



National Geospatial Program Office

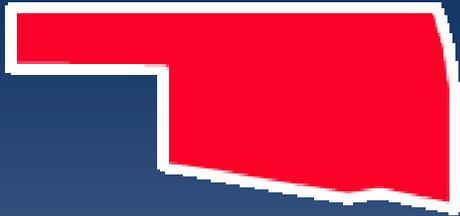
# The National Geospatial Program and the New Direction of *The National Map*

**Presenter:** Darryl S. Williams  
USGS Geospatial Liaison for Oklahoma

**Event:** Oklahoma Tax Commission, Sixty-fifth Annual Ad Valorem  
Education Conference for Oklahoma Assessing Officers

**Date:** August 5, 2009

U.S. Department of the Interior  
U.S. Geological Survey



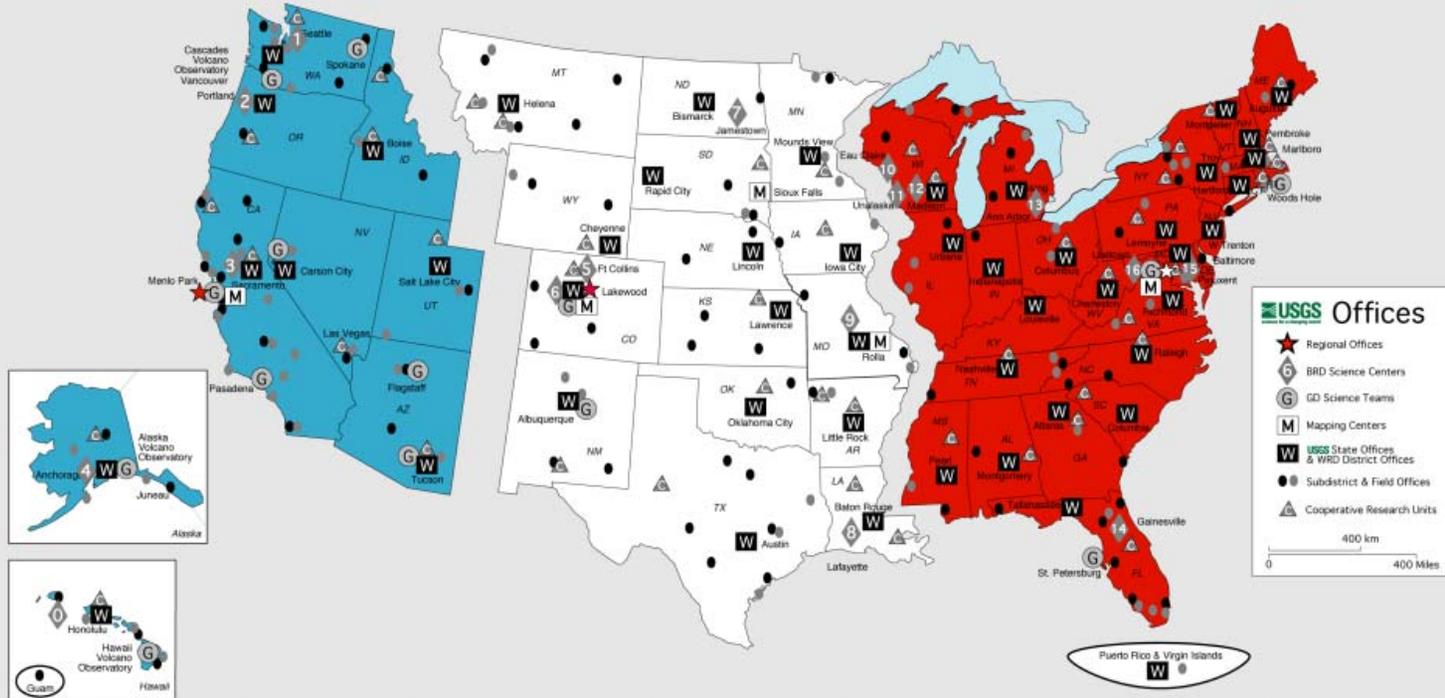
# Oklahoma Darryl Williams



- **Major Strategy:** Contribute to the development of the NSDI by leveraging Federal resources toward implementation of OSDI. Establish permanent funding for the OGI.
- **Current focus:** Develop multi-agency (city, county, regional, Federal) partnership proposals for urban areas; OKC/Tulsa / COUASI ; assimilate Federal requirements & resources; establish data sharing agreements among various entities, develop & implement statewide clearinghouse.
- **Future Activity:** 1-m NAIP meets many user requirements but one of Oklahoma's top future priorities is to acquire funding for statewide leaf-off orthoimagery ; latest vintage is 1995.
- **Concerns:** Continued lack of common strategy/mandate for Partners from the same and different levels of government to consistently & effectively leverage geospatial data resources. Resources for data stewardships for TNM/Framework layers.



## U.S. Geological Survey Regions and Location of Major Offices



**Western Region**  
Menlo Park, CA

- 0. Pacific Islands Science Ctr.
- 1. NW Biological Science Ctr.
- 2. Forest & Rangeland Ecological Science Ctr.
- 3. California Science Ctr.
- 4. Alaska Science Ctr.

**Central Region**  
Lakewood, CO

- 5. Mid-Continent Ecological Science Ctr.
- 6. Ctr. for Biological Informatics
- 7. Northern Prairie Wildlife Research Ctr.
- 8. National Wetlands Research Ctr.
- 9. Environmental & Contaminants Research Ctr.

**Eastern Region**  
Reston, VA

- 10. Environ. Mgt. Tech. Ctr.
- 11. Nat'l Wildlife Health Ctr.
- 12. Upper Mississippi Science Ctr.
- 13. Great Lakes Science Ctr.
- 14. Florida & Caribbean Research Ctr.
- 15. Patuxent Wildlife Research Ctr.
- 16. Lextown Science Ctr.



