

## Sustainability at Fort Hood

Sustainability is the keystone of the new Army Strategy for the Environment: Sustain the Mission. Secure the Future. The Strategy represents thinking that recognizes the interdependence between the mission, community and environment. This ecosystem approach to culture change in the way we think and live will assist Fort Hood in continuing to train as we fight for generations to come.



Fort Hood is nestled in the heart of the Central Texas hill country and resides in both Bell and Coryell counties. Encompassing 339 square miles, it is larger than the state's capitol city, Austin, which is about 60 miles south west of the installation. It is home to two divisions, the 4<sup>th</sup> Infantry Division (mechanized), and the 1<sup>st</sup> Cavalry Division. Also housed on the installation are the III Corps Sustainment Command (Expeditionary), III Corps Headquarters, and a myriad of support organizations and partners including Medical Department Activity (MEDDAC) and Dental Activity (DENTAC) support, Military Police and Intelligence, and the Operational Test Command. Reserve and National Guard support and training, an Air Force Air Support Operations Squadron, as well as full spectrum Garrison Support lend the installation a daily population of around 100,000.

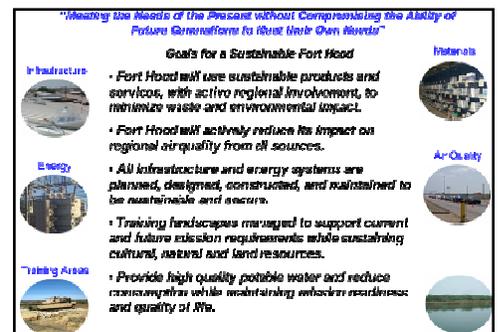


Fort Hood is the Army's premier power projection platform. We deploy troops who fight and win wars. In

order for our troops to fight and win wars, we must train as we fight. The ability to sustain the mission and maintain the training environment for future missions is essential. With resources dwindling and training needs increasing we must find proactive ways to reduce the consumption of natural resources, while increasing the ability to produce the world's most lethal war fighter. Fort Hood's Sustainability program is the strategic plan that will maintain the environment, and sustain the mission. With our strategy in place, and an Environmental Management System (EMS) as the roadmap to achieve our goals, we will continue to produce war fighters, and remain the Army's Enduring "Great Place."

## History of Fort Hood Sustainability Program

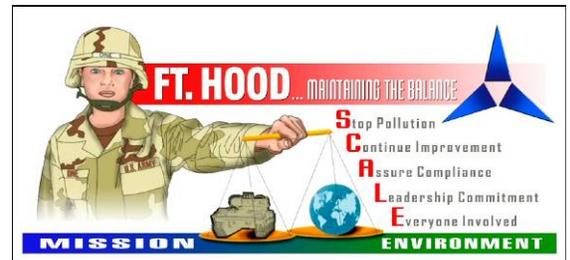
The Fort Hood Sustainability program was officially established in June 2001. One year later in June of 2002, the installation held a Sustainability conference where teams of stakeholders, environmental professionals, and community leaders worked together to create our 25-year



strategic goals. The goals were divided into five continually working teams, who have developed objectives and targets to achieve their goals. After goals and teams were established, we had to implement the plan.

In order to get down to the day-to-day operations of implementing our strategic plan for sustainability, we needed a foundation. That's where our EMS and Sustainability programs intersected. We developed a policy, so everyone on the installation knows what is expected of them. Fort Hood's EMS Workgroup knew that the Army is an organization who loves acronyms. The team also understood that a picture can speak a thousand words. So, to better educate the population, the EMS team established a logo with an acronym that reflects the policy. The policy was originally signed in April 2004. Fort Hood reviewed the policy and renewed it in 2005.

The logo design was created by Fort Hood Soldiers deployed to Iraq. Our goal to balance the environment with the mission is represented by a scale balancing the Earth and a Bradley Fighting Vehicle. The letters associated with the acronym SCALE represent key concepts of the policy: **S**top pollution, **C**ontinue improvement, **A**ssure compliance, **L**eadership commitment, and **E**veryone involved. Once confident we had a policy that communicated the expectations of our personnel, it was time to help them find ways of integrating the policy into daily mission operations.



## Folding Sustainability into the New Mission and Vision

**US ARMY GARRISON - FORT HOOD, TX**

**MISSION**  
U.S. Army Garrison Fort Hood, a power projection platform, in support of the full spectrum of operations; provides responsible stewardship of resources; provides services and maintains infrastructure; enables training of joint/combined expeditionary forces; mobilizes/demobilizes RC forces; establishes a safe, secure environment; provides for the well-being of the DA Family; fosters relationships with surrounding communities; and sustains/supports Army transformation.

