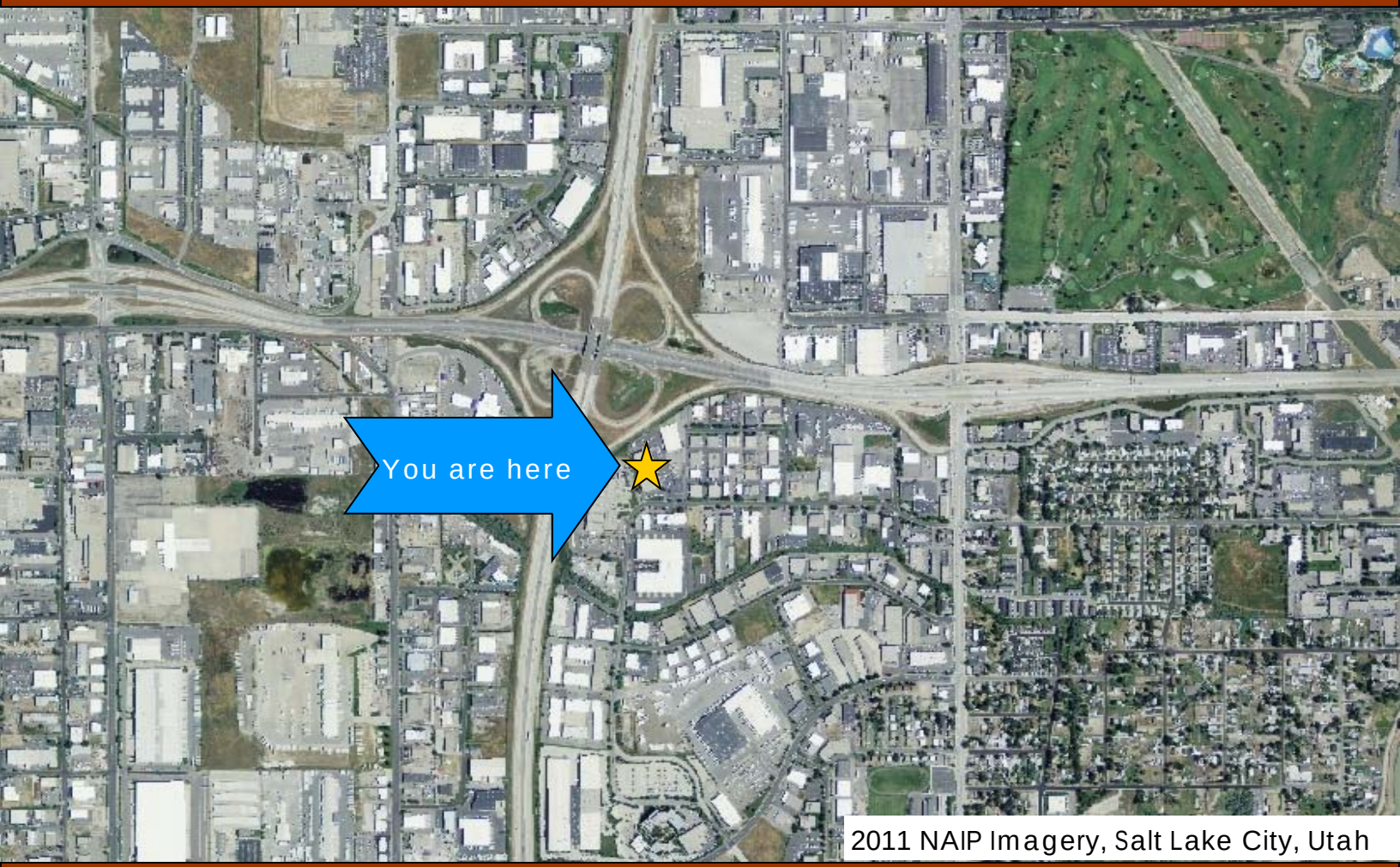
Aerial Photography Field Office



2011 NAIP Imagery, Salt Lake City, Utah

USDA

FSA
FARM SERVICE AGENCY

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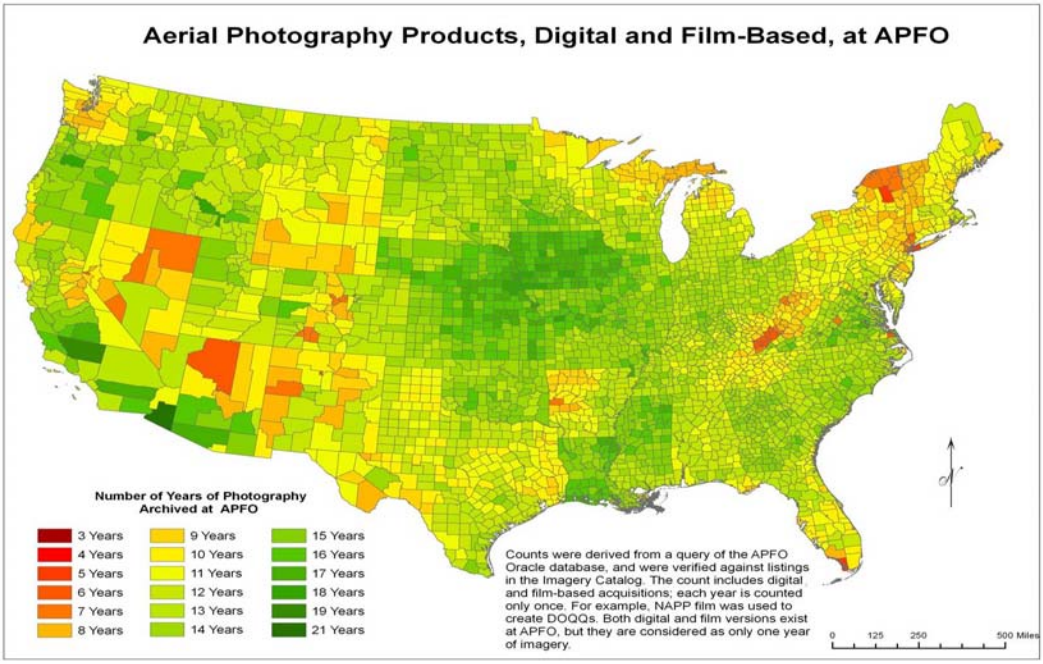
Agriculture is a vital sector of the U.S. economy. Every American benefits from a strong U.S. agricultural industry that provides the abundant food and fiber supply necessary to sustain a stable and prosperous country. The Farm Service Agency (FSA) of the U.S. Department of Agriculture (USDA) plays a critical role in maintain that strength. The Aerial Photography Field Office (APFO) supports the missions of the USDA and the FSA through various aerial imagery acquisitions and analysis programs.

One of the most successful agriculture information tools is the mass application of aerial photography. Pioneered in 1935 using hot air balloons, the original units combined two synchronized cameras, and each camera had five 6" lenses and took photos from 23,000 feet. Each photo captures 225 square miles. 75 years later APFO is using various types of cameras on contracted aircraft to image 1/3 of the United States agricultural lands annually and starting in 2013 will make use of cameras on satellites 438 miles above the earth.

Through decades of development, USDA now acquires imagery with ground resolution at or below 1 meter. The uses for this imagery is as diverse as are the formats that APFO collects and produces. The USDA's authoritative imagery library, which is housed in Salt Lake City Utah, is utilized by the public as well as several government agencies at various levels. USDA imagery is used as a base layer for many purposes such as land boundaries, risk management, disaster area identification and many commercial applications. APFO subject matter expertise in Imagery Production, Quality Assurance and Geospatial Support Services are sought after and used by numerous agencies both within and outside the USDA. This underscores APFO's commitment to support the American Farmer and Rancher with relevant and up to date services while it also supports the USDA's Strategic Goals of supporting productive farms and ranches, supporting secure and affordable foods and fiber and conserving natural resources and enhancing the environment.

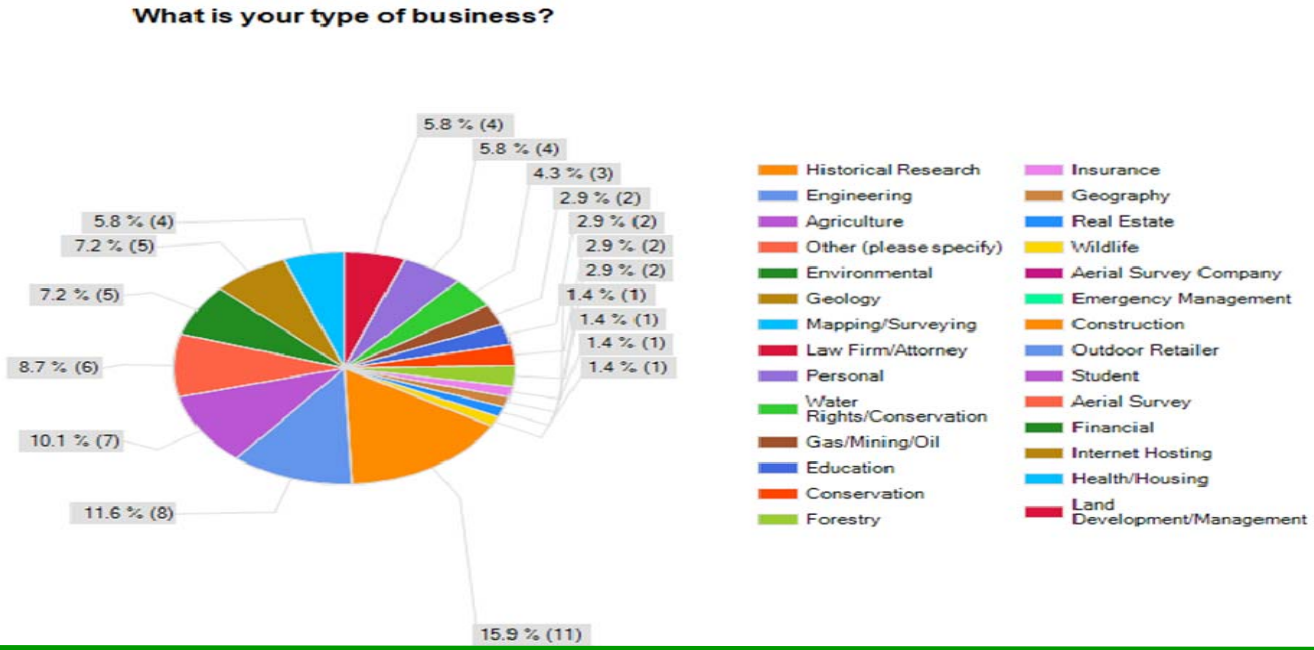


Office of the Director

If a picture says a thousand words, imagine the conversation going on in the APFO Film Vault. Housing one of the largest collections of historical aerial imagery, APFO can research land images dating back to 1954. That's a lot of research power to support the American farmer and rancher. Aerial imagery programs managed by the APFO provide up-to-date land use information that can be used to satisfy a multitude of needs such as allowing for accurate acreage calculations, boundary measurements and pre-disaster historical data.