# Regions and Areas

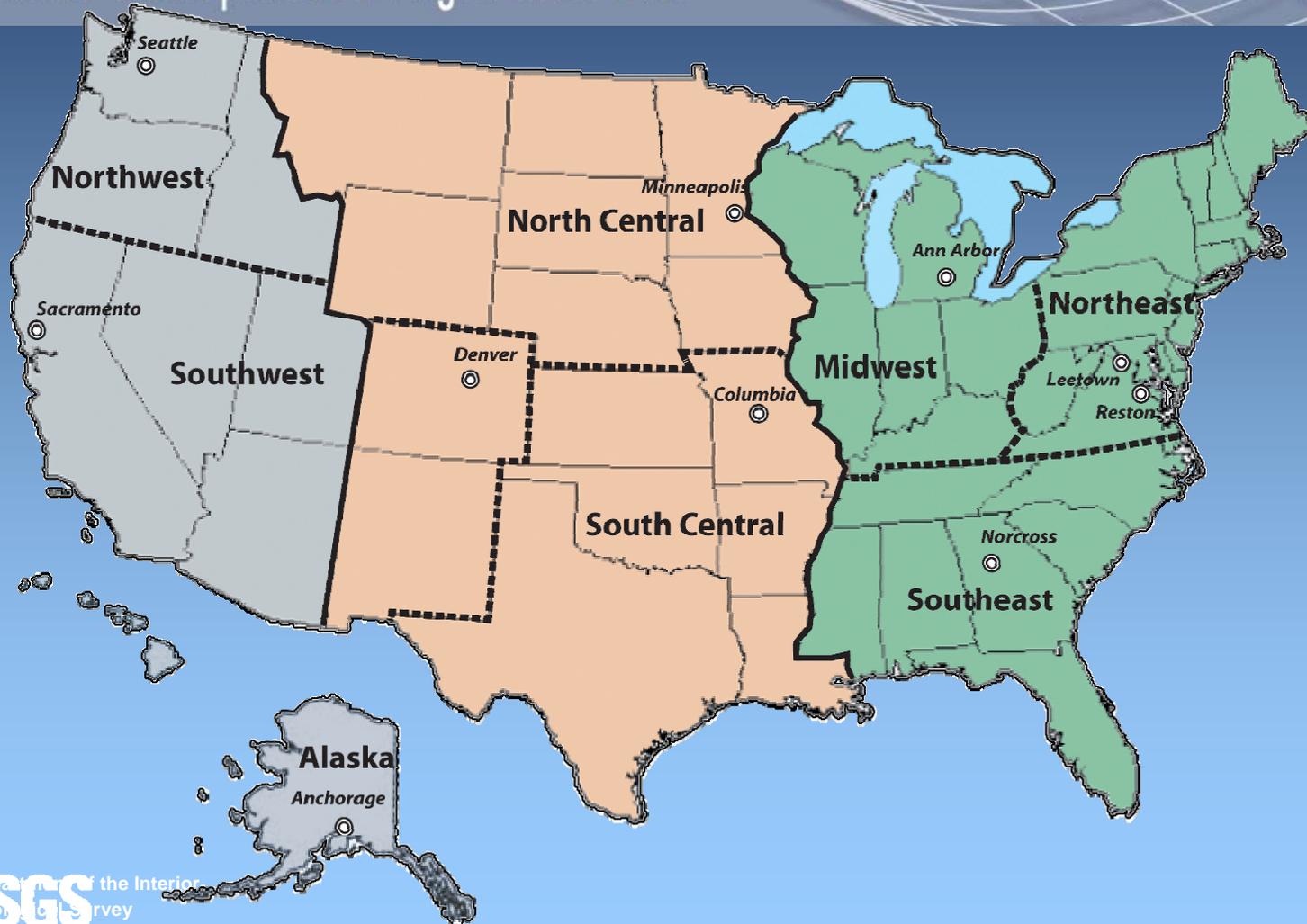




science for a changing world

# Selected REX Duty Stations

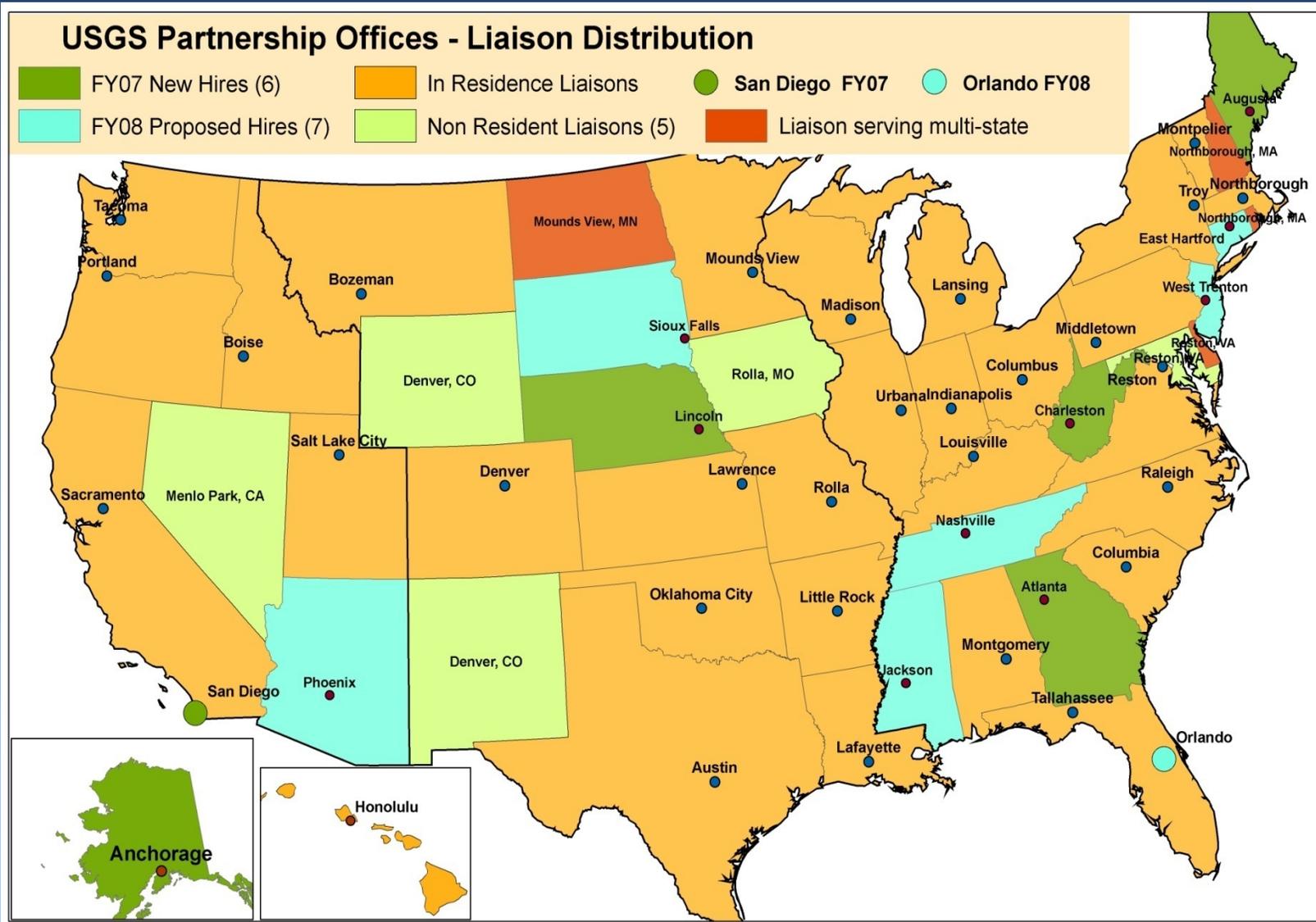
National Geospatial Program Office



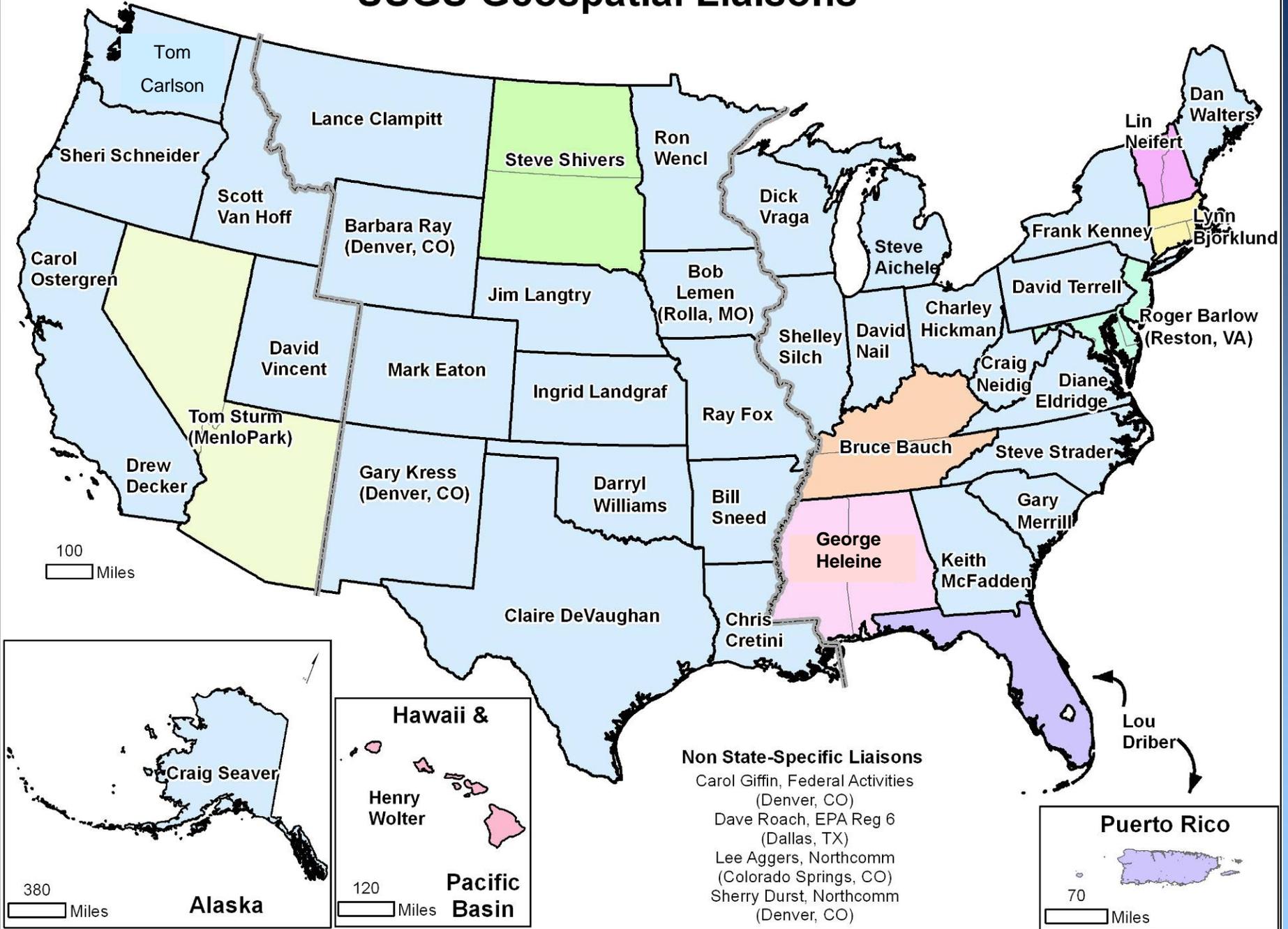
## Criteria for Establishing Boundaries of New Areas

