

USDA Service Center Agencies

Draft GIS/GPS Training Plan



13 December 2002

Draft Statement on GIS/GPS Training for USDA Service Center Agencies

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Executive Summary

The Service Center Agencies (SCA) GIS Team has coordinated the implementation of an enterprise GIS system over the last 3 years. An enterprise system consists of hardware, software, applications, data, training and support. Progress has been made in each of these areas, but much remains to be done before we can say we have completed our implementation. This plan addresses the training component of the enterprise implementation. This is an ambitious training plan. However, training is a key component of our successful implementation. GIS and GPS technologies are new to many staff in the agencies. GIS and GPS technologies and the software they use are harder to learn than some other software systems. However, the SCA have seen significant productivity gains to date through the introductions of these technologies. This training plan when fully implemented will enable us to achieve additional productivity gains. The tables below summaries the course the training team plans to develop and implement in fiscal years 2003 and 2004.

USDA-SCA Training Courses FY03 and FY04					
Course	Date	Trainees	Location	# of Sessions	Provider
Fundamentals of GIS for SCA Program Staff (1 day)	June 2003 Nat.Conf.	SO - Train the Trainer	State Offices/NHQ	50	Veridian
Understanding SCA Geospatial Data (1/2 day)	March 2003 Nat.Conf.	SO - Train the Trainer	National Workshop	1	NCGC/SCA
Intro to ArcGIS I for SCA (2 Day)	Jun-03	SO - Train the Trainer	NHQ & State Offices	28	NCGC/ESRI
Intro to ArcGIS II (3 Day)	Jan-04	SO - Train the Trainer	ESRI Training Centers	25	ESRI
Intro to ArcIMS (ver. 9.0) (3 Day)	TBD	Development Centers	SCA Development Centers	5	ESRI
SDE Administration for SQL Server (5-day)	Fall 2003	SO IT and GIS	ESRI Training Centers	15	ESRI
ESRI Virtual Campus	Life of Contract	Any SCA Employee.	via Virtual Campus	500	ESRI
Other Courses					
PDA/GPS/GIS Mobile Data Collection and Integration	TBD	SO - Train the Trainer	State Offices/NHQ	50	TBD
SCIMS	TBD	SO - Train the Trainer	State Offices/NHQ	50	TBD
ERDAS	TBD	SO	State Offices/NHQ	TBD	TBD
Geodata Base Development	Feb-03	Development Centers	Fort Collins/ Kansas City	1	ESRI

USDA-SCA GIS Training Budget for 2003/2004 *		Course Dev./ Custom	Training Cost	Number of	ESRI Total	Veridian Total
Course	Customized?	Cost	per Course ***	Courses	Per Course	
FY03						
Fundamentals of GIS for SCA Programs Staff (1 day)	Yes	\$24,000		50	\$2900	\$145,112.00
Understanding SCA Geospatial Data (1/2-day)	Yes	7,500.00	0.00	0	\$7,500.00	
Intro. To ArcGIS 1 for SCA's (2-day) **	Yes	30,000.00	6,775.00	28	\$219,700.00	
Subtotal Course Dev. and Training Costs		37,500.00			\$227,200.00	
National Geospatial Workshop (hotel costs)		60,000.00		1		
Virtual Campus Subscriptions				500	\$20,000.00	
FY 03 Costs ESRI					\$247,200.00	
FY 03 Costs Veridian						\$145,112.00
Total FY 03 Training Costs						\$452,312.00
FY04						
Intro. To ArcGIS 2 (3-day)**	No	0.00	10,165.00	27	\$274,455.00	
Introduction to ArcIMS (ver. 9.0) (3-day)**	No	0.00	7,281.00	2	\$14,562.00	
Total FY 04 Costs					\$289,017.00	
CCE Training Budget						
SDE Administration for SQL Server (5-day)**	No	0.00	19,056.00	15	\$285,840.00	

* -- Intro to ArcGIS 1 for SCA's, Intro to ArcGIS 2, and SDE Admin. for SQL have private class discount on top of GSA and USDA discounts.

** -- Training cost per course includes GSA discount, USDA discount, a 20% private class discount, and \$500 waiver of normal additional instructor travel cost for a two-day class

*** -- cost for maximum number of 12 students for ArcGIS, ArcIMS and SDE classes

Introduction

This document is the result of an effort initiated by Dennis Lytle, ITWG GIS Team Leader in April 2002 to identify the GIS/GPS Training requirements of the three Service Center Agencies. The team members are:

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Christine Clarke, NRCS, Beltsville, MD
Dennis Crow, RD, Washington, D.C
Larry Davis, NRCS, Ft. Worth, CO.
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Mark Plank, RD, Washington, D.C.
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Background

The goal of the GIS Training Team is to identify what specific GIS/GPS and related training is necessary to ensure the success of the ongoing GIS/GPS deployment. We will work with existing agency training organizations to develop the necessary skill sets to take advantage of the new environment, and support program needs. Training needs that cannot be met using internal resources will be obtained from qualified contractors. Some training may be provided in conjunction with other CCE work groups, and all methods of training delivery will be evaluated for effectiveness. By developing a broad and all encompassing training strategy, SCA agencies can begin to define and create the infrastructures to support the effective use and application of geospatial technologies at the local level. In the course of this work it became apparent that there interdependencies and overlap between training requirements of the different ITWG Teams. The most obvious is that between Common Computing Environment, Data Management and GIS.

USDA SCA recently concluded an Enterprise License agreement with ERSI, which will help in the acquisition of GIS software throughout all tiers of SCA. In order for USDA staff to realize the full potential of the software, it is important to provide standardized training at all levels of the USDA hierarchy. With adequate GIS/GPS training, Service Center employees with new CCE hardware and ESRI GIS software will use both to their maximum potential to improve customer service. To be effective, this training must be delivered to the appropriate people at the right time, —and it must be long enough in duration to allow trainees to absorb its lessons.

SCA senior management has supported and encouraged the use of GIS/GPS, and has allocated funding to accomplish the training to ensure the success of GIS/GPS deployment.

