ample recreational opportunities; and
- Accommodate multiple uses of the land (vii).

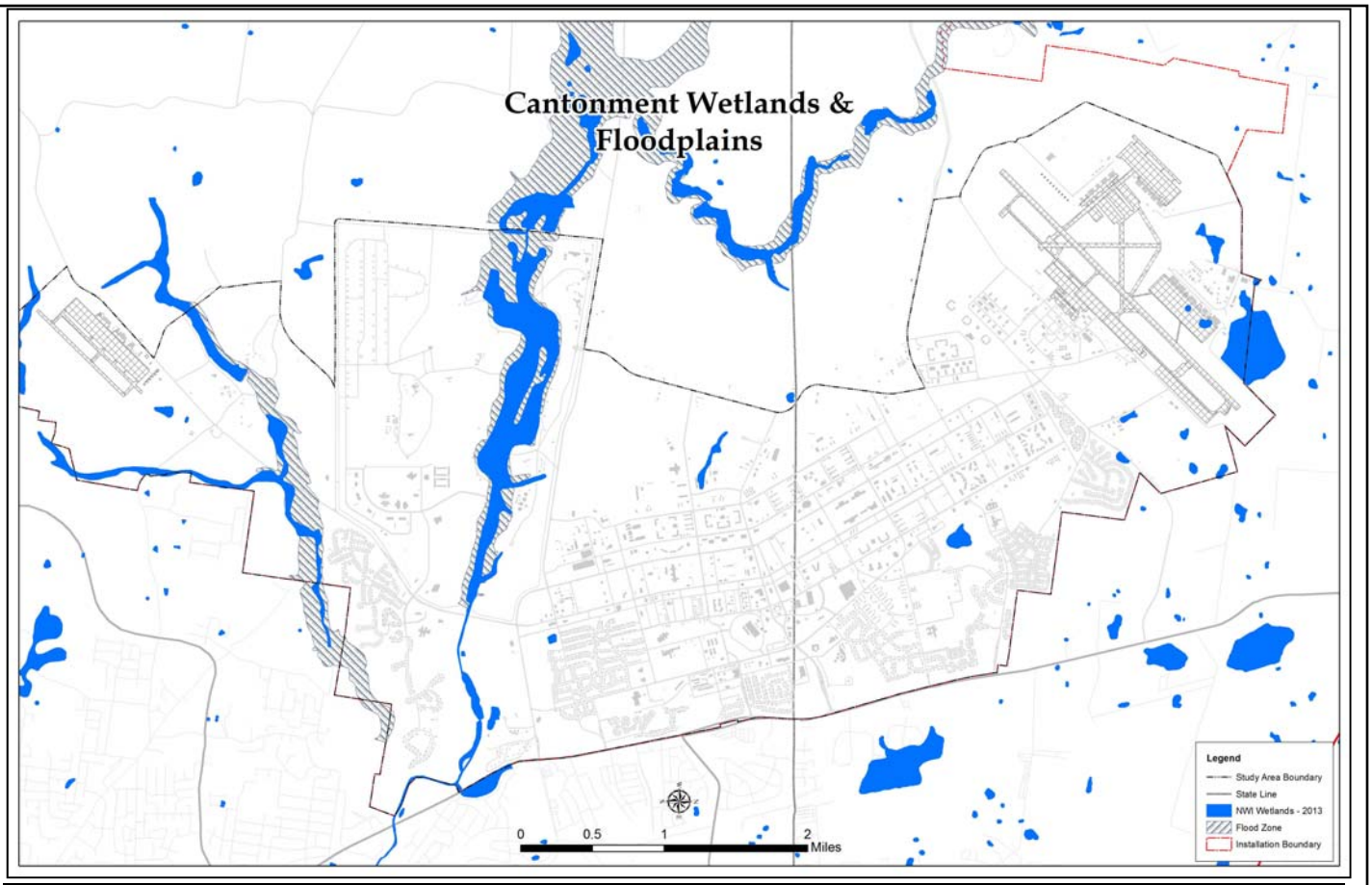
Environmentally sensitive lands should be avoided for new construction, in accordance with the above goals.

Fort Campbell's *Urban Forest Management Plan* sets goals for the management of tree resources, with a focus on trees in the cantonment. The plan focuses on proper maintenance of trees, which contribute to a healthy, pleasant environment and suitable outdoor recreation facilities. DPW personnel manage Fort Campbell's tree population through tree care and maintenance, removal of hazard trees, and new tree planting in parks and green spaces. The value of remaining unimproved forest stands is also emphasized as being important for wildlife habitat and other environmental benefits, such as troop training and storm water retention.

The installation has several goals for management of its urban forest, to include improving the quality of the urban forest resource, which includes improving tree quality, promoting tree health, management of hazard trees, monitoring for disease and insect problems, and responding to natural disasters. The Forestry program also manages a tree replacement plan, which addresses provision of native and low maintenance species. Fort Campbell's *Technical Design Guide* was recently updated to include *Low Maintenance Landscape Standards*, which are also included as Appendix D of this document. Fort Campbell seeks to maintain its National Arbor Day Tree City, U.S.A. award, and holds an annual Arbor Day celebration which focuses the installation population on the importance of education and best management practices. Fort Campbell has also sought to increase the involvement of post residents and employees in urban forest planning and implementation. The *Urban Forest Management Plan* sets a goal of planting 100 total replacement and new trees each year in areas such as parks and green spaces. Tree planting events are occasionally planned and include involvement from the housing communities, Soldiers, civic groups, schools and employees.

Overall goals related to Fort Campbell's urban forest include a goal of no net loss of trees. If a tree must be impacted by new construction or redevelopment, this plan recommends replacement at a rate of two new trees for every one tree impacted. Consider development of a tree bank (i.e. tree replacement can occur offsite). The installation also seeks to sustain what remaining urban forest resources we have, to include preservation of unimproved forest stands, in an effort to maintain 60% of the cantonment area as improved or unimproved open space.

The Directorate of Public Works will avoid the development of environmentally sensitive areas. On project sites, the installation commits to the preservation of trees where possible, as well as efforts to repopulate trees (2 trees for every 1 tree impacted using tree bank) that must be felled as part of construction efforts.



Map of Wetlands and floodplains at Fort Campbell. Original map by Rick Zimmer with edits by Mike Malham, 2013

2. Storm water Management Areas:

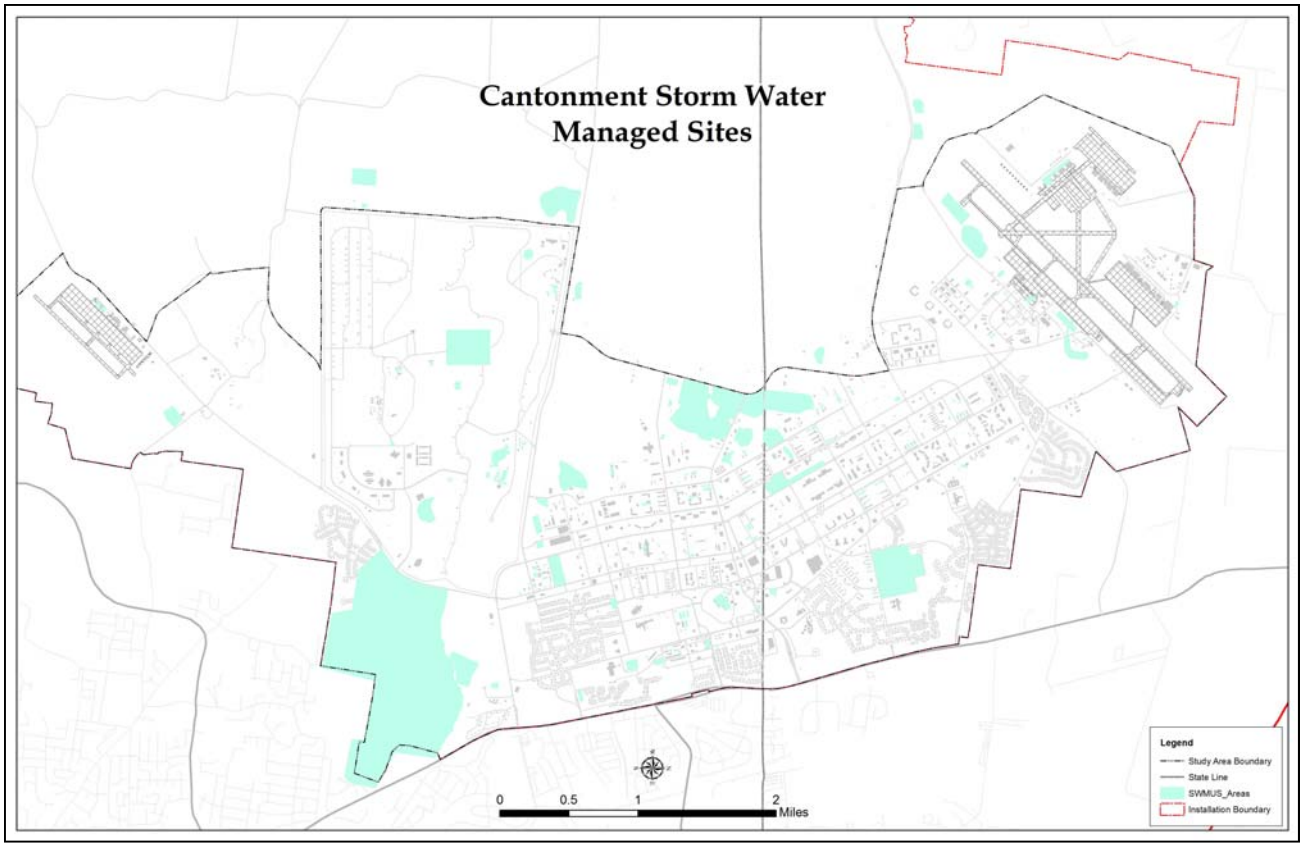
Another type of passive, but very important open space on Fort Campbell is space utilized for the management of storm water. Numerous requirements, most notably *Title 42, USC, Chapter 52, Section 17094, Section 438 of the Energy Independence and Security Act*, *Executive Order 13423*, *Executive Order 13514*, and the *Clean Water Act* require that Fort Campbell maintain predevelopment hydrology and prevent net increase in storm water runoff with new construction. According to Office of the Assistant Chief of Staff for Installation Management (OACSIM) and U.S. Army Corps of Engineer curriculum presented at a *Low Impact Development Training Workshop*, the Department of Defense defines "predevelopment hydrology" as the pre-project hydrologic conditions of temperature, rate, volume, and duration of storm water flow from the project site (LID, 7). Fort Campbell staff utilize the United States Environmental Protection Agency's *Technical Guidance on Implementing the Stormwater Runoff Requirements for Federal Projects under Section 438 of the Energy Independence and Security Act* to manage storm water runoff and maintain this pre-development site hydrology through green infrastructure or low impact practices.

Fort Campbell is also required to manage its storm water in accordance with its National Pollutant Discharge Elimination System (NPDES) permits for both Tennessee and Kentucky. Both states' permits lay out requirements for the installation's storm water management programs, to include discussion of minimum controls and water quality management. The *Kentucky Pollutant Discharge Elimination System Permit* encourages the use of open space, vegetated conveyance and buffers, natural infiltration, stream buffers, green infrastructure and other low-impact development as means to manage storm water. Both the Kentucky and the *State of*

Tennessee NPDES Permit provide requirements for structural storm water Best Management Practices for new development and redevelopment. The State of Tennessee permit specifically encourages brown-field redevelopment, high density construction, vertical density and mixed use and Transit Oriented Development, and provides incentives for this type of development via reduced requirements for runoff management. Planning documents such as the *Town Center Area Development Plan* discuss storm water management in various locations on the installation. For example, around Town Center, water is directed into limestone sinkholes and man-made ponding areas southeast of the hospital. The plan also discusses the use of both curb and gutter and open ditches to regulate the flow of run-off (37). Open space areas used for the management of storm water should be maintained or enhanced as development in the area occurs.

Map showing Vegetation, Drainage and Open Space, from the Town Center Area Development Plan

On a *USEPA Scorecard* submitted as part of the *Kentucky Pollutant Discharge Elimination System Permit,* Fort Campbell highlighted how some of its green infrastructure practices contribute to improved water quality. Among other things, the installation identifies and manages its critical natural resources through usage of Geographic Information System technologies, and through management of programs such as the Army Compatible Use Buffer, Integrated Natural Resources Management Program, Urban Forestry, and agricultural programs. Efforts to enhance and expand open space, and on providing new types of construction, such as mixed-

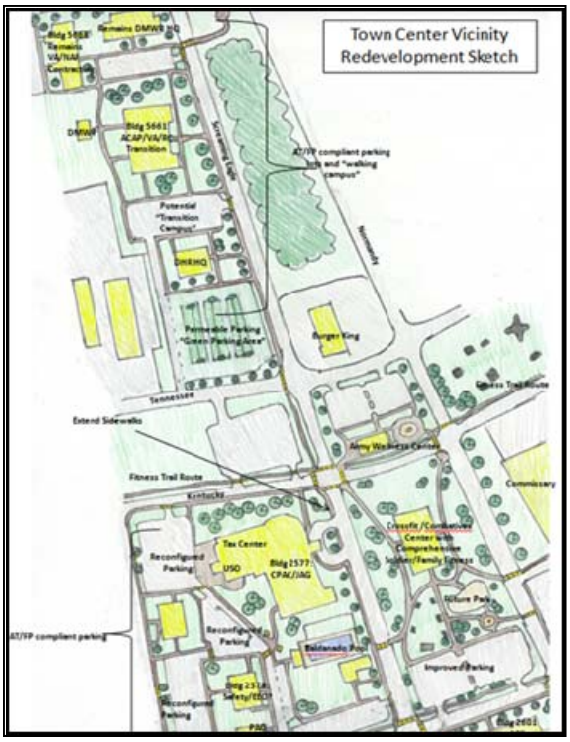


Original map by Rick Zimmer with edits by Mike Malham, 2013

use development, and multi-modal transportation, also contribute to improved storm water management.

The installation is required to implement Low Impact Development techniques into construction project sites to ensure both quality and quantity storm water management. During Military Construction project planning, DPW considers both Nonstructural and Structural methods for managing storm water. Nonstructural methods include minimizing disturbed areas, preserving natural flow pathways and patterns, protecting riparian buffer areas and other sensitive areas, cluster development, minimization of soil compaction, and reducing impervious surfaces. Structural efforts that can be implemented at construction sites include re-vegetation, bio-retention, rain gardens, swales, permeable pavers, stream day lighting, treatment trains, check dams, native re-vegetation, and filter strips. These methods are being implemented as part of new projects and should be required in future projects. DPW Environmental Division has also recently completed a project that established a pervious parking lot constructed with low intensity geo-grid grass pavers. This effort moves the installation closer to a goal of converting 25% of impervious parking areas to pervious parking (one new lot annually). The installation will focus on adding more of these lots in occasional use areas. Fort Campbell's list of approved, low-maintenance plants for landscaping in these areas is at Appendix D. ***The Directorate of Public Works and partners will preserve land identified for storm water management, including sinkhole areas, and to using quality and quantity storm water management at individual construction sites and to converting 25% of impervious parking to pervious parking in overflow and occasional use parking areas (1 new lot annually).***

3. Recreational Open Space: A third type of open space on the installation is recreational space. As discussed by Benedict and McMahon in *Green Infrastructure Linking Landscapes and Communities*, studies have shown that experiencing nature and the outdoors are good for one's mental health and that residents who live in communities that exercise more, such as those with trail systems or open space, can reduce diseases such as heart disease, high blood pressure, diabetes, depression and anxiety (77). Fort Campbell provides many opportunities for recreation, including six large parks: Clarksville Base Park, Eagle Park, Cole Park, Wilkes Park, Joe Swing Park and Destiny Park. There are also over 40 playgrounds on the installation. An existing BMX bike track is located in Old Clarksville Base, but requires maintenance. A private donor recently constructed a community garden near the Werner Park community center and the Army's first therapeutic garden was recently opened at Blanchfield Army Community Hospital with donations from the USO. Additional gardens are planned, potentially funded with Non Appropriated Funds or Qualified Recycle Program dollars. These gardens will be placed in areas designed for recreational land use within walking distance of housing. Potential locations were voted on by the community on Facebook. While providing feedback, community members also expressed interest in having a community green house, skate parks, tween playgrounds, neighborhood pools, more dog parks in better terrain, and an indoor child's play area.



Conceptual "greening" of the Town Center, to include a park at Dryer Field House

A Fort Campbell goal is for all residential neighborhoods to be within .5 walkable miles of a park or playground, a goal for that for the most part is already met with existing park and playground infrastructure. However, sidewalk gaps currently exist on many primary streets; if put in place, sidewalks would successfully connect neighborhoods, playgrounds and parks.

