



Farm Service Agency

**National Agriculture
Imagery Program (NAIP)**

Pecora Conference

November 13, 2002 Denver, Colorado

Kent Williams, USDA FSA

Aerial Photography Field Office

Presentation Outline

- **Background to USDA aerial imagery programs.**
- **Introduction to National Agricultural Imagery Program (NAIP)**
- **Review 2001 and 2002 NAIP pilot projects**
- **Outline partnership opportunities**

Brief History

USDA has been acquiring and using aerial photography/imagery to administer farm programs since 1936.

- Full county coverage in agricultural land on 5-7 year cycle.
- Coverage of National Forests
- Over 10 million film negatives archived at FSA Aerial Photography Field Office (APFO)

Requirements for Imagery

USDA Farm Programs

- **Base Map or Farm Records**
- **Measure Acreage**
- **ID Crop Type**
- **Coordinate Image acquisition**

Maintaining Farm Records



Measuring Acreage



Identifying Crop Type

FSA Aerial Compliance Photography



Small Format A. P.

- 35mm Camera
- Acquired Locally
- Natural Color
- Growing Season

Two Photo Programs to meet all requirements



Small Format A. P.

- 35mm Camera
- Acquired Locally
- Natural Color
- Growing Season

Large Format A. P.

1:40,000

- National Program
- Black and White
- Leaf Off
- 5-7 year cycle

Image Acquisition Programs used by USDA/FSA



FSA County Based Photography

NHAP National High Altitude Aerial Photography Program

NAPP National Aerial Photography Program

NDOP National Digital Ortho Photography Program

FSA Aerial Compliance Program

Other USDA Image Acquisition Programs

- **US Forest Service**
 - “Resource Photography”
- **Natural Resources and Conservation Service**
 - National Resource Inventory

GIS Implementation

1999 - 2004

USDA Farm Service Agency

Digitizing Farm Field Boundaries (Common Land Units)



