The Integrated Training Area Management (ITAM) Regional Support Center (RSC) Program.

The United States Army must be ready to perform at the highest level in a variety of environments. Army training is designed to challenge soldiers, leaders, and units alike. The Army relies on land to achieve its training and testing objectives and maintain force readiness. In this day and age, the Army has faced unparalleled threats to its ability to train. Increased environmental regulations and the encroachment of the public sector onto installations have made the management of training lands a fine and exact science. A happy medium must be found between the interests of environmentalists, the public and Army personnel wishing to provide the best training for our troops in a fiscally responsible manner. The Army Integrated Training Area Management (ITAM) program deals with issues regarding the prudent management of training and testing lands.

The goals of the ITAM program include the following:

- Achieve optimal sustained use of lands for the execution of realistic training, by providing a sustainable core capability, which balances usage, condition, and level of maintenance
- Implement a management and decision-making process, which integrates Army training and other mission requirements for land use with sound natural and cultural resources management
- Advocate proactive conservation and land management
- Align Army training land management priorities with the Army training, testing, and readiness priorities.

A popular medium in trying to display management practices and stewardship techniques on Army installations is through the use of maps. One component of the ITAM program is the use of GIS (Geographic Information Systems). GIS is used to provide solutions or answer questions where a spatial component is involved. The Army ITAM GIS Program supports the Army's integrated land use planning strategy for the management of training lands to ensure mission requirements are supported while environmental administration objectives are achieved.

A major component of the ITAM GIS program is the Regional Support Center, which provides data, analysis and technical support to Army installations across the world. At the current time, the ITAM program supports two Regional Support Centers. The Western Regional Support Center (WRSC) is located at the Center for the Environmental Management of Military Lands (CEMML) Office at Colorado State University in Fort Collins, Colorado. The Eastern Regional Support Center (ERSC) is located on the grounds of Fort A.P. Hill in Bowling Green, Virginia. The ERSC is run by CALIBRE, an information technology and management services firm located in Alexandria, Virginia. The United States Army Environmental Center (USAEC) located at Aberdeen 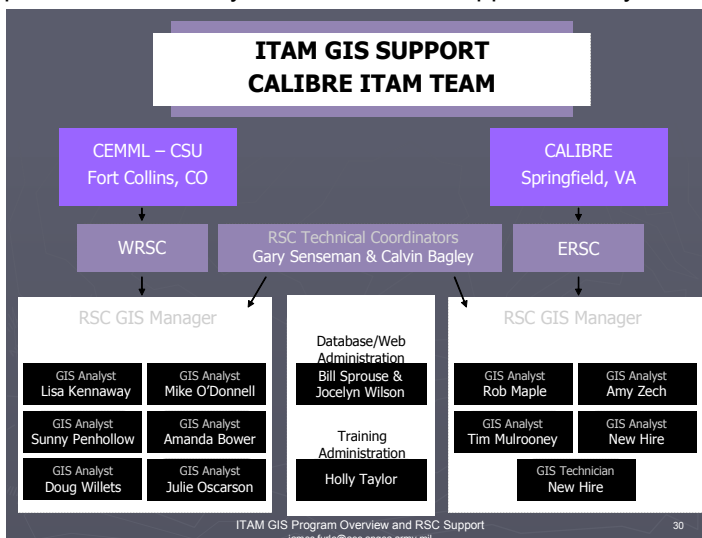Proving Ground, Maryland, maintains oversight of the two RSCs through CALIBRE. The entire RSC infrastructure is shown in Figure 1.

Figure 1: Regional Support Center Infrastructure

The primary goal of the RSC is to provide GIS support and capabilities to the 75 or so Army ITAM installations and complexes across the United States, Europe, Asia and Puerto Rico. This support can take on a number of forms depending upon the level of support category that each falls into. Larger Army Installations such as Fort Benning, which already have a GIS Specialist on site, receive partial support. The RSC provided GIS technical support, or hotline support, for these installations. The RSC and RSC personnel work directly with installation personnel on spatial analyses and hardware/software support. RSC personnel work with ITAM coordinators, environmental managers, range mangers and other GIS personnel on site. Approximately 35 installations fall into this category.