Agency GIS and GPS Training To Date

All three SCA agencies have programs to train their staff in the use of GIS and GPS.

FSA

FSA has a similar ongoing program for its staff, in addition to which FSA planned and coordinated the training required for the deployment of GPS. The GPS/GIS cross agency

training effort enabled approximately 250 SCA staff to learn how to use and apply these new tools. Some of the current training FSA topics are listed below:

- CLU Digitizing Training
- CLU Maintenance Training (includes basics of Arcview 3.x, and assorted FSA developed tools/scripts.)
- Digital Compliance Training
- Slide Rectification Training
- Digital Compliance tools for Arcview
- Crop Reporting Tool Training
- Basic Arcview training for National staff (this was on a limited scale and no classes have been held recently.)
- CLU Digitizing Training
- CLU Maintenance Training (includes basics of Arcview 3.x, and assorted FSA developed tools/scripts.)
- Digital Compliance Training
- Slide Rectification Training
- Crop Reporting Tool Training
- Basic Arcview training for National Headquarters staff.

NRCS

NRCS has an ongoing GIS/GPS training effort at the State and National levels. NCGC has trainers certified by ESRI to teach some courses and training facilities located at Fort Worth. The NCGC also provides other GIS training using ESRI staff where necessary. NCGC studies training requirements within the Agency, and provides training at different domestic locations. NCGC maintains a web site listing its training course offerings which is listed in the section titled Links.

RD

RD has an active GIS training program, and provided State Environmental Coordinators two days of GIS training at a conference in August this year. In addition 12 RD State Environmental Coordinators and Engineers have attended ArcGIS I and ArcGISII training classes.

Scope

This effort will result in the acquisition of training requirements that the SCA have, at different levels in their organizations. It will include support staff at headquarters, help desks, program areas, state offices, as well as at FO. This global approach to training will be standardized to ensure the required level of technical proficiency is achieved by SCA staff. The GIS Team has completed the following actions in order to develop this enterprise training plan.

1. Identified the training needs of Service Center Agencies (SCA) including Service Centers, State Offices, Centers and Institutes including Help Desks and National Headquarters.
2. Coordinated with other ITWG Teams to eliminate training redundancy.
3. Developed training curriculums.
4. Identified training delivery methods.
5. Identified USDA and non-USDA training capabilities.

6. Included metrics for measuring training effectiveness.

Assumptions

There are several assumptions that have been made with regard to this training plan.

1. Departmental Senior Leadership will continue to support the SCA GIS/GPS program.
2. State and Regional Leadership will support the use of GIS/GPS, and promote this training effort.
3. Agency State GIS/GPS Coordinators will be actively involved in coordinating national training plans.
4. Supervisors at USDA State and Field offices will allow employees who need training sufficient time to participate.
5. Follow-up training will be provided, along with support services.
6. There will be active participation from Data Management and CCE ITWG teams to provide support for GIS/GPS and ensure that the infrastructure necessary to utilize GIS/GPS is maintained.
7. Training modules will be practical, and designed to meet specific agency work processes, and SCA agencies will provide the work examples necessary for trainees to understand and appreciate the applicability of GIS/GPS technology in their work.
8. Departmental support for the deployment of GIS/GPS software will continue for maintenance and upgrade of GIS/GPS tools and training in out years.
9. Funding for training will not be cut.

Training Needs Assessment

The effort to collect training needs was initiated in May, with each SCA identifying their specific training needs, and the categories of employees who would receive training. The data was compiled and distributed to anyone who expressed an interest in GIS/GPS training. In addition to interviews, agencies were asked to provide detailed data on forms designed to reinforce the information obtained in interviews. This information was solicited without regard to any constraints. The data forms are in Appendix A.

FSA

FSA staff was interviewed to solicit their needs. Two interviews were held with FSA State Office Staff, followed by interviews with Program Staff at Washington DC, and staff at the Kansas City and Washington DC Development Centers. In addition to the interview, KCDC development staff also submitted a training request needs document. These interviews were organized by Shirley Hall.

NRCS

NRCS training data requirements were collected and submitted by Christine Clarke who worked with state staff, NCGC and others to collect the information.

RD

RD training data requirements were developed and submitted by John Distler, Mark Plank and Dennis Crow.,

Agency identified training requirements were entered into a matrix, and validated by the SCA representatives, along with NCGC and APFO. The matrix was distributed to USDA attendees at the ESRI 2002 User Conference, at which the entire USDA GIS community was well represented.

Training Considerations

Some of the many considerations that should be made while deciding how to provide training are presented below.

1. An effective cadre of USDA employee trainers must be developed to meet the follow-up training requirements, and recommend additional training requirements.
2. Training should be synchronized with the delivery of hardware and software, so the trainees could immediately begin to use their new skills. Failure to do this will result in suboptimal use of GIS/GPS tools in the field.
3. Examples of how the new software should be used must be realistic; using the same applications that trainees will use after GIS/GPS is deployed.
4. Previous training efforts have shown that a student body that representing different agencies is less effective than single agency training. This is due to the fact that agencies use specific applications, and it is difficult to hold student's interest without using these agency specific tools and examples.
5. A mix of different delivery methods and training locations must be used.
6. A set of prerequisites must be defined for each training item.
7. Basic computer skills which are a critical prerequisite to using any computer based tool are often missing.
8. Computer Based Training (CBT) is not feasible in FO because of staff and lack of local management support.

Benefits of Training

SCA agencies have used GIS/GPS for some time, but the level of familiarity with the technology varies. Recognizing the advantages of GIS, USDA has concluded an enterprise agreement with ESRI for the acquisition of GIS software, with the intention of deploying it nationwide, at all levels of SCA presence. Trained personnel will be able to take advantage of USDA Geo-databases, developing applications that work faster, and provide better results for our customers. However, without formal training USDA staff will not be capable of exploiting the full range of GIS/GPS capabilities. An additional benefit of training will be to have an educated staff at the Service Center that can educate the USDA customer who wishes to use GIS/GPS in a farming or ranching operation. In the long term this has the potential of saving USDA countless staff hours.