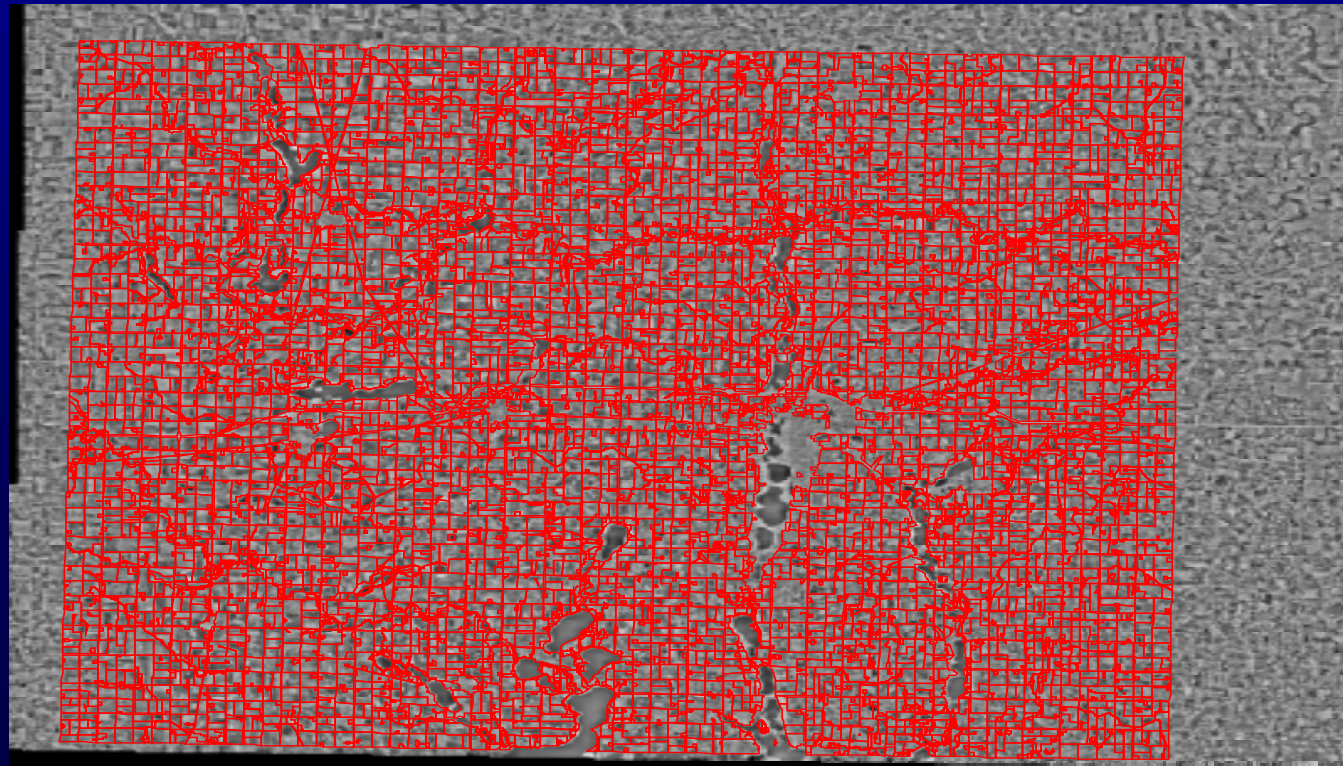
GIS Implementation

1999 - 2004

USDA Farm Service Agency

Digitizing Farm Field Boundaries (Common Land Units)

Approx. 50 million polygons



Requirements for Imagery

USDA Farm Programs

in

GIS Environment

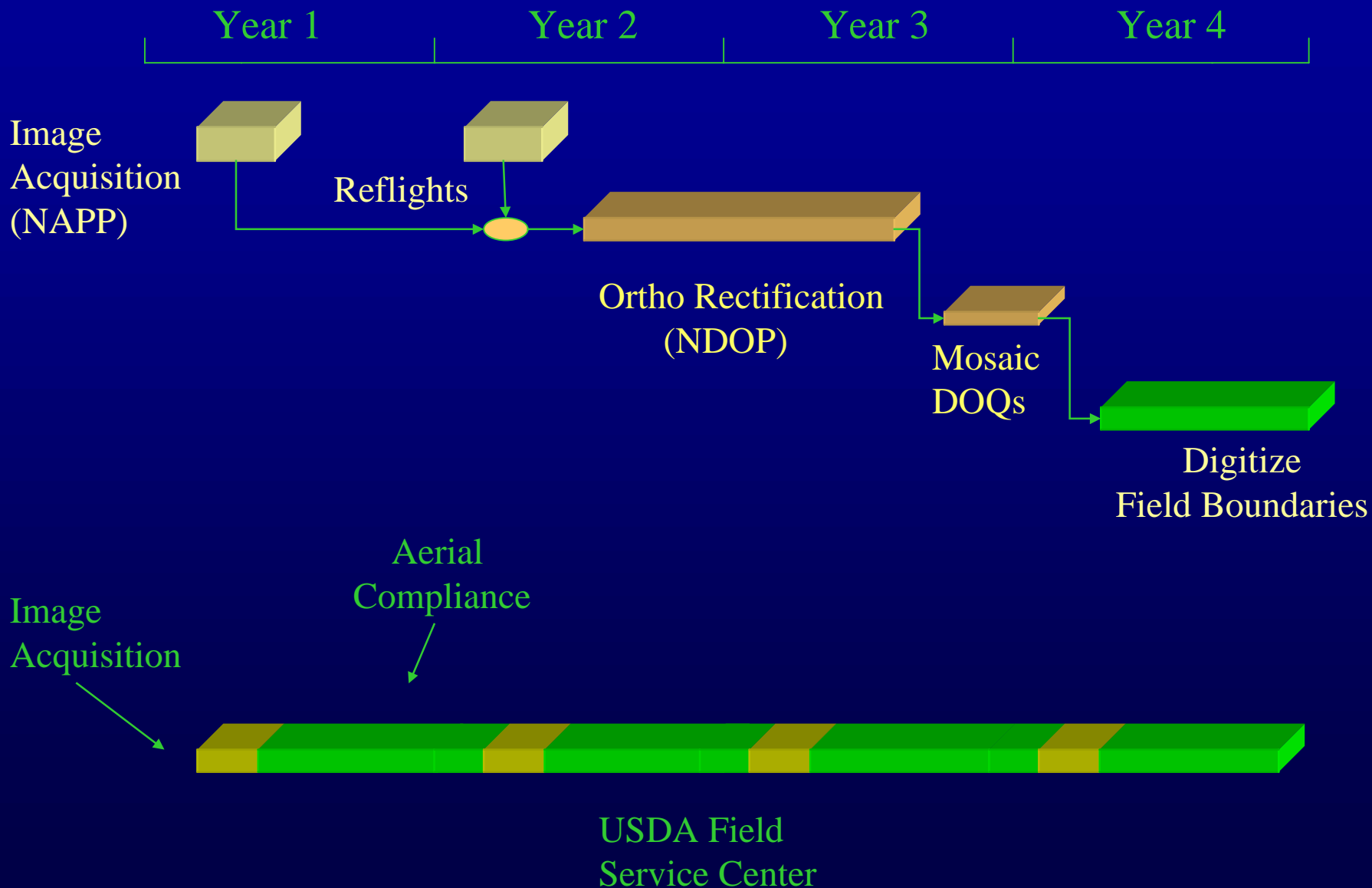
- **Measure acreage**
 - **ID Crop Type**
 - **Base Map**
for Farm Records
 - **Coordination**
- *Rectified Digital Image*
acquired annually
 - *Color/Color Infrared*
>2m. GSD
 - *Updated Ortho Imagery*
 - *FGDC, etc.*