**GOALS**

1. Enable joint/combined training and power projection of mission ready forces.
2. Plan, construct, sustain and improve infrastructure that supports transformation and enables Fort Hood to accomplish any mission with minimal risk.
3. Recruit, train, retain and empower a dynamic, service-oriented workforce.
4. Deliver premier customer service.
5. Foster an environment that improves teamwork, professionalism, partnerships and stewardship of resources.
6. Provide for well-being of the DA family in a safe and secure environment.

**VISION**  
Fort Hood - DoD's enduring "Great Place" - the Army's Premier Installation;  
*Ready for any mission;*  
*Leading change in the Army;*  
*Committed to the well-being of our DA family.*

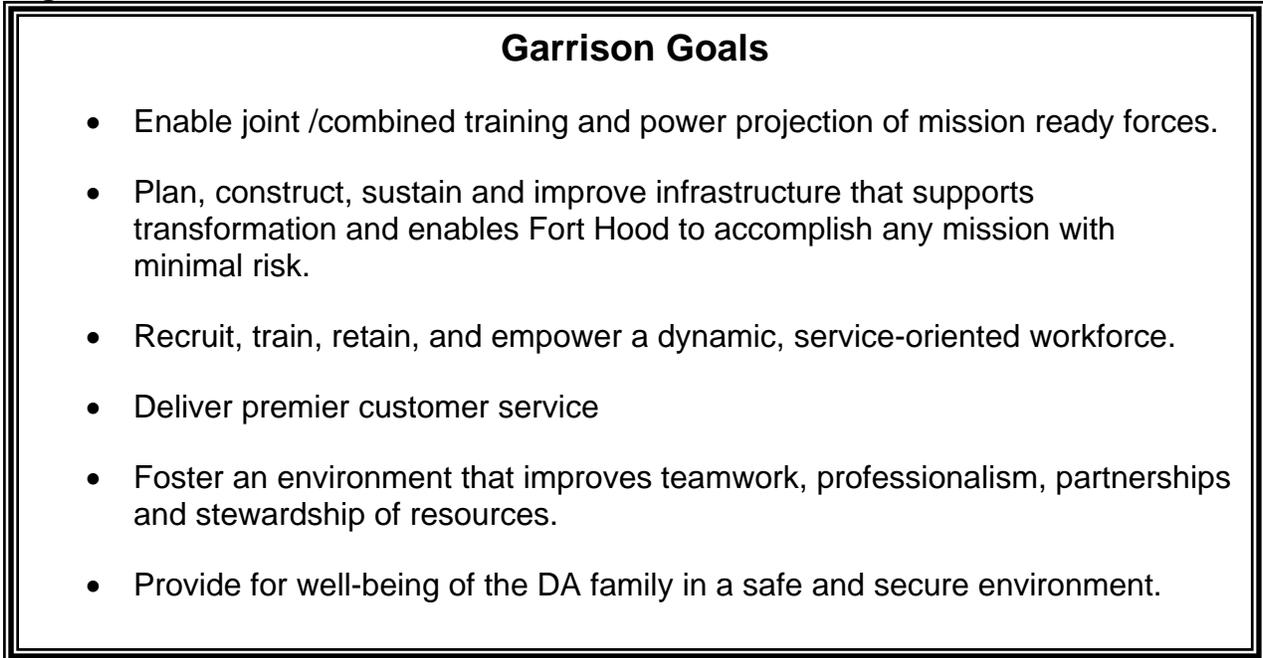
In 2005, Fort Hood Garrison developed a new mission, and vision. Also developed by Installation leadership were strategic goals to reach the new mission and vision. Sustainability principles were incorporated in to the new goals.

Fort Hood's mission is: *U.S. Army Garrison, Fort Hood, a power projection platform, in support of the full spectrum of operations; provides responsible stewardship of resources; provides services and maintains infrastructure; enables training of joint/combined*