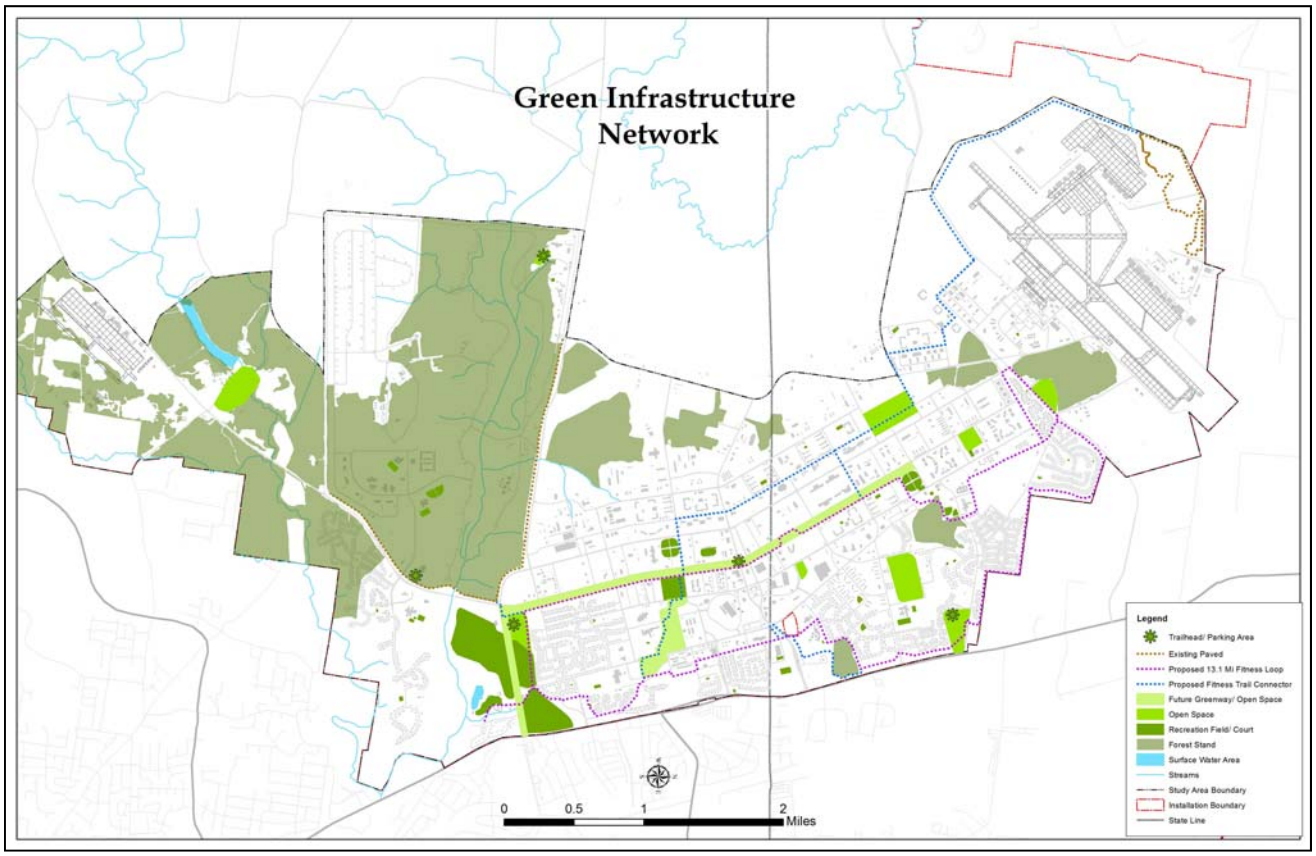
Some parks also need improved parking, although walking access is a priority. Playground maintenance and improvements also need to be regularly considered. Providing shade structures at playgrounds is a desire of many community members; structures are planned at Town Center park and at the installation's two dog parks; additional projects will be considered, although most other park equipment is shaded by trees.

In 2012, Fort Campbell constructed the Town Center Park in response to a request from the community to provide more gathering places, where events like farmers markets, art shows, and concerts could be held. Additional efforts are planned to add more green space, such as a park outside the Dreyer Field House. As demolition reduces excess facilities, opportunities should be sought to provide green space. One idea is to create a pocket park near the Kentucky shoppette as it is upgraded. Additional acres of land on the south end of Fort Campbell's cantonment area are devoted to outdoor activities such as horseback riding, fishing, hunting, camping and archery. Unfortunately, many of Fort Campbell's recreational opportunities are disconnected and accessible only by car. The proposed route for the previously discussed fitness trail and transportation projects have been developed to provide connections between existing recreation facilities in the cantonment. A longer term goal is to improve connectivity to Lake Taal and the existing ATV area, to include sidewalks between the DFMWR Rec facility and the stables. Another possibility is providing additional RV/Camp sites in the Lake Taal area if the lake's dam must be drained due to safety concerns.

Co-located with each Brigade footprint are recreational ball fields and courts as well as six fitness facilities (a new fitness facility was completed in 2013 in Clarksville Base and Dreyer Field House will be renovated in 2014). Another installation goal is to ensure all Single Soldier housing is within .5 walkable miles of outdoor recreation and fitness facilities. In addition, flexible open space area for conducting physical fitness activities should be within .5 walkable miles of each Brigade headquarters. These areas can also be used as locations for "hip pocket" training conducted by squad leaders. For the most part, if sidewalks are provided to "fill in the gaps," all barracks are within .5 walkable miles of fitness centers and recreational facilities. The Implementation section lists long term MILCON projects to replace all of Fort Campbell's older fitness centers. These efforts should include demolition and replacement of courts in poor condition. Maintenance of courts also needs to be considered. Projects to construct an additional Rec Center and construct an addition to the DW Rec Center are also planned. In the future, Fort Campbell should explore other areas where the proposed fitness trail can be expanded to provide connections between housing, barracks and recreational facilities, such as near the proposed location of the Non Commissioned Officers Academy MILCON project footprint, to New Clarksville Base, around the Air Assault School, and between Hammond Heights and the Cole Park area.

When possible, Fort Campbell will integrate National Register eligible resources into recreational opportunities. For example, a plan to reuse the historic Commanding General's quarters should consider development of the grounds into part of the proposed trail system. Park features added near the historic home should be compatible with the historic significance of the facility and its use as the home for Survivor Outreach Services. It should facilitate an atmosphere of quiet reflection and could include gardens, memorials and seating. The significance of the National Register of Historic Places-eligible Clarksville Base Historic District can also be highlighted in a potential recreation project. As part of the *Programmatic Agreement Between Fort Campbell and the Tennessee State Historic Preservation Office Regarding Development, Construction, and Operations at Clarksville Base Historic District,* Fort Campbell has committed to erect and maintain signs at the entrances to the district that explain the history of the district and the functions carried out by the contributing structures. Some of this signage may be coordinated along the Nature Trail planned for Clarksville Base.

The Directorate of Public Works, the Directorate of Family Morale, Welfare and Recreation and partners will preserve existing recreational land and establish new recreational opportunities. The installation sets the goal of a park or playground within .5 walkable miles of any neighborhood, and outdoor recreation and fitness facilities within .5 walkable miles of barracks and Brigade Headquarters. Fort Campbell will hold land in trust for recreational purposes, as demolition activities allow developed areas to be returned to green space.



Fort Campbell's Real Property Vision Plan includes this Green Infrastructure Network Plan, which shows passive and recreational open space, as well as fitness trails.

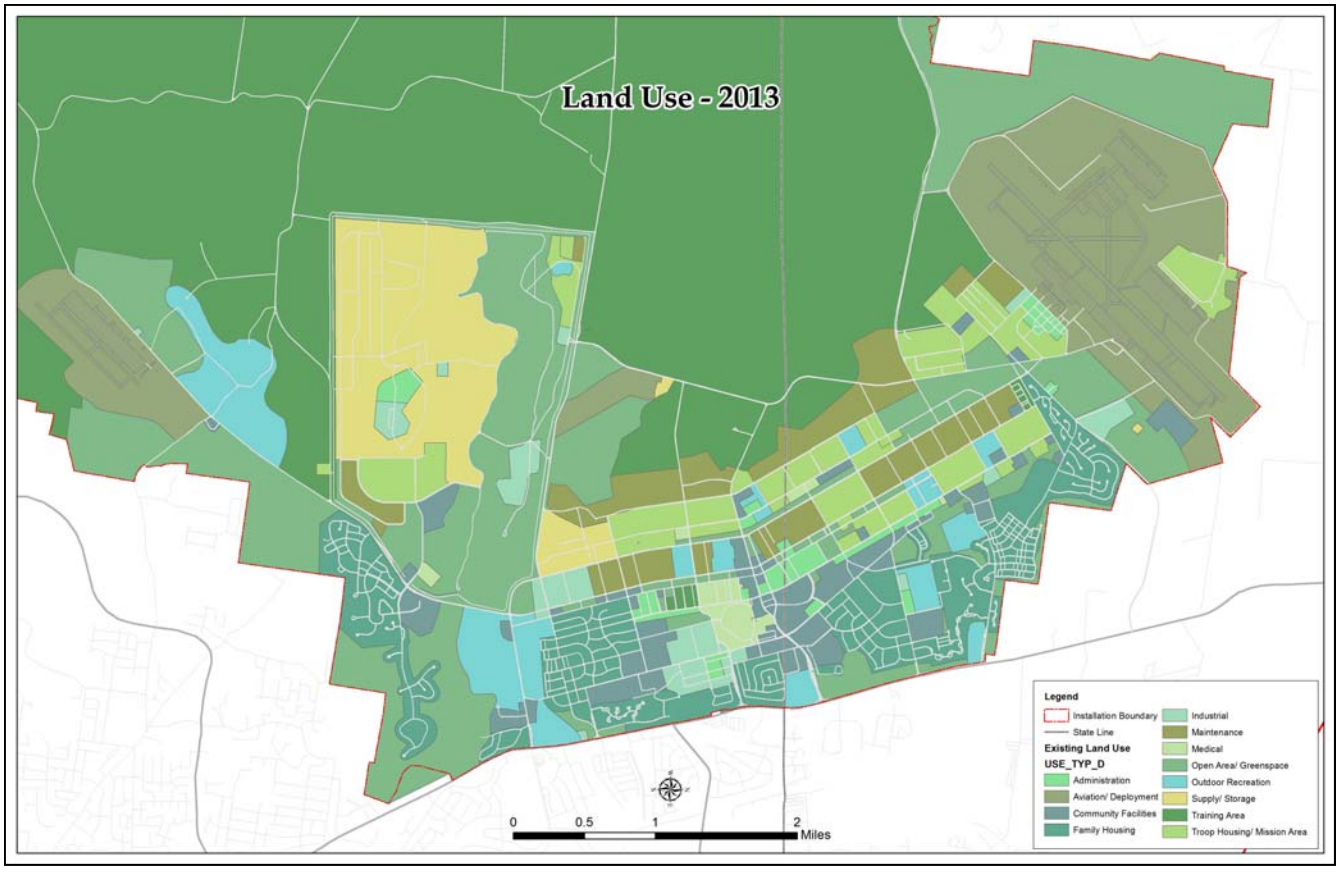
iii. Strategy 3: Get Land Use Right: A final component of the Green Infrastructure Plan is compatible land use planning. The installation's existing and future land use maps were revised as part of the planning effort. The new Future Land Use map shows projected land use based on current planned construction, and considering the presence of facilities that do not conform to desired land use but are not anticipated to be replaced in the long term. In these cases, landscaping shall be used to provide buffers between incompatible uses in the short term. The plan shows the conversion of a large developed area currently occupied by the NCO Academy into open space. A portion of this land will be turned over to Campbell Crossing as part of a land swap and used for future housing, a maintenance facility and park. The remainder of the land north of 15th Street will remain open space and is the site of a proposed youth recreational compound.

Fort Campbell has also developed a Vision plan which shows the vision for long term use of Fort Campbell's land as grandfathered facilities are replaced. A facility that does not conform to the long term Vision plan should not be replaced in the same footprint, but relocated to a proper land use area. This includes facilities located in the proposed green belt between Kentucky and Tennessee Avenues. Today, Fort Campbell has 4,267 acres of open space and 826 acres of recreation space. The land use vision proposes 4,514 acres of open space and 856 acres of recreation space. A land use affinities matrix has been developed and can be utilized to determine the compatibility of proposed development on Fort Campbell with the Vision plan. ***All land use decisions should support our land use vision.*** In addition to traditional land uses, Fort Campbell has also proposed the use of a Mixed Use/Multi-Use Overlay where mixed land uses are appropriate. A key example would be Fort Campbell's Town Center area. In this location, a variety of land uses, to include housing, community, and administrative oriented land uses are appropriate, to include 24 hour uses. Other land uses, such as industrial or training

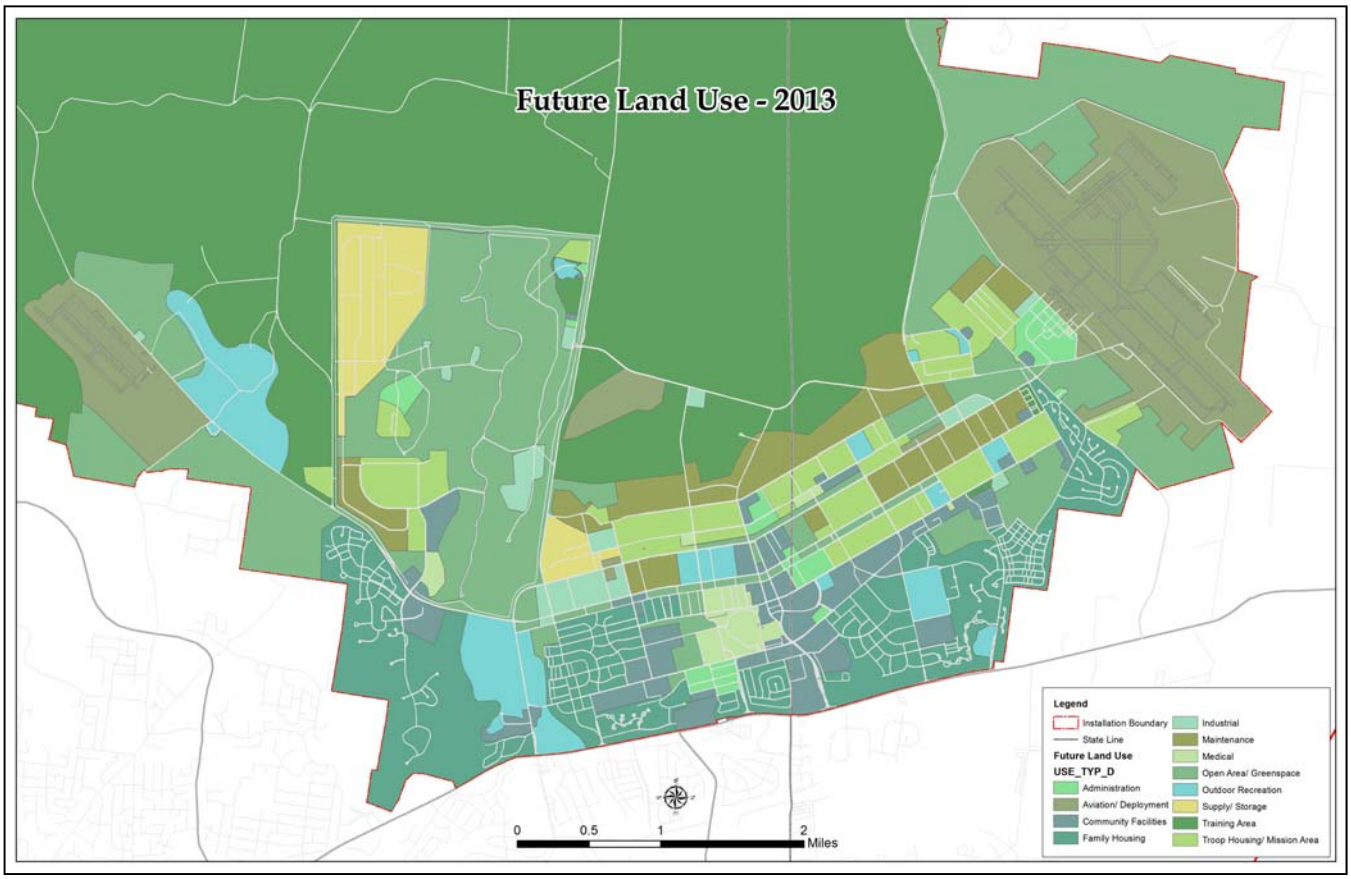
land uses, would not be appropriate here. Mixed Use/Multi-Use Overlay areas are appropriate near Brigade footprints, where barracks and mission areas are co-located. Medical and recreation uses are also appropriate in Mission footprint areas; community services should otherwise be within a 10 minute walk of each footprint.

Fort Campbell should also consider land use when making decisions about the reuse of National Register eligible facilities. For example, the planned reuse of the historic Commanding General's quarters on the installation would be for a low-intensity use appropriate for the location of the grounds of the home (which is surrounded by housing and community support facilities as well as open space). The proposed use of the facility is for the Survivor Outreach Services function. The SOS is a low intensity administrative use appropriate for the historic setting of the facility. This is also an appropriate location for a trail extension and passive park.

Another component of land use on Fort Campbell involves coordination regarding land usage immediately outside of the installation, most significantly with the City of Clarksville, TN, Montgomery County, TN and the City of Oak Grove, KY. Coordination between Fort Campbell and these and other surrounding municipalities occurs as part of the implementation of the Army Compatible Use Buffer (ACUB) program. According to the *U.S. Army Environmental Command Website*, ACUBs, "establish buffer areas around Army installations that limit effects of encroachment and maximize land inside the installation that can be used to support the installations' mission" (aec.army.mil). *Fort Campbell's Joint Land Use Study (JLUS)* provides an assessment of the installation's relations with the surrounding communities, and makes recommendations to those communities, including proposals for zoning implemented to restrict height of structures near the installation, guidelines for zoning/subdivision regulations in airfield clearance areas and noise zones, establishment of noise disclosure



Revised Existing and Future Land Use Maps were completed for Fort Campbell, KY in 2013. Maps by Bob Brundage and Mike Malham, 2013.



Future Land Use Map by Bob Brundage and Mike Malham, 2013.