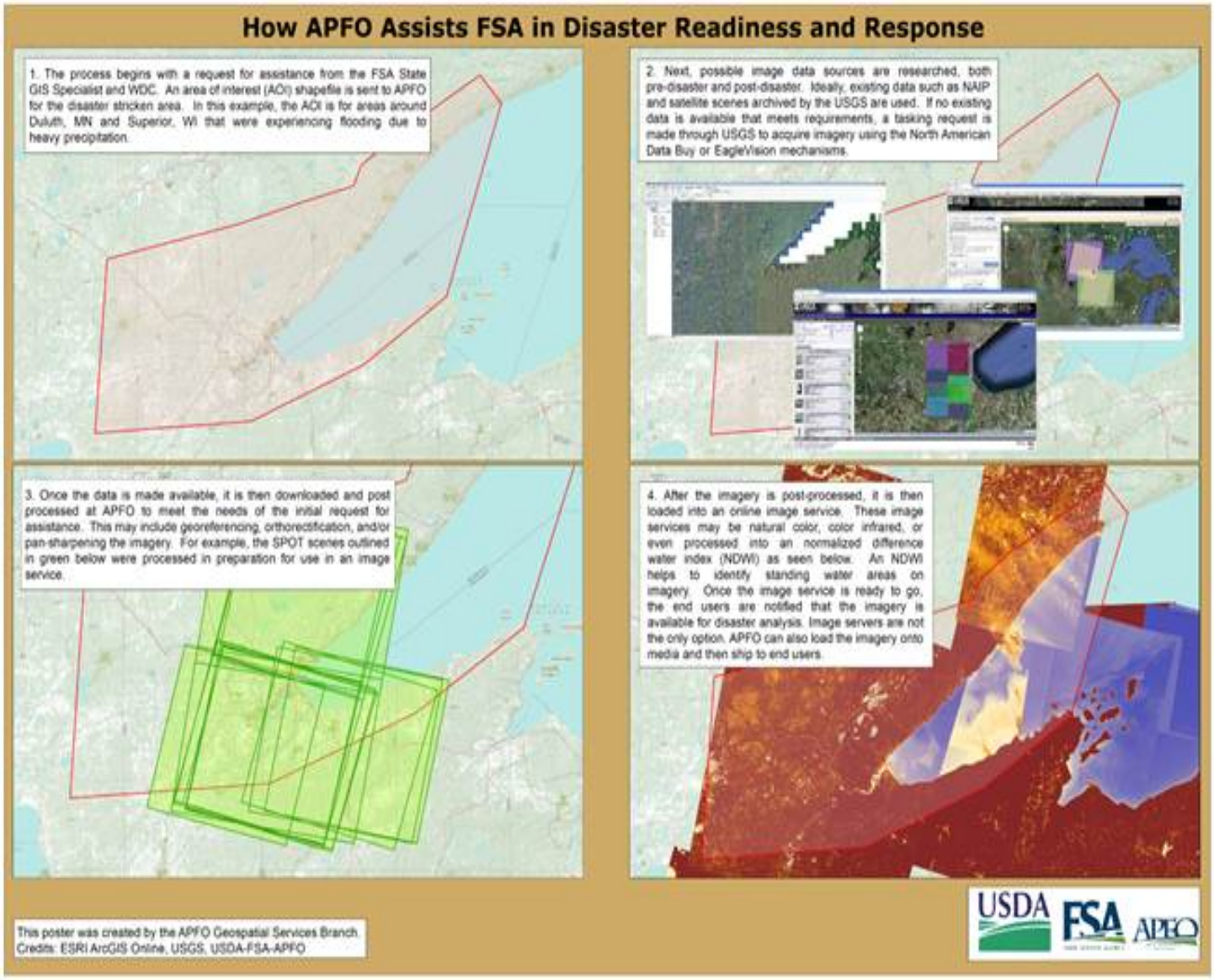
Since 1977 APFO has been supporting the USDA Strategic Mission by providing aerial imagery that tells the story of America's heartland. But it is not all about the past, through our current acquisitions in the National Agriculture Imagery Program (NAIP) we can see what is happening today and use that information for a variety if purposes such as accurate acreage measurements, and helping maintain integrity in FSA programs. Imagery acquired by FSA is used by other federal agencies, state governments, commercial entities, and the general public.

APFO products can be used in a variety of ways such as cartography, land-use planning, archaeology, environmental studies, and community planning projects. APFO partners with various other federal agencies to enhance their programs and conserve valuable government resources. APFO serves the American People also, through several different products utilizing our vast imagery library. We encourage people to go to the APFO homepage and explore the possibilities (https://www.apfo.usda.gov) where they can download images or have them printed in our Production Services Branch and mailed out through the Customer Service Center. Through these programs APFO facilitates the widest application of these wonderful technologies.



Office of the Director

One of the biggest areas of expansion is the use of FSA imagery in the filed of Emergency Management. Planners can look at imagery in areas and determine the risk of flooding or damages during weather events. After an incident has occurred post-disaster imagery can be acquired and compared to the most recent historical images, this assists in identifying areas that are hit the hardest and the potential future effects the chain of events may have on farmland.



APFO is organized around our mission of acquiring and providing imagery to FSA. The staff includes experts in contract administration, quality assurance, photo production services, geospatial analysis and policy, data management, and data distribution. The organization is supported by an operations staff responsible for HR, facility management, security and purchasing. APFO acquires over 20Tb of new data each “flying season” and executes over $26M in annual expenditures supporting the FSA Mission.

USDA – FSA Aerial Photography Field Office Salt Lake City, UT

Office of the Director
Ronald B. Nicholls
Kent Williams

FTEs - 57
Contractors – 2

Management Operations Branch
Denny Skiles

Customer Service Section
David Parry
Debbie Burridge
Linda Cotter
Jerry Lohry
Sharron McIff

Administration/Personnel
Jesse Evans
Amy Penechar

Contracting
Geoff Gabbott
Bridget Barlow
Michelle Clifford
Jacque La Croix
John Mootz

Quality Assurance Branch
Sherry Holyoak

Ortho Imagery Inspection
David Wheeler
Jose Callejas
Mary Carlson
Doug Clark
Kerry Jones
Scott Kelly
David Moore
Dan Oles
Glenda Petersen
Jay Phibbs
Tonja Ruben

Resource Imagery Inspection
Susan Callihan
Mark Cox
Jeanette Tolliver

Vault
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Production Services Branch
John Stadelman

Photographic services
Jerry Roach
William Sanders
Mark Schneller

Scanning Section
Jon Boyden
Tom Dolan
Vikki Wynn

Geospatial Services Branch
Brian Vanderbilt

Service Center Support
Zack Adkins
Joan Biediger
David Davis
Louise Mathews
Nathan Pugh

Geospatial Services
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Forrest Gladding
Quin Ourada
Danny Petersen
Cliff Ruben

Technological Services Branch
Lori Uhlhorn

Technological Services
Ronda Fisher
Marla Jo Porter

Digital Data Management Distribution
David Nabity
Shane O'Neil

Application Development
Bonnie Hayes
Brad Losito
Margaret Nakagiri

Contractors
Kevin Clarke
Tatyana Myakisheva

As of 12/02/12

Office of the Director

Through FY12, APFO has continued to provide leadership in acquiring current, high quality imagery for FSA and other USDA agencies. That's not just talk – with NAIP it's confirmed by asking our customers every year how we are doing. In FY2012, 81% of FSA users were satisfied or very satisfied with the quality of NAIP imagery. In FY06, when we began taking surveys, 82% were either satisfied or neutral. The widespread acceptance and use of NAIP imagery by other federal agencies is best perhaps expressed by their funding commitments through cost share agreements. In FY12, other federal agencies contributed $5.4 million, or 32% of total NAIP acquisition costs. APFO also continues to support other USDA agencies with requirements for imagery that cannot be met through NAIP, on a cost reimbursable basis. USDA Forest Service requires much higher resolution and information content for some of their Forest specific "resource" needs, and Natural Resources and Conservation Service has specialized requirements to support their National Resource Inventory and Stewardship Lands Initiative programs. APFO staff provides expertise in contracting, QA, technical specifications, product development, and data management. The efforts benefit multiple agencies, with experience and lessons learned from USFS and NRCS projects and NRC, applicable to on-going FSA needs.

In addition to FSA user satisfaction with NAIP imagery, we also take a deeper look at overall FSA requirements for imagery, and the requirements survey in 2012 indicated several areas for improvement: earlier access, and higher resolution. NAIP vendors have been telling us for several years that both improvements were feasible within the NAIP contract, and this was also indicated by industry responses to a related RFI conducted last spring. We see an opportunity in 2013 in terms of improving access, and will look at piloting an "early access" to the imagery by leveraging an interim vendor hosted image service and their state of the art digital cameras which promises to result in access to imagery in less than 5 days after acquisition, with complete, authoritative imagery available from APFO image services available to FSA after delivery 30 to 60 days later.

We also see opportunities for increased resolution, though we feel the expense for half meter resolution, estimated at an additional 50% of the standard 1 meter product, does not warrant direct FSA funding as it would decrease the amount of annual coverage of States. Instead, we are offering half meter NAIP projects as buy-ups to State governments and other federal agencies, which could leverage NAIP acquisition for high resolution imagery at a fraction of the cost of managing their own acquisition contract.

The NAIP image archive, built up after 10 years of acquisition, continues to provide valuable service. General usage statistics from USDA Geospatial Data Gateway over this period show that while demand peaks for the two most current years aviable, there is also a steady, consistent demand for historical imagery that averages about 15% of ongoing use. For FSA, use of historical imagery is better defined. In the 2012 FSA requirements survey, 25% indicate a need to use imagery dating back 10 years, with a slight increase to 27% feeling access to imagery dating as far back as possible. The survey results quite likely underestimate what actual demand may be as historical imagery has not been readily accessible to FSA users. That's beginning to change as APFO implements web Image Services that enable easy, seamless access for FSA users that require no local data management or logistics. To address these unmet needs, APFO initiated a project in FY12 to assess converting the vast USDA film archive extending back to 1955, to a digital format that is readily accessible to users, and also ensures long term preservation of the imagery. While this is a long term effort, it begins to close the loop between current, state of the art digital image acquisition, and the historical film-based record.