- Science drivers, societal issues, opportunities
- Physiographic provinces and ecoregions
- Alignment with DOI bureaus
- Common ways of working with customers and partners
- Internal span of control—FTE and budget parity
- External span of control—DOI, other Federal agency partners, non-Federal partnerships

# USGS Geospatial Liaison Locations

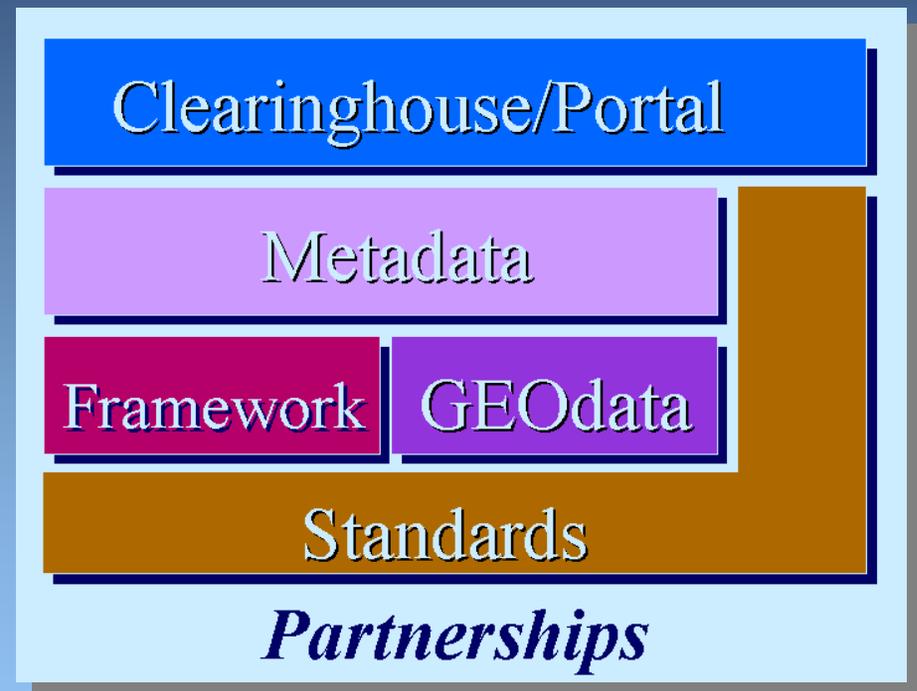


# USGS Geospatial Liaisons



# What is the NSDI?

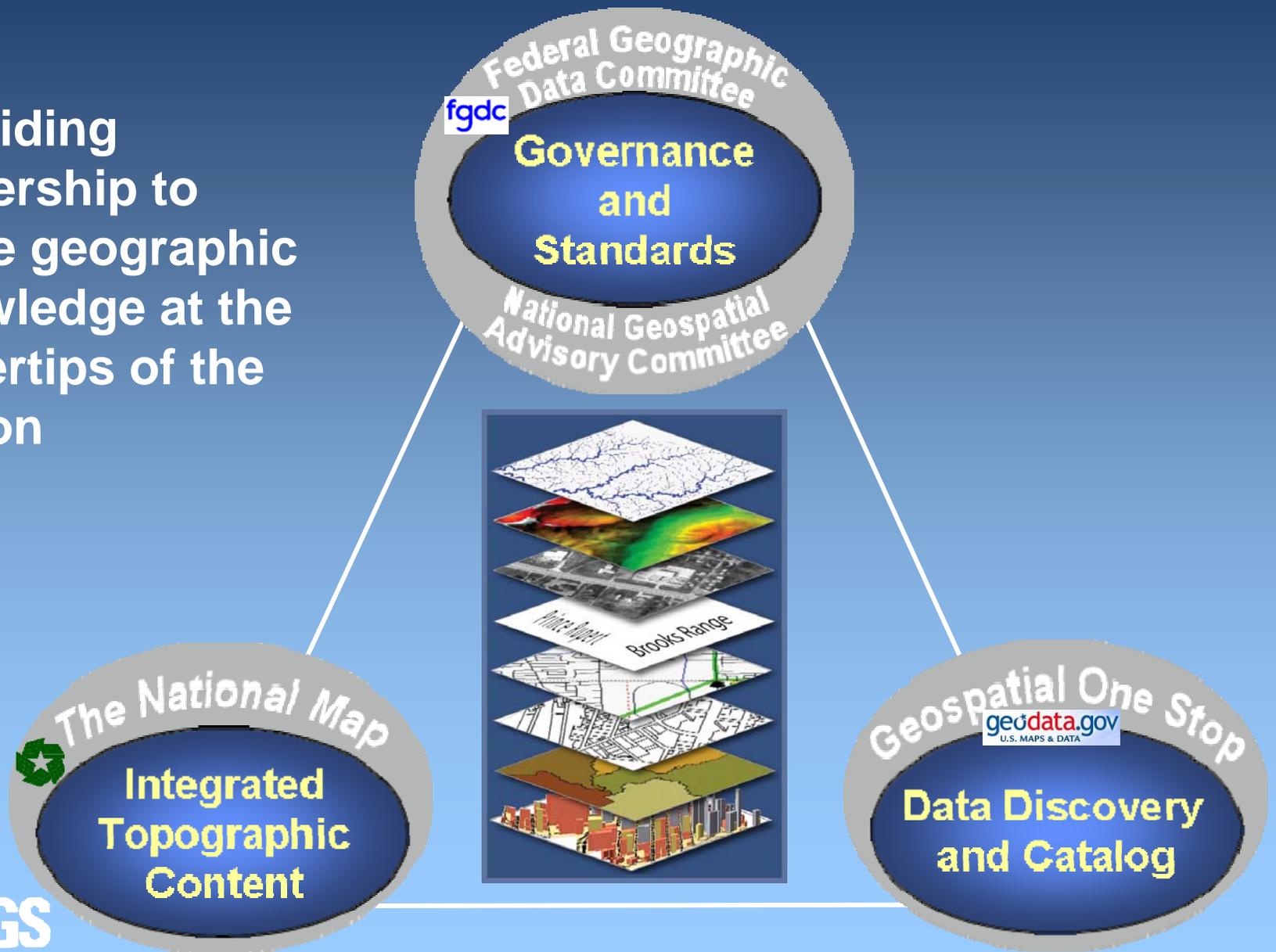
**NSDI** = the technology, policies, standards, and human resources necessary to acquire, process, store, distribute, and improve the use of geospatial data *for decision-making and solving problems*



[Executive Order 12906](#) called for the establishment of the NSDI

# National Geospatial Program Role in the NSDI

Providing leadership to place geographic knowledge at the fingertips of the Nation



# NGAC Appointments

- **28 Members**
  - 14 Members from Non-Governmental Organizations (Private Sector, Non-Profits, Academia)
  - 14 Members from Governmental Organizations (State, County, Local/Regional, Federal, Tribes)
- **Staggered Terms**
  - 14 3-year terms, 14 2-year terms
  - Subsequent appointments for 2-year terms



National Geospatial Program Office

# Geospatial One-Stop

*Gateway for Discovery and Access*

geodata.gov  
U.S. Maps & Data

The logo for geodata.gov is displayed on a white rectangular background. The text 'geodata.gov' is in a blue, lowercase, sans-serif font, with the 'o' in 'geo' containing a small star. Below it, 'U.S. Maps & Data' is written in a smaller, blue, sans-serif font.