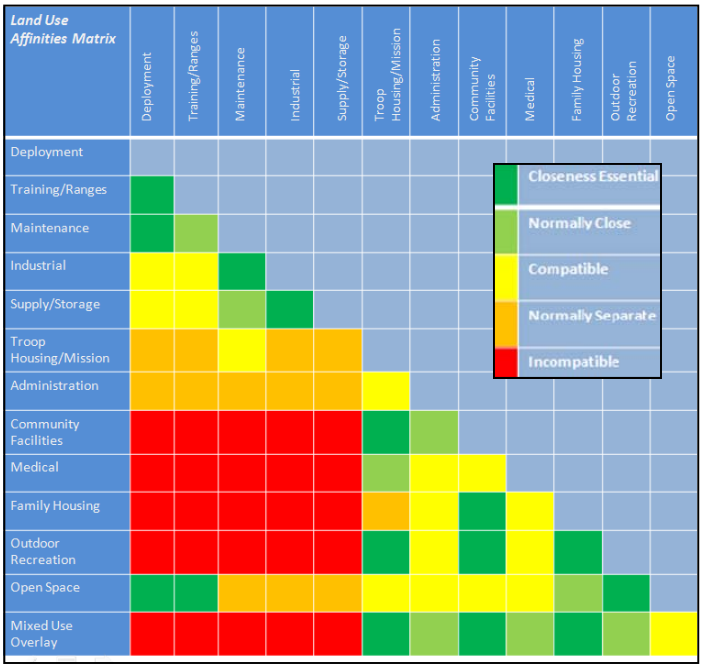
standards, signing of Memorandums of Understanding, preparing land use growth plans, and modified comprehensive plans (94). Many of the *JLUS* recommendations have been implemented by the surrounding communities. For example, according to the *Land Use Study Update Clarksville-Montgomery County, Tennessee*, the City of Clarksville has implemented a one mile buffer area around the installation and makes a special effort to coordinate with the installation when development is planned in this area (216). According to the study, "construction and/or development near any boundary of Fort Campbell (airfields and military training areas in particular)…(is) carefully reviewed to insure that it does not interfere with the military's mission" (9).

In the past, much of the coordination regarding off-post land usage has focused on ensuring incompatible development does not occur around the installation that would threaten the installation's mission capabilities and/or put off-installation residents at risk. In the future, the installation may work with Clarksville-Montgomery County, as well as the City of Oak Grove, KY to advocate for development that may supplement the recommendations of this plan. For example, construction of higher density, mixed use developments outside Fort Campbell's Gates 3-4 may

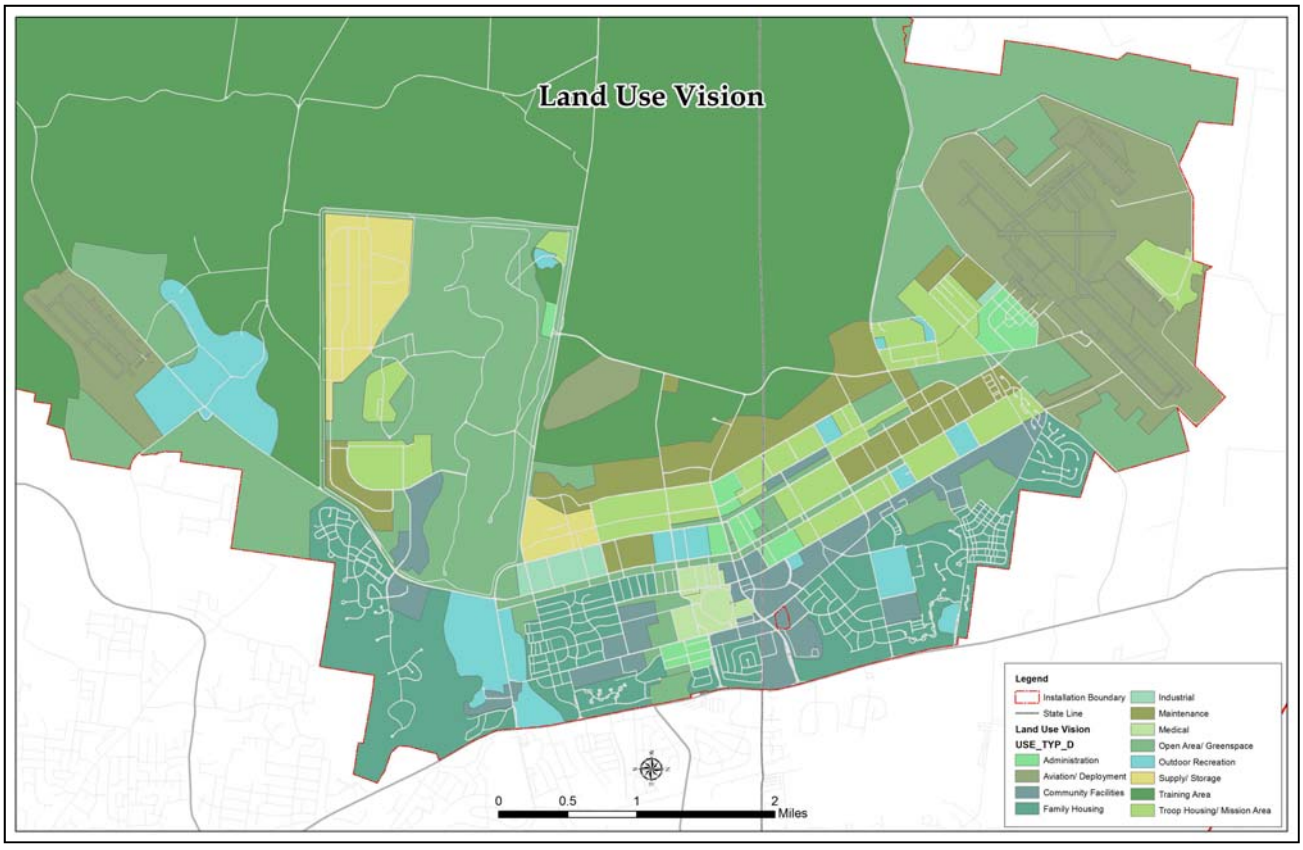
Concept for Mixed Use Development in Fort Campbell's Town Center, from the Town Center ADP.

encourage Soldiers, civilians and families who might like to bike or walk to work. Once the installation's bicycle and pedestrian oriented infrastructure has been constructed, the access control points modified to include sidewalks and pedestrian infrastructure, and assuming safe pedestrian crossings across 41A and sidewalks along 41A were constructed, Soldiers and families living immediately outside the gates could easily forgo driving to work. All such planned development would need to be reviewed to ensure compatibility with the recommendations of the JLUS plan in accordance with the ACUB program.

The Directorate of Public Works and partners will promote compatible development and facility reuse, as well as mixed use opportunities that will promote walkability for Soldiers, families and civilians. Master Plans will work with surrounding communities to provide opportunities that will allow those who live outside of the installation to choose to safely walk or bike to work, or to shop or recreate on post.



This land use compatibilities matrix was developed to help facilitate intelligent facility siting decisions.



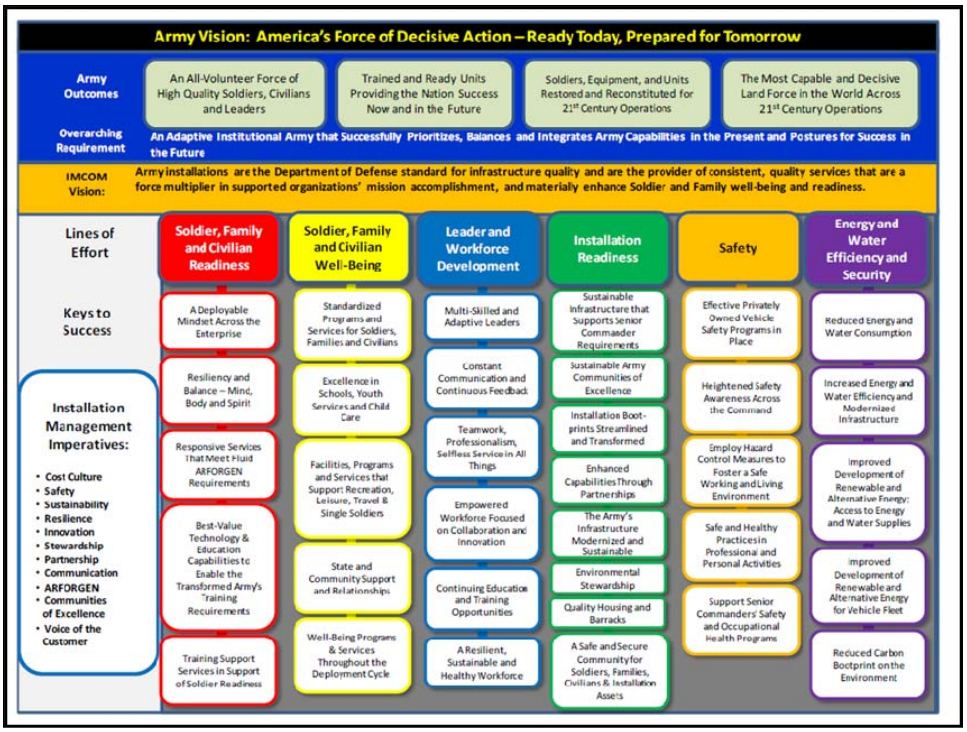
Fort Campbell's Vision map lays out a Land Use Vision for Fort Campbell. Map by Bob Brundage and Mike Malham, 2013.

Section 5: Implementation Plan

5. Implementation Plan: Throughout the development of the Green Infrastructure Plan document, there has been an emphasis on the overall goal of facilitating healthy lifestyles in Soldiers, civilians and families living and working on Fort Campbell. At the heart of this goal is the installation's plan to create an interconnected network of natural and recreational open spaces, and facilitate opportunities for installation residents to access community and recreation oriented facilities from their homes and offices, without having to use a car. If accomplished, these efforts will contribute to the revised *Fort Campbell Real Property Vision*, **"to create an enduring, sustainable, adaptable installation that supports mission readiness and power projection capabilities. Fort Campbell will build campus-like environments, with well-connected, safe, healthy and active communities and a defined sense of place"** (Vision, 5).

a. Goal Setting: The next section of the report details steps for implementing the Green Infrastructure Plan. Upon approval, the Strategies detailed in Section 4 shall be implemented utilizing the methods and goals listed below. Fort Campbell's Green Infrastructure planning goals relate to the larger *Installation Management Campaign Plan* mission to **"provide Soldiers, Civilians and their Families with a quality of life commensurate with the quality of their service,"** and tie to the various lines of effort outlined in the plan, most notably to its Lines of Effort (LOE) for Soldier, Family and Civilian Well-being (LOE 2) and Installation Readiness (LOE 4), but also to the LOE for Soldier, Family and Civilian Readiness (LOE 1) and Energy and Water Efficiency and Security (LOE 6). The list of specific Green Infrastructure Plan goals below is linked to the relevant IMCOM Campaign Plan LOE and Keys to Success. The excerpted chart is from the *IMCOM Campaign Plan: We Are The Army's Home*, and details each of the LOE's Keys to Success (7).

This excerpted chart from the Installation Management Campaign Plan guided the development of Fort Campbell's Green Infrastructure Plan goal-setting efforts.



<u>Strategy 1: Promote Multi-Modal Transportation:</u> 100 miles of trail, sidewalk and bike lanes on Fort Campbell.
Commitment: The Directorate of Public Works and partners will promote the development of a network of fitness trails on the installation to provide transportation alternatives and facilitate healthy living.

1. Construct a $500K trail project annually consistent with the Fort Campbell Trail Plan (20 miles of new trails on the installation). *LOE 1, SR2; LOE 2, SW3; LOE 4, IR1; LOE 4, IR5; LOE 6, EN2; LOE 6, EN5.*
   Lead Agency: Engineering Division with Master Plans Division support
2. Include trail construction that contributes to the planned Multi-Modal Transportation Plan or trail network for the installation in all Military Construction (MILCON) projects, UMMCA projects, other new construction and major SRM efforts. *LOE 1, SR2; LOE 2, SW3; LOE 4, IR1; LOE 4, IR5; LOE 6, EN2; LOE 6, EN5.*
   i. All projects shall receive Master Plans and Environmental Division review to identify requirements.
   Lead Agency: Master Plans Division with Engineering Division and Tenant support
3. Identify alternative methods for funding trail infrastructure through public and private measures. *LOE 2, SW4; LOE 4, IR4.* **Lead Agency: Master Plans Division with community support**

Commitment: The Directorate of Public Works and partners will promote the development of a bicycle network on the installation to provide transportation alternatives and facilitate healthy living (one new sidewalk project annually). Project Managers shall include painting, marking and signing of bicycle lanes or Sharrows as part of transportation improvement and construction projects where roads will be impacted.

4. Include provision of space for and painting/marking of bike lanes in all road expansion projects, when identified in the Multi-Modal Transportation Plan and space allows. Resurfacing projects that don't add capacity shall include painting/marking of bike lanes when space allows. Keep bike lanes separate from roads where possible. *LOE 1, SR2; LOE 2, SW3; LOE 4, IR1; LOE 4, IR5; LOE 6, EN2; LOE 6, EN5.*
   Lead Agency: Master Plans and Engineer Divisions
5. Include bike lanes and sidewalks in all designs for Access Control Points at Gates, to include modifying existing designs. *LOE 1, SR2; LOE 2, SW3; LOE 4, IR1; LOE 4, IR5; LOE 6, EN2; LOE 6, EN5.*
   Lead Agency: Master Plans Division
6. Include preference for bike infrastructure (storage and showers/changing rooms) in RFPs for construction/ renovation projects in areas designated for Troop Housing/Mission, Administration, Community, Medical, or Family Housing land use. *LOE 1, SR2; LOE 2, SW3; LOE 4, IR1; LOE 4, IR5; LOE 6, EN2; LOE 6, EN5.*
   Lead Agency: Master Plans and Engineering Divisions with Tenant Support

The Directorate of Public Works and partners will promote the development of a sidewalk network on the installation in order to provide transportation alternatives and facilitate healthy living. Planners and engineers shall include sidewalks as part of transportation improvement and construction projects. The Directorate of Morale, Welfare & Recreation will work with others to develop an on-installation bus service to reduce reliance on cars.

7. Commit to construction (and/or repair) of new sidewalk or bicycle infrastructure annually (= approximately 2% of the annual SRM budget). *LOE 1, SR2; LOE 2, SW3; LOE 4, IR1; LOE 4, IR5; LOE 6, EN2; LOE 6, EN5.*
   Lead Agency: Engineering Division with Master Plans Division support
8. Coordinate with the neighboring community and installation partners to advocate for off-installation side walks and crosswalks, and transportation infrastructure, including on tenant held land *LOE 2, SW4; LOE 4, IR4.* **Lead Agency: Master Plans Division and DFMWR with on-and off-post community support**

<u>Strategy 2: Make Open Space a Priority:</u> Fort Campbell's vision is to work towards a goal of 60% open space in the cantonment area, focusing on redevelopment of existing sites versus construction on Greenfield sites.
The Directorate of Public Works and partners will avoid the development of environmentally sensitive areas. On project sites, the installation commits to the preservation of trees where possible, as well as efforts to repopulate trees (2 trees for every 1 tree impacted using tree bank) that must be felled as part of construction efforts.

9. Commit to conservation of existing passive/recreational open space. *LOE 1, SR2; LOE 2, SW3; LOE 4, IR6.*
   i. Construct all new facilities on previously developed or Brownfield sites.
   ii. Require SC approval at RPPB to develop on Greenfield sites.
   Lead Agency: Master Plans, Engineering and Environmental Divisions

The Directorate of Public Works and partners will preserve land identified for storm water management, including sinkhole areas, and to using quality and quantity storm water management at individual construction sites and to converting 25% of parking from impervious to pervious in overflow parking areas (one lot annually).

10. Commit to conservation of existing storm water management areas. *LOE 1, SR2; LOE 2, SW3; LOE 4, IR6.*
    i. Require SC approval at RPPB to develop in storm water management areas.
    Lead Agency: Master Plans, Engineering and Environmental Divisions.
11. Require the use of Low Impact Development techniques in planning for storm water management during development of MILCON projects and major SRM projects. Provide pervious parking in overflow parking areas (project annually). *LOE 6, EN2.* **Lead Agency: Master Plans, Engineer and Environmental Divisions.**

The Directorate of Public Works, the Directorate of Family Morale, Welfare and Recreation and partners will preserve existing recreational land and establish new recreational opportunities. The installation sets the goal of a park or playground within .5 walkable miles of any neighborhood, and outdoor recreation and fitness facilities within .5 walkable miles of barracks and Brigade Headquarters. Fort Campbell will hold land in trust for recreational purposes, as demolition activities allow developed areas to be returned to green space.

12. Develop a plan to provide parks/playgrounds within walkable .5 miles of all neighborhoods and recreation/fitness centers within .5 miles of barracks. Provide open space on new facility sites, to include space needed to comply with Anti-Terrorism Force Protection standards. Include recreation facilities in barracks and other projects. *LOE 1, SR2; LOE 2, SW3; LOE 4, IR1/IR7.*
    i. Site projects through Siting Board and execute. **Lead Agency: Master Plans with Engineering support.**
13. Develop new open space through demolition of excess and substandard facilities. *LOE 4, IR3.*
    Lead Agency: Master Plans Division, Directorate of Family Morale, Welfare & Recreation.

<u>Strategy 3: Get Land Use Right:</u> All land use decisions should support the land use vision.

The Directorate of Public Works and partners will promote compatible development and facility reuse, as well as mixed use opportunities that will promote walkability for Soldiers, families and civilians. Master Plans will work with surrounding communities to provide opportunities that will allow those who choose to live outside of the installation to choose to safely walk or bike to work, or to shop or recreate on post.