Training Delivery Alternatives

There are many alternatives available to deliver training, and the training curriculum, level of difficulty, potential target audience, effectiveness, and expense should be considered before deciding which is appropriate. Some training alternatives were identified during the interviews and in subsequent exchanges with agency personnel.

1. Computer Based Training (CBT)
Using the computer for training and instruction, CBT programs are called "courseware" and provide interactive training sessions for all disciplines. Using graphics extensively,

CBT was originally introduced on Laserdiscs, then CD-ROMs and, later, online. CBT courseware is typically developed with authoring languages that are designed to create interactive question/answer sessions. There are many sources for CBT and specific courseware can be developed to order, and made to meet specific SCA requirements. This approach was used when delivering CCE computers to the field. While it is difficult to measure the success rate of CBT, anecdotal evidence suggests that unless there is strong management support, it is not an effective method of knowledge transfer. Most Service Center staff do not have or can not take the time to complete these self paced courses.

2. Train the Trainer

Coaching a subset of staff from SCA to make them proficient in an academic discipline or application, and using them to train staff at their respective locations and act as a coach and motivator in their duty station or region. The trainer would be trained to a higher level than those would receive training from the trainer, and have priority access to help desk staff who would respond to any questions according to a strict timeframe. Most of the SCA training delivered to date has been train the trainer training. This method will likely continue.

3. Classroom Training

This approach to training is very effective if the right mix of curriculum and students are identified. Besides being away from work interruptions, this approach allows training staff to equip the training facility with the necessary support facilities to deliver an effective product. This type of training also allows student to make contact with one another and develop peer support groups. It also is the most effective in making sure that the material is understood, because instructors can closely monitor to make sure that the material is understood. So in affect, the course is more customized to the students.

4. Net Meeting Training.

NMT is an effective way to provide support in the crucial after training on-the-job support that is sometimes necessary to assist field staff in applying training to work situations. Net Meeting is a versatile technology that can be used for other support and management functions, besides training. Net Meeting training will be used with a land-line telephone connection for audio connectivity to conserve bandwidth. This type of training is only successful for certain types of materials. NetMeeting was successfully used for the SCA Geospatial Data Management training.

5. Conferences

Conferences are an essential part of developing synergy within and between agencies that use GIS/GPS technologies. It allows the development of personal rapport between GIS/GPS staff, a venue for the exchange of ideas and the discovery of commonalities. It also provides a venue for exchanging ideas, discussing new approaches to solving problems, and results in a better way of doing business. In addition to the regular conference agenda, conferences will include industry participation and a classroom training component at which participants will have the opportunity to learn what the latest GIS/GPS developments.

6. Documentation Distribution
Documentation on GIS/GPS utilization, hardware and software manuals, policies and procedures, and work methodologies should be available at every location where GIS/GPS is used. While some critical technical documentation will be available on paper at each service location, the majority of information will be in electronic format, located via USDA Intranet, and accessible for use 24 hours a day.
7. Specialized Courses
This type of training would apply to development centers and similar organizations within the USDA GIS/GPS community. A small community doing crucial work would typically qualify for this type of training.
8. On Site Training
This training would be delivered when there were a sufficiently large number of trainees at one geographic location. This could be at a development center where a number of trainees are stationed, or at a location like the NCGC or APFO where trainees gather to take advantage of the facilities available.
9. Off Site Training
This training would be delivered when there are a small number of trainees who are geographically dispersed, or when specialized facilities and equipment were needed for conducting the training.
10. Follow-Up Training
This is essential to augment the initial effort, keep the field informed of new developments in GIS/GPS, and training opportunities. An electronic library where staff can access USDA GIS/GPS FAQs, a knowledge base, and relevant documents will be an essential part of this activity. The site will be maintained by national headquarters staff.
11. Virtual Campus
ESRI maintains an extensive e-learning capability. A link to the ESRI training site is provided in Appendix C. The courses offered are typically those to teach basic GIS technology, but geared toward the use of ESRI software. The critical success factor in this type of training delivery method is the personal motivation of the student. Interviewees did not rank this method of delivery highly. Staff had to do this on their own time, since if it were done at work there were too many interruptions.
12. Presentations
These are essentially to present the benefits of GIS/GPS to management and should be done on a regular basis. Included in the presentations will be succinct summaries of how the deployment of GIS/GPS helped meet Departmental outcomes in the USDA Strategic plan.

13. Continuing Education

The training plan provides for periodic refresher courses as determined by deployment of new technology, or as determined by the agencies. These may be provided by traditional educational institutions, e-learning, and other certified sources.

14. New Employee Training and Orientation

The orientation program for new employees in any SCA will be expanded to include a GIS/GPS component. This will be agency appropriate training designed to ensure that new employees will become productive members of the staff immediately.

Training Objectives

The deployment of GIS and GPS on a Service Center wide scale has created training requirements throughout the organization. Candidates for training have been identified at national headquarters, state, and county levels. The inclusion of National Leadership in this training program is to generate an appreciation of what GIS and GPS is, and the possibilities made available by the technology when SCA staff is skilled in its use. In addition, partners who work with SCA must attain a sufficient level of proficiency with GIS and GPS tools to adapt to USDA concepts and methodologies that are evolving. The following are the different levels of candidates which have been identified.

National Level

1. Agency Political Leadership

This training will be designed to familiarize them with GIS/GPS and the benefits to senior management in the acquisition of decision support data. Senior management sets the tone, and their support is critical to the success of the GIS/GPS deployment effort.

2. Agency National Program Leaders and Headquarters staff

This training will be designed to create an understanding of the power of GIS/GPS and the benefits to their specific programs to reduce workload and improve customer service. The anticipated benefits to the GIS/GPS program are continued financial support by those who control budgets.

3. Help Desk Staff

Help Desk staff are crucial to the success of this effort, and will be trained to assist users, either by resolving problems or identifying the resources necessary to resolve them and forwarding problems for resolution. They will also be trained to maintain a knowledge base accessible to users via the Intranet.