**Publishing Web Map Services in GOS  
In Support of TNM**

U.S. Department of the Interior  
U.S. Geological Survey

# USGS Information Policy

Taken from [www.usgs.gov/laws/info\\_policies.html](http://www.usgs.gov/laws/info_policies.html)

- “The USGS, as the science arm of the Department of the Interior and the earth and natural science agency for the Nation, has an ongoing obligation to **keep the broadest spectrum of the public advised and engaged in its scientific research, investigations, and ongoing information releases.**”
- “It is the policy of the USGS to conduct its activities and **make the results of its scientific investigations available in a manner that will best serve the whole public.**”

# ***The National Map***

***The National Map* is a collaborative effort to improve and deliver topographic information for the nation**

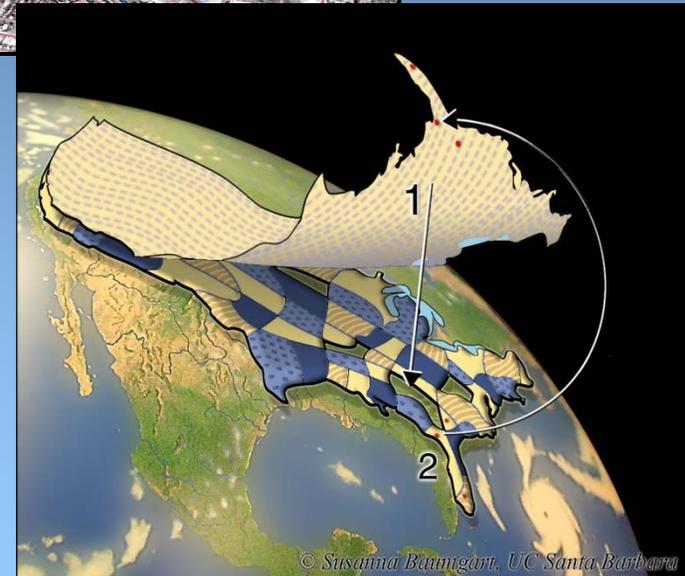
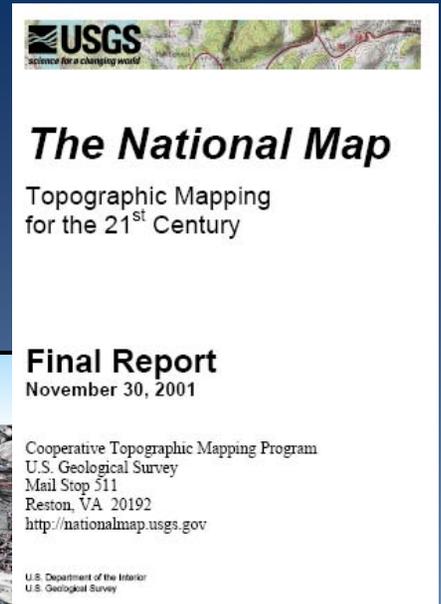
The goal of *The National Map* is to become the nation's source for trusted, nationally consistent, integrated and current topographic information available online for a broad-range of uses

***The National Map* contributes to the NSDI**



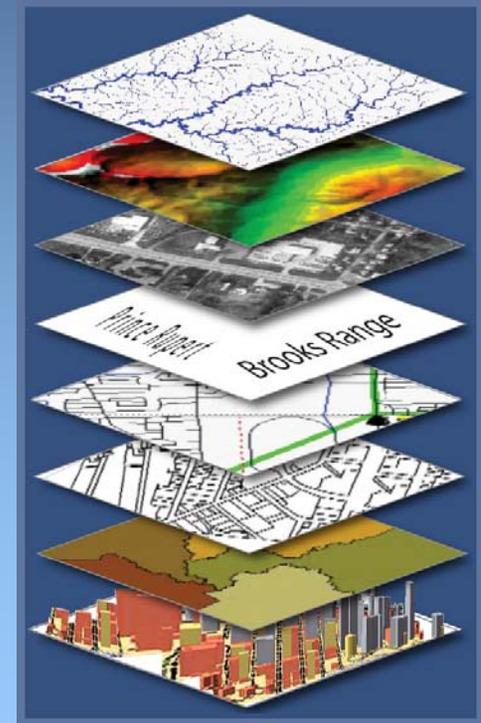
# The National Map Vision

- A seamless, continuously maintained, nationally consistent set of base geographic data
- Developed and maintained through partnerships
- A national foundation for science, land and resource management, recreation, policy making, and homeland security
- Available over the Internet
- The source for revised topographic maps



# *The National Map*

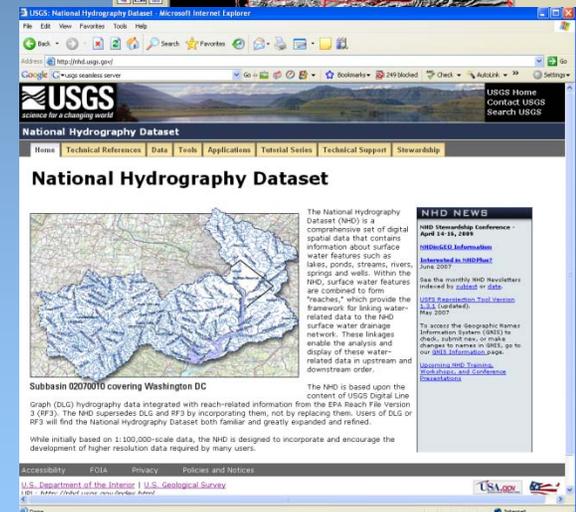
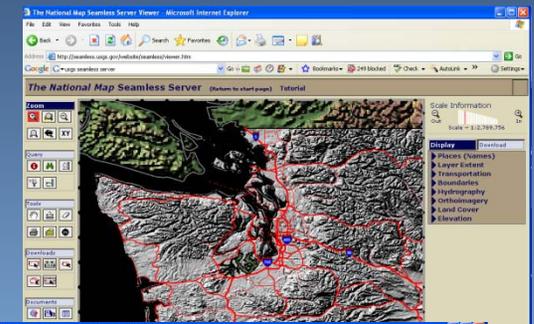
- *The National Map* includes eight data layers: hydrography, elevation, orthoimagery, geographic names, boundaries, transportation, land cover, structures
- Public domain data to support
  - USGS topographic maps at 1:24,000-scale
  - Products and services at multiple scales and resolutions
  - Analysis, modeling and other applications at multiple scales and resolutions
- *The National Map* is built on partnerships and standards



# The National Map Products and Services

If you've ever used or partnered on any of these, you are a user and partner of *The National Map*

- National Hydrography Dataset (NHD) and NHD stewardship
- Seamless Server and imagery partnerships
- National Elevation Dataset (NED) and elevation partnerships
- Best Practices Database – transportation, boundaries and structures
- Geographic Names Information System (GNIS)
- Digital 7.5-Minute Topographic Maps (DRGs and GeoPDFs)



# *The National Map 1.0*

- *The National Map 1.0* has included both centralized and distributed data approaches
  - For some data themes, **partner data are ingested into and distributed from centralized databases** such as the National Hydrography Dataset (NHD) and the National Elevation Dataset (NED)
  - For others, rather than physically holding partner data, the database referred to as *The National Map* data catalog stores links to multiple, **distributed partner web map services**
- Centralized and distributed data are displayed online together via a viewer which is one service of *The National Map*

# ***The National Map Partnership Opportunities***

- Make use of geospatial data and services available online for free
- Use USGS Geospatial Products and Services Contract (GPSC) contracting mechanism if desired (5% charge)
- Partner with USGS to acquire LiDAR and Hi-Resolution Orthoimagery over mutual areas of interest

# ***The National Map Partnership Opportunities***

## **Partnering on Data Acquisition – Major Federal Orthoimagery and Elevation Funding Programs**

- Farm Service Agency National Aerial Imagery Program
  - Statewide 1-m ortho coverage on three-year or better cycle
  - FSA provides majority of funding, with other federal contributors
  - States (with other partners) can buy up CIR and hi-res
- National Geospatial Agency Urban Area hi-res ortho and LiDAR
  - Major population centers of US, state capitals, other Areas of Interest, upcoming national events
- USGS annual Mapping Contract and Partnership Expenditures
  - USGS allocation for LiDAR and imagery stable
- 2009/2010 American Recovery and Reinvestment Act stimulus funds
  - \$14.5M (\$9M available to partnerships to acquire LiDAR and hi-res statewide imagery)

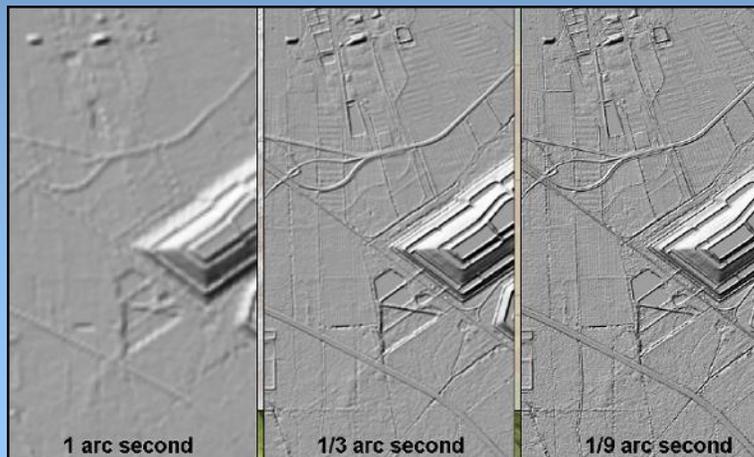


# The National Map Partnership Opportunities

## Free data download available

### ORTHOIMAGERY

- National 1-Meter available
- 1-foot natural color orthoimagery in the 133 urban areas