14. Ensure all facilities are sited in compatible land use areas as shown on the land use compatibilities matrix (consistent with the Campbell Crossing Ground Lease). *LOE 1, SR2; LOE2, SW5; LOE 4, IR1; LOE 6, EN2.*
    i. Ensure housing/community land uses are sited in areas near community resources and connected with sidewalk and/or bicycle infrastructure.
    ii. Promote Multi/Mixed Use development in appropriate overlay areas.
    iii. Require SC approval at RPPB to construct a facility in an incompatible land use area.
    Lead Agency: Master Plans Division
15. Ensure existing facility reuse decisions consider the compatibility of surrounding land use (consistent with the Campbell Crossing Ground Lease and operational documents). *LOE 1, SR2; LOE 4, IR3/IR5; LOE 6, EN2.*
    i. Ensure housing/community land uses are sited near community resources with sidewalk connections.
    Lead Agency: Master Plans and Engineering Divisions
16. Green Infrastructure Goal 12: Work with surrounding communities to promote off-post development that encourages alternative transportation and healthy lifestyles. LOE 1, SR2; LOE2, SW4; LOE 4, IR4.
    i. Work with the off-post community to promote mixed use/housing opportunities that will allow Soldiers, civilians and families to safely walk or bike to work from off-post housing.

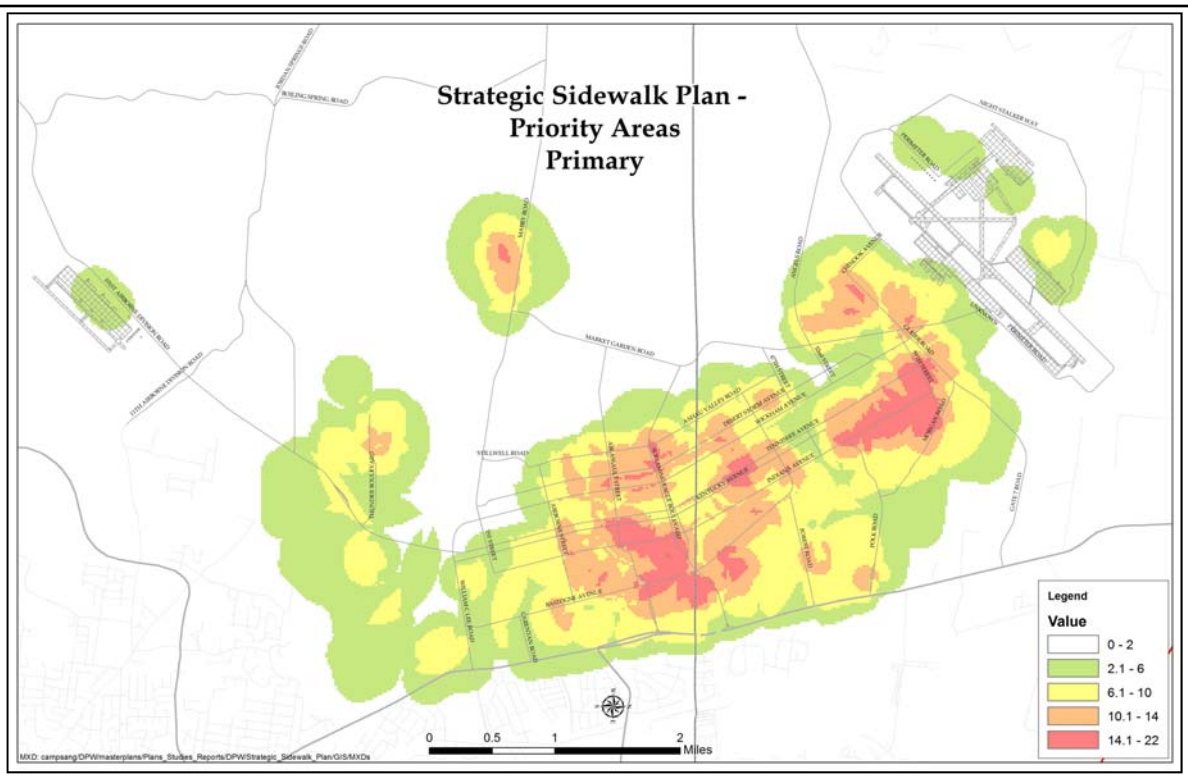
b. Implementation: Considering current funding constraints, implementation of the Green Infrastructure Plan will be a long-term process. However, the intent in developing the Green Infrastructure Plan is to set in place a vision for the future of the installation, "**to create an enduring, sustainable, adaptable installation that supports mission readiness and power projection capabilities; Fort Campbell will build campus-like environments with well-connected, safe, healthy, and active communities and a defined sense of place"** (*Vision Plan*, 1) and implement a disciplined decision making process at the individual project level which will work toward achieving the vision over time. While many decisions involving open space or land usage will be implemented as a particular site or building is addressed, decisions related to the execution of elements of the Multi-Modal Transportation Plan will require careful prioritization and phasing efforts. Components of the Green Infrastructure Plan will be reviewed in accordance with Federal regulations prior to implementation.

i. Prioritization: For purposes of prioritizing multi-modal transportation improvements, such as sidewalks, bicycle lanes, and trails, Fort Campbell shall utilize a land use oriented approach that focuses on providing sidewalks that serve barracks, housing, Town Center and schools. This approach ensures that the installation gets the biggest bang for the buck for its investment, providing sidewalk, bike and trail connections for those most likely to walk or ride to work, or to services and recreational opportunities, those who live on the installation in housing or barracks. Generally, primary road segments within the heat areas shown on the Priority Areas Map will receive first priority for construction. Ten top priority sidewalk projects were identified by the Garrison Commander and are listed in the Implementation Section. Road segments within the heat areas or other areas serving community services, medical or administrative land use areas will receive second priority for construction. The installation assumes that most individuals will not walk any further than 1/2 of a mile, so providing opportunities to walk to areas with primarily maintenance, warehouse, or heavy training land uses are not considered a priority and will be designated with a Priority of 3, unless they are otherwise designated with a high priority by installation leadership. Proposed projects are included in the Recommendations section.

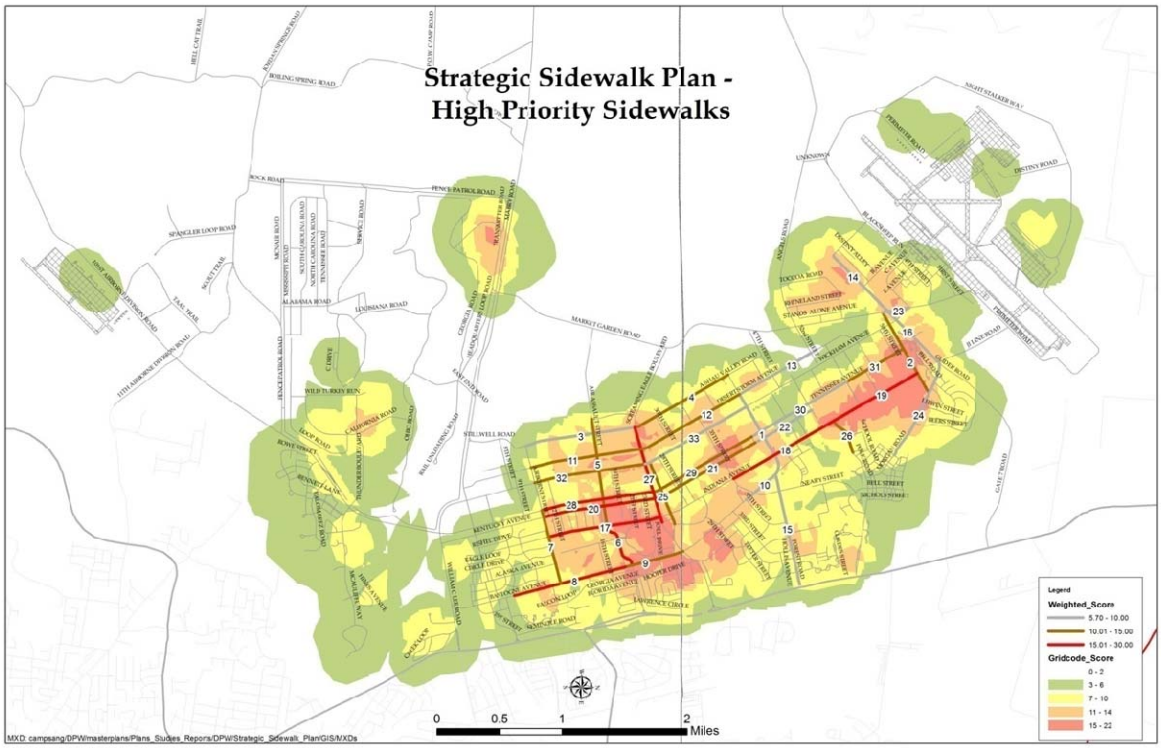
In addition to this method for prioritization, the installation shall also seek opportunities for "easy wins." For example, where funding is available to complete a multi-modal transportation improvement project at a minimal cost, the installation shall take that opportunity. An example of this would be requiring the painting of bicycle lanes as part of a funded road resurfacing project where there is room for lanes to be painted without a road widening, or when special funds are made available to complete a project identified in the Multi-modal Transportation Plan, such as through a Quality Recycle Program (QRP) project or a grant. In those cases where project specific funds are available, the project should be executed, even if the project would not otherwise receive the highest priority. The Multi-Modal Transportation Plan Implementation Table at the end of this report provides details on what improvements are proposed for each road and priorities based on this criteria.

ii. Phasing: While most decisions involving open space or land usage will be implemented as a particular site or building is addressed, decisions related to the execution of the Multi-Modal Transportation Plan will require careful phasing efforts, in particular as it relates to the construction of the proposed trail system at Fort Campbell. All projects developed in support of the larger trail plan for the installation will be constructed in complete and usable sections, with priority to connecting family and troop housing and community and recreational facilities as discussed at 5.b.i. above.

c. Funding Opportunities: One of the greatest challenges with implementing the Green Infrastructure Plan for Fort Campbell will be funding, especially considering the constrained fiscal environment. For this reason, Fort Campbell will utilize a variety of approaches to execute the vision that has been outlined. Complete execution of elements of the plan, such as the Multi-Modal Transportation Plan, is anticipated to be a long-term effort.



The heat map above was used to recommend priorities for Fort Campbell's sidewalk construction. It identified barracks, housing, and community type facilities within walkable distance from major roads. The Garrison Commander recommended the installation's Top 10 priority sidewalk projects based on his preference to provide sidewalks to barracks, housing, Town Center and schools first. Of lesser priority were projects to connect to parks, medical facilities, fitness centers, and community facilities like the library. Projects that correspond to the numbers below, and the Garrison Commander's Top 10 priority projects are shown starting on Page 43. Maps by Mike Malham & Bob Brundage, 2013.



i. Funding Opportunity 1 Military Construction (MILCON): In accordance with DoD Sustainability Policy Requirements outlined in *UFC 1-200-02*, *High Performance and Sustainable Building Requirements,* Fort Campbell will design and build all new construction projects in compliance with the *Guiding Principles for Sustainable New Construction and Major Renovations,* will commit to third-party certification of buildings in accordance with the U.S. Green Building Council Leadership in Energy and Environmental Design Silver level (or equivalent) and will achieve no fewer than 40% of certification points related to energy and water conservation. During the planning stages for MILCON projects, planners shall review the Green Infrastructure Plan and ensure that the project is appropriately sited with the Vision plan and consistently with open space planning goals. For example, the selected site should not be a Greenfield site or in an incompatible land use area unless previously approved by the Senior Commander at the Real Property Planning Board. During the 1391 and Request for Proposal planning stages, the planning team shall review the Multi-Modal Transportation Plan and incorporate its components where possible. For example, sidewalks identified in the Multi-Modal Transportation Plan that fall on the project site shall be constructed as part of the project. If the project will include expansion of peripheral roads, or other transportation improvements, roadways should be widened and or striped to accommodate bicycle lanes. Similarly, if a leg of the proposed fitness trail is included in the project footprint, it shall be constructed as part of that project, but designed to be a complete and usable component of the project.

Military Construction (MILCON) projects should include components of the Green Infrastructure Plan during RFP development

For major transportation projects, such as the construction of Access Control Points (ACPs) and major road improvement projects, elements of the Multi-Modal Transportation Plan shall be included. For example, sidewalk and bike lane infrastructure shall be included in design for ACPs. Road widening projects shall incorporate sidewalks and widening and/or striping for bicycle lanes.

RFPs should identify installation preferences for LEED certification points that are appropriate for the function of the facility. For example, if the facility has Troop Housing/Mission, Administration, Community Facility, Medical, Family Housing or certain types of light Training as the primary land use, and is in an area projected to be served by a future bicycle or trail network in the Transportation Plan, preference should be given for providing Sustainable Sites Credit 4.2 Alternative Transportation Bicycle Storage and Changing Rooms. Projects should also attempt to maximize open space per Sustainable Sites Credit 5.2, and develop usable recreation space around facilities in areas required for Anti-terrorism setbacks; for example, recreational ballfields and courts should be provided near barracks, and components such as picnic shelters, tables and gathering areas should be provided around other community support, administrative and medical facilities. All MILCON projects within .5 miles of the Town Center or a Brigade footprint area shall include sidewalks, bike or trail components, and supporting infrastructure to promote the utilization of alternative forms of transportation.

If a MILCON project is making repairs to an existing facility that will change its use, planners shall ensure the new usage with the Vision plan for the project site. Renovations to a building costing more than 50% of the Plant Replacement Value (PRV) of the facility shall not occur if the resulting facility will be sited in an incompatible land use area without approval of the SC at the RPPB. If a grandfathered facility that is sited in an area designated for a different land use on the Vision plan is scheduled for replacement, that facility must be relocated and constructed in a compatible area unless otherwise approved by the SC.

ii. Funding Opportunity 2 Unspecified Minor MILCON Army (UMMCA): Similarly, during the planning stages for UMMCA projects, planners shall ensure that DoD Sustainability Policy Requirements are met. Planners shall review the Green Infrastructure Plan and ensure that the project is appropriately sited in accordance with the Vision plan and consistently with Fort Campbell's open space planning goals (not on a Greenfield site or in an incompatible land use area without RPPB approval). When applicable, project planners shall include sidewalks, trails and or bike lane infrastructure into 1391 and Request for Proposal (RFP) planning documents in accordance with the Multi-Modal Transportation Plan. Again, RFPs should identify installation preferences for appropriate LEED certification points such as a preference for Sustainable Site Credit 4.2 Alternative Transportation Bicycle Storage and Changing Rooms when a relevant UMMCA project is within .5 miles of the Town Center or a Brigade footprint area. Construction projects should utilize open space around buildings for recreational components such as picnic shelters, tables and gathering areas.

If a UMMCA project is making repairs to an existing facility that will change its Category Code, or if it will replace a facility, project planners shall ensure that the new usage complies with the Vision plan for the project site. Any new construction, major renovation, or repair of an existing facility will comply with the *Guiding Principles.* Renovations to a building (resulting in a Category Code change) costing more than 50% of the Plant Replacement Value (PRV) of said facility shall not occur if the resulting facility will be sited in an incompatible land use area without approval of the SC at the RPPB. Similarly, if an existing (or grandfathered) facility that is sited in an area designated for a different land use zone is scheduled for replacement, that facility must be relocated and constructed in a compatible land use area unless otherwise approved by the SC at the RPPB.

The Town Center Park was built for less than $750K, in part with winnings from the Army Community of Excellence award.

PN81265, the Soldier and Family Fitness Greenway Trail, a key component that connects the Multi-Modal Transportation Plan, was submitted last year for UMMCA funding and will continue to be submitted annually.

iii. Funding Opportunity 3 New Work <$750K: The number of pre-engineered buildings (PEBs) constructed for less than $750K is anticipated to be reduced based on recent IMCOM guidance; however, should these facilities, or other new construction (i.e. facility additions) be constructed, the guidance discussed under 5.c.i. and 5.c.ii applies, to include the requirements outlined in the *UFC 1-200-02* and *Guiding Principles*. Regarding siting of these facilities, PEBs or additions shall not be sited on Greenfield sites nor shall they be sited in inappropriate land use areas without RPPB approval. A conceptual sketch showing the PEB in relation to surrounding facilities shall be developed and included during the siting board process to show that the PEB will fit into the approved master plan. Projects constructing PEBs and other new work shall include sidewalks connecting the facility to surrounding facilities and parking. If funds are available to construct sidewalks, trails or bike infrastructure, or supporting infrastructure such as bicycle storage, and the land use area is appropriate, the project shall do so. Projects should utilize open space around buildings for recreational components such as picnic shelters, tables and gathering areas. Projects costing less than $750K that will result in changing the Category Code of an existing facility, or adding an addition to a grandfathered facility in an incompatible land use area requires approval by the SC at the RPPB.

iv. Funding Opportunity 4 Repair (Sustainment, Restoration & Modernization): In accordance with DoD Sustainability Policy Requirements outlined in *UFC 1-200-02*, *High Performance and Sustainable Building Requirements,* Fort Campbell will ensure that major renovation or repair projects will comply with the *Guiding Principles,* are third-party certified at the Silver level (or equivalent) and achieve no fewer than 40% of certification points related to energy and water conservation. This will assist in meeting the goal that at least 15% of DoD facilities over 5,000 sf comply with the *Guiding Principles* by FY15. When projects making repairs to existing facilities will cost more than 50% of Plant Replacement Value (PRV), and/or when a project will be LEED certified for Major Renovation or Operations and Maintenance, the planning team shall review the installation's Multi-Modal Transportation Plan and incorporate components of that plan where possible as discussed in Section ii. RFPs should identify installation preferences for LEED certification points that are appropriate for the function of the renovated facility. For example, providing infrastructure to meet Sustainable Sites Credit 4.2 Alternative Transportation Bicycle Storage and Changing Rooms for Major Renovations for facilities in appropriate land use areas and within .5 miles of the Town Center or a Brigade footprint area to promote the utilization of alternative forms of transportation. Renovation projects should utilize open space around buildings for recreational components such as picnic shelters, tables and gathering areas.