4. National Center and Institute Staff
NRCS Center and Institute staff have unique GIS and GPS needs that are related to their specific functions. Most staff require a basic understanding of GIS/GPS. Others have and will continue to develop high level skills in the use of these technologies. The basic understanding of GIS and GPS Training for these staff can be accomplished with State Staff Training. High level training can be accomplished at vendor supplied training sessions.
5. SCA Application Developers at NHQ, Kansas City, St. Louis and Fort Collins.
Application developers will learn the most applicable development languages and techniques develop applications according to the GIS Strategy which calls for cross agency development standards, predefined deployment schedules, and common criteria for acceptance testing. Training for this group is high level programming for the development of agency applications that use GIS and GPS.
6. NCGC and APFO Staff
This core group of experts in GIS/GPS technology will help in resolving ongoing GIS/GPS issues, and will also be able to provide the technical skills needed for making strategic and policy decisions for the Department. The staffs include personnel who are certified to teach ESRI courses, and it is expected that this role will be expanded with the mass adoption of ESRI GIS technology. NCGC and APFO will continue to be the repositories of baseline data used by the SCA, and their position will continue to evolve along with the technical infrastructure. Their staffs also function as the highest escalation point within USDA, and are authorized to forward troubles to ESRI and other contractors with whom they have established contractual relationships. They will continue to provide in-house training at USDA locations, as well as at their classroom facilities which are equipped to accommodate up to 20 students simultaneously.

State Level

1. State Leadership and State Program Leadership
This class of trainees will understand that GIS/GPS will support their programs with no disruption and result in an integrated staff with standardized skills that will reduce workload and deliver better service to their customers.
2. State and Regional GIS/GPS Staff, State Office Staff ,and State Geo-Administrators
This class of trainees are the core support for implementing these technologies in the SCA. They will have a high level of GIS/GPS skill. The new tools that will be deployed as a result of this effort, will enable them to help state and field staff to exploit the technology to the maximum. They will receive extensive training in data management and security administration to better understand and carry out their roles and responsibilities.
3. State IT Staff and State CST Coordinators
This class of trainees will understand the close interrelationship between IT and GIS/GPS, and the IT functions necessary to ensure the successful deployment and

utilization of GIS/GPS technology, and to better understand and carry out their roles and responsibilities.

Service Center Staff

In most instances Service Center Staff will be trained by State GIS/GPS staff. They will use the training material developed through this effort. These materials may be customized to their unique requirements. The State GIS/GPS staff may also acquire training from other sources for training Service Center staff. Some Service Center staff have and may continue to receive training from university and other vendors.

1. Local GeoData Administrators, FSA Local GeoData Administrators
This class of trainees will have a common understanding of the roles and responsibilities at the local level, and an ability to use the tools to carry them out. Training will be provided by State IT and GIS/GPS staff
2. FSA Local GeoData Editors, FSA Local CLU Data Editors, FSA Disaster Events Editors and FSA Staff Users Group
These agency specific staff trainees will ensure that FSA specific functions are carried out to ensure the continuity of programs in the new work environment, and to better understand and carry out their roles and responsibilities. Training will be provided by State programs and IT staff.
3. NRCS Local GeoData Editors, RD Local GeoData Editors, CD Local GeoData Editors
This agency specific trainee class will ensure the continuity of agency and partner programs in the new work environment, and to better understand and carry out their roles and responsibilities. Training will be provided by State GIS/GPS and IT staffs.

Performance Measures

The following measurements will be used to determine the success of this project:

Objectives	Performance Measures
Provide GIS training to the pilot sites so the Service Center staff is well trained in the use and application of GIS.	Ensure that 90% of pilot site Service Center employees who use GIS are proficient within 6 months of training.
Select most cost-effective training alternatives (e.g., train the trainer, Web-based training, distance learning, contractor, develop course and allow states to determine training methods, etc.).	Reduce cost of providing GIS training by 75% over traditional training methods.
Identify improvements to the Service Center business processes that use GIS information.	Reduce the amount of time it takes Service Center staff to perform GIS-related business processes by 25% (e.g., measuring land information [area, linear distance, etc.]).
Develop a cost-effective GIS training and support plan for national implementation.	Improve the Service Center staff's ability to effectively use GIS by 40%.
Provide improved service to Service Center customers through the use of GIS (e.g., reduction in waiting time before the customer receives their final product).	Reduce the amount of time the customer must spend waiting in the Service Center for GIS related products by 25% (this is dependent on what service is being requested by the customer).
Reduce the amount of time for the Service Centers to provide the customer with services requested.	Reduce the amount of time a customer has to wait for a revised map by 25%.
Increase the accuracy of the data provided to the customer.	Increase the accuracy of the data provided to the customer by 65%.
Provide the customer with maps that have improved quality and accuracy.	Improve the quality and accuracy of maps by 80% (measured through customer survey that has criteria for measuring improvement in quality and accuracy).

SCA GIS/GPS Training Courses

This section documents the final list of cross agency GIS/GPS training that are the highest priority at this time. The team realizes that this list of training is not all-encompassing; they were guided by fiscal and scheduling constraints.

1. Fundamentals of GIS for SCA Program Staff

Objective: This training is intended to give participants an overview of GIS. The primary goal is to provide an appreciation of GIS technology, what it is, and how it can be used. Trainees will be exposed to the basic principles of geography and cartography as they apply to GIS. Trainees will be introduced to the applications of GIS technology in agriculture and specifically in the field operations of the SCA. This is a survey course intended to provide an in-depth appreciation for what GIS is and how it can be applied.
SCA Contact - Shirley Hall