### ELEVATION

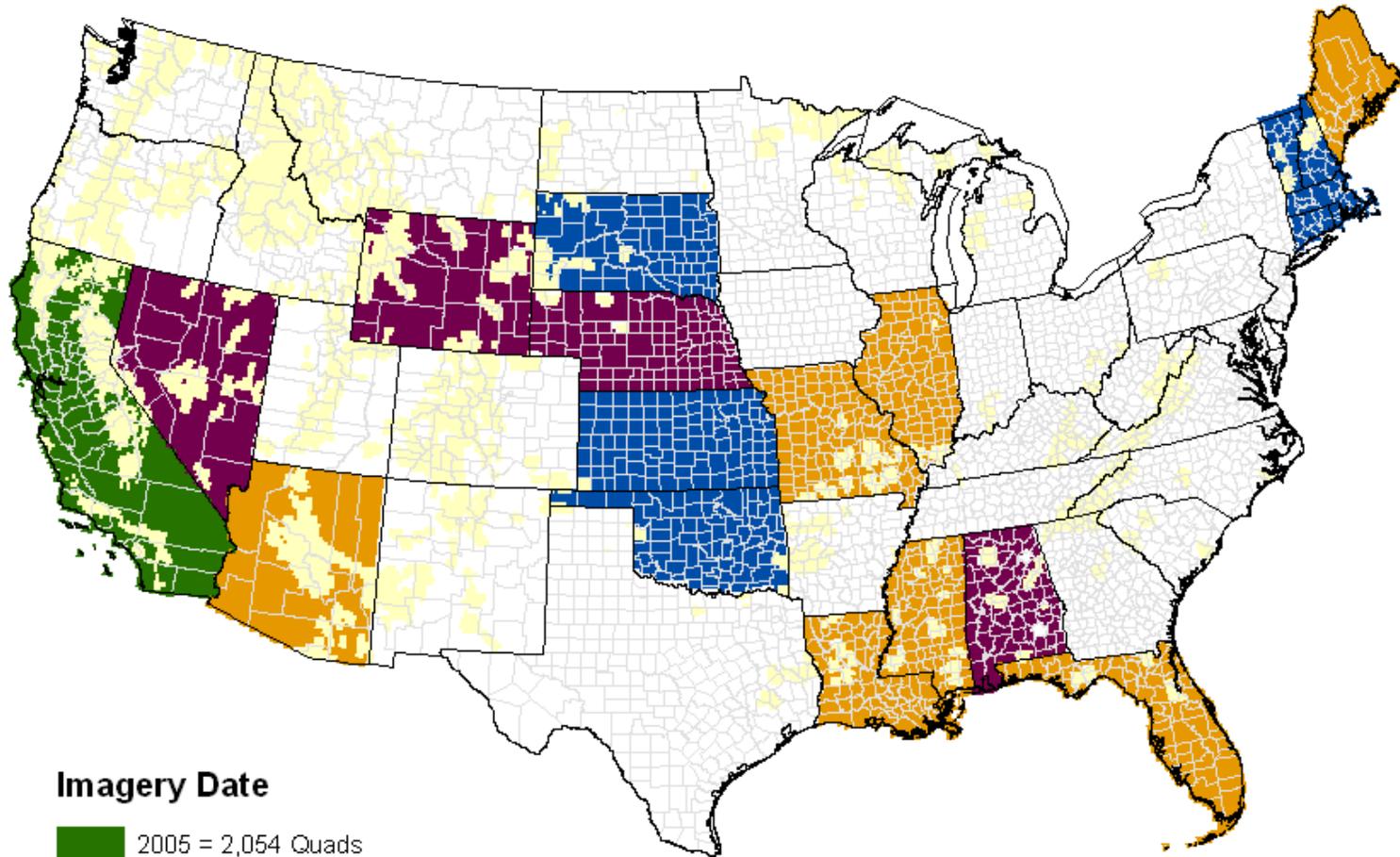
- Bare earth LiDAR over many Urban Areas through NGA partnerships
- Bare earth LiDAR over other areas of interest
- Point Clouds available for some areas



<http://seamless.usgs.gov/>



# FY09 Graphic Mapping Work Plan



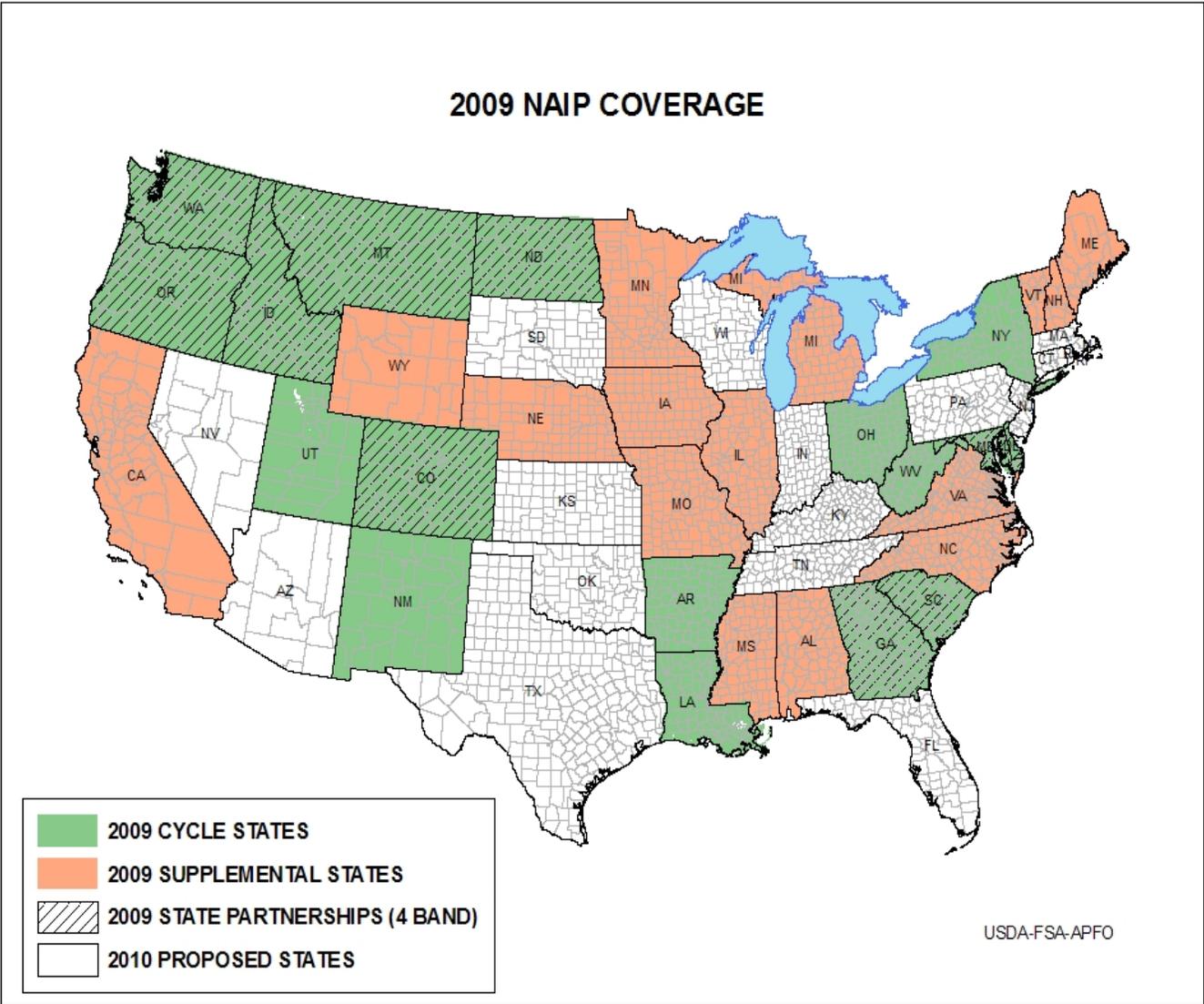
## Imagery Date

- 2005 = 2,054 Quads
- 2006 = 4,889 Quads
- 2007 = 6,319 Quads
- 2008 = 4,269 Quads
- US Forest Service Quads