Current Image Acquisition

Two Programs

- Worked fine in the past
- Worked fine for GIS implementation
 - Digitizing CLU boundaries from mosaicked DOQs
- Not So good for GIS Maintenance
 - Timeline for ortho update too long
 - Redundant Photo coverage
 - Imagery for aerial compliance needs to be rectified

Current Image Acquisition/Use Cycle



National Agricultural Imagery Program

Single Source of Imagery to Support GIS Maintenance in
USDA Field Service Center

Acquired Annually and Delivered for Compliance

- Flown during growing season
- color/CIR
- delivered “geo-referenced”

Source of Imagery for updated ortho-photos

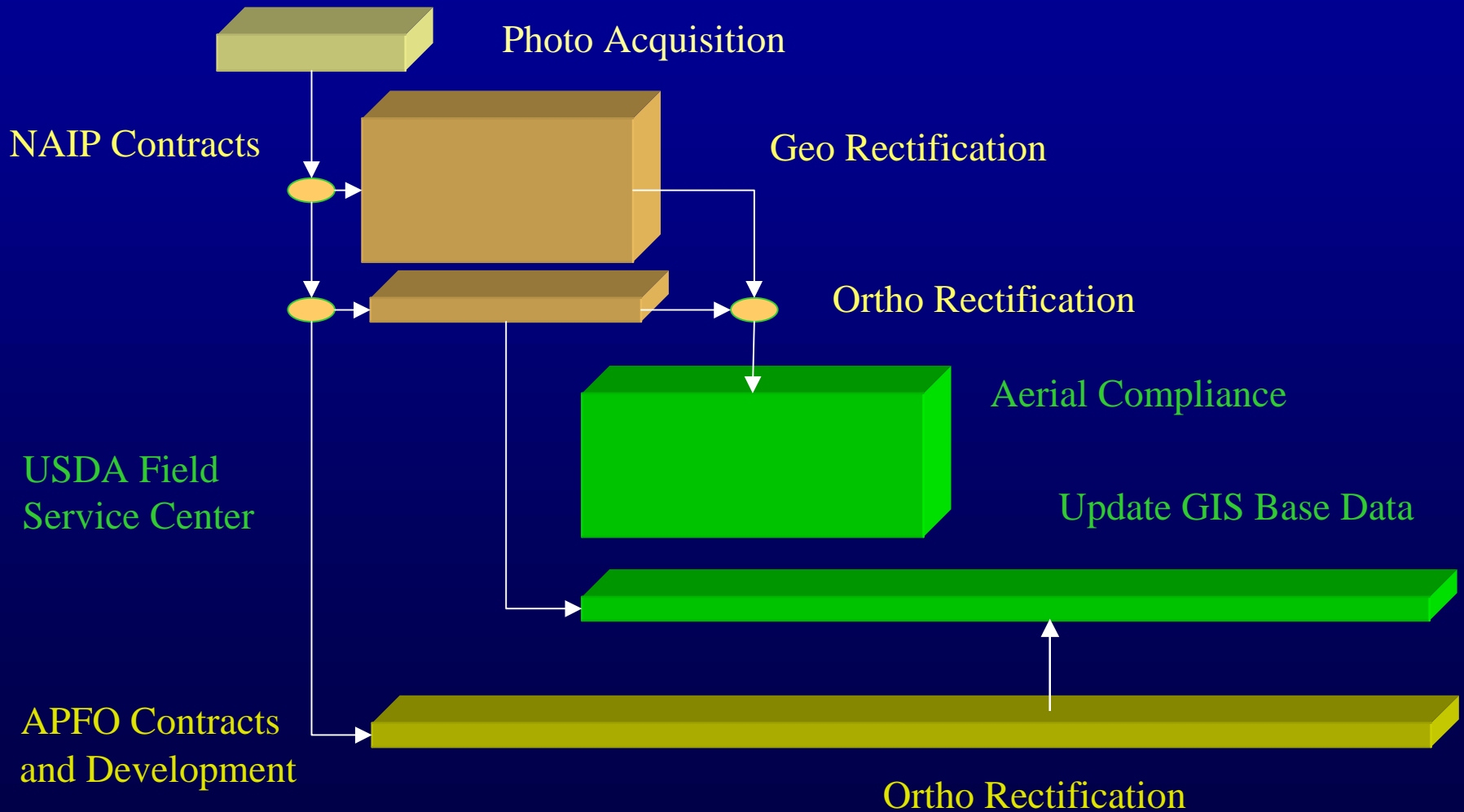
- Register 1st generation within 3 meters
- Ortho Produced/Delivered within 1 year of acquisition
 - Based on funding levels
 - Cost Sharing Crucial