- a. Suggested Prerequisites: None. A recommended reading list will be given to students who register for this course. Students will also be given a list of URLs that will assist them in gaining a rudimentary knowledge of GIS.
- b. Who will be trained: HQ Staff, State Office, Program Managers, Program Specialists, and others who want a basic introduction to GIS. Some flexibility for state specific situations regarding who will attend this course.
- c. Course Content: Fundamentals of GIS, using examples of Agency applications, List and examples using Agency data.
- d. Who will develop the course: Veridian Inc working with SCA staff using SCA materials.
- e. Method: 1 day of Classroom/Seminars, using lectures and power point presentations, to demonstrate how GIS is used in the SCA context. The course will not include any hands-on activities.
- f. Enrollment: Up to 25 participants per class.
- g. Training Materials: Handouts, Recommended reading list, FSA and NCGC materials.
- h. Who will do the training: The training team will consist of contractors and SCA staff. Contractors will conduct the training and SCA staff will address any agency specific questions.
- i. Follow up: State GIS Teams will train the field office staff.
- j. Where will the training be delivered: 4 National Headquarters sessions¹, 25 sessions at State Offices. Sessions at State Offices may include staff from multiple states.
- k. Schedule: March 2003
- l. Cost: TBD

2. Understanding Service Center Agency GIS Data

Trainees will gain an understanding of GIS data, including, soil survey, digital imagery, common land unit, census (demographic data), topography, elevation, hydrologic units (watershed boundaries), hydrography (streams), transportation (roads),

¹ For the purposes of this document, National Headquarters might include locations in the Washington, D.C. metro area, St. Louis, MO., Kansas City, KS., and Ft. Collins, CO.

Public Land Survey, administrative boundaries, national wetland inventory, annual mean precipitation, and flood hazard areas. Metadata standards for these data types will be discussed. This training will allow users to better understand the value of GIS data as it is used by Service Center Agencies.

SCA Contact: Boris de Souza

- a. Suggested Prerequisites: Introduction to GIS
 - b. Who will be trained: HQ Staff, State Office, Program Managers, Program Specialists, and others who want a basic introduction to GIS data. State office Staff will be trained to prepare them to train field office staff.
 - c. Course Content: This course will be designed using teaching modules. In follow up sessions, states could add, delete, or alter individuals for classes in their regions.
 - d. Who will develop the course: Agency Staff working with a contractor. While developing the course material, the development team will utilize recourses and material available at NCGC and institutions like universities that have worked with SCA and might have appropriate existing material.
 - e. Method: CD-ROM, One half day at a national workshop Classroom/Seminar, using lectures and power point presentations, One half day at the National GIS Workshop, in conjunction with other appropriate GIS courses.
 - f. Enrollment: TBD
 - g. Training Material: Each student will be given a set of material including all class presentations, examples, data, etc., as well as hard copies and other necessary teaching resources that will be used in follow up activities.
 - h. Who will do the training: This training will be conducted by SCA staff, including NCGC and other national office staff.
 - i. Follow up: State GIS Teams will train the field office staff using teaching modules.
 - j. Where will the training be delivered: National Workshop – location TBD
National Headquarters two ½ day seminars – Location TBD
State Office selected locations
 - k. Schedule: TBD
 - l. Cost: TBD
3. Introduction to ArcGIS I for SCA
- This training is intended for those who are new to the use of GIS tools, but are familiar with the Microsoft Windows operating system. It is intended to provide trainees with the skills necessary to use ArcMap, ArcCatalog, and ArcToolbox, and to explore how these applications work together. They will gain foundation level skills in the use of ArcView, ArcEditor, or ArcInfo. Trainees will learn how to work with georeferenced spatial data, and to manipulate tabular data, query a GIS database, and present data clearly and efficiently using maps and charts.
- SCA Contact: Boris de Souza
- a. Prerequisites: Understanding GIS or previous ArcView3.x experience.
 - b. Who will be trained: 25 Sessions for State Office Staff. The staff to be trained will include State GIS team members, and State Office specialists. Center and Institute.

Staff will be trained at a separate session. Help Desk staff will be trained at a separate session using a curriculum designed for them. 2 Sessions will be held at ESRI facilities at Vienna, VA for headquarters staff.

- c. Course Content: This course will be the Standard COTS ESRI Course customized for Service center agencies.
- d. Who will develop the course: ESRI with SCA input.
- e. Method: Classroom Training including lectures, demos, exercises – using exercise examples prepared specifically for Service Center Agencies.
- f. Enrolment: 12 Students per session, representing 2 employees per agency per state.
- g. Training Material: The material used for this course will be an adaptation of the Standard ESRI ArcView3.x COTS. The course will use data and examples developed by ESRI for the ArcView3.x course previously developed by ESRI for the SCA, and using SCA data.
- h. Who will do the training: ESRI staff, except at Ft. Worth, where NCGC staff will do the training..
- i. Follow up: TBD.
- j. Where will the training be delivered

This course will be conducted at ESRI Training Centers located nationwide. The list below shows which ESRI training centers will be used by what SCA state staff.

1. Denver/Broomfield, - CO, WY, KS, AZ
2. Charlotte - NC, PR, SC, FL, GA, AL, TN, KY
3. Vienna – VA, WVA, MD, OH, PA, DE
4. Boston - MA, ME, VT, NH, RI, CT, NY, NJ
5. St. Louis - MO, IL, IA, IN
6. Olympia - OR, WA, AK, CA
7. Minneapolis - MN, WI, ND, SD, MI, NE
8. Ft. Worth - OK, TX, LA, AR, MS, NM (NRCS)
9. Salt Lake City - UT, ID, NV, MT (FSA)
10. Honolulu - HI, Guam (NRCS, FSA)

- k. Schedule: Course material developed by ESRI by June 03, Training starts August 2003.
- l. Cost : TBD

4. Intro to ArcGIS II

A more advanced course will be provided for staff that has already been exposed to ArcGIS. Trainees will focus on spatial analysis, automation of spatial and attribute data, editing, and advanced options for cartographic display and reports. Hands on exercises will require trainees to resolve situations typical of those they will encounter in the course of their work. They will also complete an analysis project learned in this class.