If a major renovation project will change the category code of an existing facility, project planners shall ensure that the new usage (Category Code) of the facility is compatible with the Vision plan for the project site. Renovations to a building (resulting in a Category Code change) costing more than 50% of the Plant Replacement Value (PRV) of said facility shall not occur if the resulting facility will be sited in an incompatible land use area unless otherwise approved by the SC at the RPPB.

v. Funding Opportunity 5 Demolition: Project planners shall identify facilities that house land uses that are incompatible with the vision plan (grandfathered facilities) and strive to reuse those facilities with a compatible function, and/or demolish them when they have completed their useful mission life or when no appropriate use is available. Facilities located in an area designated for recreational or open space land use in the vision plan shall be demolished when possible and the sites returned to green space as part of the demolition contract. Any demolition site that does not have an immediately designated use shall be returned to green and open space until such time as it is redeveloped. Demolition sites may be redeveloped into pocket parks or other recreational space if appropriate.

The footprint of facilities that were recently demolished has been converted to green space.

vi. Funding Opportunity 6 Quality Recycle Program (QRP): Planners shall apply for and assist in the planning and execution of recreation related projects funded by the QRP. Projects shall first be given the green light by DFMWR and the Staff Judge Advocate (SJA), key members of the QRP Committee who review projects to ensure they meet statutory requirements. Projects contributing to the Green Infrastructure Plan, such as recreational trails, ball fields and park and playground infrastructure, as well as additional garden plots are encouraged to be submitted to the board for Committee review and approval. Projects shall be accessible and connect to community land use areas, family housing, Troop Housing and Mission areas and other appropriate land use areas.

The Community Garden at the Werner Park neighborhood center was funded by private donation

vii. Funding Opportunity 7 On-Installation Partnerships: The DPW shall approach and form partnerships with installation tenants such as Campbell Crossing and the Department of Defense Education Activity (DoDEA) to construct elements of the Multi-Modal Transportation Plan. DPW shall encourage Campbell Crossing to construct and or upgrade sidewalks, bike lanes and trail infrastructure consistent with the Multi-Modal Transportation Plan when existing sidewalks or roadways require replacement. The installation shall also seek Memorandums of Understanding to allow the installation to cross the Campbell Crossing ground lease area if funds are available to improve upon existing assets.

Similarly, Fort Campbell shall work with other installation tenants, such as DoDEA, the Army Air Force Exchange Service (AAFES) etc. to implement elements of the Multi-Modal Transportation Plan into their major construction projects. All community related facilities shall include connecting sidewalks, bicycle lanes and trail connections consistent with the Multi-Modal Transportation Plan. All proposed sidewalk, bicycle and trail street crossings near schools and community facilities frequented by children shall be reviewed by the DPW Transportation Engineer for safety.

viii. Funding Opportunity 8 Off-Installation Partnerships: Fort Campbell shall advocate for transportation improvement projects "outside the gate" that will support the Fort Campbell community. Fort Campbell shall approach the Cities of Clarksville, TN and Oak Grove, KY to request prioritization of projects to construct and repair sidewalks, provide safe pedestrian crossings across 41A, and connectivity to bus stops that serve Fort Campbell residents and employees. Fort Campbell shall work with the City of Clarksville as necessary to expand bus service to the installation if future development in the Town Center area warrants it. Fort Campbell shall advocate with Clarksville to provide a connection between the future Clarksville Greenway and Fort Campbell's Gate 1 along Jack Miller Boulevard. Fort Campbell shall provide connectivity to off post sidewalks as part of Access Control Point construction projects and as part of the Wings of Liberty Museum project.

1. Grants and Demonstration Projects: Fort Campbell staff shall conduct research to identify grants, such as Safe Routes to School, tree grants, etc. which may fund elements of the Green Infrastructure Plan, and prepare applications for these relevant grant projects, as appropriate and as approved by the Staff Judge Advocate. The installation shall explore grant opportunities completed by the installation itself or in partnership with the surrounding community, to include Community Transformation Grants, ACHIEVE Grants, Pioneering Healthy Communities, HUD Sustainable Communities, FTA New Starts, FTA/FHWA Congestion Mitigation & Air Quality funding, etc. Fort Campbell should also seek opportunities to fund projects, such as permeable parking lots, through demonstration projects or via donations from private organizations. Finally, Fort Campbell shall continue to seek other opportunities to solicit community involvement in implementation of the Green Infrastructure Plan, such as through tree plantings, community driven garden projects, etc.

A volunteer assists with the construction of BACH's Therapeutic Garden (US Army photo by Stacy Rzepka, 23 May 14)

Section 6: Conclusions & Recommendations

6. Conclusions and Recommendations: A military installation like Fort Campbell is a microcosm of the larger community of which it is a part. Unfortunately, Fort Campbell's population is subject to the trend towards obesity that is being seen throughout the rest of the Nation. Unlike their civilian counterparts, military members and their families face additional stresses associated with deployments and separations which has made providing a living environment that promotes improved resiliency and health even more important. Health professionals have recognized links between physical and mental health and the built environment. Unfortunately, the character of Fort Campbell's auto-oriented development has failed to encourage Soldiers, families and civilians to obtain the physical and mental benefits associated with exercise and time spent enjoying the outdoors. Fort Campbell's Green Infrastructure Plan contributes to larger installation, Army and Department of Defense efforts to improve resiliency in Soldiers, civilians and families by promoting alternative forms of transportation, such as walking, running, and biking, that facilitate connections within the larger community. The plan will also encourage further utilization of public transportation, which will provide more opportunities for those Soldiers and families without cars, and contribute to more sustainable alternatives for those who do.

The Green Infrastructure Plan also promotes wise decision making about the installation's valuable land resources, recognizing the value of our limited natural/passive open space, storm water management areas, and recreational space to the lives of Fort Campbell's employees and residents. By revising the installation's land use plan for the installation, Fort Campbell recognizes the importance of siting community support and recreational facilities in smart locations where they can best serve residents of housing and barracks. The Green Infrastructure Plan holds DPW and other organizations accountable for decisions that don't contribute towards our larger goals for promoting resiliency and health in the built environment by requiring that those actions be approved by Senior Leadership at the Real Property Planning Board. The plan also provides for opportunities to explore Mixed Use development, where appropriate, such as in Fort Campbell's Town Center.

The Green Infrastructure Plan also serves as a sign-post for further action: follow-on activities associated with this plan include executing prioritized projects as funding is available (see the attached list of Green Infrastructure projects and project map on the following pages), as well as updating the Installation Design Guide. DPW will also develop the other planning components of the Installation Development Plan, to include a revised Capital Investment Strategy that includes Green Infrastructure Plan component projects. The installation must also update its Long Range Component planning documents, including development of new and update of existing Area Development Plans that will highlight Green Infrastructure elements in this document. This plan will be reviewed annually by DPW staff, with a more comprehensive update every 5 years.

There are many challenges facing the Army today. Implementing elements of the Green Infrastructure Plan may assist in addressing some of these problems, and could contribute towards efforts to reduce obesity rates and help our Soldiers and families become more Ready and Resilient. By providing alternatives to get around the installation and recreate outdoors, the installation will contribute towards an improved quality of life as well as foster the goal of promoting a sustainability ethic on the installation, with emphasis on social and environmental sustainability. Continuing to keep installation residents involved in the execution of this plan offers a great opportunity for collaboration and participation in the Fort Campbell community, helping to build greater resiliency physically, mentally and socially among a population that has seen its share of hard times.

Green Infrastructure Projects

Multi-Modal Transportation Plan Projects (Trails, Bike Infrastructure, Sidewalks)

Programmed and Proposed Green Infrastructure Projects					
Trails			Est. $49.99/LF for 10' wide asphalt		
Map ID	Priority	Project #	Project Name	Project Cost	Funding Source/Year
T1	3	PN82240	Clarksville Base Trail Pt 1 (.6 miles)	$640K	QRP/FY14
T2	1	PN81265	Soldier/Family Fitness Trail (13.1 miles)	$1.95M	UMMCA/Unfunded
T3	2	PNTBD	W. Barracks Connector (4.13 miles)	Est. $1.05M	UMMCA/Unfunded
T4	3	PNTBD	NCB Connector Trail (.4 miles)	Est. $100K	SRM/Unfunded
T5	2	FE100654J	Cole Park Connector Trail (.43 miles)	Est. $750K	SRM/Unfunded
T6	3	PNTBD	Destiny Connector Trail (2.7 miles)	Est. $732K	SRM/Unfunded
T7	2	PNTBD	Gate 3 Bypass Connector Trail (1 mile)	Est. $200K	SRM/Unfunded
T8	2	FE1042231	Farmhouse Connector Trail (.75 miles)	Est. $257K	SRM/Private Funds?
Bike-lanes			Est.$71.10/LF 12' of bike lanes		
Map ID	Priority	Project #	Project Name	Project Cost	Funding Source/Year
B1	3	PN77980	Lee Road Bike Lane (Part of Road Widening UMMCA project)	Est.$1.85K	UMMCA/FY13
B2	1	Mult.	Air Assault Bike Lane (FE101894J/ FE101874J/FE101884J)	Est.$578K	SRM/Unfunded
B3	1	PNTBD	Screaming Eagle Bike Lane	Est.$593K	SRM/Unfunded
B4	2	PNTBD	Forest Road Bike Lane	Est.$339K	SRM/Unfunded
B5	2	PNTBD	Polk Road Bike Lane	Est.$491K	SRM/Unfunded
B6	1	PNTBD	Morgan Road Bike Lane	Est.$423K	SRM/Unfunded
B7	1	PNTBD	Bastogne Ave Bike Lane (Parts 1 & 2)	Est. $1.1M	SRM/Unfunded

Programmed and Proposed Green Infrastructure Projects					
Bike-lanes			Est.$71.10/LF 12' of bike lanes		
Map ID	Priority	Project #	Project Name	Project Cost	Funding Source/Year
B8	2	PNTBD	Airborne St Bike Lane	Est.$422K	SRM/Unfunded
B9	1	PNTBD	Indiana Ave Bike Lane (Parts 1 & 2)	Est.$1.2M	SRM/Unfunded
B10	1	PNTBD	Texas Ave/29th St Bike Lane	Est.$168K	SRM/Unfunded
B11	2	PNTBD	Michigan Ave/30th St Bike Lane	Est.$205K	SRM/Unfunded
B12	1	PNTBD	Kentucky Ave Bike Lane (Parts 1 & 2)	Est.$1.1M	SRM/Unfunded
B13	2	PNTBD	Normandy Blvd Bike Lane	Est.$258K	SRM/Unfunded
B14	2	PNTBD	42nd St Bike Lane	Est.$280K	SRM/Unfunded
B15	2	PNTBD	Tennessee Ave Bike Lane (Parts 1 & 2)	Est.$1.5M	SRM/Unfunded
B16	1	PNTBD	49th St Bike Lane	Est.$165K	SRM/Unfunded
B17	3	PNTBD	Angels Rd Bike Lane	Est.$268K	SRM/Unfunded
B18	2	PNTBD	Wickham Rd Bike Lane (Parts 1 & 2)	Est.$1.5M	SRM/Unfunded
B19	1	PNTBD	Desert Storm Bike Lane (Parts 1 & 2)	Est.$1.2M	SRM/Unfunded
B20	1	PNTBD	59th St Bike Lane	Est.$280K	SRM/Unfunded
B21	2	PNTBD	Glider Rd Bike Lane	Est.$224K	SRM/Unfunded
B22	3	PNTBD	Thunder Blvd Bike Lane	Est.$355K	SRM/Unfunded
B23	3	PNTBD	California Rd Bike Lane	Est.$415K	SRM/Unfunded
B24	3	PNTBD	101st Airborne Div Rd Bike Lane	Est.$285K	SRM/Unfunded
Sharrows			Est.$405.59 for signage every .25 miles		
Map ID	Priority	Project #	Project Name	Project Cost	Funding Source/Year
SH1	3	PNTBD	101st Airborne Div Rd	Est. $5K	SRM/Unfunded
SH2	3	PNTBD	Jordan Springs Rd	Est. $3K	SRM/Unfunded

Programmed and Proposed Green Infrastructure Projects					
Sharrows			Est.$405.59 for signage every .25 miles		
Map ID	Priority	Project #	Project Name	Project Cost	Funding Source/Year
SH3	3	PNTBD	Ohio Rd	Est.$7K	SRM/Unfunded
SH4	3	PNTBD	Mabry Rd Sharrows	Est.$12K	SRM/Unfunded
SH5	3	PNTBD	Market Garden Rd Sharrows	Est.$4K	SRM/Unfunded
SH6	3	PNTBD	Air Assault (West of A Shau) Sharrows	Est.$2K	SRM/Unfunded
SH7	3	PNTBD	Screaming Eagle (West of A Shau) Sharrows	Est.$1.5K	SRM/Unfunded
SH8	3	PNTBD	Angels Rd Sharrows	Est.$11K	SRM/Unfunded
SH9	3	PNTBD	Angels Rd to Perimeter Rd Connector Sharrow	Est.$.5K	SRM/Unfunded
SH10	3	PNTBD	Perimeter, Chinook, Entrance Rd Sharrows	Est.$5.5K	SRM/Unfunded
Side-walks			Est.$146.81/lf for 6' wide sidewalks		
Map IDs	Priority/	Project #	Project Name	Project Cost	Funding Source/Year
S1/NA	2	PN85230	Pedestrian Bridge (at Screaming Eagle/Gate 4)	Est.$1.2M	UMMCA/Unfunded
S2/#10	2-10	PNTBD	Lee Rd Sidewalks	Est.$732K	SRM/Unfunded
S3/#5, 6	2	Multi.	Air Assault Sidewalks (2 projects) FE101894J/ FE101874J	Est.$1.6M	SRM/Unfunded
S4/#1	1-1	FE100654J	Screaming Eagle Sidewalks	Est.$612K	SRM/Unfunded
S5/NA	2	PNTBD	Forest Road Sidewalks	Est.$700K	SRM/Unfunded
S6/NA	2	PNTBD	Polk Road Sidewalks	Est.$250K	SRM/Unfunded
S7/NA	2	PNTBD	Morgan Road Sidewalks	Est.$642K	SRM/Unfunded
S8/#9/NA/ NA	1-5/NA/NA	Multi.	Bastogne Ave Sidewalks (3 projects): FE100654J, Air Assault to Screaming Eagle, and	Est.$1.3M	SRM/Unfunded
S9/NA	2/3	PNTBD	Airborne St Sidewalks	Est.$880K	SRM/Unfunded

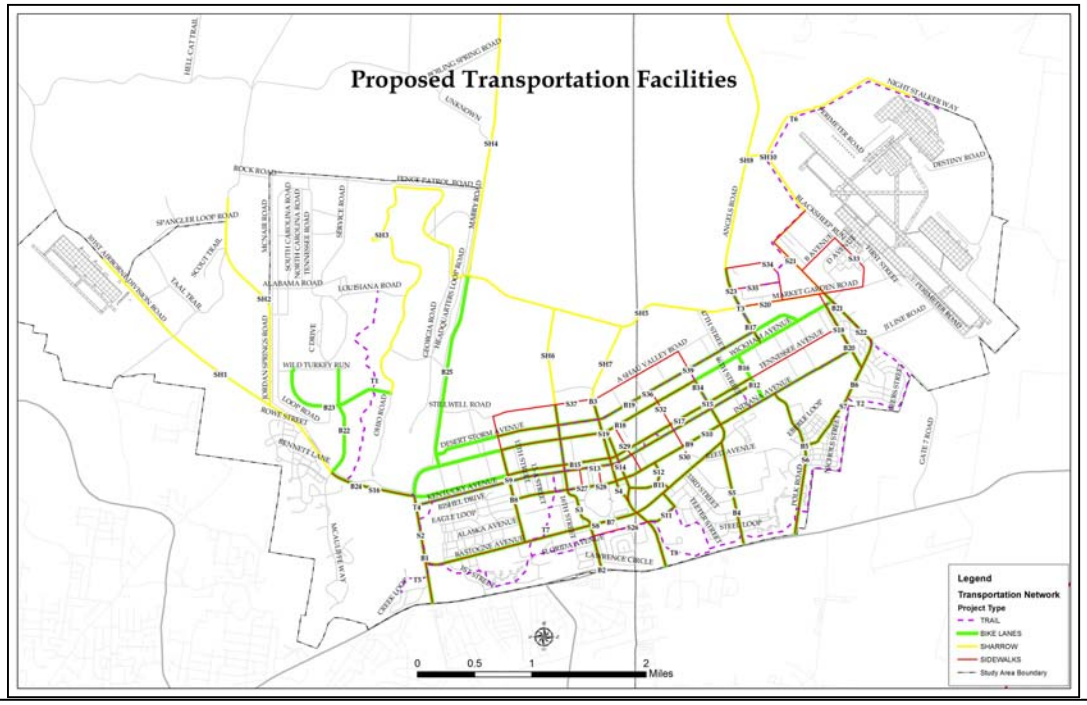
All projects listed on this table were identified during Fort Campbell's Visioning. Sidewalk projects went under an additional level of scrutiny as part of the development of the Strategic Sidewalk Plan. Map ID #s and priority numbers corresponding to both the overall Transportation Plan and the Strategic Sidewalk Plan are reflected in the Map ID and Priority columns. Highlighted projects are the GC's priority sidewalk projects and are labeled 1-10. Priority 2 projects are other projects serving community type land uses that should be ranked after the first group of priority projects are completed. Projects with a Priority 3 serve maintenance, warehouse, and heavy training areas that are less likely to see pedestrian traffic.