Operations

Taking care of the things that make APFO function smoothly is no small task. Under the Operations Branch are two major functions; Administration and Customer Service. The **Administration Services Section** provides administrative functions; facility management; maintains and tracks salaries and the expense budget; offers Human Resources management; supply property/shipping and receiving/warehouse management; various procurement actions and enforces physical security of the building.

APFO Director Ron Nicholls, FSA Administrator Bruce Nelson and CSS Supervisor David Parry

APFO made huge strides in FY 2012 and showed that it can be flexible in an ever-changing GIS world. In March, FSA Administrator Bruce Nelson paid a visit to the makers of the 10x10 black and white photos his family farm received each year when he was growing up. Mr. Nelson made note of the advances in how farmers use the images acquired by FSA each year and thanked the employees for their continued support over the years to those working the land of the American heartland.

It was a tough year for budgets everywhere and APFO was no exception. But with the challenges of providing our services with less resourcing, came some innovative approaches that helped us meet our mission and come in under budget.

- **Recycled material**— by purchasing refillable items and post consumer recycled items we saved on waste as well as reutilizing shipping material such as boxes and bubble wrap (this effort alone saves over $1000 annually).

- **Waste Prevention**—employees recycled approximately 50,000 lbs of material in FY 12 diverting it from landfills.

- **Teleworking Program**— this initiative has many benefits for not only APFO employees (reduced transportation costs) but also for APFO as an organization (reduced energy consumption, increased productivity).

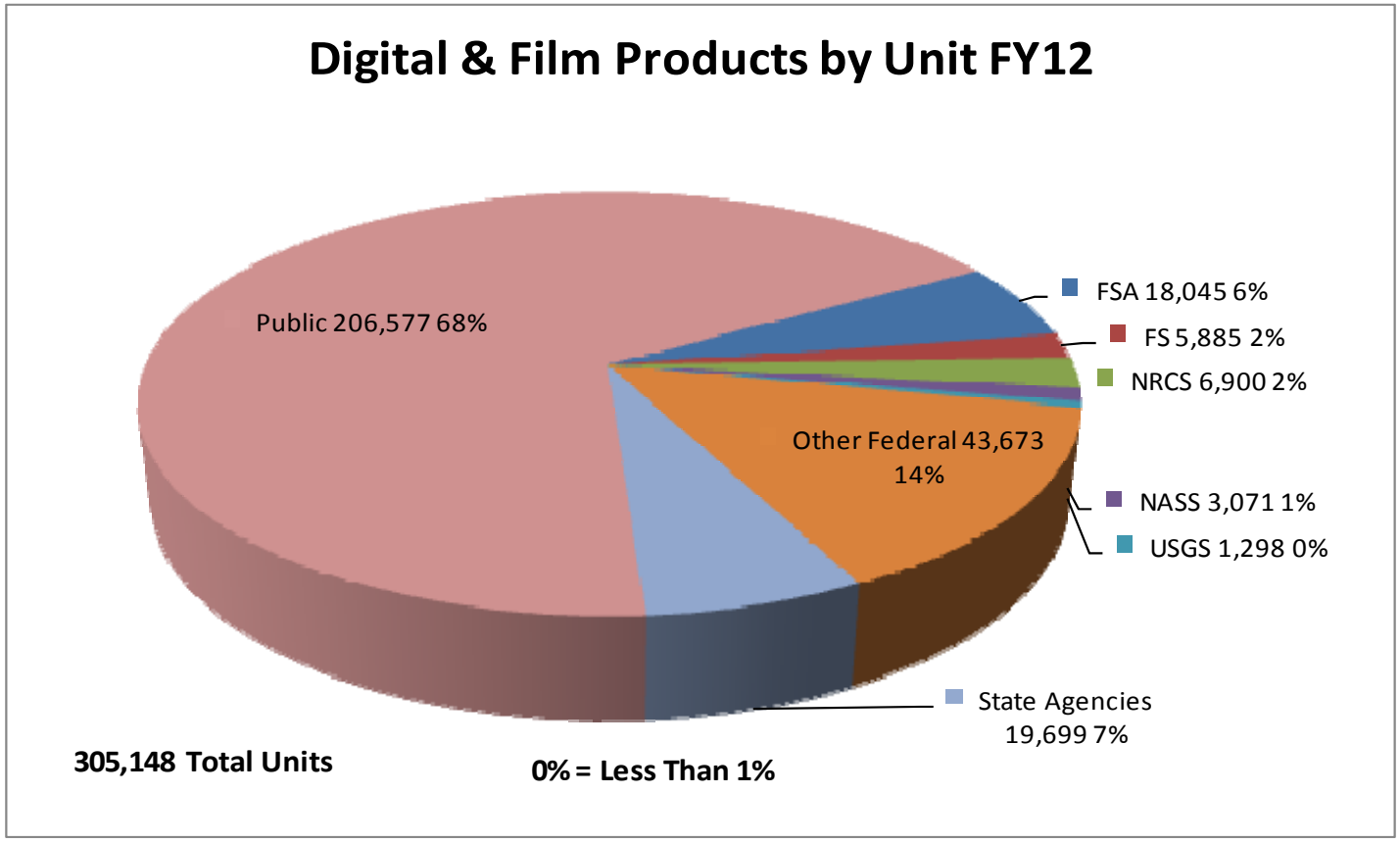
- **Increased Cost Accountability and Streamlining**— APFO developed an internal process to better capture costs associated with projects. Each section participating in a given project sees the entire process described in the cost estimate and can help identify duplications and streamlining that could lead to cost and time savings.

Customer Service

As a major part of the Operations Branch, the **Customer Service Section (CSS)** is responsible for the receipt, preparation, and releasing of work orders and coverage requests for aerial photography, digital imagery, and common land unit products and services. CSS is the liaison for the Aerial Photograph Field Office to outside government agencies and the general public.

Research is preformed utilizing Geographic Information System (GIS) tools to identify historical imagery and attributes needed for traditional and custom digital photographs. The CSS assists customers with and updates GIS content for maintaining the National Agriculture Imagery Program (NAIP) Coverage Viewer, Interactive Coverage Status Map, and downloadable quarter quad and film center shape files on the APFO website.

The most important asset we have at APFO is the employee, CSS Customer Service Representatives have consistently ranked well in satisfaction surveys because of the time they take with the customer and the level of service they provide. Each CSS representative makes themselves available as the primary source of technical information concerning USDA related aerial photography, digital imagery, and common land unit data of the United States and its territories. Additionally, CSS accounts for and reconciles funds from all government agencies and the general public while maintaining and monitoring all fiscal activity as it pertains to aerial photography and digital imagery. FY 2011 orders processed exceeded $1.2 million with digital products and service outselling film based by an average of 3 to 1. One highlight of the year came as CSS completed the **NAIP Film Center Coverage Map & Shape file** corrections which enabled thousands of NAIP images to be *accurately* identified.



Administration

Government employees throughout the State of Utah and portions of the surrounding states are supported by APFO for their ID cards. HSPD 12 requires a government-wide standard for secure and reliable forms of ID issued by the federal government to its employees and the employees of federal contractors for access to federally controlled facilities and networks. Based on this directive, USDA developed a HSPD-12 compliant ID called LincPass, and through a multi-stepped process is designed to link a persons identity to an ID credential and the credential to a person's ability to physically and logically access federally controlled buildings and information systems. As the Inter-mountain Region Priority 1 LincPass Activation and Enrollment Station, APFO facilitates over 1000 transactions annually ranging from security certificate renewal to full scale new authorization enrollments. An advantage to having these customers here for that service is that they also get to see what we do and the resource that could be used in their daily business.

Another way for APFO to get the word out is through our Public Information Campaign. This has several different activities which include informational products sent out to County Assessors offices, participating in Government GIS forums and having our products appear on postage stamps. That's right, you could see us on your mail. In 2012 the US Postage Service used several images to commemorate this wonderful capability.

Geoff Gabbott and Jacque LaCroix man the Utah State Fair booth

2012 saw local area involvement from the APFO staff as it collaborated with the Utah State Fair to highlight the changes the fair has gone through over the last 50 years. A 9-panel display was erected outside the agriculture building showing the fairgrounds and surrounding acreage. Local area farmers and ranchers were treated to go back in time and be reminded of days gone by when they were kids running around a much different Utah State Fair.

Contracting

APFO **Contracting** is responsible for aerial imagery procurement and coordination of cost share agreements for the Farm Service Agency (FSA) and the U.S. Department of Agriculture (USDA) Agencies. Several national level programs are procured through the Contracting Branch including the National Agriculture Imagery Program (NAIP) for FSA, USDA Service Center Agencies, and partnering agencies; the National Resource Inventory and Stewardship Lands Programs for the National Resources Conservation Service (NRCS); and the Resource Imagery Program for the U.S. Forest Service and other participating agencies.

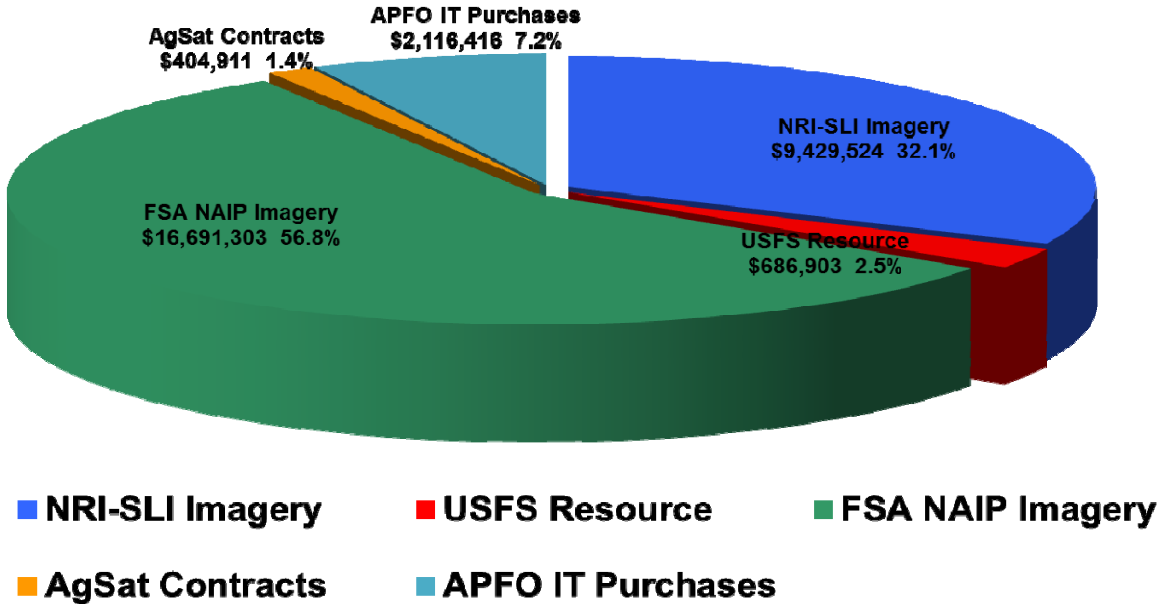
***APFO Contracting Services by the numbers*:**

$29,385,214.02 – Total amount of imagery & IT contracts awarded
1,595,331 – Total number of square miles of imagery contracted

1,471,543 square miles of NAIP
96,351 square miles (sites) supporting NRCS programs
18,615 square miles of U.S. Forest Service lands
8,822 square miles of AgSat satellite imagery

$358,392.30 – Revenue generated through administrative fees.
$282,885.72 from NRCS and $75,506.58 from U.S. Forest Service.