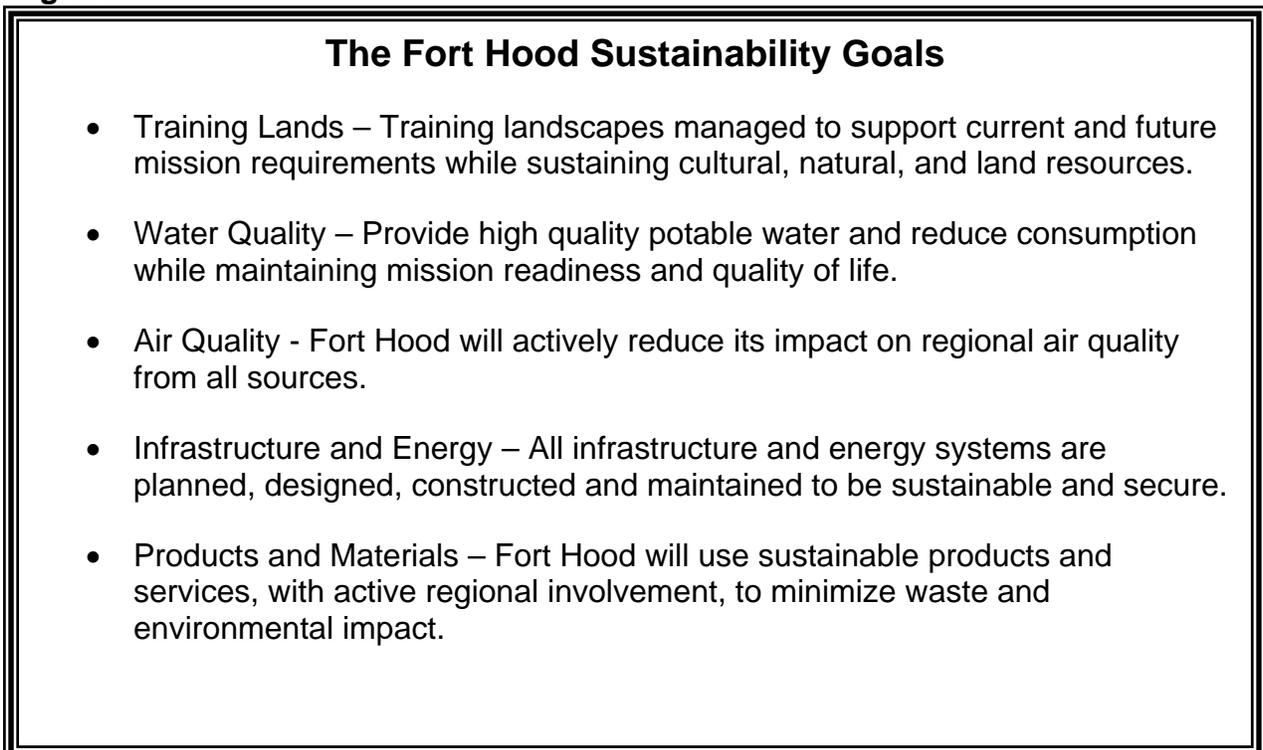
*expeditionary forces; mobilized/demobilizes RC forces; establishes a safe, secure environment; provides to the well-being of the DA family; fosters relationships with surrounding communities; and sustains/supports Army transformation.*

The Installation's vision is: *Fort Hood DoD's enduring "Great Place" – The Army's Premier Installation; Ready for any mission; Leading change in the Army; Committed to the well-being of our DA family.*

**Figure 1.**



**Figure 2.**



Key Process Indicators-- Installation Sustainability Program Overview	
• All Infrastructure and energy systems are planned, designed, constructed, and maintained to be sustainable and secure	<input checked="" type="checkbox"/> R <input type="checkbox"/> A <input type="checkbox"/> G
• Fort Hood will actively reduce its impact on regional air quality from all sources	<input checked="" type="checkbox"/> R <input type="checkbox"/> A <input type="checkbox"/> G
• Provide high quality potable water and reduce consumption while maintaining mission readiness and quality of life	<input type="checkbox"/> R <input checked="" type="checkbox"/> A <input type="checkbox"/> G
• Training landscapes managed to support current and future mission requirements while sustaining cultural, natural, and land resources	<input checked="" type="checkbox"/> R <input type="checkbox"/> A <input type="checkbox"/> G
• Fort Hood will use sustainable products and services, with active regional involvement, to minimize waste and environmental impact.	<input type="checkbox"/> R <input checked="" type="checkbox"/> A <input type="checkbox"/> G

Each of the Sustainability teams has worked diligently to achieve the objectives that lead to a sustainable Fort Hood. Every accomplishment pushes us further down the road that integrates the environment, community, and our mission into the daily lives of the individuals who live, work, and play on the installation.

The framework for achieving the sustainability strategic goals is our EMS. In 2005, Fort Hood successfully met Department of Defense metrics for the implementation of its EMS. Fort Hood's Sustainability program goals are the objectives and targets of the EMS. As such, these goals, objectives and targets are reviewed at bi-monthly in-progress reviews with the Director of Public Works as part of the official management review. The status of goal achievement and challenges are also presented to the senior leadership at the Environmental Quality Control Committee (EQCC).

## EQCC – Fort Hood Forum for Environmental Issues

In 2005, our EQCC charter was revised to include the Installation and III Corps Chief of Staff as well as our Garrison Commander as committee chairs. This co-chair of the leadership revolutionized how we communicate environmental issues on the installation. It has brought about synchronicity between the military and civilian workforces on the installation. Military and civilian organizational leaders can now work in concert and participate in joint decision making about environmental issues and concerns across the installation. This open line of communication between everyone on the installation has increased environmental performance and helped to integrate sustainability principles into everyone's daily activities.

During 2005, the EQCC was presented a variety of environmental issues, and made decisions on how to handle them. These meetings also provided needed information and instructions to military and civilians on how and where to obtain information regarding environmental concerns and compliance.

With each EQCC, the structure of the meeting is refined, so the meetings continue to evolve as an effective decision-making forum. Military, civilian, and contractor leadership are invited to attend.