The other 40 installations that the RSC supports are classified as full support installations. These are smaller installations that do not have the need or financial resources for a full-time GIS specialist. The RSC is utilized for data creation, retrieval, support and analysis. The end product of this is often times delivery in the form of digital data and paper maps. In essence, the RSC acts as the GIS specialists for these installations, albeit from a central location in Fort Collins or Fort A.P. Hill. This allows the RSC staff to consult with a number of GIS and environmental experts while easily accessing and querying the plethora of data at their disposal. Being a regional support center, the RSC staff keeps in close contact with anyone that may have interest or experience in the GIS operations at these supported installations. They deal with state GIS managers, Range Control, ITAM coordinators, planning department heads and anyone else familiar with GIS technology and how it can impact their Army installation. Often times the RSC staff will arrange personal site visits with these individuals for the sake of data creation, coordination, QA/QC (Quality Assurance / Quality Control) and the update of existing layers.

Partially Supported Installations		Fully Supported Installations	
Aberdeen PG, MD	Camp Gruber - OK ARNG	Schweinfurt, Germany	Camp Gruber, OK - OK ARNG
White Sands MR, NM	Camp Ripley - MN ARNG	Wuerzburg, Germany	Camp Guernsey, WY - WY ARNG / Korea Area I (North)
Yuma PG, AZ	Orchard TA - ID ARNG	Camp Crowder, MO	Camp Parks, CA / Korea Area II (Northwest)
Dugway PG, UT	Camp Roberts - CA ARNG	Devens RFTA, MA	Harrison, MT – MT ARNG / Korea Area III (Central)
Fort Bragg, NC	Camp San Louis Obispo - CA ARNG		Kansas Regional Training Center, KS - KS ARNG / Korea Area IV (South)
Fort Drum, NY	Fort Jackson, SC	Marseilles, IL	Roswell WETS, NM - NM ARNG
Fort Polk, LA	Fort Rucker, AL	Ravenna, OH	Ashland, NE – NE ARNG / Aschaffenburg, Germany
Fort Stewart, GA	Fort Benning, GA	Wendell Ford RTC, KY	Biak Training Center, OR - OR ARNG / Butzbach, Germany
Fort Campbell, KY	Fort Knox, KY	Camp McCain, MS	Camp Stead, NV - NV ARNG / Fort Dix, NJ
Fort Carson, CO	Fort Leonard Wood, MO	Ansbach, Germany	Florence Military Reservation, AZ - AZ ARNG / Macon, MO
Camp Grayling - MI ARNG	Fort Huachuca, AZ	Bamberg, Germany	Fort Hunter Liggett, CA / Fort Custer, MI
Fort Hood, TX	Fort Bliss, TX	Tullahoma, TN	Camel Tracks, NM - NM ARNG / McClellan (Pelham Range), AL
Fort Irwin, CA	Fort Sill, OK	Ethan Allen, VT	Limestone Hills, MT - MT ARNG / Milan, TN
Yakima TC, WA	Fort McCoy, WI	Camp Butner, NC	Camp Grafton, ND - ND ARNG / Clark, MO
Fort Lewis, WA	Grafenwoehr, Germany	Riley / Bog Brook, ME	Camp Rilea, OR - OR ARNG / Camp Dawson, WV
Fort Riley, KS	Hohenfels, Germany	Stones Ranch Military Reservation, CT	Camp Wismer, WI - WI ARNG / Caswell / Loring, ME
Fort A.P. Hill, VA	Fort Richardson, Alaska	Camp Santiago, PR	Camp Dodge, IA - IA ARNG / Fort Lee, VA
Fort Sam Houston, TX	Fort Greely, Alaska	Friedberg, Germany	Hastings, NE – NE ARNG / BG Thomas Baker Training Site, MD
Fort McClellan, AL (Pellham Range) - AL ARNG	Fort Wainwright, Alaska	Camp Smith, NY	Camp Navajo, AZ - AZ ARNG / Wappapello, MO
Camp Shelby - MS ARNG	Dillingham, Oahu, Hawaii	Catoosa, TN	Camp Minden, LA
Fort Chaffee - AR ARNG	Kahuka, Oahu, Hawaii		
Fort Pickett - VA ARNG	Kawailoa, Oahu, Hawaii		
Camp Atterbury - IN ARNG	Makua Maneuver Area, Oahu, Hawaii		
Camp Blanding - FL ARNG	Pohakuloa, Hawaii, Hawaii		
Schofield Barracks West Range, Oahu, Hawaii	Schofield Barracks East Range, Oahu, Hawaii		