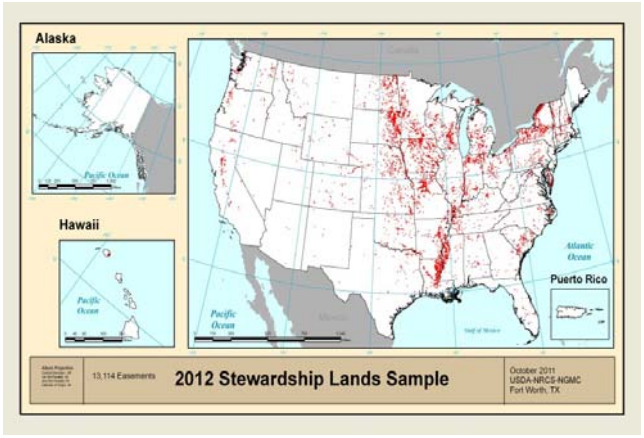
15% of all contracts awarded went to small businesses.

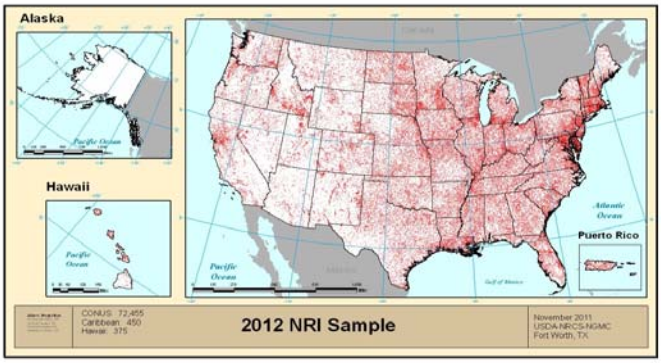


Contracting

National Resource Inventory (NRI) and Stewardship Lands Imagery (SLI)

APFO provided contracting services to NRCS to acquire the National Resource Inventory (NRI), Stewardship Lands Imagery (SLI), and the Highly Erodible Lands (HEL) programs aerial photography and related services for 96,351 sites and easement exposures in the 48 CONUS states, Hawaii, and Puerto Rico & Virgin Islands.

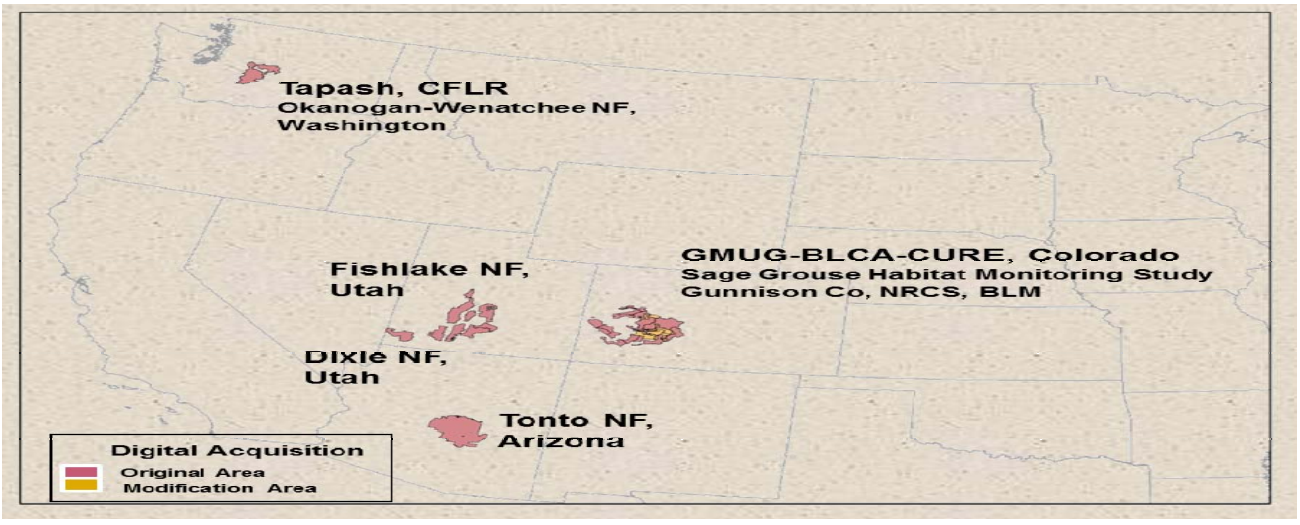




The FY2012 total contract value was $9,429,524.24, with a combined total administrative charge of $282,885.72. Contracted services included acquisition, film products and scanning services.

Resource Aerial Photography

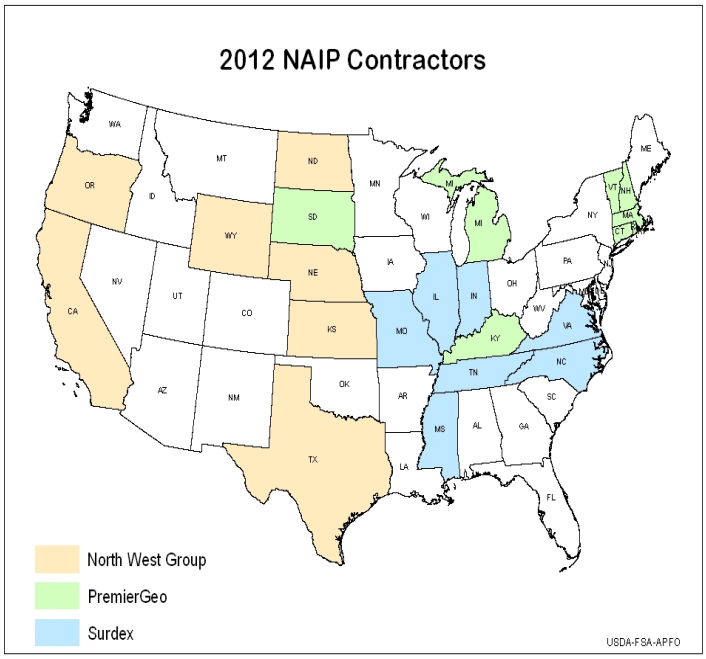
Provided contracting services to the Forest Service (USFS) for a total of 18,615 square miles of digital resource aerial photography for a total value of $743,059.07. A combined total administrative charge of $75,506.58 was assessed. Contracted 5 digital aerial imagery projects covering the western national forests of Tonto AZ, Tapash area of Okanogan-Wenatchee WA, GMUG and White River CO, Dixie UT, and Fishlake UT. The Contracting Branch continues to provide support and assistance in developing standard specifications for digital imagery and support of other digital acquisition requirements and procedures.



Contracting

National Agriculture Imagery Program (NAIP)

Since 2003, the National Agriculture Imagery Program (NAIP) has been the primary vehicle for FSA to acquire aerial imagery. Since NAIP is primarily funded by FSA, imagery is acquired to meet specific FSA needs such as collection of entire states within a single growing season, and availability within 30 days of flying season end. Having current imagery saves time in FSA Service Centers, shows change over time, and helps FSA keep CLU boundaries and other critical records current.



NAIP is funded through cost share partnerships, with FSA cost based on the percentage of agricultural land in the US (approximately 67%) while partners in other federal agencies (NRCS, USFS and other DOI agencies) funding the remaining portion.

In 2012, funding was at $11.3 million from FSA with an additional $5.4 million from partners. The total amount of $16.7 million funded the acquisition of 22 states with a result that all states in the continental US have imagery that is no older than 3 years.

APFO Contracting Branch provided procurement services to FSA and other contributing partners for one meter digital orthoimagery covering 1,628 counties (1,471,543 square miles) in 22 states. NAIP contract task orders were awarded for a total value of $16,691,303.15. Imagery was acquired using precision large format digital mapping cameras which resulted in all states being delivered as 4-band products. The 2012 contract task orders were awarded under the first year of a 5 year IDIQ NAIP contract. The NAIP Program is the largest civilian government contract in the country providing high quality imagery widely used by federal, state, and local agencies as well as many academic and private users.

AgSat BPA Satellite Imagery

Contracting services were provided to FSA to acquire high resolution 8-band satellite imagery through the USDA AgSat Blanket Purchase Agreement (BPA). Five areas of interest were awarded covering portions of Alaska, Arkansas, Hawaii & Pacific Basin, US Virgin Islands, and Alabama. 8,822 square miles (22,849 Sq Km) were ordered amounting to a total of $404,911.30. The AgSat BPA is available to all USDA agencies to order imagery directly.

Quality Assurance

The Quality Assurance Branch has spent this year developing operational plans to exploit both new technology and processes designed to efficiently support the Department of Agriculture's mission to provide leadership on food, agriculture, natural resources, and related issues based on sound public policy, the best available science, and efficient management, and the Farm Service Agency mission to equitably serving all farmers, ranchers, and agricultural partners through the delivery of effective, efficient agricultural programs for all Americans by insuring that quality imagery and geospatial products are available for its programs.

QAB's primary mission is to inspect for contractual compliance imagery obtained for the National Agriculture Imagery Program (NAIP), Resource Aerial Photography, Common Land Unit (CLU) updates, National Resources Inventory (NRI) and Stewardship Land Inventory (SLI).

Two out of QAB's three work centers namely Ortho Imagery Inspection and Resource Imagery Inspection sections have developed an employee exchange program that has drastically eliminated the time it takes to inspect our imagery. In short, we are able to put more people on projects that have either higher priority or larger work volumes. At the same time we have redefined our inspection criteria to better align our tasks with customer requirements, thus resulting in an efficient and timely workflow as illustrated by our improved 2012 man-hour to rate of inspection ratio.