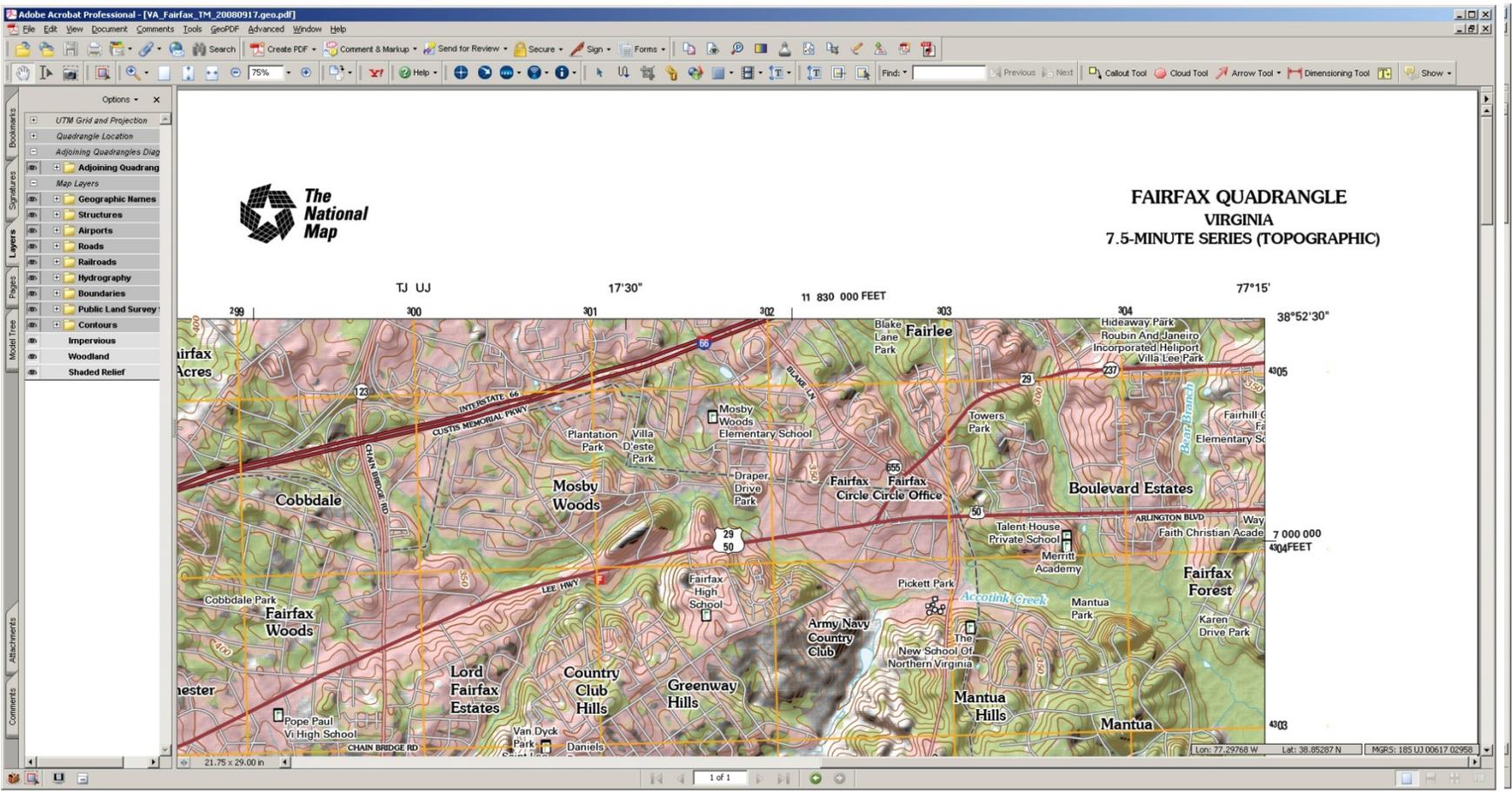
Total targeted quads = 17,531

January 7, 2008

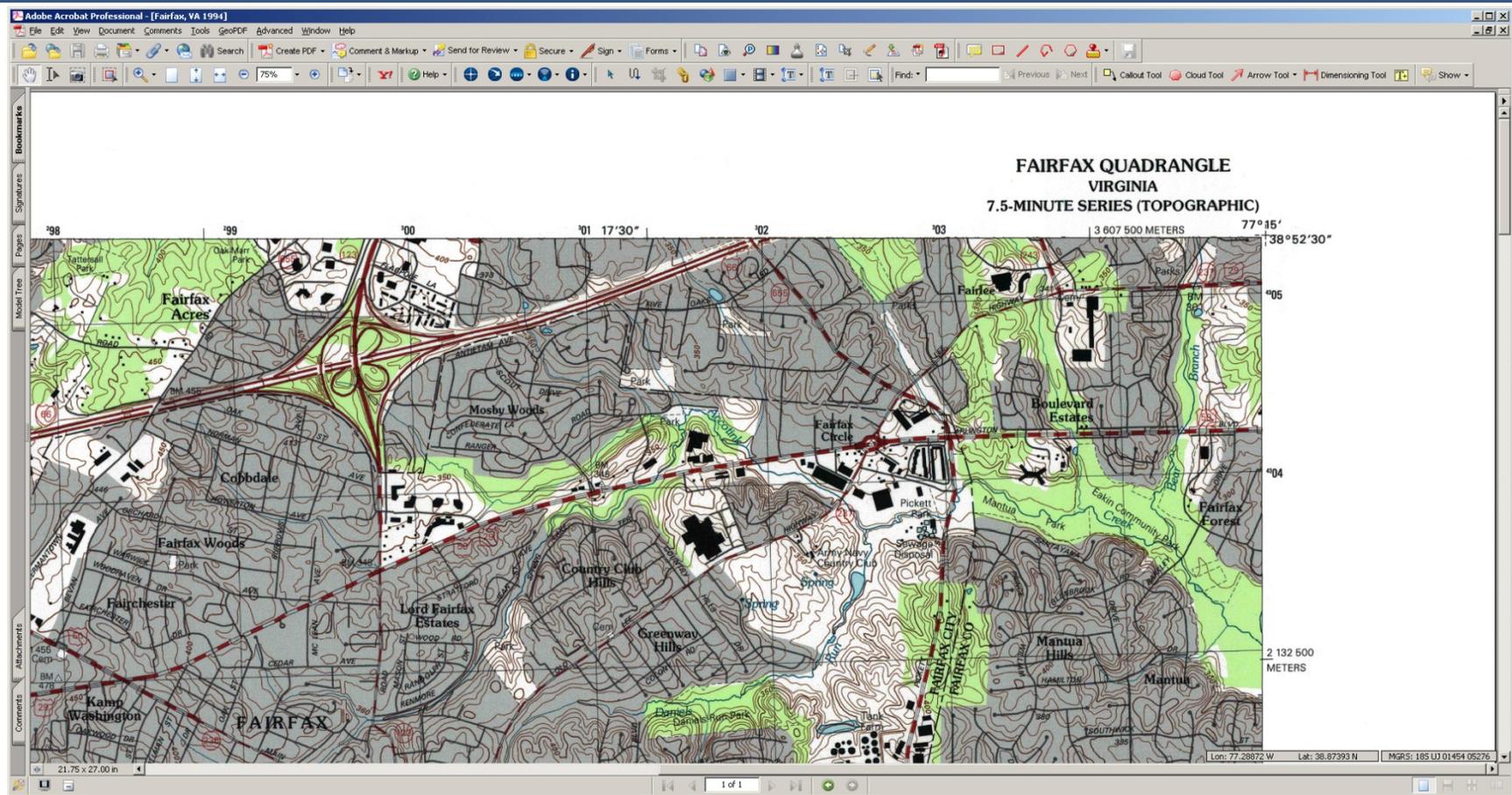
# 2009 NAIP Supplemental



# GeoPDF Digital Maps Being Generated from The National Map Data Bases



# High-resolution Scans Being Produced of All Previous Versions of USGS Topoquads



# Factors Considered in Allocating Partnership Funding

- USGS to Partner funding ratio
- NGP geographic area priorities
- More current data
- Improvement of resolution or accuracy
- Data integration goals
- Partner Priority/Statewide Plans
- Technical soundness/completeness of proposal
- Areal amount of coverage
- Partner Stewardship Agreement
- Partner Past Performance
- Regional science priority
- Leverages Federal partnerships