## Training and Outreach Efforts – Conquering Culture Change

During 2005, the EMS and Sustainability programs increased awareness through many outreach efforts. These outreach efforts have created awareness about both Sustainability and our Environmental Management System.

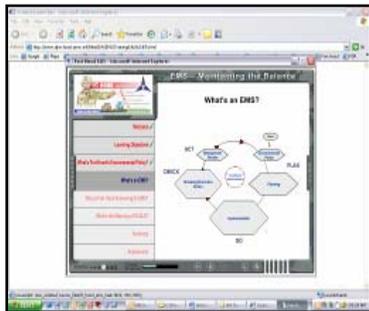


One thing we worked very hard to do is to renew the environmental policy, so that each individual would understand what was expected of them. During the course of the year, we had the policy re-signed by III Corps Commander, LTG Thomas Metz.

One of the ways we communicated our policy to everyone on the installation, was to post SCALE logo signs at all the entrances and exits of motor pools. Since Fort Hood has over seven miles of motor pools, the nearly 300 signs get enormous visibility, and have inspired many questions and phone calls.



We also went an extra step with our EMS Awareness Training issuing a Mission Support Order (MSO)



requiring that everyone on the installation take the 12-minute online training course. The numbers are reported bi-weekly to the III Corps Chief of Staff. Since the course is online, we have a tracking tool, which tracks by individual and organization, and we are able to report the number and percentage of people who have taken the training.

The integration of Sustainability and EMS has exhibited such incredible progress because the two programs opened the door for us to audit ourselves. We already had a comprehensive compliance audit system in place, and in 2005, we integrated EMS concepts and interviewing techniques into that system, giving us the opportunity to ensure that everyone on the installation is involved in the sustainability of the installation.



We also took the opportunity to allow outside organizations audit our system, so we could see where any gaps were. This ability to assess ourselves and invite other organizations to audit us has kept us on the road of continual improvement.

In May 2005, the installation underwent an EMS Management Review. The Environmental Protection Agency (EPA) used the opportunity to audit us as a training event for their new lead auditors, and Fort Hood used the opportunity to find the gaps in EMS implementation, in order to ensure we'd met our Department of Defense metric. The audit proved that we were on the right path. EPA said in its audit report "Fort Hood faces many challenges in developing and implementing an EMS for what is effectively a small-to-medium size city. Despite these obstacles, however, if the facility continues to progress on its current path, Fort Hood should be in a position to declare that it has an EMS in place and has completed at least one cycle of the continual improvement process."

In November 2005, the installation also underwent a decision audit to gain entry into the Clean Texas Cleaner World National Leader Program, which simultaneously grants entry into the EPA's Performance Track. The decision audit found two moderate non-conformances and one area for improvement. A follow-on visit in March 2006 indicates that the TCEQ audit team intends to recommend approval for Fort Hood's acceptance into the program at the Platinum level. The installation expects to be inducted formally into the program in May 2006.