Programmed and Proposed Green Infrastructure Projects					
Side-walks			Est.$146.81/lf for 6' wide sidewalks		
Map IDs/ GC Rate	Priority/ GC Rating	Project #	Project Name	Project Cost	Funding Source/Year
S10/#2,3,4	1-2/3/4	Multi.	Indiana Ave Sidewalks FE100654J/ FE1011974J/FE101984J	Est.$2M	SRM/Unfunded
S11/NA	2	PNTBD	Texas Ave/29th St Bike Lane	Est.$337K	SRM/Unfunded
S12/NA	2	PNTBD	Michigan Ave/30th St Sidewalks	Est.$427K	SRM/Unfunded
S13/#8,9	1-8/9/NA	Multi	Kentucky Ave Sidewalks (3 projects);	Est.$2.5M	SRM/Unfunded
S14/NA	2	PNTBD	Normandy Blvd Sidewalks	Est.$411K	SRM/Unfunded
S15/NA	2	PNTBD	42nd St Bike Sidewalks	Est.$565K	SRM/Unfunded
S16/NA	3	PNTBD	101st Airborne Div Rd Sidewalks	Est.$598K	SRM/Unfunded
S17/NA/NA	2	PNTBD	Tennessee Ave Sidewalks (4 projects)	Est.$2.5M	SRM/Unfunded
S18/NA	2	PNTBD	59th Street Sidewalks	Est.$576K	SRM/Unfunded
S19/#NA	2	PNTBD	Wickham Ave Sidewalks (2 projects)	Est.$1.4M	SRM/Unfunded
S20/#NA	2	PNTBD	Market Garden Rd Sidewalks	Est.$708K	SRM/Unfunded
S21/#NA	2	PNTBD	Entrance Road	Est.$481K	SRM/Unfunded
S22/#NA	2	PNTBD	Glider Road	Est. $481K	SRM/Unfunded
S23/NA	2	PNTBD	Angels Rd Sidewalks	Est.$557K	SRM/Unfunded
S26/NA	2	PNTBD	South Carolina Ave Sidewalks	Est.$379K	SRM/Unfunded
S27/NA	2	PNTBD	20th St Sidewalks	Est.$126K	SRM/Unfunded
S28/NA	2	PNTBD	23rd St Sidewalks	Est.$126K	SRM/Unfunded
S29/NA	2	PNTBD	28th St Sidewalks	Est.$366K	SRM/Unfunded
S30/NA	2	PNTBD	PX Area Sidewalks	Est.$156K	SRM/Unfunded

UIDs not used are reserved for future projects.

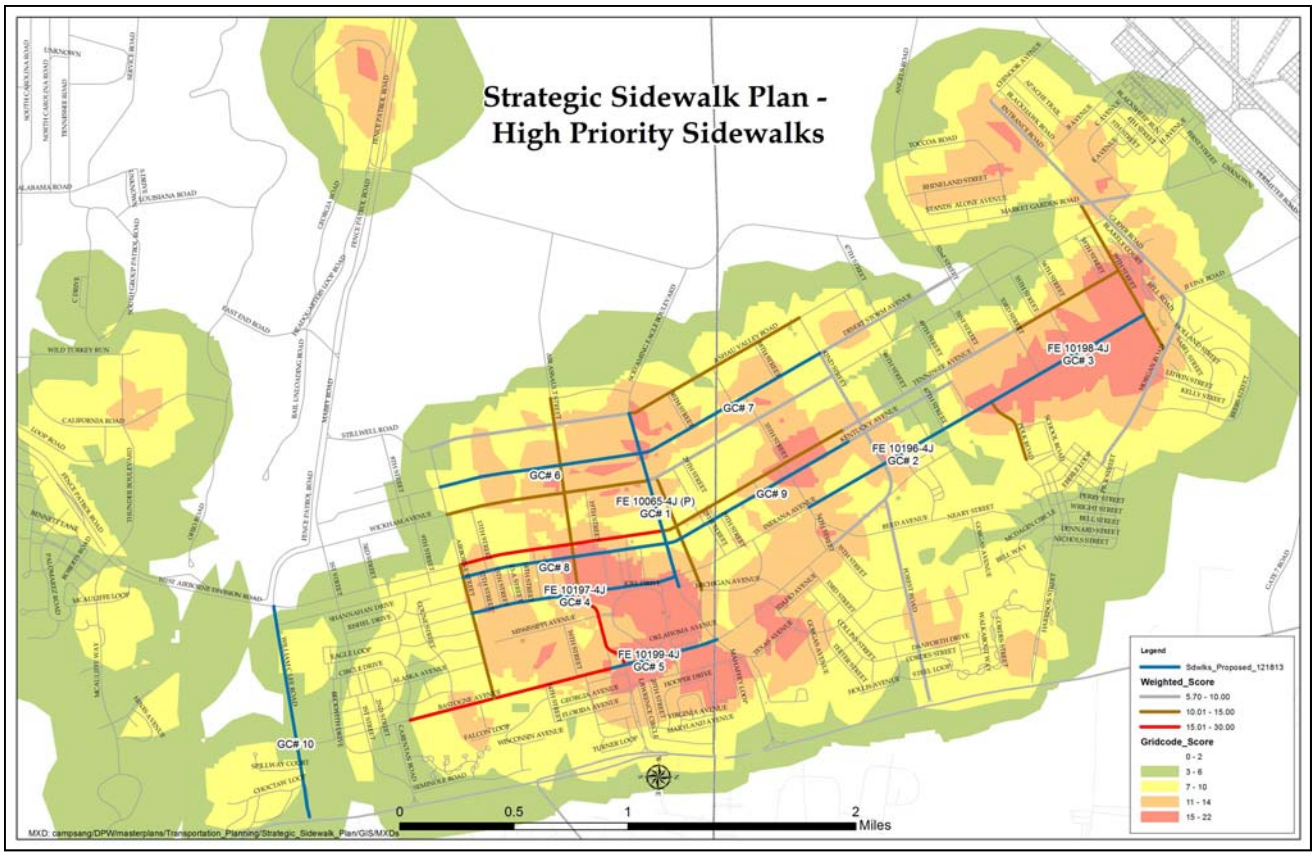
Programmed and Proposed Green Infrastructure Projects					
Side-walks			Est.$146.81/lf for 6' wide sidewalks		
Map IDs/ GC Rate	Priority/ GC Rating	Project #	Project Name	Project Cost	Funding Source/Year
S32/NA	2	PNTBD	35th (Desert Storm– IN) Sidewalks	Est.$434K	SRM/Unfunded
S33/NA	2	PNTBD	CAAF Loop Sidewalks (Market Garden,	Est.$484K	SRM/Unfunded
S34/NA	2	PNTBD	Toccoa Rd Sidewalks	Est.$554K	SRM/Unfunded
S35/NA	2	PNTBD	Rhineland St Sidewalks	Est.$329K	SRM/Unfunded
S36/#6/7/ NA	1-6/7/NA	Multi	Desert Storm Sidewalks (3 projects);	Est.$1.9M	SRM/Unfunded
S37/#NA	2	PNTBD	A Shau Valley Rd Sidewalks	Est.$1.3M	SRM/Unfunded
S39/NA	2	PNTBD	42nd St Sidewalks (W of Wickham)	Est.$226K	SRM/Unfunded

Multi-modal Transportation Projects Map



Project numbers on this map correspond to the first UID identified in the Multi-Modal Transportation Plan project table that begins on page 41 and represent the totality of multi-modal transportation projects proposed in Fort Campbell's Vision document. Map by Mike Malham, 2013.

Strategic Sidewalk Plan Map



The Garrison Commander developed his top sidewalk priorities based on this map which showed streets without sidewalks within 500' of barracks, housing, Town Center and schools. The separate, Strategic Sidewalk Plan Map ID and the GC priorities are listed in the Sidewalk section of the Multi-Modal Transportation Project table on pages 45-47.

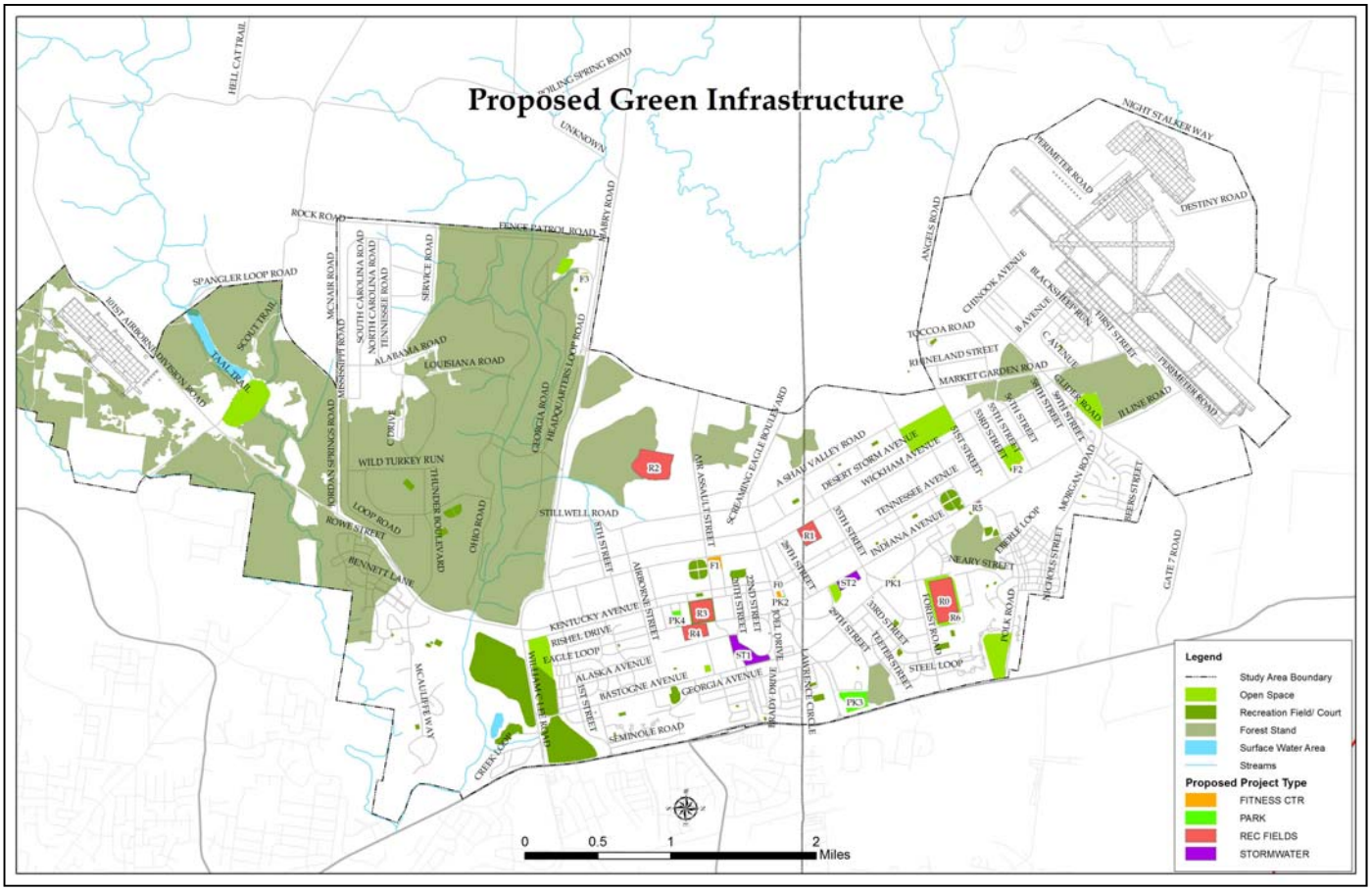
Storm-water Management Related Projects

Programmed and Proposed Green Infrastructure Projects					
Storm-water					
Map ID	Priority	Project #	Project Name	Project Cost	Funding Source/Year
ST1	1	ST1	Phase 2 Repair BACH Basin	TBD	SRM/Unfunded
ST2	2	ST2	Town Center Open Space Grass/ Gravel Pavers	TBD	SRM/Unfunded

Parks, Playgrounds and Recreational Facilities

Programmed and Proposed Green Infrastructure Projects					
Parks					
Map ID	Priority	Project #	Project Name	Project Cost	Funding Source/Year
PK1	2	TBD	KY Shoppette Pocket Park	$240K	SRM/Unfunded
PK2	1	FE102204J	Dreyer Park	$240K	SRM/FY14
PK3	2	FE1042231	Farmhouse Memorial Park	$350K	SRM/Private Funds?
PK4	1	TBD	Campbell Crossing Park	TBD	Privately funded
Fitness Facilities					
Map ID	Priority	Project #	Project Name	Project Cost	Funding Source/Year
F0	2	FE10412-3J	Repurpose Dreyer Field House	$250K	SRM/FY14
F1	1	77989	Main Installation PFC	$36M	MILCON/Unfunded
F2	1	77988	Replace Fratellinico PFC	$20M	MILCON/Unfunded
F3	3	86166	Replace Old Clarksville Base PFC	$8M	MILCON/Unfunded
Rec Facilities					
Map ID	Priority	Project #	Project Name	Project Cost	Funding Source/Year
R0	2	51410	Football/Soccer Fields	$1.011M	NAF/FY13
R1	3	79969	SFSC Phase 4 Military Lodging (Includes Rec fields)	$13.2M	MILCON/Unfunded
R2	3	18656	NCO Academy (Includes Rec fields)	$82M	MILCON/Unfunded
R3	2	72073	Outdoor Recreation Facility	$690K	NAF/QRP?
R4	2	72075	Youth Football Field/Track	$270K	NAF/QRP?
R5	3	86168	Multi-Purpose Fields North	$2.5M	MILCON/Unfunded
R6	2	65013	Indoor Pool and Family Water Park	$9.2M	NAF

Storm-water, Park, Playground and Recreational Facility Project Map



This map details proposed future Storm water management projects, as well as future parks, playgrounds, and recreational facilities. Map by Mike Malham, 2013.

Green Infrastructure Project Checklist

CMT NO.	REFERENCE	DESCRIPTION/COMMENTS
1	**Fitness Trails & Other Recreational Trails** Green Infrastucture Plan Strategy 1, Item 2	Include trail construction contributing to the Fort Campbell Trail Plan (see map) in MILCON projects, UMMCA projects, major SRM projects and other new construction by providing complete and usable segments that contribute to site connectivity. Projects constructing trails within Campbell Crossing leased land or on other tenant leased/licensed property requires approval of appropriate real property instruments. Ensure projects receive Master Plans Division review. See Fort Campbell Installation Planning Standards for specifications: 10' wide asphalt multi-modal trail (geotextile fabric, 6" gravel base, a 2" binder, and 1" asphalt surface). Trail structure should include culverts or any other means to ensure no change in overall stormwater flow and prevent ponding on the trail surface. The trail should have a buffer of at least three feet from the street. See Implementation Tables for more information. See IPS pgs 21 and 28 for more details.
2	**Bike Lanes** Green Infrastructure Plan Strategy 1, Item 3-4	Include space for painting and marking of bike lanes in all road expansion projects if inclusion would contribute to the Fort Campbell Multi-Modal Transportation Plan (see map). Resurfacing projects that do not add capacity shall include painting and marking of bike lanes when space allows. Include bike lanes and sidewalks in all ACP projects, and provide for bicycle infrastructure when new construction (i.e. MILCON) projects include expansion of peripheral roads. Ensure projects receive Master Plans Division Review. See Fort Campbell Installation Planning Standards for specifications: bike lanes shall be a minimum of 4' in width (3' may be provided when ROW is not available), 5' when adjacent to on-street parking. Min of 14.5' from edge of street to edge of bike lane (12' absolute minimum). 6-8" white stripe when adjacent to vehicle travel lane; 4" between parking and bike lane. Bike lane words/symbols/arrow/signage IAW MUTCD. See IPS pgs 22-27 for more details.
3	**Bike Infrastructure** Green Infrastructure Plan Stategy 1, Item 5	Include preferences for bike infrastructure in all RFPs for construction and major renovation projects (i.e. bicycle storage and showers/changing rooms) in areas designed for Troop Housing/Mission, Adminstration, Community Support, Medical or Family Housing land use.
4	**Sidewalks** Green Infrastructure Plan Strategy 1, Item 6	Include sidewalk construction consistent with the Fort Campbell Multi-Modal Transportation Plan (see map) in all MILCON, UMMCA, new construction and major SRM projects. Appropriate sidewalks that contribute to site connectivity shall also be included. Ensure projects receive Master Plans Division review. See Fort Campbell Installation Planning Standards for specifications: Primary sidewalks min width of 6' and 10-12' in high use areas. Secondary sidewalks minimum of 4'. Tertiary sidewalks min width of 4' and unpaved walkways 3'. See IPS pg 19 for more details.
5	**Facility Siting** Green Infrastructure Plan Strategy 2, Item 8	Site all facilities on previously developed or Brownfield sites. Do not site facilities on existing greenspace or space designated for open space or recreation space. Ensure Master Plans review and Siting Board Approval for all sites. Obtain SC approval via the Real Property Planning Board if facility is sited in a Greenfield site or site designated for open space. See Zoning (Land Use Vision) Map.
6	**Recreation Facilities** Green Infrastructure Plan Strategy 2, Item 11	Include recreational ball fields and courts and open space areas as part of barracks projects. Utilize open space around all facilities for recreational structures such as picnic shelters, tables and other gathering areas (while ensuring Anti-terrorism Force Protection criteria are met). Provide parks and playgrounds within .5 miles of neighborhoods where possible. Ensure Master Plans review and Siting Board Approval for recreation sites.
7	**Stormwater Management** Strategy 2, Items 9-10	Avoid siting facilities in storm water management areas. Use LID techniques when developing storm water management plans for projects and include in RFPs for MILCON and SRM projects. Ensure Environmental Division review of all plans constructing new facilities.
8	**Demolition** Strategy 2, Item 12	Return demolition sites to green space unless otherwise identified by Master Plans Division.
9	**Land Use** Strategy 3, Item 13	Ensure all facilities are sited in compatible land use area as shown on the Land Use Compatibilities Matrix and Zoning (Land Use Vision) Map. Ensure housing and community related facilities are sited within .5 miles of Town Center or as needed to serve housing and barracks. Allow for mixed land uses where appropriate. Ensure Master Plans review and Siting Board Approval for all facility sites. Obtain SC approval via RPPB if facility is proposed in an incompatible land use area.
10	**Facility Reuse** Strategy 3, Item 14	Ensure all renovation projects support facility reuse decisions that are compatible with the Land Use Compatibilities Matrix and Zoning (Land use Vision) Map. Ensure housing and community related functions are sited within .5 miles of Town Center or as needed to serve housing and barracks. Ensure Master Plans review and Space Utilization approval through the GC for all facility reuse/renovation projects. Obtain SC approval via RPPB if a proposed reuse function is proposed in an incompatible land use area.