Table 1: List of Fully and Partially Supported ITAM Installations Supported by the RSC

Besides the technical support that the RSC provides for installations, the RSC provides data development for supported and other military installations across the world. The RSC can be tasked with a number of data development duties, such as GPS data collection, the processing of remotely sensed imagery, digitization, attribution of data layers, field data collection and scanning. The RSC takes a proactive role in data development. Most data development revolves around the required ITAM GIS layers such as roads, training areas, live fire ranges and rivers. The RSC may develop other layers that may have some computational value at the request of the installation. Nonetheless, all data developed or edited by the RSC are standardized in accordance to FGDC (Federal Geographic Data Committee) standards, internal SOPs (Standard Operating Procedures), and parameters set forth by the USAEC. The RSC has started to convert existing data to SDSFIE (Spatial Data Standards for Facilities, Infrastructure and Environment)-compliant geo-databases.

GIS data are very dynamic entities, often enduring numerous edits, updates, and revisions. As a result, the RSC must follow up data development with a robust GIS data support system. The RSC maintains a large database of GIS data and imagery collected from data development tasks. Whenever any data are created or edits are performed, the accompanying metadata is edited accordingly. It is necessary that all users and future stewards of this information be kept up to date on all modifications of each and every data layer. Having these data at a central location is paramount to the easy update, editing and dissemination of these data. Any of the RSC staff can easily access the data from any installation to accommodate interested parties in an expeditious and efficient manner.

In support of data development tasks, the hardware and software used to run and house GIS data must run in an efficient manner. In addition, RSC staff must keep all installations and the USAEC appraised of all activities and how they relate to our primary goal of supporting our nation's Army. RSC staff must be knowledgeable in all GIS technologies in order to communicate with people of varying GIS backgrounds. The RSC staff must also be conversant in the hardware and software applications that keep an entire GIS running and operational. The RSC staff often serves as the first line of questioning when installation staff encounters problems with ancillary issues such as GPS hardware and configuration, software installation and import/export techniques. As a result, RSC staff provides support in the following areas.

- Database Maintenance
- Data Analysis
- Data Display
- Data Output
- GIS / GPS System Configuration and Maintenance
- MAGIC Support and Updates
- GIS Data Updating and Editing
- GIS Data Archive
- GIS Metadata Archive
- Monthly Reports to AEC and Installations POC

Our nation's Army is being supported by GIS technologies and applications created by some of this country's best and brightest people. The RSC helps to develop and test these new technologies before they are released for use in the field. One facet of the ITAM program is ATTACC (Army Training and Testing Area Carrying Capacity) Methodology. RSC staff have been working with ATTACC to develop their LCM (Land Condition Module), a GIS-based application that models surface erosion and land condition as a product of both training and environmental factors. The RSC has been tasked with testing the newest version of an ArcGIS extension that creates surface danger zones (SDZs) based on weapon type, munitions and firing medium. This ArcGIS extension is scheduled for release in mid-August, 2003. The RSC has also had a hand in the new fielding of RFMSS (Range Facility Management Support System) by providing necessary data layers for selected United States Marine Corps installations throughout the United States and Asia. The RSC has provided support for endeavors in the LCTA (Land Condition Trend Analysis), LRAM (Land Rehabilitation and Maintenance), and TRI (Training Requirement Integration) programs.