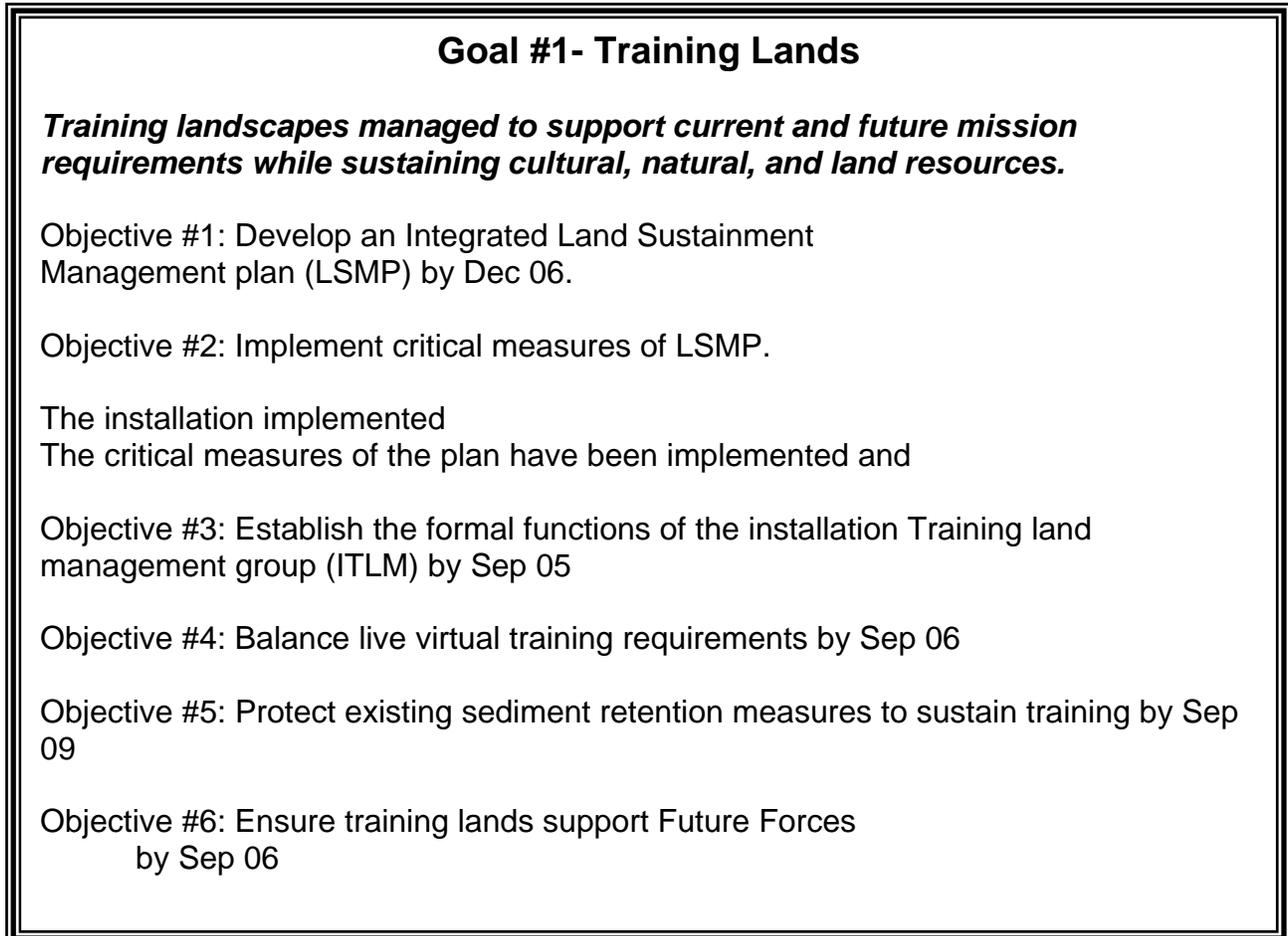


The successful integration of the EMS into the Sustainability strategic plan proves that a performance based EMS is the framework to ensuring that our Sustainability goals are met.

## Fort Hood's Sustainability Teams – Focused and Ready

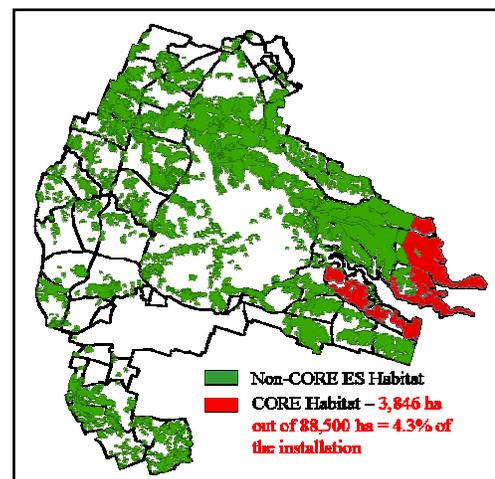
Fort Hood has five sustainability teams, one for each of its goals. Following is an update on the progress of each team:

Figure 3.



Fort Hood faces significant challenges when it comes to maintaining the condition of our training lands because of intense training of two heavy divisions on the installation. The installation has taken many pro-active steps over the course of 2005 to ensure that continued erosion and degradation of the land is minimized, and controlled.

In March 2005, a new biological opinion, the result of research done by the Fish and Wildlife Service indicated that military training and Fort Hood



endangered species habitat worked well together. Training restrictions were lifted on 90% of previously restricted areas. The Black Cap Vireo and Golden Cheek Warbler, Fort Hood's two endangered bird species continue to thrive on the installation.

The Training Lands team implemented several new best management practices to reduce unserviceable or damaged lands and restore maneuver capabilities in 2005. Two hilltop access trails and two miles of tank trails were created to enhance maneuver access and restore training capabilities to our West Side training lands. The team **continues to** implement training land restoration.



As part of the **land** restoration, a preventive maintenance program for the tank trails was developed. Fire breaks were maintained, and the Range Training Land Assessment indicates **improvements** in biomass and reduction in bare ground and sediment loads because of **land best management practices implemented**.

Changes in the future force requirements on the installation were evaluated and new objectives were integrated into the Training Land Team Plan **and goals**. Finally, the dig request system was automated and streamlined so Commanders could spend time training, not requesting dig permits when in the field.

Erosion caused by continual training and inadequate funding to complete projects that will restore the land quickly continue to be the main challenges faced by the Training Lands team.