Looking forward; QAB is partnering with experts from Geospatial (GIS), Contracting, and Information Technology, to develop an all new approach to imagery inspection, incorporating advancements in both knowledge and technologies to enable the inspection of any type of imagery data set, then create integrated reports that show both trends and analysis of specific geographical locations as well as vendor performance as a whole.

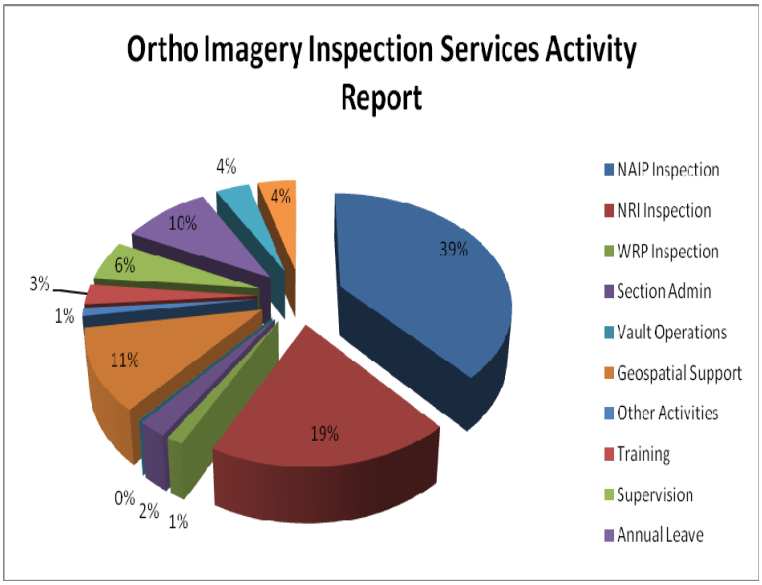
Other significant accomplishments of QAB was the development of a flight planning system for Stewardship Land Inventory (SLI), taking a process that normally took several months, down to just a few. What makes this even better is that QAB was able to utilize existing software to accomplish this task, thus saving thousands of dollars on procurement costs of new software packages.

In addition to inroads on flight planning, QAB continues to maintain an archive of over 65,000 rolls of historic imagery. We are currently performing test to determine if there is any level of deterioration of the 1955 to 1965 imagery, this will help us for planning purposes of our historical imagery scan project. Additional accomplishments of making available 3 states worth of vault scan indexes were made available to the public electronically. The sum total of all the QAB accomplishments in development of new ideas, planning, and task accomplishment has positioned us to achieve great things in our future endeavors.

The APFO Film Vault contains over 65,000 canisters of film

Quality Assurance

The Quality Assurance Branch is divided into two sections to better capitalize on the special skill sets of the members and proper application to the projects they encounter.



The **ORTHO IMAGERY INSPECTION SECTION (OIIS)** emphasis is "Directly" responsible for the oversight and management for inspection, monitoring, and dissemination of imagery inspection results related to the National Agricultural Imagery Program (NAIP). This accomplished 6 major project initiatives. OIIS conducted research on NAIP imagery accuracy which resulted in the development of an approach with current academic and national standards to apply Root Mean Square Error calculations to determine image accuracy which aligns horizontal accuracy to a national standard.

The Ortho Inspection team accomplished several major initiatives designed to improve image inspection workflow and task efficiency. The most important of which was the development of the ArcMap 9.3 to 10.1 migration plan. This transition represents a major shift in capabilities for OIIS, and as applications are developed over the next few years, it is anticipated that the imagery inspection, along with trend analysis will be significantly enhanced.

In addition to the 10.x migration plan, we achieved an improvement in the rate of inspection of the 2010/11 NAIP project, achieving a decrease of 10% of our man hours normal required to this project. These time savings allowed us to supplement other inspection programs important to APFO.

Accomplishment 1: Because project inspection cycles split between calendar years, OIIS reports that for the year 2011/12 over (115,000) imagery units were inspected.

Accomplishment 2: Implemented procedural changes in the current inspection system that netted a 10% decrease in man-days normally used to inspect the annual NAIP project.

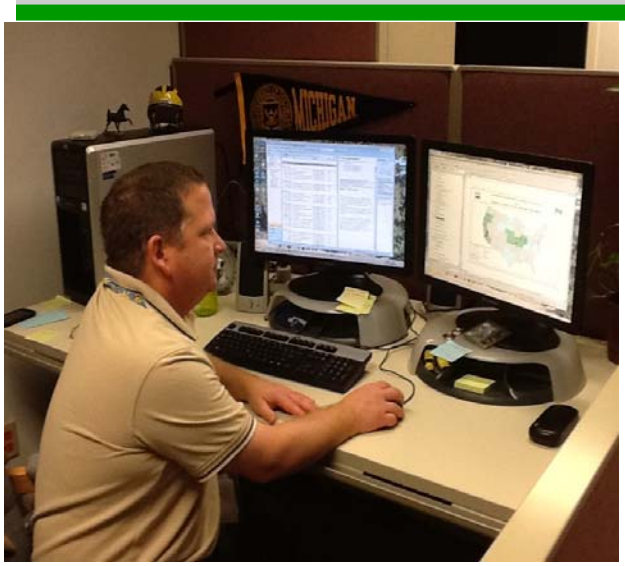
Accomplishment 3: Developed NAIP quality assurance inspection requirements for integration into ArcMap 10.x migration. This project will be the template for all other imagery inspection systems scheduled for the foreseeable future.

Accomplishment 4: Developed a process that identified the extent of damage to imagery sets, caused by errors of horizontal accuracy. This new capability has identified areas of accuracy that would have previously gone undetected.

Accomplishment 5: Developed proof of concept plan for the quality assurance inspection of APFO historical vault.

Accomplishment 6: Cartographically depicted 4 years of NAIP historical key program indicators, to include spatial, physical, and operative conditions of the NAIP imagery. Allowed for accurate imagery performance assessment of the NAIP program

Quality Assurance



QA Cartographer Dan Oles checks the NAIP Status Map

The **RESOURCE IMAGERY INSPECTION SECTION** assures customers needs are met by providing quality assurance inspection of acquired imagery and geospatial data for the Resource Aerial Photography, National Resources Inventory (NRI) and Stewardship Lands Imagery (SLI).

Flight Planning

In FY2012 the section provided flight planning for 1,521 sites (exposures) totaling 21,811 NRCS SLI sites and prepared five digital imagery based projects that covered 18,605 square miles including the inspection of contractor submitted flight plans.

Aerial Film Imagery

The section inspected two film-based resource projects covering 3,834 square miles consisting of 3,599 images and 16 rolls of original film to 100% completion.

Digital Imagery

Inspection of Eight National Forests, seven of which were 100% completed total of 11,458 square miles consisting of approximately 25 TB of data.

Inspection deliverables included Digital Ortho Quads (DOQ), Digital Ortho Quarter-Quads (DOQQ), Digital Ortho Quarter-Quarter-Quads (DOQQQ), GeoTIFFs, Stereo Imagery and Compressed Project Mosaic (CPM).

National Resources Inventory (NRI) inspection

2012 NRI CONUS sites/scans inspected: 73,017 sites and 73,017 scans

2011 NRI CONUS sites/scans inspected: 2,460 sites and 10,614 scans

Stewardship Lands Inventory (SLI) inspection

2012 SLI CONUS sites/scans inspected: 21,810 sites and 21,810 scans

2011 SLI CONUS sites/scans inspected: 2,808 sites and 7,628 scans

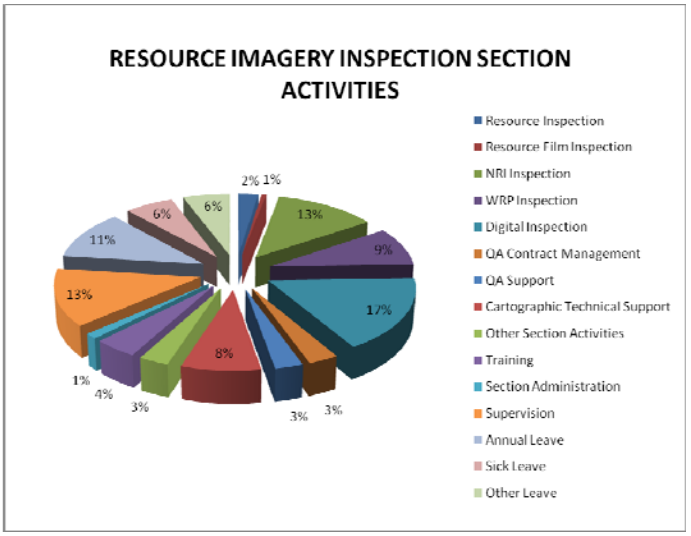
Other Section Accomplishments

Inspection of the Vault Index Scans, 462 hours were used to inspect 23,752 indexes from this project.

RIIS participated on the Resource Imagery Team to improve the overall management of the Resource Program.

RIIS participated on Technical Evaluation and Source Selection Teams for Five Forest Service Projects.

Jeanette Tolliver served as Chairperson on the Equal Employment Opportunity Advisory Committee during FY12.



Geospatial Services

The **GEOSPATIAL SERVICES Branch (GSB)** is divided into two sections that ensure quality services across the geospatial spectrum. GSB ensures National Agricultural Imagery Program (NAIP) and other USDA imagery program technical specifications and standards are correct, and will produce products that meet FSA and USDA customers needs the first time around, saving countless dollars in both time and infrastructure resources by getting accurate, authoritative data to the customer as quickly as possible.

GSB researches changes and trends in geospatial technology, which translates into product enhancements over time, ensuring imagery products are leveraging the best available technologies and methodologies and are relevant to meet the customers' needs.

GSB also builds historical imagery products based on FSA and other customer requests, ensuring historical imagery products are spatially enabled such that the State and County field offices may track and trend changes over time, offering real visual evidence of land use/land cover change in support of various programs.

Ensured web services are functioning optimally in support of enterprise applications enabling state and field office employees to do their jobs efficiently and in a timely manner, such that changes on the earth's surface can be positively detected and that field boundaries and acreages, which are directly tied to producer benefits, can be updated quickly and efficiently, providing for end customer satisfaction and more accurate record keeping.

Through multi agency partnerships, provided for fast turnaround image acquisition, post processing and web service construction and delivery, for FSA disaster response and recovery in MO, MN, and WI.