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Appendix A: Literature Review

Fort Campbell Installation Planning Standards
The Installation Planning Standards document was developed in conjunction with the Real Property Vision Plan and finalized in May 2013. These standards help to define the desired form, arrangement, and characteristics of buildings, streets, and landscapes. Once reviewed and adopted by the Real Property Planning Board, it will serve as a supplement to the Installation Design Guide for Fort Campbell.

Within the Buildings section are standards that contribute to the development and preservation of green infrastructure through site planning and sustainable design. The Streets section contains standards that will help to develop a multimodal transportation network through the provision of sidewalks, trails, and bike lanes. The Landscapes section includes basic standards that enhance and add to the overall green infrastructure by recommending bioswales, landscaped buffers, and the use of native vegetation.

Draft Fort Campbell Integrated Natural Resources Management Plan 2013-2018
The Integrated Natural Resources Management Plan (INRMP) describes how Fort Campbell will integrate environmental values into the military mission. It is currently in draft form, but is being routed for approval by local, state and federal agencies. Through the goals described in the draft plan, Fort Campbell hopes to sustain natural resources, integrate programs into military operations, comply with applicable laws and regulations, and maintain a healthy natural ecosystem.

Because of the complexity of the environmental system, several plans were developed prior to this INRMP which are incorporated into it, such as the Forest Management Plan, Endangered Species Management Component, Watershed Management Plan, and Fish and Wildlife Management Plan. The combination of these and other plans provide a thorough analysis of existing conditions and recommended actions necessary to conserve, protect, and enhance the green infrastructure. This Green Infrastructure Plan links efforts described in the INRMP to Master Planning processes and products designed to develop the built and natural infrastructure.

Fort Campbell Real Property Vision Plan
The Real Property Vision Plan was finalized in May 2013. It was developed through a collaborative process which included stakeholder interviews and a visioning charrette. The Vision Plan establishes the vision and long-term development goals for the installation which are used to create the installation design guide, justify capital investments, and set the foundation for area development plans.

The goals of the Vision Plan include respect for existing natural resources, the provision of a multimodal transportation network, and a trail system connecting green infrastructure. Several of the design principles are consistent with the development of green infrastructure such as:

1.a. Planning for new trees
1.b. Preserving green spaces
1.d. Low Impact Development

4.a. Installation wide pedestrian friendly network consisting of sidewalks, pathways, and trails
4.h. Multimodal transportation network

Along with these principles is a map identifying current and future opportunities to enhance the green infrastructure through the addition of parks, playgrounds, and other community facilities.

Fort Campbell Joint Land Use Study 2009
The Joint Land Use Study was developed and finalized in 2009. These studies are a DoD Office of Economic Adjustment initiative aimed at creating a coordinated community approach to land use planning around military installations. Primarily, it focuses on land use, economic and population growth, infrastructure, and environmental sustainability.

Because community encroachment could significantly impact the installation's mission, the study recommends land conservation and the development of buffers as key strategies to improving land compatibility and environmental protection. Additional measures include developing regional sustainability partnerships, such as joint efforts to protect watersheds, improve data collection, and develop sustainability indicators.

Installation Management Campaign Plan 2012-2020
The Installation Management Campaign Plan was developed by the Installation Management Command and finalized in 2011. It describes the vision of the Installation Management community and the strategy to achieve that vision through six lines of effort related to Army Community readiness, well-being, workforce development, installation readiness, safety, and energy and water efficiency. Several keys to success within each of these lines of effort support the creation, protection, and conservation of green infrastructure. Many relate to the physical and mental health of soldiers, families, and civilians. Others relate to the increase in the level of sustainability of the environment, infrastructure, and installations. Additional strategies and sub-tasks promote specific actions to achieve the overall vision of setting the DoD standard for quality for infrastructure and services that enhance the well-being and readiness of soldiers and their families.

Land Use Study Update Clarksville-Montgomery County, TN.
This plan discusses the coordination process that occurs between Clarksville-Montgomery County officials and Fort Campbell when a land use related decision occurs in the area immediately outside the installation.

Army Sustainability Report 2009: Sustain the Mission Secure the Future
Annual Army Sustainability Reports have been developed since 2008 to evaluate and highlight efforts being made to sustain the mission, environment, and the community, often referred to as the triple bottom line. As stated in the report, sustaining the mission includes protecting the natural environment. Sustaining the environment involves not only complying with environmental regulations, but also establishing an ethic in which the natural infrastructure is valued as a vital component of the mission and the community. Sustaining the community includes quality of life issues, education, health, and safety. The goals outlined in the report guide the Army towards sustainability through education, efficiency, enhanced well-being, and innovation.

Draft Fort Campbell Integrated Cultural Resources Management Plan 2010-2015
The Integrated Cultural Resources Management Plan serves to guide the protection and conservation of historic cultural resources on Fort Campbell. It describes the natural, cultural, and historic settings of the installation, defines the roles and responsibilities of personnel on post, and establishes procedures to properly manage re-

cultural resources. The goals contained within this document pertain to the development of archaeological surveys, legal compliance, public awareness and education, and coordination. This document should be referenced to ensure historic cultural resources are preserved during the development of the green infrastructure.

Town Center Area Development Plan, Fort Campbell, KY

Area Development Plans (ADPs) are designed to be pieces of an all-encompassing Installation Development Plan (IDP) complete with network plans and capital investment strategies. The Fort Campbell Town Center ADP is the first step in a series of plans that will constitute the overall IDP. Although still in draft form, this document provides guidance for the design, placement, and management of facilities and land in the study area. It includes key components such as defined goals, an explanation of stakeholder involvement, and specific project recommendations. The goals most aligned with green infrastructure planning are related to the improvement of the transportation network. These include 3) Enhance links to transportation options …; 4) Provide improved connections from neighborhoods …; 8) Address integration any new transportation requirements to include road and sidewalk networks.

The recommendations focused specifically on land use/zoning, circulation and parking, and environmental/ aesthetic enhancements. Within land use/zoning were recommendations for mixed-use and infill development. Within circulation and parking were recommendations for the extension of sidewalks and bike lanes. Within environmental/aesthetic were recommendations for landscape elements and place-making. Additionally there were recommendations for sustainability that included pedestrian-oriented environments, land conservation, and tree preservation.

Fort Campbell Strategic Plan 2012-2017

The Strategic Plan was developed in order to align efforts at the installation with the Installation Management Command Campaign Plan and other guidance. It was designed to serve as a roadmap to meet future demands through improved capacity, infrastructure, and technology. The primary strategic goals with objectives that support or enhance the development of green infrastructure include goals 2) Enhance Well Being of the Military Community; 4) Sustain, Transform and Modernize the Installation; and 6) Improve Energy and Water Efficiency, Infrastructure and Security. Within these goals are sub-tasks that highlight the promotion of healthy lifestyles, outdoor recreational facilities, and greenhouse gas reduction programs.

Campbell Regulation 200-1 Environmental Quality Installation Environmental Strategy Plan

This Campbell Regulation describes environmental protection and enhancement responsibilities and programs for the installation. All of the programs and management efforts referenced in this document directly or indirectly enhance the green infrastructure. Several key, efforts such as Environmental Restoration, Natural Resources, and Water Management, are further explained in related plans or programs and were integrated into this Green Infrastructure Plan.

Kentucky Pollutant Discharge Elimination System Permit to Discharge from a Small Municipal Separate Storm Sewer System into Waters of the Commonwealth

This permit lays out the requirements for Fort Campbell's Stormwater Management Program in Kentucky, to include discussion of minimum controls and language related to permanent stormwater management requirements for new development. The report encourages the usage of non-structural Best Management Practices such as open space, vegetated conveyance and buffers, natural infiltration, stream buffers, green infrastructure, and low-impact development. Requirements for Structural BMPs are also discussed. The importance of public

education and outreach, as well as involvement and participation, in an effective stormwater management program is discussed.

State of Tennessee NPDES Permit, NPDES General Permit for Discharges from Small Municipal Separate Storm Sewer Systems, Permit No. TNS000000

This permit lays out requirements for Fort Campbell's Stormwater Management Program in Tennessee to include discussion of minimum controls and specific language relating to permanent stormwater management requirements for new and redevelopment, to include usage of green infrastructure to manage runoff. The permit encourages redevelopment, brownfield redevelopment, high density construction, vertical density and mixed use and Transit Oriented Development and offers incentives for this type of development. This permit also discusses the role of public education and outreach, as well as public involvement and participation, in development of an effective stormwater management program.

Unified Facilities Criteria 1-200-02, High Performance and Sustainable Building Requirements

This UFC provides minimum requirements and guidance to develop sustainable facilities in accordance with the *Energy Policy Act of 2005* and Executive Orders 13423 and 13514. It incorporates industry standards with sustainability design principles and the long-term vision for sustainability. Because the planning and design approach described within the UFC is intended to enhance overall sustainability, by design it preserves and enhances the green infrastructure of an installation. These efforts are centered on site selection. Guidance includes giving preference to previously developed sites, locations within central business districts, sites served by a multimodal transportation network, and those near established housing.

Unified Facilities Criteria 2-100-01, Installation Master Planning

This UFC establishes the master planning processes and products to be used and developed at the installation level. Through the master plan, decisions are made to ensure current and future mission capability that are consistent with all applicable rules and regulations. In support of the overarching installation planning philosophy, which is "to develop a sustainable platform to support the effective execution of assigned military missions as efficiently as possible," the UFC presents ten planning strategies. Three of these strategies are directly related to planning for green infrastructure: Sustainable Planning; Natural, Historic and Cultural Resource Management; and Healthy Community Planning.

Within the Sustainable Planning strategy are many key principles related to green infrastructure such as compact and infill development, connected transportation networks, and low impact development. For Natural, Historic and Cultural Resource management, the key principle is land preservation. For Healthy Community Planning, the key principles include planning for walking, running, and biking, and community gardens.

Unified Facilities Criteria 3-210-10, Low Impact Development

This UFC aims reduce the impacts of stormwater runoff and nonpoint pollution through low impact development. It implements Section 438 of the *Energy Independence and Security Act,* which requires new facilities over 5,000 sq ft to maintain or restore the predevelopment hydrology of the property. Within the UFC is a design requirement to incorporate sustainable development concepts in the site design.

Unified Facilities Criteria 4-010-01, DoD Minimum Antiterrorism Standards for Buildings

The intent of this UFC is to prevent mass casualties from terrorist attacks. It establishes guidance for the inclusion of antiterrorism features for new and existing facilities. By requiring significant building setbacks it indirectly

adds a requirement for open space for new developments, which could be used for stormwater mitigation and be included in green infrastructure.

Urban Forest Management Plan United States Army Garrison Fort Campbell, KY 2008-2013
The intent of this report is to promote the sustainability of tree resources in the cantonment area on Fort Campbell and to conserve natural resources while improving the appearance of the installation. Healthy, pleasant surroundings and suitable outdoor recreation facilities enhance the welfare and morale of Fort Campbell's population. The plan seeks to facilitate this through sound management of the installation's tree resources. The report makes several recommendations related to the intent of the Green Infrastructure Plan, to include improved quality of Fort Campbell's urban forest resources through inventory management, development of a tree replacement plan when construction will impact trees (for example, any one tree impacted by new construction is replaced with two trees), maintaining Fort Campbell's National Arbor Day Tree City, U.S.A. award, and getting increased community involvement in urban forest planning and implementation planting, which further facilitates healthy living. The plan sets a goal of planting a minimum of 100 total replacement and new trees each year.

USEPA Water Quality Scorecard
This document was a submittal required for approval of Fort Campbell's Kentucky State NPTES Permit. The document provides an overview of Fort Campbell's green infrastructure practices to include the identification of critical natural resources through use of Geographic Information System (GIS) technology, and through implementation of programs such as the Army Compatible Use Buffer (ACUB) program, Fort Campbell's Integrated Natural Resources Management Program, Forestry and Agricultural programs. The scorecard discusses Fort Campbell efforts to improve open space and recreational opportunities on the installation, such as through its trail, streetscape and Town Center planning efforts, and highlights the installation's efforts to improve storm water management as part of new construction projects, to include an update of the installation's landscape standards, inclusion of both nonstructural and structural storm water management BMPs in Military Construction (MILCON projects), and use of pervious pavements. The installation also discussed its recent efforts to consider new types of construction, such as higher density and mixed use development and highlighted a Fort Campbell Green Infrastructure Workshop that was held 3-4 Mar 2011

Appendix B: Community Comment Review

The following chart lists comments submitted by community reviewers throughout Green Infrastructure Plan development. For A community reviewer is a reviewer who is not otherwise employed on Fort Campbell, KY. All comments were addressed in the report text.

Comment	Contributer	Comment Forum	Nature of Comment
21-Dec-10	Linke, Jessica	Facebook	Need more tennis courts; redo the one off of Polk Rd; add basketball courts in housing areas
21-Dec-10	Palmer, Stacy	Facebook	Fort Campbell needs a skate park
21-Dec-10	Bryer, Abby	Facebook	Playgrounds in neighborhoods need to be fixed up
21-Dec-10	Walker, Shellei; Long-Canada, Crystal; Sperk, Kelly; Kowalkowski, Steven; DeEtte, Garman; Baker, Jeanna; Richardson, Chelsea	Facebook	Fort Campbell needs an indoor play area, community gardens, community green house
21-Dec-10	Hendricks, Missy; Eve, Ness	Facebook	Community shuttle needed
21-Dec-10	Latchman, Rozalynn Walker, Shellei	Facebook	More dog parks in neighborhoods with better terrain
21-Dec-10	Nester, Edward	Facebook	Have a lake area for military and families
21-Dec-10	King, Selena; Baker, Jeanna; Beeson, Laura	Facebook	Provide more pools with kiddie pools/splash parks; indoor water park
21-Dec-10	Breidenstein, Stephanie; Honeycutt, Teressa	Facebook	More sidewalks on post with better lighting.
21-Dec-10	Long-Canada	Facebook	Improved sidewalks in LaPointe Area
21-Dec-10	Whittington, Lynne	Facebook	Need improved fitness facilities
21-Dec-10	Atkins, Jacob	Facebook	Fix up DW Rec Center
21-Dec-10	Atkins, Jacob	Facebook	Add a Sports USA
21-Dec-10	Churach, Rachel	Facebook	More bike infrastrcture/BMX track
21-Dec-10	Baker, Jeanna; Richardson, Chelsea	Facebook	Add more areas for older kids; ballfields, etc.
21-Dec-10	Baker, Jeanna	Facebook	Tween playgrounds in housing areas
21-Dec-10	Andrel, Reyna	Facebook	More running tracks not locked up.
21-Dec-10	Cassada, Olga	Facebook	More shade on playgrounds
22-Dec-10	Holstein, Tamera	Facebook	Need neighborhood pools for each housing area with a community center.
22-Dec-10	Nym, Sue	Facebook	Sidewalks connecting housing to walking/jog trail at the hospital; bandstand for outdoor concert events. Add a community park near the PX.
22-Dec-10	Cooper, Laura	Facebook	Need a farmer's market on post
15-Jun-12	Brown, Dallas	Facebook	Need a parking lot at the Park next to Gate 6
15-Jun-12	Sager, Danielle; Riley, Dexie	Facebook	Bike lanes needed from Woodlands to community area; nature trail through wooded areas
15-Jun-12	Plemmons, Melissa	Facebook	Need a sidewalk all down Indiana
15-Jun-12	Gregory, Amanda	Facebook	Put in a trail that is a specific distance
15-Jun-12	Richards, Jason	Facebook	Put in a fitness trail in the woods by Gate 10
15-Jun-12	Brown, Amy	Facebook	Put a sidewalk down Polk Road
15-Jun-12	Matthews, Laura	Facebook	Add more bike lanes and parking racks
15-Jun-12	Vasquez, Marty	Facebook	More sidewalks needed
15-Jun-12	Lynn, Mindy	Facebook	Barker's Court needs sidewalks on street
15-Jun-12	Armstrong, Tina	Facebook	Sidewalks connecting housing to walking/jog trail at the hospital; bandstand for outdoor concert events. Sidewalk from MWR Rec Center to Lake Taal Park
15-Jun-12	Riley, Dexie	Facebook	Provide more sidewalks with waste bins and doggie waste bags; maintain trails regularly