SCA Contact: Boris de Souza

- a. Prerequisites: Experience in using ArcGIS.
- b. Who will be trained: 25 Sessions for State Office Staff. The staff to be trained will include State GIS team members, and State Office specialists. Center and Institute. Staff will be trained at a separate session. Help Desk staff will be trained at a separate session using a curriculum designed for them. 1 to 2 Sessions will be held at ESRI facilities at Vienna, VA for headquarters staff.
- c. Course Content: This course will be the Standard COTS ESRI Course, using SCA examples..
- d. Who will develop the course: ESRI with SCA input.
- e. Method: Classroom Training including lectures, demos, exercises.
- f. Enrolment: 12 Students per session, representing 2 employees per agency per state.
- g. Training Material: The material used for this course will be the Standard ESRI COTS.
- h. Who will do the training: ESRI staff and NCGC at Ft.Worth.
- i. Follow up: TBD
- j. Where will the training be delivered
This course will be conducted at ESRI Training Centers located nationwide. The list below shows which ESRI training centers will be used by what SCA state staff:
 - 1. Denver/Broomfield, - CO, WY, KS, AZ
 - 2. Charlotte - NC, PR, SC, FL, GA, AL, TN, KY
 - 3. Vienna – VA, WVA, MD, OH, PA, DE
 - 4. Boston - MA, ME, VT, NH, RI, CT, NY, NJ
 - 5. St. Louis - MO, IL, IA, IN
 - 6. Olympia - OR, WA, AK, CA
 - 7. Minneapolis - MN, WI, ND, SD, MI, NE
 - 8. Ft. Worth - OK, TX, LA, AR, MS, NM (NRCS)
 - 9. Salt Lake City - UT, ID, NV, MT (FSA)
 - 10. Honolulu - HI, Guam (NRCS, FSA)
- k. Schedule: January 2004
- l. Cost: TBD

5. Intro to ArcIMS (ver. 9.0)

A more advanced course will be provided for staff that has already been exposed to ArcGIS. Trainees will focus on spatial analysis, automation of spatial and attribute data, editing, and advanced options for cartographic display and reports. Hands on exercises will require trainees to resolve situations typical of those they will encounter in the course of their work. They will also complete an analysis project learned in this class.

SCA Contact: Boris de Souza

6. Intro to ArcGIS II

A more advanced course will be provided for staff that has already been exposed to ArcGIS. Trainees will focus on spatial analysis, automation of spatial and attribute data, editing, and advanced options for cartographic display and reports. Hands on exercises will require trainees to resolve situations typical of those they will encounter in the course of their work. They will also complete an analysis project learned in this class.

SCA Contact: Boris de Souza

7. Introduction GPS and Digital Cameras

This training will be delivered as required by the SCA, and is dependent on the procurement of new, or deployment of existing tools.

8. Advanced GPS and Mobile Data Collection

This course will offer participants in-depth instruction in using mobile data collection devices and GPS to collect accurate feature location data and incorporate that data to create new or update existing GIS information in files on a server or workstation. Participants will learn the basics to prepare data to be used on PDA devices by field personnel. Participants will become more productive GIS users by learning to create, edit, and manipulate GIS files on PDA devices, using the correct map projections and scripts. The tools used will be COTS as well as any applicable Agency developed software. Realistic class projects and hands-on exercises will be used to increase student skills.

SCA Contact: Boris de Souza

- a. Prerequisites: TBD
- b. Who will be trained: TBD
- c. Course Content: TBD
- d. Who will develop the course: Agencies will develop material specific to their applications.
- e. Method: TBD
- f. Enrollment: TBD
- g. Training Material: TBD
- h. Who will do the training: TBD
- i. Follow up: TBD
- j. Where will the training be delivered: TBD
- k. Schedule: This course is currently piloting and will revisit in summer.
- l. Cost; TBD

9. Follow up to GPS training.

This GPS/Digital Camera course revisits requirements and need, necessitated by the next round of GPS purchases scheduled for April 2003

10. Service Center Information Management Systems (SCIMS)

This training will offer participants an in-depth understanding of the SCIMS application and its uses. On completion of this course, State Office staff will be able to train Service center staff, to The specific content of this course will be designed by the people who developed SCIMS. SCIMS includes RD, FSA, & NRCS customer information and their associated geospatial information including point locations and farm field boundaries.

SCA Contact: Shirley Hall

- a. Prerequisites: ArcGIS I
- b. Who will be trained: State program staff (Trainer the Trainer) FSA NRCS & RD
- c. Course Content: How to use SCIMS for customer records mgt.
- d. Who will develop the course: FSA RD NRCS
- e. Method: Classroom – Train the trainer
- f. Enrollment: TBD
- g. Training Material: TBD
- h. Who will do the training: FSA RD NRCS staff
- i. Follow up; State Offices will train field office staff
- j. Where will the training be delivered: State Offices
- k. Schedule: Oct-Nov 2003
- l. Cost: TBD

11. ArcIMS (ArcGIS ver.9.0)

Trainees will be introduced to an integrated approach to creating and maintaining geography based web sites, and how users can access and interact with the mapping and GIS data stored on them. Trainees will be able to build, utilize, and customize Internet mapping applications and serve them on the net using ArcIMS.

SCA Contact: Boris de Souza

- a. Prerequisites: TBD
- b. Who will be trained: National Headquarters, Centers, and Institutes staff.
- c. Course Content: Standard ESRI COTS course
- d. Who will develop the course: ESRI
- e. Method: Classroom
- f. Enrollment: TBD
- g. Training Material: TBD
- h. Who will do the training: ESRI
- i. Follow up: None
- j. Where will the training be delivered: NCGS, APFO, or ITC.
- k. Schedule: Fall 2003
- l. Cost: TBD

12. ArcSDE/SQL

This training will prepare database administrators for implementing ArcSDE. Trainees will learn how to configure SQL Server to support ArcSDE, install and configure ArcSDE, load vector and raster data, monitor and optimize queries, and manage a multiversioned geodatabase. Trainees will learn effective methods for planning and managing memory, data I/O, and how to reallocate server resources as database usage changes. Trainees will understand how ArcSDE software interacts with SQL Server, and learn solid strategies for maintaining an enterprise GIS database.

SCA Contact: Scott Snover.

Vendor Contact: John Young, ESRI.

- a. Prerequisites: Standard Microsoft introduction to SQL server course.