In a multi-disciplinary team setting, launched the Consolidated Historical Project (CHP). The vision of CHP is "Modern day access to historical agricultural imagery assets" with a mission to "digitally and/or spatially enable historical imagery assets and provide access to all product lines, leveraging the most appropriate technology that results in useful viewing, research, analysis, and delivery methods for our customers"

Geospatial Services

The Service Center Support Section provides technical and programmatic support and assistance on geospatial related issues to Farm Service Agency (FSA) Service Centers, State Offices, and Headquarters offices as well as to other government agencies and the public. The Service Center Support Section supports APFO and FSA in research and analysis, product enhancement, and in the development of processes and methodologies to improve efficiency in all aspects of geospatial business.

Project Work

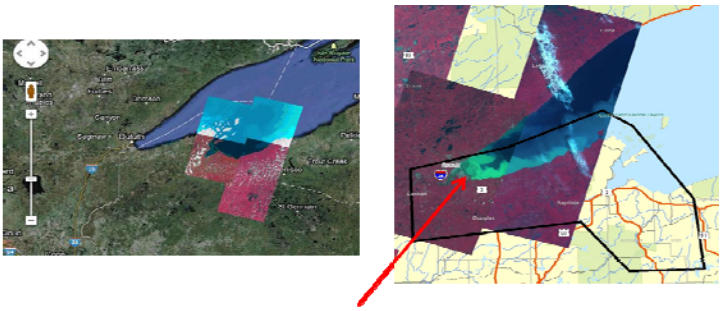
- National Agriculture Imagery Program (NAIP) Support
  - Developed, administered, and reported results for the 2011 NAIP Survey.
  - Designed, administered and reported on 2012 Imagery Requirements Surveys.
  - Absolute Control Projects: 2012 control point acquisition and database work for 2012 NAIP States.

Teaming with States and Federal Agencies to obtain points and supplemental data. Administered database updates and maintenance, and assistance with automation of the database inspection process. The database is conservatively worth $12M at present with 40,000+ points, developed through partnerships and provided on a mostly gratis basis.

- Researched and purchased GPS unit to support internal FSA control point acquisition; an investment that will yield points that will collectively be worth many times the value of the unit, and will keep the database up to date with current data, ensuring quality end products for the FSA customer
- Performed quality assurance on NAIP Statewide Seamline Files
- Provided NAIP graphics for FGDC Annual Report
- Provided NAIP graphics for Census Bureau Report
- Part of 2012 NAIP Technical Evaluation Panel and Source Selection Committee
- Reviewed and Updated 2012 NAIP Metadata Templates
- Evaluated Highly Compressed CCM Product for 2012 NAIP
- Evaluated 8-Band Data Samples for NAIP 2012
- Evaluated 2012 NAIP RFI Responses for Web Services Delivery of Imagery

- Worked closely with Contractor to develop and sustain APFO Image/Web Services for NAIP, NRI, Customer Service Section, QA, the general public, and FSA WDC, State and County Office users in support of FSA thin client and future MIDAS architectures. Constructed NAIP services as well as PR, AK, HI, Pac Basin services. Acted as MIDAS POC between APFO and the MIDAS Team, helping to ensure services necessary for MIDAS rollout are available and updated

- Disaster Recovery and Response: Provided for fast turnaround image acquisition via the North American Data Buy (NADB) and EagleVision USGS managed mechanisms. Provided back end image post processing and web service construction, for FSA disaster response and recovery (MO River Flooding and MN/WI Heavy Rainfall Event)

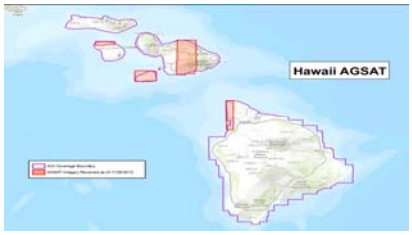


Color Infrared Scene – Notice the Mud / Silt Dumping Into the Lake

Geospatial Services

- Historical Project Work: Kicked off Consolidated Historical Project (CHP) work, with the vision of "Modern day access to historical agricultural imagery assets" and a mission to "digitally and/or spatially enable historical imagery assets and provide access to all product lines, leveraging the most appropriate technology that results in useful viewing, research, analysis, and delivery methods for our customers"

- Worked closely with other organizations on Satellite Acquisition BPA (AgSat). Reviewed AgSat BPA Proposals. Developed Customer Requirements Questions and Survey. Developed Specifications and built (based on customer input) AOIs for AK, HI, Pac Basin, U.S. Virgin Islands, GA, AL, and AR. Provide Pricing Estimate per Square Mile for AK Acquisition. Developed ArcGIS Online Tracking System for AgSat Projects



- FSA Work for Puerto Rico (PR). Obtained and Processed Imagery and Built PR Image Services. Deployed GPS Unit to PR to Support WDC Assessment Trip. Initiated MOU with PR Government to Obtain CRIM (Land Parcel Data) to Support FSA CLU Digitizing Work. Attached to Training Team to Spend 3 Weeks in PR in FY13, Training on GPS, CLU Maintenance, and Farm Records

- Assisted on digital Resource Photography projects at APFO, consisting of a complex mix of new customer requirements and diverse deliverables. Participated in multiple contract evaluations. Assisted in development of contract specifications. Designed and/or reviewed several metadata templates. Continued to work through issues with stereo inspection

- Provided Continuity Support for QA Branch, to include Training, Map Making, Process Review, Trouble Shooting, and fielding Control Point Database questions

- Assisted in updating the Digital Camera Specification attached to APFO Contracts

- Updated process to repair Photo Index Scans in-house

- 1AP – Finalized Official Policy Document

- Map Published in the Esri *Mapping the Nation* Book

- Completed 15-18 Custom Cartographic Requests

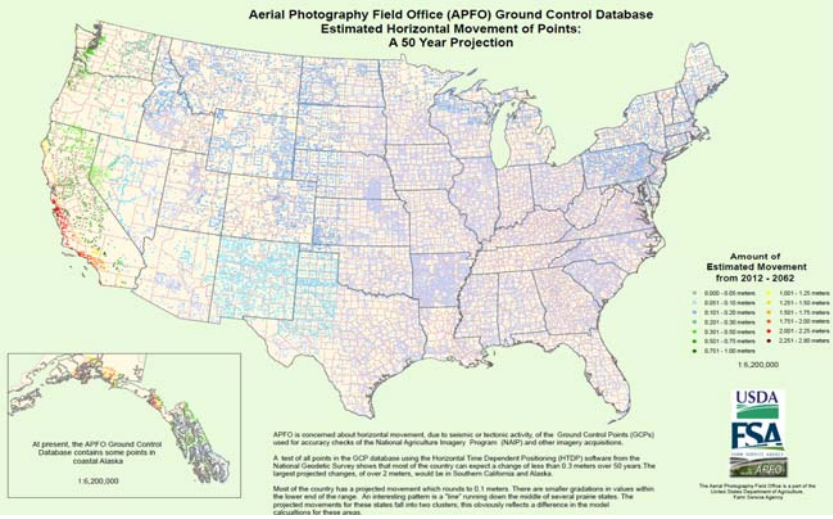
Customer Support

- Fielded and answered several hundred customer support calls and emails from APFO, FSA, SCA, Federal & local government, private business, and the general public. Updated the AskFSA website with APFO FAQs and corrected responses

Geospatial Services

Research and Analysis

- Completed the Horizontal Velocity Study showing geologic movement of control points in the control point database



- Researched and assembled available imagery for HI and AK in support of FSA thin client services. Tested and processed HI 4-band 16-bit to 3-band 8-bit NC and CIR tiled products

- Software Testing: ENVI and ENVI Toolbox in ArcGIS, ArcGIS Online, and several software packages supporting web services

- Completed research and paper on linear/non-linear stretches with regard to digital and analog data acquisition, for best image quality in 8 and 16-bit space

- Researched Spatial Tags and updated the USDA Digital File Format Specification

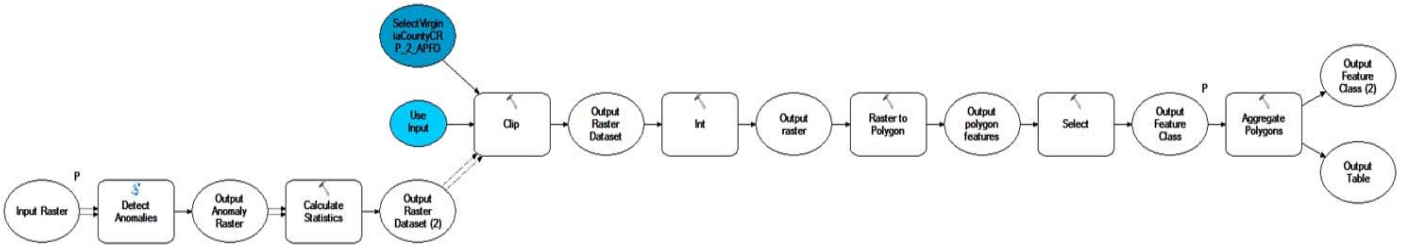
- Continued to evaluate potential of Volunteered Geographic Information (VGI) scenarios

- Continued to work through LiDAR Derived Control for Inspection Pilot Project

- Developed and initiated a scan resolution study, to assess point of diminishing return on scan resolution, where no more detail can be gained from higher scan resolution, only file size increase

- Evaluated Iris Sensor

- Providing potential automated processes for detection of CRP violations. Follow-on work and analysis will determine if the process has value for wider implementation

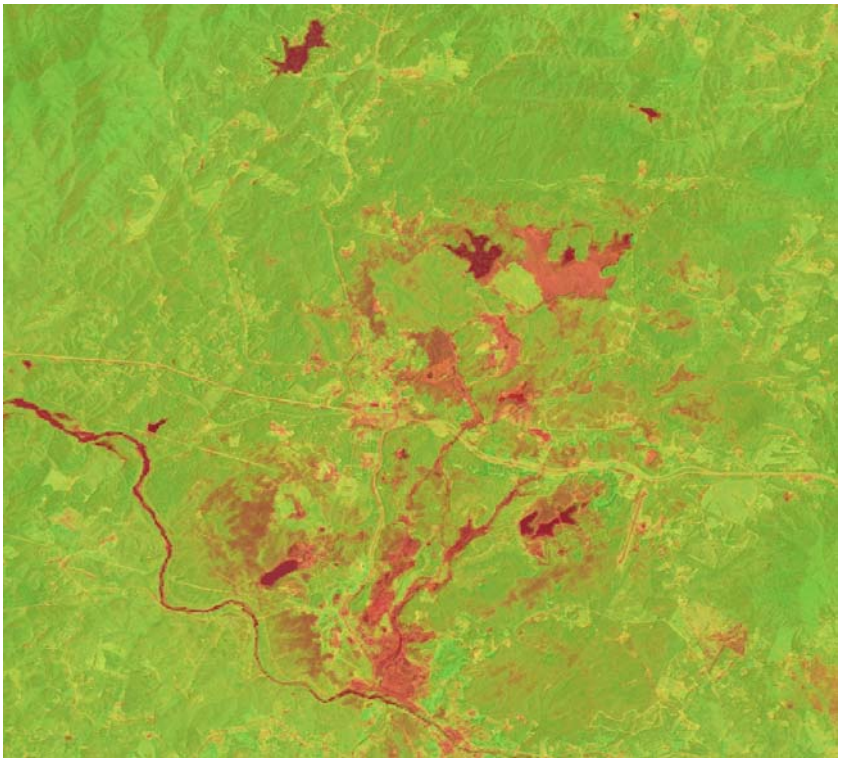


Geospatial Services

Team Representation, Presentations, and Training

- Presentations on various subjects at:
  - USDA Planning and NAIP Post Mortem Meetings
  - Keynote Speech at the ND State GIS Conference
  - National Digital Orthophoto Program (NDOP)
  - FGDC Cadastral Subcommittee
  - UGIC