NAIP Vision Statement

The **National Agricultural Imagery Program (NAIP)** consolidates FSA's aerial photography, digital imagery, and digital orthoimagery requirements into a national strategy that **acquires the best value products** for USDA agencies while is flexible enough to create win-win partnerships with Federal agencies, State and local governments, and private entities. NAIP will maximize the informational value of acquisitions by **minimizing the cycle time** from acquisition to fielding while keeping the image content information for the creation of traditional photographic and orthoimagery.

Annual NAIP Timeline

June | July | Aug | Sept | Oct | Nov | Dec | Jan | Feb | Mar | April | May



NAIP Program Goals

- Procurement plan based on “Best-Value” contracting practices
- Acquire large format aerial photography, 1:40,000 scale, color positive film
- Acquire during the peak agricultural growing season (leaf-on)
- Deliver digital imagery (one & two meter), in a county format, within one month of acquisition for FSA Compliance Program

NAIP Program Goals

- Provide new photography/digital imagery on an annual basis
- Update ortho-image base on 1-5 year cycle (depending on USDA Service Center needs)
- Aerial film archived at APFO and made available for photographic products
- Digital imagery furnished to the “National Map” concept to augment the NAPP/NDOP

NAIP Products and Cost

2002 Pilot Project

1m Ortho-Rectified

- 1 meter GSD
- 3.75" quarter quad
- horizontal accuracy: 3 meter from reference DOQ

\$19.00 / Sq. Mile

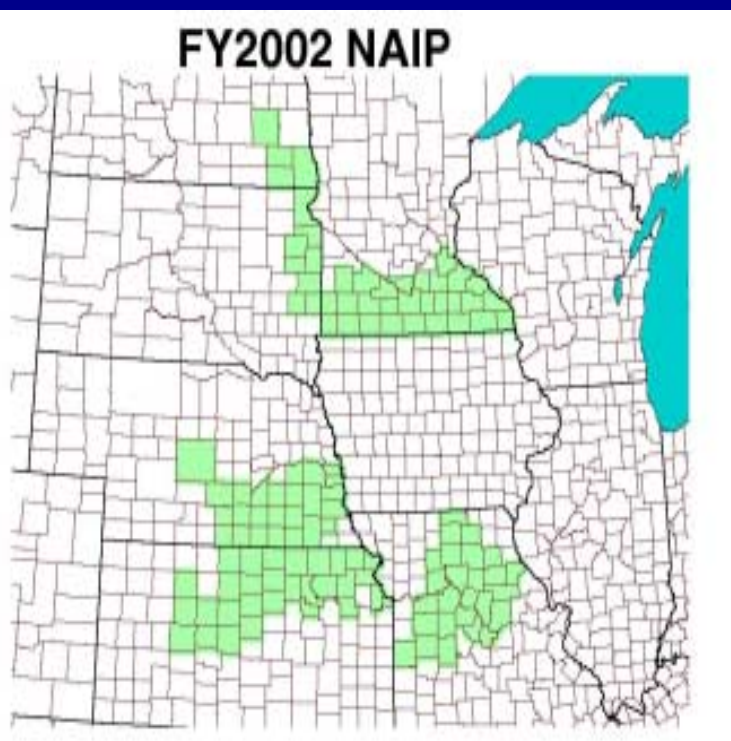
2m Geo-Rectified

- 2 meter GSD
- 3.75 quarter quad
- horizontal accuracy: not specified
 - measurements +/- 1%
 - geo-positioned to facilitate use