- b. Who will be trained: State Office IT and selected Geodata Administrators.
- c. Course Content: 5 day course
- d. Who will develop the course: ESRI, with FSA input on SCIMS Geodata model.
- e. Method: Classroom
- f. Enrollment: 12 per class 2 to 4 people per state and 10 to 15 classes
- g. Training Material: ESRI/SCA Training material
- h. Who will do the training: ESRI
- i. Follow up: None
- j. Where will the training be delivered: This course will be conducted at ESRI Training Centers located nationwide. The list below shows a list of states and the ESRI training centers at which SCA staffs from those states will be trained:
 - 1. Denver/Broomfield, - CO, WY, KS, AZ
 - 2. Charlotte - NC, PR, SC, FL, GA, AL, TN, KY
 - 3. Vienna – VA, WVA, MD, OH, PA, DE
 - 4. Boston - MA, ME, VT, NH, RI, CT, NY, NJ
 - 5. St. Louis - MO, IL, IA, IN
 - 6. Olympia - OR, WA, AK, CA
 - 7. Minneapolis - MN, WI, ND, SD, MI, NE
 - 8. Ft. Worth - OK, TX, LA, AR, MS, NM (NRCS)
 - 9. Salt Lake City - UT, ID, NV, MT (FSA)
 - 10. Honolulu - HI, Guam (NRCS, FSA)
- k. Schedule: March/June 2003 SQL training. – SDE training 2 weeks after (CCE) SQL Server Database Administrator (DBA) training completed
- l. Cost: TBD

13. ERDAS

Trainees will be introduced to the operations of the latest IMAGINE Essentials and IMAGINE Advantage software, as well as some basic concepts of remote sensing and GIS, providing a foundation in image processing and GIS. Classification, orthorectification and image mosaicking will also be presented. Trainees will be taught to do the following using ERDAS software:

Navigate around the IMAGINE Essentials and IMAGINE Advantage interfaces

Import digital data into the IMAGINE Environment

Use the IMAGINE Viewer to display imagery, vector files and other data sets

Create, edit and integrate ESRI Shape files

Perform spatial and spectral enhancements on multispectral imagery

Process multiple files using Batch Wizards

Create image libraries and catalogs

Assign geographical coordinates to an image to create geometrically corrected and orthorectified imagery

Mosaic several images to produce one seamless output

Drape images in a 3-D perspective viewer

Perform a basic land cover classification using a multispectral image

Improve a classification using the ERDAS IMAGINE Knowledge Classifier
Perform simple raster GIS functions
Create print-ready maps with the Map Composer
SCA

- a. Prerequisites: TBD
- b. Who will be trained: TBD
- c. Course Content: TBD
- d. Who will develop the course: TBD
- e. Method: TBD
- f. Who will do the training: TBD
- g. Where will the training be delivered: TBD
- h. Cost: TBD

14. Virtual Campus Courses

ESRI has several courses delivered via the Internet, and SCA will purchase 500 licenses to utilize this capability. The course offerings cover many aspects of GIS technology and GIS applications, and will allow GIS staff to take advantage of this capability when they require additional training. Maintaining SCA workforce skills of the unique group of individuals with a variety of learning styles and needs in SCA, is a challenge, and this facility will ensure that GIS courses are available to cover short and long term training requirements.

15. National Workshop late-March 2003

Monday

Pre-workshop

- a. Fundamentals of GIS – ESRI (FSA/Veridian)

Tuesday AM

General Session (Dennis Lytle)

- a. SCA GIS Roadmap ½ day
- b. Architecture – software, hardware, etc...
- c. Data Development and Acquisition Timelines
 - i. CLU
 - ii. Soil Survey
 - iii. Flood Zones
 - iv. PLSS
 - v. Transportation and Geocoding Services
- d. Application Development Timelines
- e. Geodata Warehouse and Data Marts
- f. ESRI Product Development – 1 hrs.

Tuesday PM

Breakouts (200 people – 25 per group)

- g. Understanding SCA Geospatial Information – 3.5hrs (Tommie Parham)
 - i. Soil Survey

- ii. Common Land Unit
- iii. Demographic
- iv. Orthoimagery
- v. Flood Zones
- vi. Other
- h. Data Collection Standards and Guidelines – 2 hrs (Shirley Hall/Chris Clarke)
 - i. GPS
 - ii. Digitizing
 - iii. QA and QC
- i. Managing Geospatial data in Service Centers – 2 hrs (Kathy Green / Carol Ernst)
 - i. Metadata
 - ii. Managing Photos
 - iii. Tracking Data on Servers
 - iv. Developing a State GIS data plan/strategy for state and local data

Wednesday AM

Demos Breakout – 3 hrs (GIS Team)

ArcView, ArcGIS Tips and Tricks

Resource Data Gateway

Agency Applications

PDA's, GPS and Mobile Data Collection

General Session Wrap-up Session 1 hour

Agency Specific Breakout ½ day

Location: TBD

Course	Date	Trainees	Location	# of Sessions	Provider
Fundamentals of GIS for Program Staff (1 day)	March 2003 Nat.Conf.	SO - Train the Trainer	State Offices/NHQ	50	Veridian
Understanding SCA Geospatial Data (1/2 day)	March 2003 Nat.Conf.	SO - Train the Trainer	National Workshop	1	NCGC/SCA
Intro to ArcGIS I for SCA (2 Day)	3-Jun	SO - Train the Trainer	NHQ & State Offices	28	NCGC/ESRI
Intro to ArcGIS II (3 Day)	4-Jan	SO - Train the Trainer	ESRI Training Centers	25	ESRI
Intro to ArcIMS (ver. 9.0) (3 Day)	TBD	Development Centers	SCA Development Centers	5	ESRI
SDE Administration for SQL Server (5-day)	Fall 2003	SO IT and GIS	ESRI Training Centers	15	ESRI
ESRI Virtual Campus	Life of Contract	Any SCA Employee.	via Virtual Campus	500	ESRI
Other Courses ???*****	*****			/****/	*****
PDA/GPS/GIS Mobile Data Collection and Integration	TBD	SO - Train the Trainer	State Offices/NHQ	50	TBD
SCIMS	TBD	SO - Train the Trainer	State Offices/NHQ	50	TBD
ERDAS	TBD	SO	State Offices/NHQ	TBD	TBD
Geodata Base Development	3-Feb	Development Centers	Fort Collins/ Kansas City	1	ESRI