The RSC provides support for HQDA/MACOM projects when opportunities present themselves. Recent work done in these HQDA ventures include:

- Data Modeling to Support POM Build
- Installation Training Capacity Support
- Active/Inactive Range Inventory Data Repository
- Custom Maps & Reports
- Tracking GIS Assets

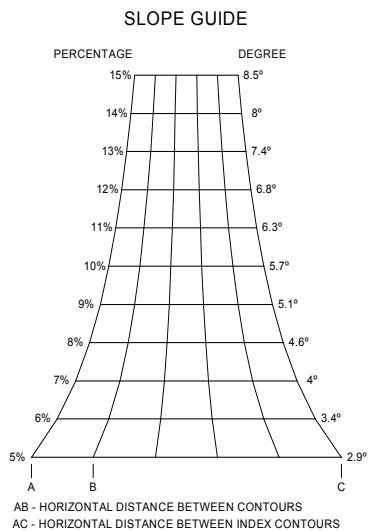While GIS personnel can appreciate the value of data, software and technical support, the layperson expects the output of most GIS projects to be in the form of maps. The maps that the RSC create cover a wide gamut of concepts. They include SDZ maps, range and impacts maps and environmental overlays. At the current time, the RSC has been tasked with the creation of MIMs (Military Installation Maps) for all fully supported installations. A sample MIM is shown in Appendix B. In order to make map creation easier through a standard process, the RSC has created and used margin tools to make and place standard elements onto the map template in ArcGIS. In addition to the tradition margin tools included in the essential elements of map design (scale bar, legend, generic north arrow), a MIM includes margin elements that can be useful out in the field. These elements include a magnetic north arrow routinely updated with changes in the earth's magnetic field, a slope guide (left), and customized scale bar. In the creation of a MIM, it is necessary for ancillary information to be displayed in addition these new graphical elements added to the map template. Using these margin tools, a map reference, citation information dialog and disclaimer can be created and customized for each installation. These tools can be easily loaded as forms and run in the VBA (Visual Basic for Applications) environment as part of ArcMap's Macro editor.
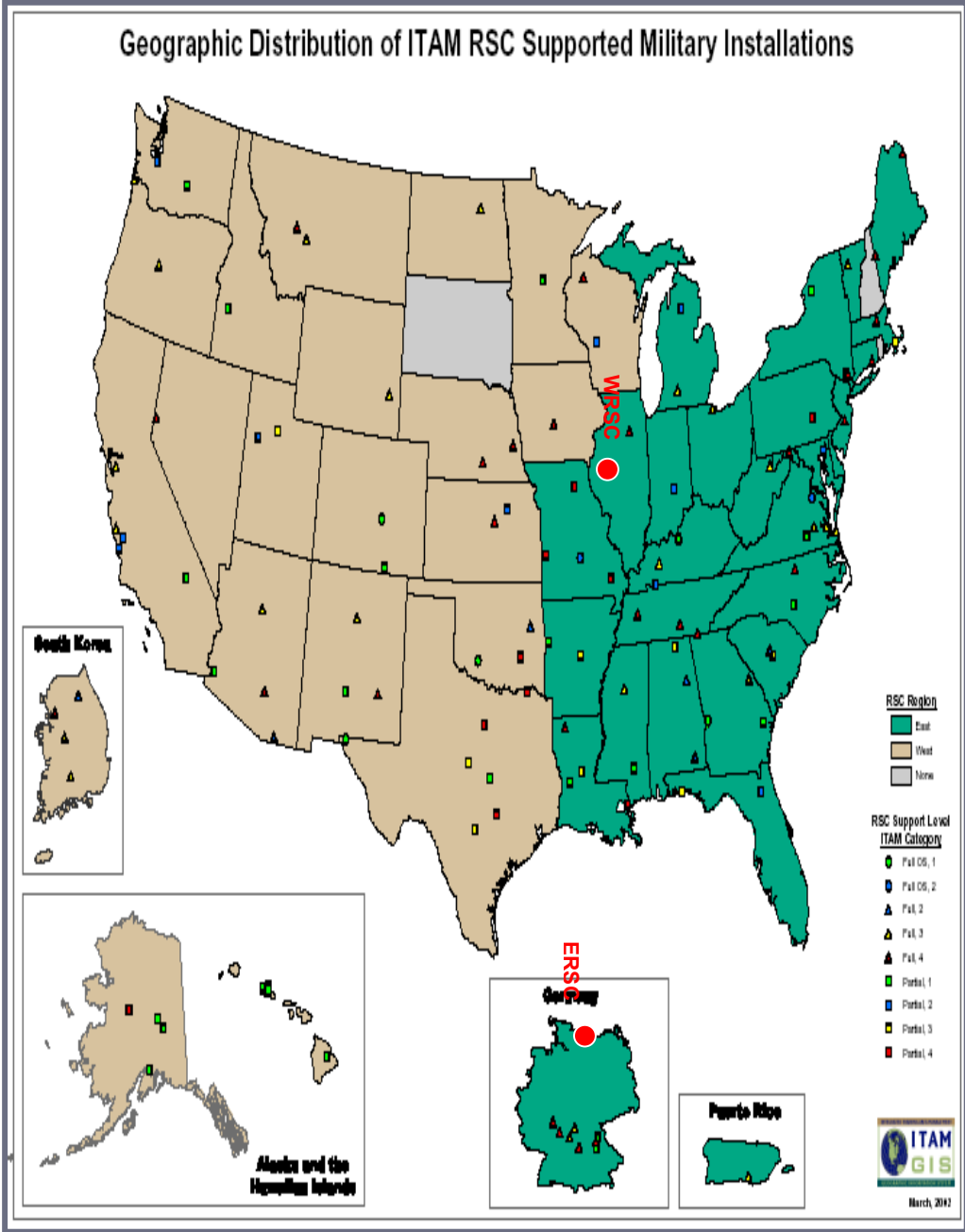