- Training
  - Provided ID/MT FSA State and County Offices Imagery Interpretation Training
  - Presented at UT GIS Day
  - Attended ASPRS
  - Attended GPS Training for GeoXH
  - Extend GIS Free Seminar
  - GSB Training Plan
    - Satellite and Remote Sensing
    - Ortho Generation
    - Esri Training Course on Mosaic Datasets and Image Manipulation/Analysis
    - Ground Control Points



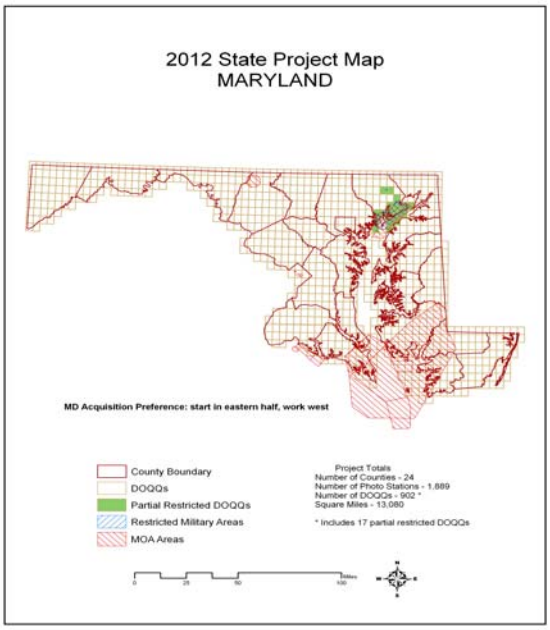
Normalized Difference Vegetation Index

Geospatial Services

The Geospatial Services Section is responsible for producing accurate and quality checked ortho imagery, from a variety of sources. Imagery is made available in soft and hardcopy formats to meet the needs of GIS implementation in support of FSA Service Centers. In addition, the Geospatial Services Section flight planned the acquisition of imagery for the NAIP 2012 year.

Cartographic features such as scales or legends accompany hardcopy digital products, thus enhancing usability. Responsibilities of the Geospatial Services Section include:

- County, State, and National Status Maps containing geospatial information
- Special projects including historic ortho generation, georeferencing, compressed imagery production, color balancing of county imagery, and reformatting of imagery to meet FSA specifications.
- Detailed flight planning status maps by county and state
- National flight planning status map



Strategic Planning

Equipment, process improvements, and training were goals established and achieved to include:

- Training
  - In-house training
    - 3D Visualization Techniques Using ArcGIS 10
    - Displaying Raster Data Using ArcGIS 10
    - Editing in ArcGIS Desktop 10
    - Organizing raster Data Using ArcGIS 10
    - Processing raster Data Using ArcGIS 10

Accomplishments

- Production
  - Historical Digital Ortho Quarter Quads produced - 31
  - Compressed mosaics produced - 1
  - Compressed mosaics reprojected - 2
  - Forest Service Digital Indices created – 2 (3 sheets)
  - NAIP 2012 states flight planned – 22
  - Status maps Produced - 200
  - Georeferencing for Custom Requests – 2227 images
  - Georeferencing for Historic Utah Project – 159 images
  - Historic Minnesota Ortho Project - Ongoing

Technology Services

The **TECHNOLOGY SERVICES BRANCH (TSB)** acts as the backbone of any APFO operation. By providing Information Technology Security and Support for agency specific applications TSB oversees all Data Management, Distribution and Application Development.

Under the Technology Services Branch are two sections:

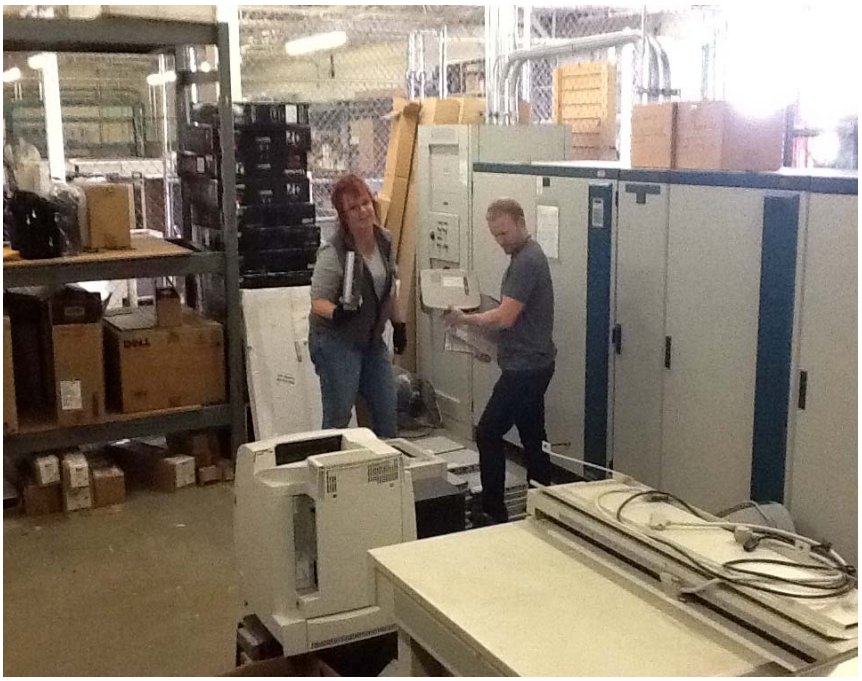
Imagery, pictures, and geo data are some of the names and formats for the images that are captured of America's farm and ranch lands. APFO has the largest collection of these images residing in a digital library containing over 8 million image files at 2.95 Terabytes, and a physical library of historical images (affectionately known as "the Vault") with 54,533 rolls of film and 83,875 photo indexes all stored in an environmentally monitored area to avoid excessive curl and brittleness or cause mold and ferrotyping. APFO's film vault exists because aerial photography has been used for over half a century in the service of the USDA Farm Programs, but has also shown its importance stretching through nearly every facet of American Life.

The **Digital Data Management and Distribution Section** performs data ingestion, archiving, distribution and fills large custom digital product orders while the **Application Development Section** supplies specific production application development while providing support and/or development of custom applications including management and development of databases.

Additional responsibilities include management of APFO web based applications and services, solution and development research and coordination of requirements with a variety of CIO-ITS organizations.

TSB supports both business and GIS applications in direct support of APFO business requirements, managing approximately 400TB (terabytes) of data on behalf of FSA and an additional 200 TB of data in support of other USDA agencies (NRCS, FS).

Beginning with FY 2011, APFO TSB entered into partnership with FSA GISO Office, providing virtualized development environments, base layer imagery for the new Citrix services, and supporting CLU services to and from County Offices.



Marla Jo Porter and Jesse Evans prepare an e-waste recycling shipment

Technology Services

With direction and assistance from ITS, TSB designed and planned APFO wide web farm security stack, wuth implementation to be complete by end of year.

- The data management support I provide for the 475TB of archived post inspection imagery on the SL8500 tape library supports all of APFOs critical business processes and applications. This past year 23 Tera Bytes of post inspection imagery was placed on APFOs archive library and 23 Tera Bytes of post inspection imagery was written to offsite recovery tapes that are destined for storage in the vaults at Perpetual Storage, Inc located in Little Cottonwood Canyon.

Post Inspection Long Term Archive

NAIP 2010 QQ –	83,900	20.0 TB
NAIP 2010 CCM –	987	1.0 TB
JP2000 –	83,900	2.0 TB
	168,787	23.0 TB

Post Inspection OffSite Archive Copy

	Number of	Data Size
NAIP 2010 QQ –	83,900	20.0 TB
NAIP 2010 CCM –	987	1.0 TB
JP2000 –	83,900	2.0 TB
	168,787	23.0 TB

Resource Data Gateway (FSA CLU shape files submitted via ftp during FY12) represents < 100GB

	DataSet Count	File Count
CLU Data Sets:	20,633	165,064
CRP Data Sets:	17,585	17,585
WET Land Data:	17,399	69,569
	55,617	255,218

- TSB provided oversight and coordination for the successful migration of production servers, with minimal downtime.

Implemented Business Intelligence purchased and design with focus on the redevelopment of the NAIP inspection applications.

- Initiated migration of Oracle from 9i to 11g, to include migration of legacy forms and reports

- Continue to provide support and services to ITSD-GISO in support of Citrix rollout and pilot

Technology Services

In the last year, TSB developed and/or implemented several IT related actions to include redesigning NAIP inspection application for FY 2011, based on current business requirements, automating several new processes before the start of the FY 2011 imagery inspection. The 100% automation of the seam line inspection process, which was a complex manual process for each county, was engineered to take 30 seconds per county without any QA Inspector intervention resulting in a savings of both man-hours and resources. Many of the applications are being evaluated for use in the Resource Imagery area.

The CLU Replication process was re-designed to streamline ingestion related processing, and shorten the overall turnaround time for dataset availability. Working with the FSA GISO Office, the CLU county deliveries were modified to enable less transaction based on analysis to occur prior to ingesting the CLU county datasets in the GDW. The new received datasets required a re-work of the in place CLU ingestion processes to enable faster processing of the CLU datasets as they arrive from the county offices.

TSB developed several Python based scripts and ArcMap tools to enable Resource Imagery to be checked and formatted for use in downstream inspection workflows.

TSB purchased a new educational booth which will display imagery and aerial imagery information

Technology Services

In support of projects that benefit the general public and agencies outside USDA TSB:

- Developed (and made available) state based web services.