**Figure 4.**

## **Goal #2 Water Quality**

**Provide high quality potable water and reduce consumption while maintaining mission readiness and quality of life.**

Objective 1: Develop a program by Sep 04 to monitor potable water consumption across the installation

Objective 2: Develop and implement a Water Quality and Conservation Education Program by Sep 05

Objective 3: Review and update Fort Hood plans and regulations governing water use by May 05

Objective 4: Develop a program to report wastewater production and wastewater and storm water permit compliance by Dec 05

Objective 5: Identify high-volume users of potable water; develop and implement strategies to reduce wasteful usage by Dec 07



The Water program had both triumphs and challenges during 2005. While the total consumption of water increased slightly (6-7%); consumption was still below the 13 year average. The increase can be attributed to several factors.

The increased training of Reserve and National Guard troops at the North Fort Hood location, an overall increase in the number of troops on the installation and a significant increase in operations tempo are some of the most noteworthy reasons for the very slight increase in potable water consumption. However, water consumption per capita remained about the same as the previous year.

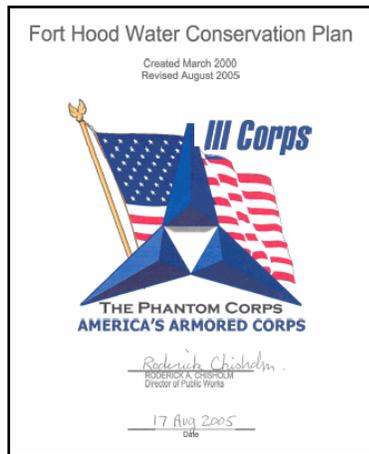
During 2005, Fort Hood met and overcame several events that could never have been predicted. These events could have affected the sustainability goal and the ability of the installation to continue to provide high quality potable water while maintaining the mission and quality of life on the installation. But, with diligence, hard work, and a dedicated team, the water team overcame these events and still made significant progress toward the Sustainability goal.

The major event was in June 2005 when Bell County Water Control and Improvement District #1 (BCWCID#1), the main supplier of potable water for the installation, had a fire at its water treatment plant, and water service to the installation was interrupted for a day.



Another problem during 2005 was a foul taste and odor in the water during the early months of the year. Due to heavy rainfall the previous year, there was an algae over bloom in the local area lakes which caused a foul taste and smell in the water. Further complicating the situation, at the same time as the taste and order problem was a bacteriological issue that led to the installation implementing a boil water advisory. Public

announcements were made, and tests were done, but there was no conclusive reason for the event. Despite these challenges, the Water team was still able to continue on its path of Sustainability.



The team accomplished several of its objectives. The installation Water Conservation plan was updated to reflect the current standards; a comprehensive storm water construction inspection program was created; and rules governing car washes and cleaning products used on area wash racks were finalized and implemented.

Fort Hood also installed three storm water diversions systems at wash racks. These “Fox” systems divert wastewater and storm water from wash racks to the sanitary sewer.



The systems divert waste water from storm drains to the sewer which reduces Fort Hood’s pollutant load into local area rivers, creeks, and lakes. These types of systems will eventually lead to the elimination of on of our wastewater permits.

**Figure 5.**

**Goal #3 – Air Quality**

***Fort Hood will actively reduce its impact on regional air quality from all sources.***

Objective 1 - Reduce or eliminate 25.1(actual emissions) tons of HAPs in 2004 baseline by 50% in 2008.

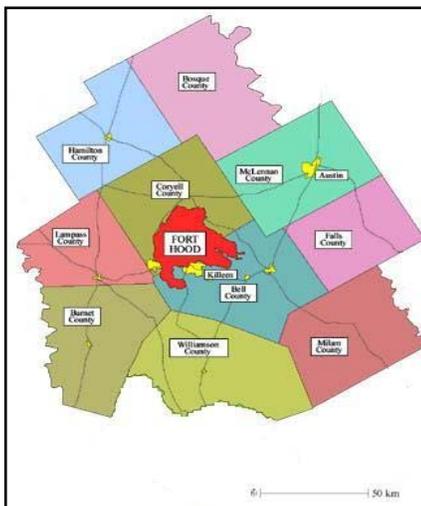
Objective 2 - Reduce fossil fuel use from 2004 levels by 20% by 2008 to reduce emissions of criteria pollutants.

Objective 3 - Reduce employee vehicle traffic of 2004 baseline by 20% by Dec 2009

Objective 4 - Improve air quality by 20% reduction of Particulate Matter through innovative training strategies by Dec 2009

Objective 5 - Develop and implement a regional air quality Awareness program by Dec 2006

Objective 6 - Develop initial partnerships to improve regional air quality by Dec 2005



Because Fort Hood sits between two near non-attainment areas, The Dallas-Fort Worth Metroplex area, and Travis/Williamson Counties the installation must remain vigilant about reducing its affect on the region's air quality.

The most significant sources of air pollution for Fort Hood are dust, boilers, paint booths, degreasing operations, fuel storage and dispensing, generators, and the landfill.

Several initiatives in 2005 reduced the amount of air pollution on the installation. Pacific North West National Laboratories did a dust monitoring survey to determine the amount of particulate matter for reporting purposes. The study also included mapping and ranking of tank trails and maneuver areas.