# FGDC Cooperative Agreement Program (CAP)

## Category 7: Demonstration of Geospatial Data Partnerships across Local, State and Federal Government

- 4 awards of up to \$75k, 50% in-kind contribution: IN, ID, IL and MO
- Begin institutionalizing practices that engage local agencies in statewide coordination efforts to build State Spatial Data Infrastructures (SSDIs) that feed into Federal data programs and advance the NSDI
- Document and share best practices to serve as models for other communities



# Change from Distributed to Centralized in 2.0

|                       | <b>TNM 1.0</b>                           | <b>TNM 2.0</b>                           |
|-----------------------|--|--|
| <b>Imagery</b>        | Distributed<br>Centralized               | Distributed<br>Centralized               |
| <b>Elevation</b>      | Distributed (CLICK)<br>Centralized (NED) | Distributed (CLICK)<br>Centralized (NED) |
| <b>Hydrography</b>    | Centralized                              | Centralized                              |
| <b>Boundaries</b>     | Distributed                              | Centralized                              |
| <b>Structures</b>     | Distributed                              | Centralized                              |
| <b>Transportation</b> | Distributed                              | Centralized                              |
| <b>Names</b>          | Centralized                              | Centralized                              |
| <b>Landcover</b>      | Centralized                              | Centralized                              |

# Planned TNM 2.0 Products and Services (continued)

- **Land Cover**
  - NLCD 2001 land cover, impervious product, and canopy product completed
  - NLCD 1992–2001 change product completed
- **Orthoimagery**
  - Based on Farm Service Agency's 3-year NAIP Cycle
- **Boundaries (Governmental Units)**
  - Apply Census 2008 and 2009 MTAIP updates
  - Update major Federal boundaries
- **Structures**
  - National coverage of essential facilities, including hospitals, schools, police stations, and fire stations available
- **Transportation**
  - 20% of nation under active stewardship for roads data
  - Work with providers of other transportation data, including airports, pipelines, trails and railroads, to develop nationally maintained and integrated geospatial data inventories

# Planned TNM 2.0 Products and Services (continued)

- **Scanned 7.5 Minute Topographic Maps**
  - 3,000 7.5' quadrangles covering the east and gulf coast areas available as hi-res
  - Approximately 250 additional 7.5' hi-res for low selling, out-of-stock quadrangles
- **7.5 Minute Digital Topographic Maps**
  - Customer input on prototype products
  - Develop streamlined production process
  - Produce topographic maps based on quality and currentness of available data
- **Image Maps**
  - Image maps 2 counties deep (50 miles) along the Atlantic (Florida to Delaware) and Gulf (Florida to Texas) coasts
  - Automated image map production for emergency response needs
- **Data Download**
  - Data download prototypes

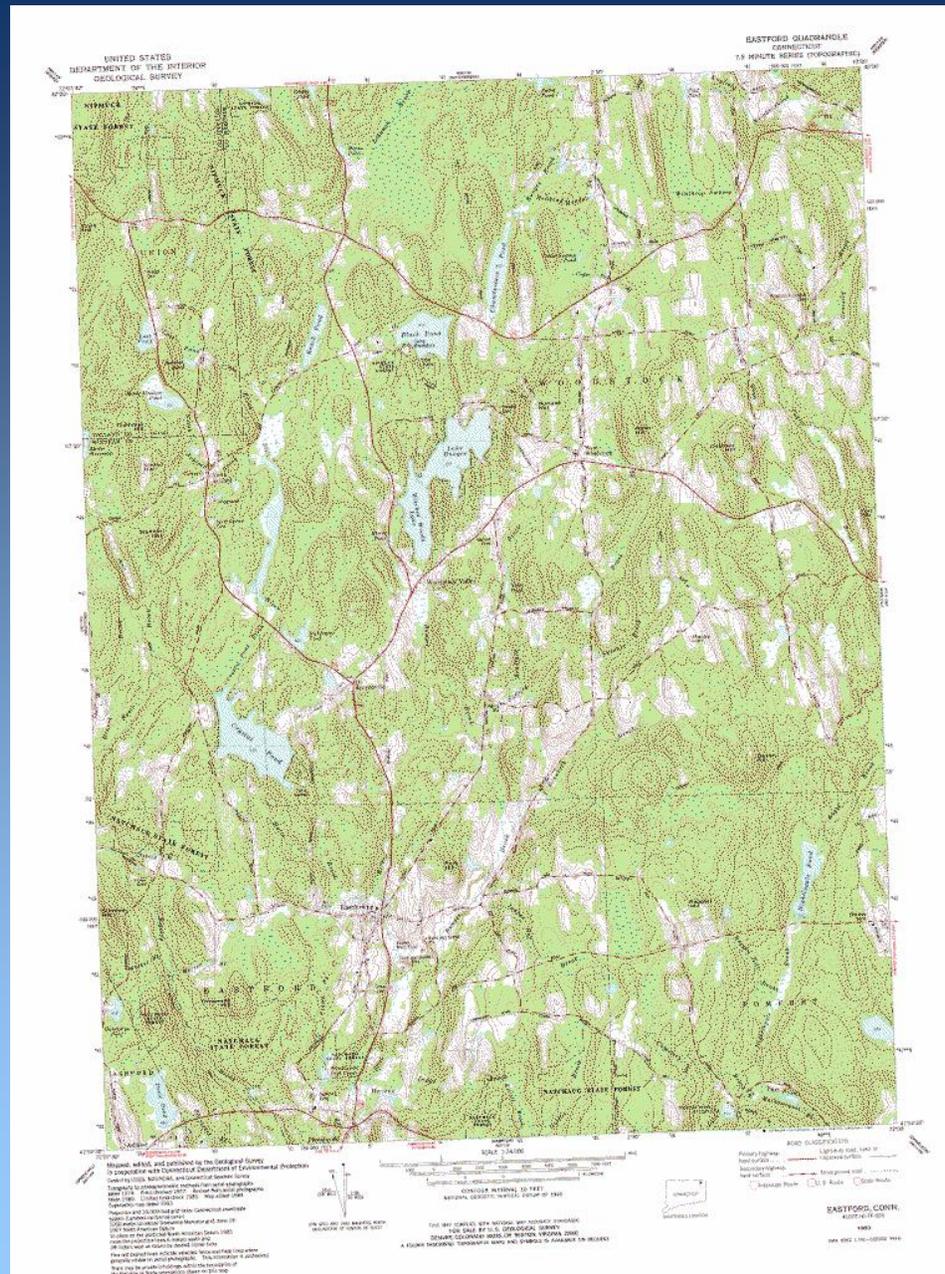
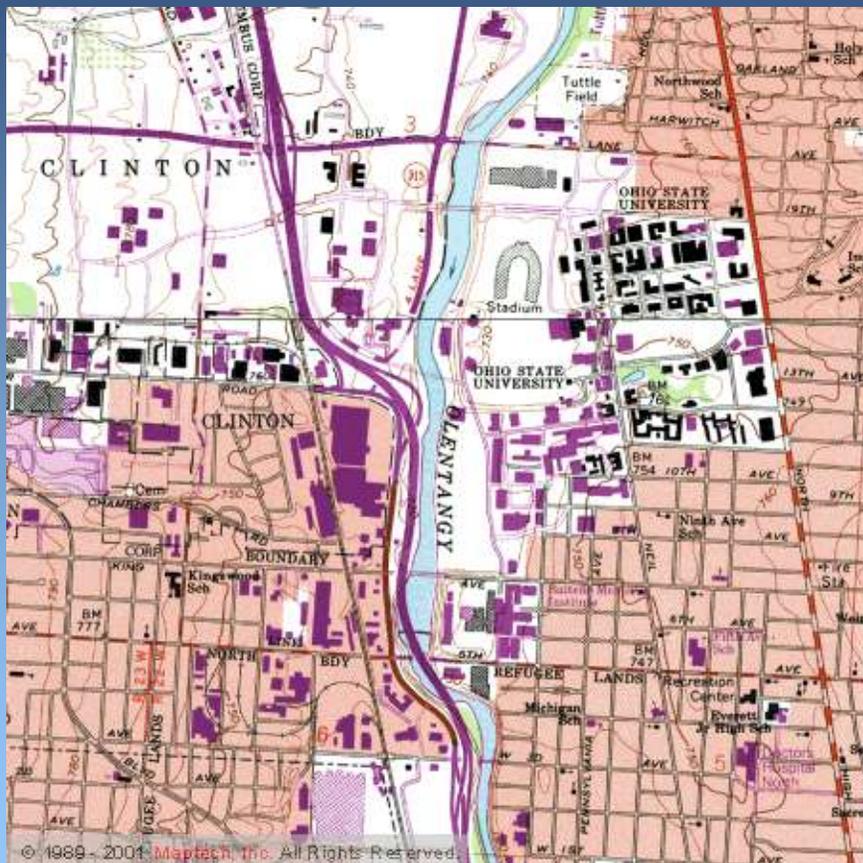
# Digital Map - Beta