Figure 2: Slope Guide

Another component of the valuable mapping tools that the RSC has helped develop and use in the course of map creation is the ITAM style set. The ITAM style set gives map makers additional flexibility by allowing them to use a universal set of symbols to be used with range related features on all ITAM maps. This allows for training related symbols not normally offered in the normal lexicon of the ERSI symbols. At the current time, the ITAM style set accommodates line, fill and marker symbols. In addition, a user is able to create a MGRS (Military Grid Reference System) 1,000 meter grid to be superimposed on the map. An explanation of MGRS grid use is created using the aforementioned margin tools.
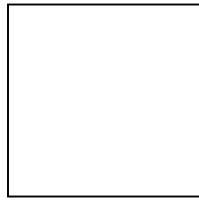

Figure 3: Examples of ITAM Polygon Symbology

The Regional Support Centers work as a cohesive unit to provide range managers, GIS specialists and environmental personnel with the best possible advice and solutions to best serve the men and women training to protect this nation. The structure and function of the RSC provides exhaustive reporting to the Government while ensuring that redundancies in data creation are not done among agencies. RSC staff is involved in all facets of map creation; therefore, they must knowledgeable in all GIS processes, techniques and technologies. As a result, the RSC is a collection of dynamic individuals who serve as the stewards to the Army's data. They are able to access and analyze these data with little notice, whether working on long terms tasks or serving the Army in prompt and competent manner.

Geographic Distribution of ITAM RSC Supported Military Installations

WRSC

ERSC

South Korea

Germany

Puerto Rico

Alaska and the Hawaiian Islands

RSC Region
- East
- West
- None

RSC Support Level
ITAM Category
- Full OS, 1
- Full OS, 2
- Full, 2
- Full, 3
- Full, 4
- Partial, 1
- Partial, 2
- Partial, 3
- Partial, 4

ITAM GIS

March, 2002

Appendix A: Location of ITAM Sites and Regional Support Centers

Appendix B: Sample MIM (Military Installation Map)