Comment	Contributer	Comment Forum	Nature of Comment
12-Jul-12	Anonymous	Transportation Meeting	Possible boulevard streetscape on Gateway Corridors (i.e. Screaming Eagle, Forest, Polk)
18-Jun-12	Kiefer, Colleen	Facebook	Provide a dog park by Stryker Village
19-Jun-12	Bond, Nikki	Facebook	Provide more bike lanes and maintain the ones we have
19-Jun-12	Solomon, Tomeka	Facebook	Add more walking trails by Barker Court
19-Jun-12	Carrier, Elizabeth	Facebook	Be able to rollerblade/bike from Pierce Village to PX
19-Jun-12	Martinez, Ruth	Facebook	Add sidewalk on S. Carolina behind the ed center
19-Jun-12	Hendrix, Stacy	Facebook	Create sidewalk loop by new commissary to connect to housing areas
19-Jun-12	Williams-Horkey, Brandi	Facebook	Add more bike/walking paths
19-Jun-12	Hopkinsville CC Veterans	Facebook	Walking trails near the ed center/library
20-Jun-12	Jackson Fort, Christy	Facebook	Need walking/bike trail near Lee Park
20-Jun-12	Carona, Healther	Facebook	Gardner Hills sidewalk to Cole Park Commons/Pool
20-Jun-12	Nagle, Jilliam	Facebook	Sidewalk on South Carolina with crosswalk to Ed Center, to BACH, and from Stryker Village to PX/Commissayr
20-Jun-12	Uzelac-Virgil, Christina	Facebook	Need sidewalk from Pierce Village to Splash Park.
20-Jun-12	Archibald, Christian	Facebook	Need to upgrade sidewalks width and add ramps
20-Jun-12	Katte, Colleen	Facebook	Need sidewalk on KY, Airborne between Bastogne and IN, and along perimeter of Werner
20-Jun-12	Hoffman, Lindsey	Facebook	Need sidewalks from Stryker to Jackson ES
20-Jun-12	Swain, Heather	Facebook	Need a walk through the woods with trees.
20-Jun-12	Vlands, Jessica	Facebook	Needs to be a sidewalk from McAuliffe to Barkley School
20-Jun-12	Zajickova, Vaclava	Facebook	Need sidewalk from Woodlands to Shoppette; more walking trails
20-Jun-12	Atkinson, Victoria	Facebook	Want 5,10,20 mile bike loop on paved trails; provide map of existing trails
20-Jun-12	Thompson, Christie	Facebook	Provide a walking trail like the Clarksville Greenway
20-Jun-12	Lane, Fabiola	Facebook	Provide a walk/bike path in the Woodlands
20-Jun-12	Montgomery, James	Facebook	Provide sidwalk by Pierce Village
20-Jun-12	Weaver, Adrienne	Facebook	Bike lanes on major roads, connecting housing to PX and commissary areas. Sidewalk in front of Lincoln to Barkley.
20-Jun-12	Morris, Maria	Facebook	Put another walking trail through/around the golf course
20-Jun-12	Lynn, Mindy	Facebook	Sidewalk from Barkers Court to the new park and schools
20-Jun-12	Hickok, Laura	Facebook	Have wider sidewalks with room for peds/bikes
20-Jun-12	Brill, Michelle	Facebook	Crosswalk/sidewalk from Woodlands to Shoppette. More visible access to trail with parking
20-Jun-12	Bond, Nikki	Facebook	More bike trails and better shoulders for bikes
20-Jun-12	Hickok, Laura	Facebook	Repaint lines and add reflectors to highly traveled roads
27-Jun-12	Anonymous	Community Meeting	Provide bike/walk trails along main post
27-Jun-12	Anonymous	Community Meeting	Use Clarksville Base for Bike and Walking
27-Jun-12	Anonymous	Community Meeting	Publicize walking and bike riding events
27-Jun-12	Anonymous	Community Meeting	Provide more sidewalks in Town Center area and bike routes near the woodlands
27-Jun-12	Anonymous	Community Meeting	Increase sidewalks and cross signs to stop traffic
27-Jun-12	Anonymous	Community Meeting	Need more sidewalk at BACH, Div, Commissary, PX
27-Jun-12	Anonymous	Community Meeting	Connect residential areas to BCTs
27-Jun-12	Anonymous	Community Meeting	Need open space around BACH, Div, Commissary, 5 SFG for lunch
27-Jun-12	Anonymous	Community Meeting	Need sidewalks for post office, Wilson Theater
12-Jul-12	Anonymous	Transportation Meeting	May need a refuse island for fitness trail crossing at Gate 4
12-Jul-12	Anonymous	Transportation Meeting	Could loop go in Green Space in Old Clarksville Base
12-Jul-12	Anonymous	Transportation Meeting	Provide connection to road march trail to fitness loop
12-Jul-12	Anonymous	Transportation Meeting	Add sidewalk along Bastogne, Air Assault, Mississippi, Indiana, TN, 35th and Wickham
12-Jul-12	Anonymous	Transportation Meeting	Possible boulevard streetscape on Gateway Corridors (i.e. Screaming Eagle, Forest, Polk)
12-Jul-12	Anonymous	Transportation Meeting	Add sidewalks along Gates

Comment	Contributer	Comment Forum	Nature of Comment
12-Jul-12	Anonymous	Transportation Meeting	Fill in sidewalk gaps near future schools, rec facilities
12-Jul-12	Anonymous	Transportation Meeting	Focus on residential to commerical/hub sidewalks
12-Jul-12	Anonymous	Transportation Meeting	Provide bike/ped signal activators at stoplights
12-Jul-12	Anonymous	Transportation Meeting	Provide bike stations at gyms, PX, etc.
12-Jul-12	Anonymous	Transportation Meeting	Provide bike boxes at major intersections and bike parking at commercial facilities
12-Jul-12	Anonymous	Transportation Meeting	Reduce lane size on minor roads and restripe for bike lanes
12-Jul-12	Anonymous	Transportation Meeting	Ensure adequate signage "bike lane" or "share the road" along bike routes
12-Jul-12	Anonymous	Transportation Meeting	Restripe with bike lanes without repaving if possible
12-Jul-12	Anonymous	Transportation Meeting	May want to add thru lane and intersections with right turn lanes for bikes
12-Jul-12	Anonymous	Transportation Meeting	Trouble spots: poor visibility on IN near 1/2 BCT footprint where Soldiers cross
12-Jul-12	Anonymous	Transportation Meeting	Need bike lanes on IN to access Club Beyond at Memorial Chapel
12-Jul-12	Anonymous	Transportation Meeting	Difficult to cross Screaming Eagle anywhere
12-Jul-12	Anonymous	Transportation Meeting	School crossing at IN/Airborne difficult
12-Jul-12	Anonymous	Transportation Meeting	1st/TN difficult to cross
12-Jul-12	Anonymous	Transportation Meeting	Bastogne and Lee difficult to cross
12-Jul-12	Anonymous	Transportation Meeting	Difficult to cross at KY/Lee
12-Jul-12	Anonymous	Transportation Meeting	Access to fitness trail around NCB very difficult
23-Jul-12	Biasca, Angela	Facebook	More sidewalks, bikelane, fitness trails
23-Jul-12	Mitchell, Sara	Facebook	Make the Pierce Village trail a complete loop. Path to Pierce Community Center.
12-Dec-12	Anonymous	Visioning Session	Create focal points at main entries, ends of streets
12-Dec-12	Anonymous	Visioning Session	Create a system of well connected open/public spaces
12-Dec-12	Anonymous	Visioning Session	Design Rec areas for ATV use and camping
12-Dec-12	Anonymous	Visioning Session	Create a post-wide pedestrian friendly network consisting of sidewalks and pathways
12-Dec-12	Anonymous	Visioning Session	Provide fitness trail with specific distance
12-Dec-12	Anonymous	Visioning Session	Provide bike lanes that connect districts and lead to gates
12-Dec-12	Anonymous	Visioning Session	Pathways should be lit
12-Dec-12	Anonymous	Visioning Session	Provide non-motorized pathways between adjacent uses, bldgs, campuses and open spaces.
12-Dec-12	Anonymous	Visioning Session	Include shade trees with meandering paths in public spaces
12-Dec-12	Anonymous	Visioning Session	Provide clearly identifiable uses in public spaces
12-Dec-12	Anonymous	Visioning Session	Provide pathways within developments that provide access to certain uses that do not exceed a 10' walk
12-Dec-12	Anonymous	Visioning Session	Provide human scaled common space/quads in campuses
12-Dec-12	Anonymous	Visioning Session	% of building space SF should be devoted to public space (courtyards, plazas, seating areas)
12-Dec-12	Anonymous	Visioning Session	Design flexible rec areas that serve Soldiers and families
12-Dec-12	Anonymous	Visioning Session	Provide rec trails with local natural materials (decomposed granite)
12-Dec-12	Anonymous	Visioning Session	Include transit hubs along streets and within new development areas
12-Dec-12	Anonymous	Visioning Session	Include alt. energy infrastructure for bus stops (solar panels on bus shelter/other shade structures
12-Dec-12	Anonymous	Visioning Session	Provide buffers between incompatible uses and to protect mission uses between non-compatible uses
12-Dec-12	Anonymous	Visioning Session	Encourage 24 hr retail in Town Center
12-Dec-12	Anonymous	Visioning Session	Develop mixed use facilities - uses you need within a 10 minute walk
12-Dec-12	Anonymous	Visioning Session	Provide services within a 10 minute walk of each BCT
2-Apr-14	Miller Feige, Mandi	Facebook	Pave path by Gate 10 to be accomodating to bikes
2-Apr-14	Armstrong, Tina	Facebook	Provide sidewalks from MWR rec center and park near Gate 10/Stables

Appendix C: Census Data

Data from census.gov American Fact Finder Profile of General Population and Housing Characteristics 2010 Demographic Profile Data for Zip Code 42223

Subject	Number	Percent
SEX AND AGE		
Total population	19,837	100.0
Under 5 years	2,961	14.9
5 to 9 years	2,350	11.8
10 to 19 years	2,984	15.0
20 to 29 years	7,426	37.4
30 to 39 years	3,045	15.4
40 to 49 years	894	4.5
50 to 59 years	121	0.6
60 to 69 years	41	0.2
70 to 79 years	13	0.1
80 to 84 years	2	0.0
85 years and over	0	0.0
Median age (years)	21.7	(X)
16 years and over	12,821	64.6
18 years and over	12,507	63.0
21 years and over	10,610	53.5
62 years and over	45	0.2
65 years and over	30	0.2
RACE		
Total population	19,837	100.0
One Race	18,711	94.3
White	13,877	70.0
Black or African American	3,238	16.3
American Indian and Alaska Native	229	1.2
Asian	322	1.6
Native Hawaiian and Other Pacific Islander	271	1.4
Some Other Race	774	3.9
Two or More Races	1,126	5.7

HISPANIC OR LATINO		
Total population	19,837	100.0
Hispanic or Latino (of any race)	2,831	14.3
Not Hispanic or Latino	17,006	85.7
RELATIONSHIP		
Total population	19,837	100.0
In households	14,744	74.3
In group quarters	5,093	25.7
HOUSEHOLDS BY TYPE		
Total households	3,930	100.0
Family households (families)	3,759	95.6
Nonfamily households	171	4.4
Households with individuals under 18 years	3,338	84.9
Households with individuals 65 years and over	29	0.7
Average household size	3.75	(X)
Average family size	3.85	(X)
HOUSING OCCUPANCY		
Total housing units	4,218	100.0
Occupied housing units	3,930	93.2
Vacant housing units	288	6.8
HOUSING TENURE		
Occupied housing units	3,930	100.0
Owner-occupied housing units	24	0.6
Renter-occupied housing units	3,906	99.4

Data from census.gov Selected Economic Characteristics 2007-2011 American Community Survey 5-Year Estimates Zip Code 42223

Subject	Estimate	Percent
EMPLOYMENT STATUS		
Population 16 years and over	12,454	12,454
In labor force	8,941	71.8%
Civilian labor force	2,002	16.1%
Employed	1,641	13.2%
Unemployed	361	2.9%
Armed Forces	6,939	55.7%
Not in labor force	3,513	28.2%
Civilian labor force	2,002	2,002
Percent Unemployed	(X)	18.0%
COMMUTING TO WORK		
Workers 16 years and over	7,960	7,960
Car, truck, or van -- drove alone	4,198	52.7%
Car, truck, or van -- carpooled	1,237	15.5%
Public transportation (excluding taxicab)	1	0.0%
Walked	1,471	18.5%
Other means	183	2.3%
Worked at home	870	10.9%
Mean travel time to work (minutes)	11.6	(X)
INCOME AND BENEFITS (IN 2011 INFLATION-ADJUSTED DOLLARS)		
Total households	3,801	3,801
Less than $10,000	585	15.4%
$10,000 to $14,999	125	3.3%
$15,000 to $24,999	308	8.1%
$25,000 to $34,999	691	18.2%
$35,000 to $49,999	829	21.8%
$50,000 to $74,999	871	22.9%
$75,000 to $99,999	205	5.4%
$100,000 to $149,999	141	3.7%
$150,000 to $199,999	12	0.3%
$200,000 or more	34	0.9%
Median household income (dollars)	40,271	(X)
Mean household income (dollars)	43,271	(X)

PERCENTAGE OF FAMILIES AND PEOPLE WHOSE INCOME IN THE PAST 12 MONTHS IS BELOW THE POVERTY LEVEL	Estimate	Percent
All families	(X)	20.0%
Married couple families	(X)	8.2%
All people	(X)	20.2%
Under 18 years	(X)	23.7%
Related children under 18 years	(X)	23.4%
Related children under 5 years	(X)	26.6%
Related children 5 to 17 years	(X)	20.9%
18 years and over	(X)	16.9%
18 to 64 years	(X)	16.9%
65 years and over	(X)	-
People in families	(X)	19.2%
Unrelated individuals 15 years	(X)	76.5%

Appendix D: Low Maintenance Landscape Standards

Bio-Retention Plant Palette

Large Grasses 3-6 ft.

Scientific Name	Common Name
Andropogon gerardii	Big bluestem
Bothriochloa laguroides ssp. torreyana	Silver beardgrass
Chasmanthium latifolium	Inland sea oats
Elymus canadensis	Canada wild rye
Bothriochloa laguroides ssp. torreyana	Silver beardgrass

Small - Medium Grasses 1 ½ to 4 ft.

Scientific Name	Common Name
Deschampsic caespritosa	Tufted hairgrass
Dichanthelium sphaerocarpon	Roundseed panicgrass
Elymus hystrix var. hystrix	Eastern bottlebrush grass
Panicum virgatum	Switch grass
Festuca arundinacea	Kentucky 51 fescue

Note: Grass selection should be based on Bio-retention area size, user maintenance needs and limits.

Perennials/Ground Covers

Scientific Name	Common Name	Cultivars or Comments
Hemerocallis middendorfii	Middendorfii Daylily	
Hemerocallis minor	Minor Daylily	
Sedum species	Sedum	Select appropriate species for the site
Liriope species	Lillyturf	Select appropriate species for the site

Shrubs

Scientific Name	Common Name	Cultivars or Comments
Ilex glabra	Inkberry	Any appropriate cultivar for bio-retention size
Itea japonica 'Beppu'	Beppu sweetspire	If there is a better cultivar for the site it should be used
Juniperus communis 'Wiltonii	Blue Rug juniper	
Viburmnum dentatum	Arrowwood viburum	Any appropriate cultivar for bio-retention size
Physocarpus opulifolius	Ninebark	Any appropriate cultivar for bio-retention size
Buxus microphylla	Littleleaf boxwood	Any appropriate cultivar for bio-retention size

Small Trees

Scientific Name	Common Name	Cultivars or Comments
Cercis candensis	Redbud	Cultivars should match conditions
Amelanchier canadensis	Serviceberry	Multiple stems

Medium / Large Trees

Scientific Name	Common Name	Cultivars or Comments
Chionanthus virginicus	Frindgetree	
Acer rubrum	Red maple	Has surface roots
Quercus palustris	Pin oak	
Quercus phellos	Willow oak	Has large surface roots
Liquidambar styraciflua	Sweetgum	Use fruitless varieties, has large surface roots
Nyassa sylvatica	Black gum	Make sure site has appropriate soils.
Platanus occidentalis	Sycamore	Select appropriate cultivar for the site
Fraxinus pennsylvanica	Green ash	
Taxodium distichum	Bald Cypress	Select appropriate species for the site
Betula nigra	River birch	

Note: Prior to selection please check information regarding inundation, drought, and salt tolerance. Also confirm mature height and spread limits, and cold and heat tolerance for the site.

Parking Lot Tree and Shrub Plant Palette

Shrubs / Small (4 to 5 feet at maturity)

Scientific Name	Common Name	Cultivars or Comments
Ilex glabra 'Chamzin'	Inkberry	When there is better cultivar for the site it should be used
Viburnum opulus 'Compactum'	Cranberrybush Viburnum	If there is a better cultivar for the site it should be used

Shrubs / Low growing (2 to 3 feet at maturity)

Scientific Name	Common Name	Cultivars or Comments
Itea japonica 'Beppu'	Beppu sweetspire	If there is a better cultivar for the site it should be used
Juniperus communis 'Wiltonii'	Blue Rug juniper	If there is a better cultivar for the site it should be used
Physocarpus opulifolius 'Nana'	Dwarf Eastern Ninebark	If there is a better cultivar for the site it should be used
Buxus microphylla	Littleleaf boxwood	
Spirea x bumalda	Bumald spirea	Chose the cultivar that is best for the site

Large Trees (Over 50 feet at maturity)

Scientific Name	Common Name	Cultivars or Comments
Fraxinus americana	White ash	'Autumn Purple'
Quercus bicolor	Swamp White oak	
Gleditsia triocanthos	Honeylocust	Use thorn less variety/cultivar inermis 'Shademaster'

Medium Trees (25 to 40 feet at maturity)

Scientific Name	Common Name	Cultivars or Comments
Ginko biloba	Ginko (Maiden Hair)	'Fastigiata',' Princeton' 'Sentry', 'Shangri-la'
Ostrya virginiana	American hophornbeam	
Zelkova serrata	Japanese zelkova	'Village Green'

Small Trees (10 to 25 feet at maturity)

Scientific Name	Common Name	Cultivars or Comments
Acer ginnala	Amur maple	
Crataegus crus-galli	Washington hawthorn	Use thorn less variety inermis

Note: To protect newly planted trees from lawnmower and weed eater damage a trunk protector, that is adjustable to the growth of the tree, should be used.






Fort Campbell, Kentucky