With a daily population of 100,000 and literally thousands of military vehicles on the installation, Fort Hood had to be pro-active in reducing fine particulate matter (PM 2.5) in its operations. In order to reduce fine particulate matter, the installation began using low sulfur diesel in its back up generators for boilers. As part of the education program developed by the Air Team, the installation also remind soldiers and civilians not to “free idle” vehicles.

One of the ways Fort Hood is reducing Hazardous Air Pollutants (HAPs) was to switch to 1.5 VOC CARC paint. The new paint significantly reduces the amount of HAPs emitted into the air. Vehicles are sent through a complete reset when they return from deployments. Part of the reset process includes new paint. For added reduction in HAPs, the installation also switched to an exempt solvent used for clean up and thinner. The low VOC paint and exempt thinner is a significant contribution to clean air on the installation and in the community.



During 2005, Fort Hood also gained admission to the Clean Cities program, and continued to participate in the Texas Environmental Partnership which brings together local, state, and federal regulators with DoD personnel. The partnership resolves issues, discusses and informs about new laws and requirements. The Air Team also continued to participate with the Texas Commission on Environmental Quality’s (TCEQ) Clean Texas Cleaner World Environmental Partnership. The Team is also investigating a program called Green Ride, a carpooling program to reduce the amount of traffic on the installation.



One challenge the Air Team has been working on is funding and resources for alternative fuel infrastructure. There is only one major provider for ethanol in the state, and it is located near Amarillo, so the transportation cost of fuel delivery adds significant cost to the price of the fuel. But the installation continues to work with several organizations to bring both ethanol and bio-diesel to the installation. It is anticipated that in 2006, Fort Hood will be able to provide alternative fuels.

**Figure 6.**

### **Goal #4 Infrastructure and Energy**

**All infrastructure and energy systems are planned, designed, constructed, and maintained to be sustainable and secure.**

Objective 1 – Develop an internal control system to ensure projects are reviewed for sustainability.

Objective 2 – Implement sustainable products and processes into contracts, specifications, and scopes of work.

Objective 3 – Ensure that 100% of equipment replacements, change-outs, and/or renovations meet the increased efficiency goals as identified in the IDG by FY 07.

Objective 4 – Ensure that 100% of new equipment installed meets the new energy standard by FY07.

Objective 5 – Ensure all HVAC equipment is operated and maintained in an energy efficient and sustainable manner.

Objective 6 – Purchase renewable energy resources (3% of installation energy consumption by FY 08).

Objective 7 – Produce our own energy using distributed energy technologies (10% of the installation total consumption by FY 08)

Objective 8 – research and implement innovative energy saving technologies.

The energy and infrastructure team made enormous progress in sustainable development and design in 2005.

The Energy Savings Performance Contract (ESPC), which was awarded in 2003, was completed in August 2005. The contract contained four energy conservation measures (ECM).

Several energy conservation measures helped the team reach its goals. These projects served as a catalyst to help in the sustainable planning and development of projects for the future.

The Utility Management and Control System (UMCS) is an “Open” LONWORKS system. LONWORKS, a communication network platform created by Echelon has the

ability to integrate products from multiple vendors into one functional system without custom hardware, software or tools.

This UMCS schedules Heating Ventilating and Air Conditioning (HVAC) equipment to operate only during scheduled occupancy. Previously the equipment operated continuously. It also provides expedited trouble shooting of HVAC equipment. The UMCS even remotely monitors the HVAC equipment so Energy Team members can monitor usage and ensure that the systems are operating efficiently.



Another innovative energy saving product is called the 'vending miser'. They were installed on 109 cold beverage vending machines in 25 different buildings. The vending miser saves energy by putting the machine in "sleep mode". The lights and cooling compressors turn off during low use times. They operate as needed to keep the beverages cooled. The energy savings resulting from this product is almost 50%.

Another place the installation has found significant energy savings in cooling tower fan variable frequency drives (VFD). These VFDs run at reduced variable speeds, or shut off when cooling tower water temperature warrants. This successful test product will be used on future cooling tower control strategies.

The team installed energy saving fluorescent lamps in fifty three buildings. They added light emitting diode (LED) emergency exit fixtures, and energy efficient high intensity discharge (HID) lamps were also installed. A survey of the personnel in the buildings indicated excellent customer satisfaction. Electric consumption was reduced and the users said that lighting levels are better.



The installation replaced conventional traffic lights with LED traffic lights. These lights use less energy and have a longer life span. Upon failure the maintenance staff replaced about 150 lights with LED lights as of 31 Jan 06. An Engineering project has now been submitted to replace 1,362 traffic lights at 53 intersections.