\$7.00 / Sq. Mile

FSA NAIP Contracts

2002 Aerial Imagery Contracts

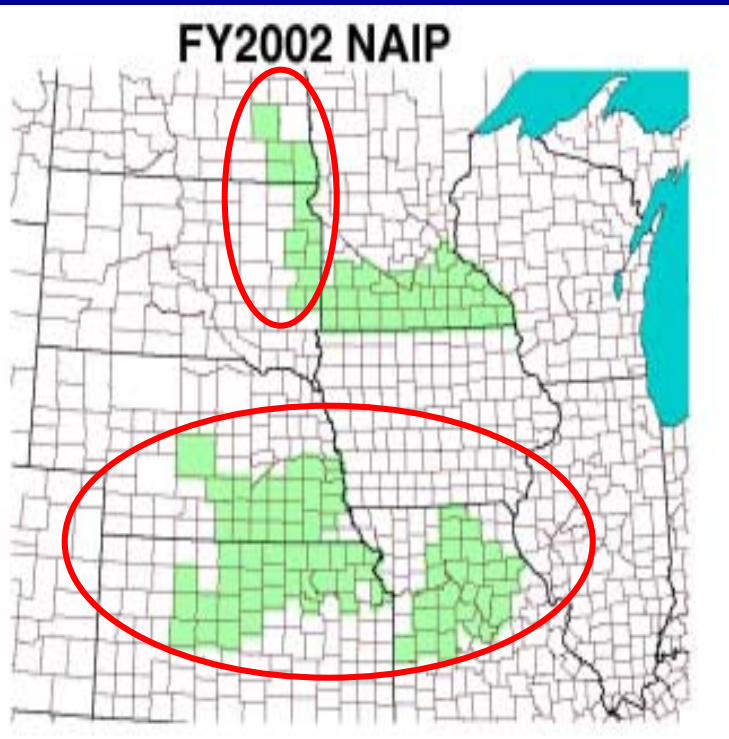


Contracts Summary

- **Six States Contracted: KS, NE, ND, SD, MO, and MN**
- **121 Counties Covered**
- **82,727 Square Miles**
- **28,932 Linear Miles of NAPP-Like Aerial Photography (Film archived at APFO)**
- **Summer 2002 Flying Season**

FSA Compliance Imagery

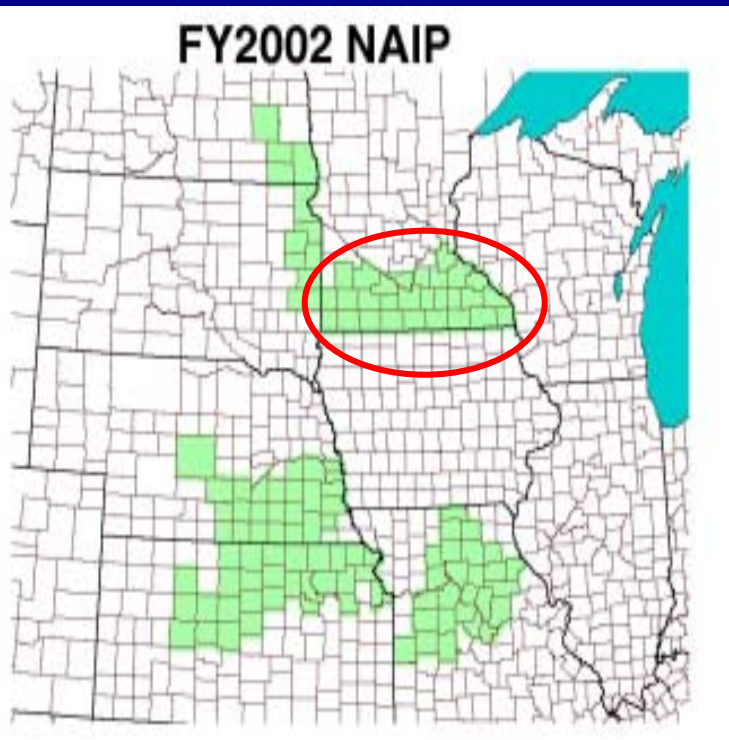
2 Meter Geo-rectified Imagery



Kansas, Nebraska, North & South Dakota, and Missouri

- Project Cost: \$6.94 per square mile
\$453,000.00 total
- 65,266 Square Miles
- 93 Counties Covered
- Geo-Rectified Color Digital Imagery
- 2.0 Meter pixel Resolution
- Geo-Tiff Image Format