- Completed APFO Work Order Entry and Pitney Bowes SendSuite Shipping Interface, batch process replaced by new table and 2 database triggers.

- Completed the repositioning of the entire suite of GDW hosed NAIP imagery services. Migrated hardware platform to newer servers and software platform to latest ESRI release. Shifted delivery paradigm from a UTM based set of images to state based image services to better meet the needs of FSA users in the field. Deployed state based services for all historical and current 1 meter state acquisitions for years 2005-2010, with 2003 and 2004 years currently in progress.

Hard drives are staged for imaging and shipment to customers.

- Implemented Web based Customer Order Entry System (COES) to allow both public and Federal customers the ability to order geospatial data online.
- Geospatial Infrastructure Support—TSB continues to support and enhance existing websites to enable Federal and public customers to obtain status on CLU, NAIP, and NRI related projects.

- CLU Pilot Project— Assisted with the deployment of an integrated suite of CLU web services to enable national scale CLU data to be accessed by FSA web applications for use in Disaster Planning and related activities.

- Provided on site coordination and project management for the successful migration from legacy enterprise servers to more robust systems

In the last year, TSB developed and/or implemented several IT related actions to include redevelopment of all NAIP inspection applications and process for implementation in FY13.

TSB developed several Python based scripts and ArcMap tools to enable Resource Imagery to be checked and formatted for use in downstream inspection workflows.

Life cycle replacement of Multifunction (Leased) Printer and legacy printers, reducing printing footprint and paper consumption by more than 50%.

Technology Services

Cyber Security

- Certified and Accreditation for Consolidated Management System (CMS) has been completed for FY 2012 and reviewed quarterly.
- Disaster and Recovery is being reviewed and maintained by APFO.
- All APFO databases are continuously reviewed for appropriate security levels and user permissions and changes made as necessary.
- In collaboration with FSA ISO, TSB developed account management policy and procedures.

In support of projects that benefit the general public and agencies outside USDA TSB:

- Developed (and made available) state based web services.
- Federal customers the ability to order geospatial data online.
- Geospatial Infrastructure Support—TSB continues to support and enhance existing websites to enable Federal and public customers to obtain status on CLU, NAIP, and NRI related projects.
- Successfully upgraded the APFO Oracle Development and Certification databases from Oracle 11gR2 to Oracle 11gR3 and migrated the databases to new servers.
- Developed a detailed migration plan to assist with future Oracle Database 11gR3 installations and upgrade of production system.
    - ◊ Approximately 90% progress towards completing upgrade and migration of Oracle Forms and Reports 10g to Oracle Fusion Middleware Forms and Reports 11g. Completion of this upgrade and migration is critical because Oracle Forms and Reports 10g is no longer supported by Oracle.
- Provided data management for 4ooTB of archived imagery on the SL8500 tape library.
- **Customer and NAIP partner orders**

#WO	Reprints	CCMs	QQs	CDs	DVDs	#HDs	HD size (GB)	Enclosure	CLU	Resource Imagery
276	283	7258	481,853	64	275	223	258,614	150	44,815	487,186

Ingested 46713 NAIP11 QQs, 674 NAIP11 CCMs, 53,218 NAIP12 QQs and 725 NAIP12 CCMs

Resource Projects- Copied and delivered 44TB of data on 46 hard disks

Production Services

"...change should be exploited as an opportunity rather than viewed as a threat..." - Peter Drucker

APFO's **Production Services Branch** is responsible for generating color and black and white aerial products both from digital image files and film original source materials for various customers, including the Farm Service Agency (FSA), the National Resources Conservation Service (NRCS), and the U.S. Forest Service (USFS), as well as many other federal/non-federal agencies and the general public. The Branch is also responsible for photographic chemical mixing and chemical quality control as well as the electronic and mechanical maintenance of all production related equipment.

During the last 12 months, our legacy production methods continued to shift away from relying on analog equipment for producing hardcopy photoproducts. During the second quarter the integrated digital printing/processing system, discussed in last year's report, became operational and throughout FY12, was relied on to produce over 13,000 Resource Program prints.

Mark Schneller performs system start-up checks on the integrated digital printing/processing system. APFO photo credit

The photogrammetric film scanning upgrades, also acquired last year, have equally demonstrated shifting away from analog systems simply makes sense. Because of the increased film scanning capabilities coupled with our integrated digital printing/processing system APFO will be able to discontinue 12 analog products and eliminate over 30 analog production equipment systems within the next several months.

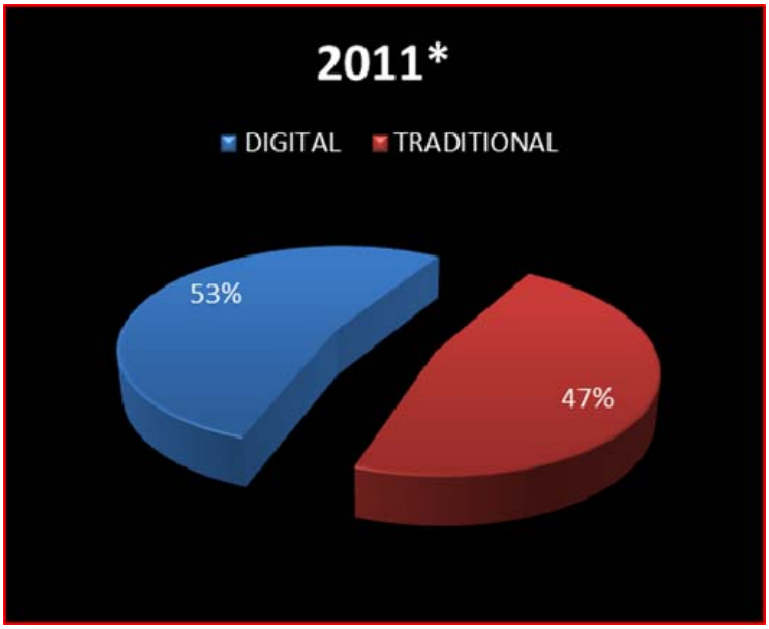
Along with the resulting changes in equipment and products, changes occurred with our most important production component, the employees. Production saw three employees retire after serving over 90 cumulative years of honorable and faithful service. Their departure, although challenging for the organization, brings forth new opportunities for staffing the Branch. One of those opportunities will come from hiring a new kind of employee, a Visual Information Specialist.

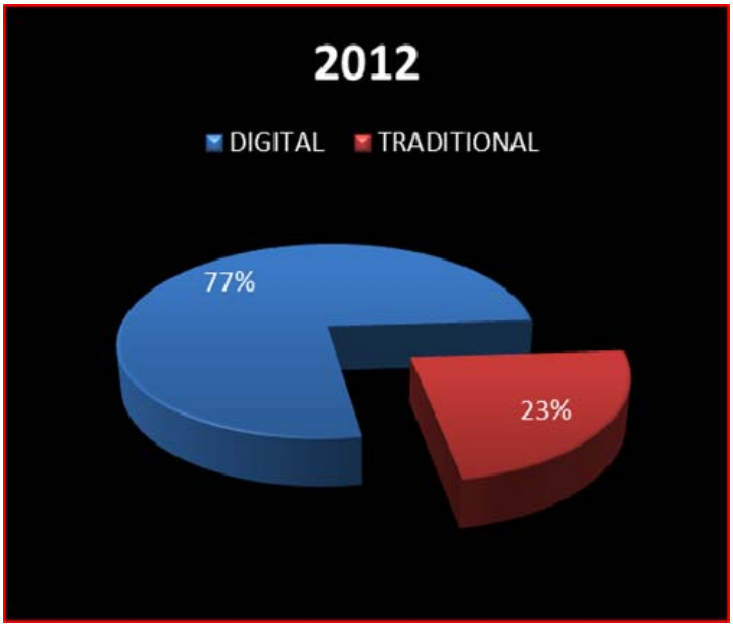
Production Services

The photographic laboratory skill set required of past employees no longer meets the needs of our business. Today and in future years, Production's employees will require skills and competencies that involve correcting and enhancing electronic image files with computer aided software applications and digital printing devices. Gone are the days of creating photographs with contact printers and enlargers, and correcting those photos by using the correct grade of printing paper, the correct filter pack, or by burning and dodging an image to achieve the highest quality results. The Visual Information Specialist brings to the workplace a contemporary set of skills and competencies that will produce high quality photographic products using imagery software, a mouse click, and a digital printing device in order to better support the business.

Another opportunity involved reassigning Photo Section employees to the Scanning Section. It was necessary for the Branch to adapt and shift work efforts to better support APFO's evolving business environment. So little original imagery that APFO now acquires is on film, this has had a cascading and far-reaching effect respectively on its internal functions as well as it product distributions. The employee reassignments will also allow for better support of work directly involved with large scale, long-term projects such as that of scanning roughly 10,000,000 historic black and white and color film images hosted in the AFPO film vault.

The production workload balance between traditional and digital production jumped significantly from FY2011. Traditional (analog) work requests continued to trend downward, and are expected to reach near zero levels by the end of FY13.





*Revised from FY11 estimates

Employee Activities

APFO Director Ron Nicholls gives an address at the USDA 150th Anniversary celebration.

True to his roots as a frontier farm boy, on May 15, 1862, President Abraham Lincoln signed legislation to create the U.S. Department of Agriculture. 2012 marked 150 years of service to the American Farmer and Rancher and APFO celebrated at the Bennett Federal Building in downtown Salt Lake City with other regional USDA organizations and employees.

"Leading Change Every Day in Every Way" isn't a phrase but more a commitment to ensuring a more positive cultural environment at APFO. A multi–disciplined approach to enhancing our most valuable resource, our workforce, saw several activities and initiatives.

APFO Equal Employment Opportunity programs provide employees with various opportunities to participate in events that promote workforce diversity. One such activity is the diversity education program "Lunch and Learn" where employees spend their lunch time learning about topics such as:

- **Disability Awareness**
- **Native American Heritage**
- **Black History**

Some of the Employee Observance Activities included:

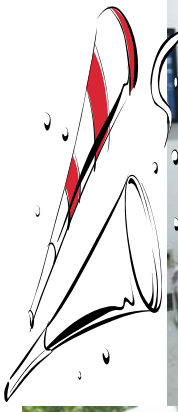
The Road Home * Hispanic Heritage Month *** Sub for Santa**

Utah Pet Adoption * 26th Annual Utah Women's Conference *** Veteran's Day**

Breast Cancer Awareness Month * Women's History Month**

Asian/Pacific Heritage Month * Utah Food Bank**

Employee Activities



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