Fort Hood also installed 12 Duro-Last roofing systems in 2005. These thermoplastic roofing systems are no maintenance, energy savers. The white color of the roofs helps to reflect sunlight, and in the hot Texas summer they lower the cost of air conditioning. These roofs also resist leaks, and come with a standard 15 year warranty. The roofs also have a higher fire rating than conventional

roofing materials, and are resistant to mold growth. Installation of these roofs also did not require tar and kettle heating; so Fort Hood reduced impact on air quality.

Fort Hood is using solar cell (photo voltaic) panels for parking lot lighting in around 70 acres of parking lots. These solar cell panels are a non-polluting, energy saving distributed energy source that light the areas well, and add security and safety to our parking lots.



Fort Hood's Installation Design Guide was revamped and updated in 2005. Two chapters reflect sustainability development and design concepts. The chapter on construction management, details requirements to meet Fort Hood's 25-Year Sustainable Goals to (1) plan, design, construct, and maintain all infrastructure and energy systems to be sustainable and secure, and (2) to minimize waste and environmental impact. Another chapter on education and operation of systems and equipment requires facility managers, maintenance personnel and building occupants be trained on new systems.

A memorandum of understanding between DPW Engineering, Planning, Maintenance and Environmental that ensures that the systems are in place, operated and maintained minimize environmental impact was signed in 2005. The Energy and Infrastructure teams understood how working together would save energy and last longer.

**Figure 7.**

### **Goal #5 Products and Materials**

**Fort Hood will use sustainable products and services, with active regional involvement, to minimize waste and environmental impact.**

Objective 1 – Increase solid waste diversion by 5% each year.

Objective 2 – Identify products and services, and their users that support a sustainable Fort Hood by 2008.

Objective 3 – Educate on Post and in local community.

Fort Hood achieved its objective of 5% diversion in 2005. An enormous dollar figure was associated with solid waste diversion as well. Cost avoidance was \$3.3 million for the fiscal year! Several factors contributed to the installation's solid waste success.

In 2005, Fort Hood began an active compost and mulch program. We produced over 350 tons of manure and over 2400 tons of wood throughout the year. Instead of placing this material into the landfill, we re-used it to create high quality compost and mulch. The compost is used for land application on our ranges to help control erosion and maintain vegetation. This saved us around \$80,000. This project is one of the many ways our sustainability strategic plan integrates its goals and objectives across the teams, and works together to better our installation as a whole.



Another factor leading to waste stream diversion was our recycle program. Fort Hood's recycle program, deemed the largest in the United States Army, embodies the Environmental Policy, and gets everyone involved. During 2005, the program grew exponentially. We processed 9,188 tons of recyclable material. This generated revenue of over \$1.6 million. During 2005, the program expanded to integrate collection of recyclables in our family housing areas, as well as every office and motor pool on the installation.

Still another area of success is in construction and demolition (C&D) waste. C&D debris is one of our largest waste streams. It accounts for over 60,000 tons or 53.75% of the non-hazardous waste generated on the installation.

Land filling this debris would cost over \$1.7 million. During 2005, Fort Hood initiated an aggressive program that re-uses a lot of this debris. The program allows for some the material to be used as is, while grinding some for use on tank trails and low water crossings.



In the true spirit of the Sustainability triple bottom line: Mission, Community, Environment, Fort Hood partnered with Habit for Humanity (HfH) who used the material to provide valuable services in the community creating homes for low-income citizens.

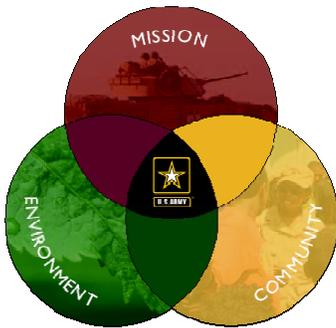
Additionally, Fort Hood's Residential Community Initiative (RCI) also used HfH in several family housing deconstruction projects. Overall, in 2005 Fort Hood's deconstruction program diverted 750 tons of C&D debris, with a cost avoidance of \$21,000, and generated \$45,000 of revenue for HfH.

Fort Hood's education, outreach, and partnership programs continued to excel in 2005. As a result of continued communication and education on the installation, Fort Hood units have significantly decreased the amount of excess products turned in because of shelf-life expiration and/or deployment.

The installation also integrated the EMS internal audit process into its already existing Environmental Compliance Assessment process. Integration of EMS concepts and principles into an already successful compliance assessment procedure allowed the installation to communicate the policy more effectively, ensure that each and every person on the installation knows that they are expected to protect and preserve the environment, and understand that they play a vital role in reducing the waste on the installation.



DPW-Environmental was also able to create product based specifications for the Job Order Contracts and participate in the review of all of the installation's service contracts during 2005.



Fort Hood made significant progress in 2005 in the achievement of its 25 year Sustainability goals. Challenges, set-backs, triumphs, and changes all factored in to that success. Continued flexibility, an awareness of changing needs, and a firm finger on the pulse of our community will allow Fort Hood to continue to train as we fight and support our soldiers and their families far into the future.