FSA Compliance and 1 Meter Ortho Imagery Updates



MINNESOTA

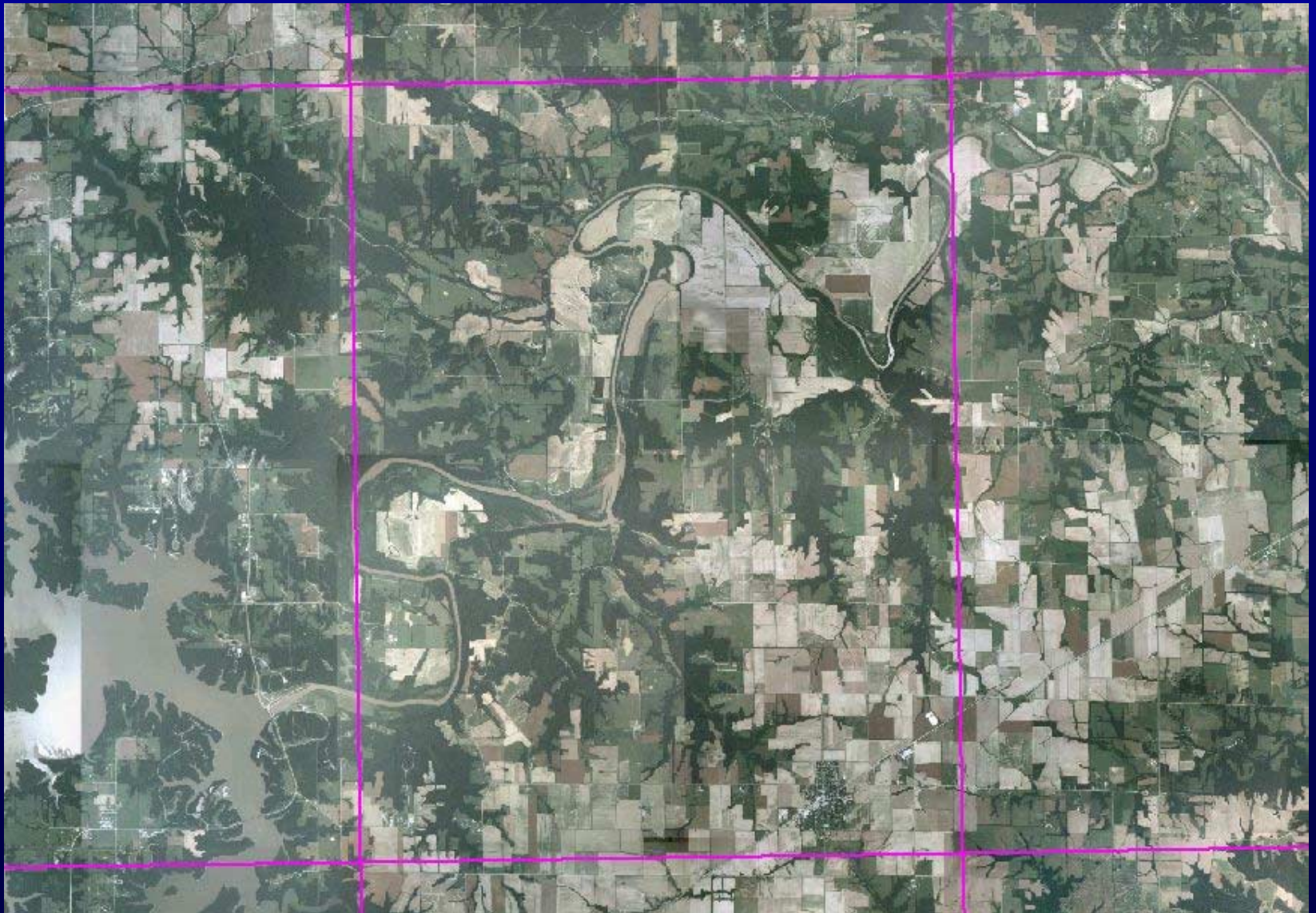
- Project Cost: \$18.99 per square mile, \$331,548.70 total
- 17,461 Square Miles
- 28 Counties Covered
- Ortho-Rectified Color Digital Imagery
- 1.0 Meter pixel Resolution
- Geo-Tiff Image Format