Table 1. USDA-SCA Training Courses and Schedule for FY03 and FY04

USDA-SCA GIS Training Budget for 2003/2004 *		Course Dev./ Custom	Training Cost	Number of	ESRI Total	Veridan Total
Course	Customized?	Cost	per Course ***	Courses	Per Course	
FY03						
Fundamentals of GIS for Programs Staff (1 day)	Yes	\$23,400		50	\$2900	\$145,112.00
Understanding SCA Geospatial Data (1/2-day)	Yes	7,500.00	0.00	0	\$7,500.00	
Intro. To ArcGIS 1 for SCA's (2-day) **	Yes	30,000.00	6,775.00	28	\$219,700.00	
Subtotal Course Dev. and Training Costs		37,500.00			\$227,200.00	
National Geospatial Workshop (hotel costs)		60,000.00		1		
Virtual Campus Subscriptions				500	\$20,000.00	
FY 03 Costs ESRI					\$247,200.00	
FY 03 Costs Veridian						\$145,112.00
Total FY 03 Training Costs						\$452,312.00
FY04						
Intro. To ArcGIS 2 (3-day)**	No	0.00	10,165.00	27	\$274,455.00	
Introduction to ArcIMS (ver. 9.0) (3-day)**	No	0.00	7,281.00	2	\$14,562.00	
Total FY 04 Costs					\$289,017.00	
CCE Training Budget						
SDE Administration for SQL Server (5-day)**	No	0.00	19,056.00	15	\$285,840.00	

Table 2. USDA-SCA Training Budget for 2003/2004

* -- Intro to ArcGIS 1 for SCA's, Intro to ArcGIS 2, and SDE Admin. for SQL have private class discount on top of GSA and USDA discounts.

** -- Training cost per course includes GSA discount, USDA discount, a 20% private class discount, and \$500 waiver of normal additional instructor travel cost for a two-day class

*** -- cost for maximum number of 12 students for ArcGIS, ArcIMS and SDE classes

Course	SCA Contact	Provider
Fundamentals of GIS for Program Staff	Shirley Hall	Veridian
Understanding SCA Geospatial Data	Tommie Parham	NCGC/SCA
Intro to ArcGIS I for SCA	Tommie Parham	NCGC/ESRI
Intro to ArcGIS II	Tommie Parham	ESRI
Intro to ArcIMS (ver. 9.0)	Boris de Souza	ESRI
SDE Administration for SQL Server	Scott Snover	ESRI
ESRI Virtual Campus	Boris de Souza	ESRI
Other Courses ???*****	*****	*****
PDA/GPS/GIS Mobile Data Collection and Integration	Tommie Parham	TBD
SCIMS	Shirley Hall/Jim Heald	TBD
ERDAS	Boris de Souza	TBD
Geodata Base Development	Boris de Souza	ESRI

Table 3. USDA-SCA Course Points of Contact

GIS Training Team Issues, Recommendations and Follow-up

1. How can issues like “basic computer training” that are constantly raised, yet not “trainable” be handled?
2. Who will be trained and what are the criteria for trainee selection?
3. Is the set of training courses adequate to meet immediate and long-term needs?
4. Identify a common dataset to be used for training. This should include agency specific training examples, examples that are common to all agencies.
5. Where will documentation be housed on the web?
6. Who will be responsible for update and maintenance of the reference material?
7. What changes if any will be required at the Help Desk?
8. What training sources are available in-house and do they meet our selection criteria?
9. How will Data Management and CCE teams coordinate their training with GIS Training?
10. What are the criteria for direct and support training activities as central or agency funded?
11. How will necessary training follow-up activities be categorized for funding purposes?
12. What mechanism will be used to track fund expenditure?
13. What mechanism will be used to track employee training activity and final disposition?
14. What will be the performance metrics used to judge the success of this effort?

GIS Training Team Recommendations

1. Recognize the many commonalities and dependencies in training that cut across team areas of responsibility and that coordination across teams is essential for effective training.
2. Establish a web SCA Training presence on the USDA SCA Intranet where information on training can be obtained. This should include course material, examples, best practices, and other relevant information.
3. Identify the long term training goals that will meet USDA SCA’s Strategic Plan.
4. Establish a funding stream to ensure that training is assured as the program transits between deployments to operational phase.
5. Create a training plan for the transition from the deployment to operational phase.
6. Consolidate and coordinate all GIS and related training activities to obtain the best return on the training expenditures.
7. Establish a method of prioritizing follow-up activities and tracking their progress.
8. Establish a method of consolidating SCA staff training histories.
9. Establish a method of tracking overall training expenditures.

GIS Training Team Follow-Up Activities

To ensure that the USDA GIS user base is kept up to date on developments in the technology, and to ensure that training needs are identified early, several follow up activities will be initiated according to a predetermined schedule. The following list is random list of activities and not arranged according to priority.

1. Establish an Intranet GIS web presence that includes a knowledge base, FAQs and links to appropriate GIS informational sites external to USDA.

2. Create an authoritative source for all USDA GIS information, including the current version of all documentation used in the field.
3. Initiate periodic user surveys to ascertain user satisfaction of GIS support and operational processes.
4. Validate business processes.
5. Work with the applications development community to ensure that existing standards and processes meet their requirements.
6. Maintain a web presence external to USDA to let our customer base know what we do and how they can take advantage of it.

URL Links to Training

Hyper links to web pages of interest.

1. NRCS NCGC Training URL: http://www.nedc.nrcs.usda.gov/courses/course_listing.htm
2. FSA Training URL: <http://dc.ffasinet.usda.gov/fsagis/default.htm>
3. ESRI Instructor Led Courses URL: <http://www.esri.com/training/training.html>
4. ESRI Virtual Campus URL: <http://campus.esri.com/>