Ralls County, Missouri

2 Meter Geo-Referenced Image



7.5 Minute Quad Boundaries



Common Land Unit (CLU) Boundaries



3.75 Minute Quarter Quad Centered

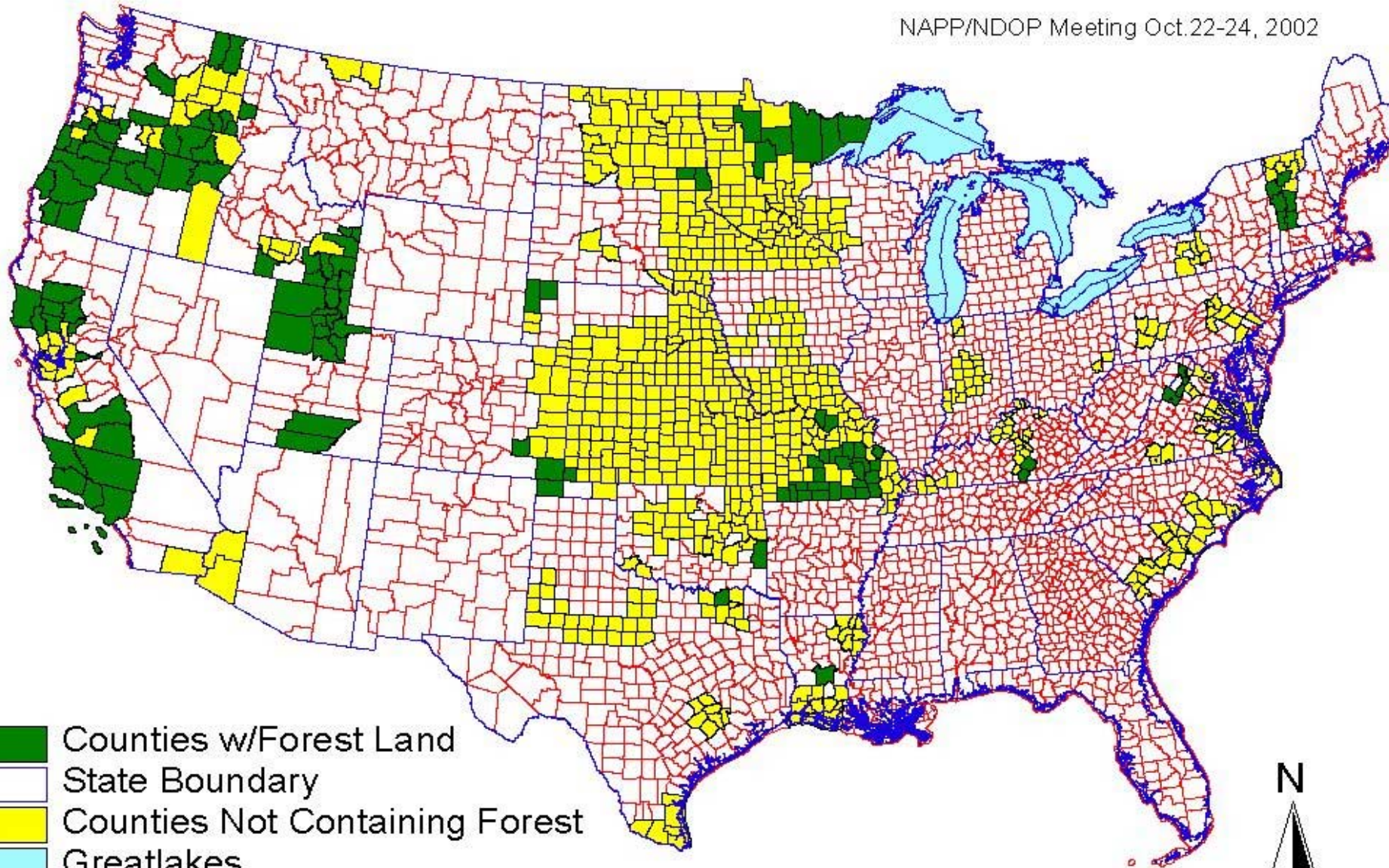


3.75 Minute Quarter Quad Centered



Proposed NAIP Counties FY03

NAPP/NDOP Meeting Oct.22-24, 2002

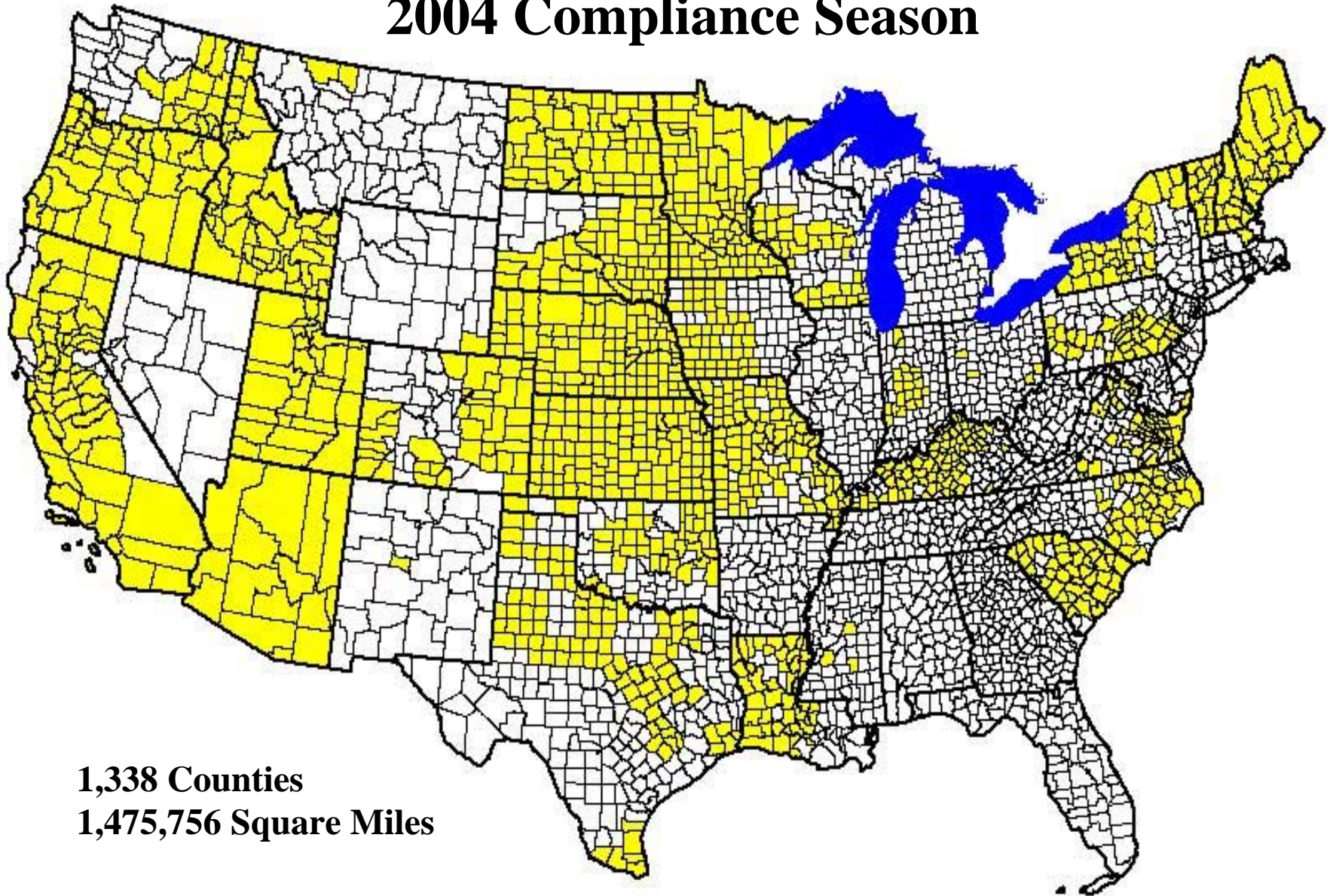


- Counties w/Forest Land
- State Boundary
- Counties Not Containing Forest
- Greatlakes
- U.S. Base Map

USDA-FSA-Aerial Photography Field Office



Potential NAIP Coverage for 2004 Compliance Season



1,338 Counties

1,475,756 Square Miles

Types of Partnership Opportunities

- **New Coverage Beyond FSA Counties**
- **New Coverage Beyond Agricultural Areas of a County**
- **Higher Image Resolution Upgrade**
- **Ortho Rectification Upgrade**
- **State or County Cost Share with FSA**

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Contacts for Partnership Information:
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**APFO is the primary source of aerial imagery
for USDA with over 10 million images dating from 1955.**