- Produced from best-available orthophoto
  - Preferred NAIP Imagery, 1-Meter Resolution, Tonal-Balanced
- Produced in response to program or national needs
- Rapid, semi-automatic, production methods
- Georeference PDF format
- 1:24,000-Scale

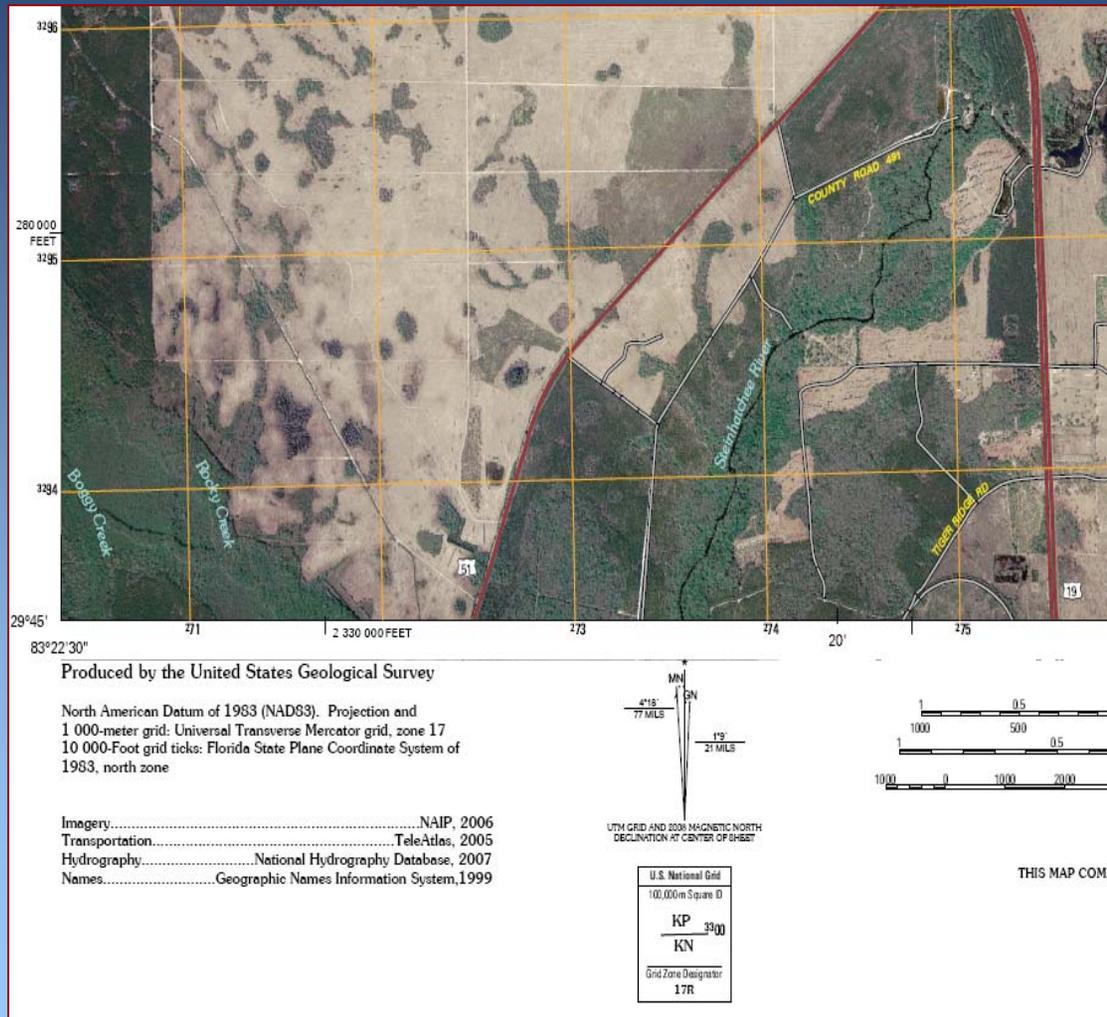
# Digital Map - Beta

- Framed with 7.5-Minute Projection Line
- Overlays (Overlays in Blue may be Added over Time)
  - Major Towns, Local Names, Local Names & Major Road Symbols
  - Full-Line National Grid with Labels
  - Minimum Map Margin Information and Credit Notes
  - Hydrographic names
  - File Format
  - Enhanced, Layered & Georeferenced PDF

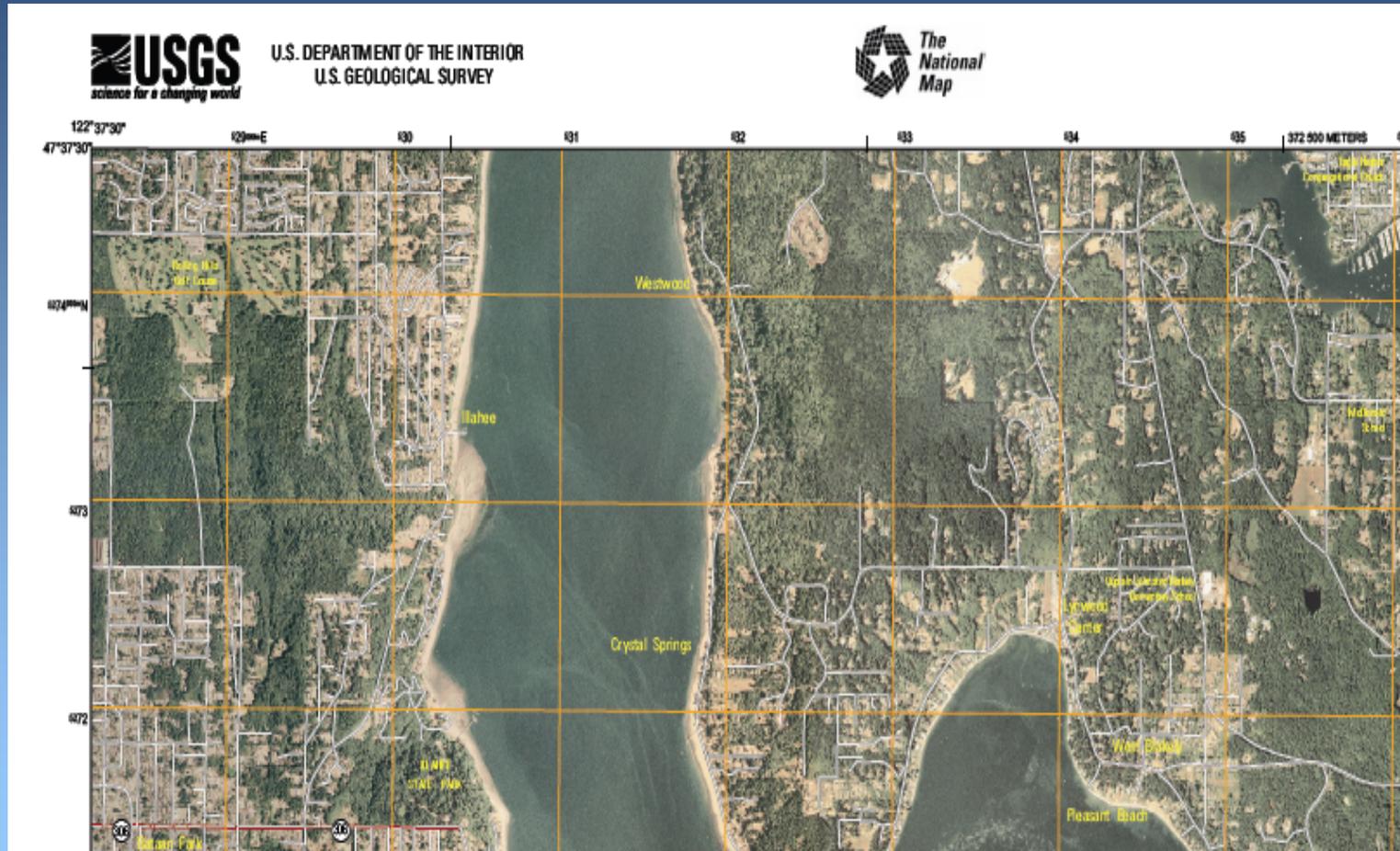
# Topographic Maps



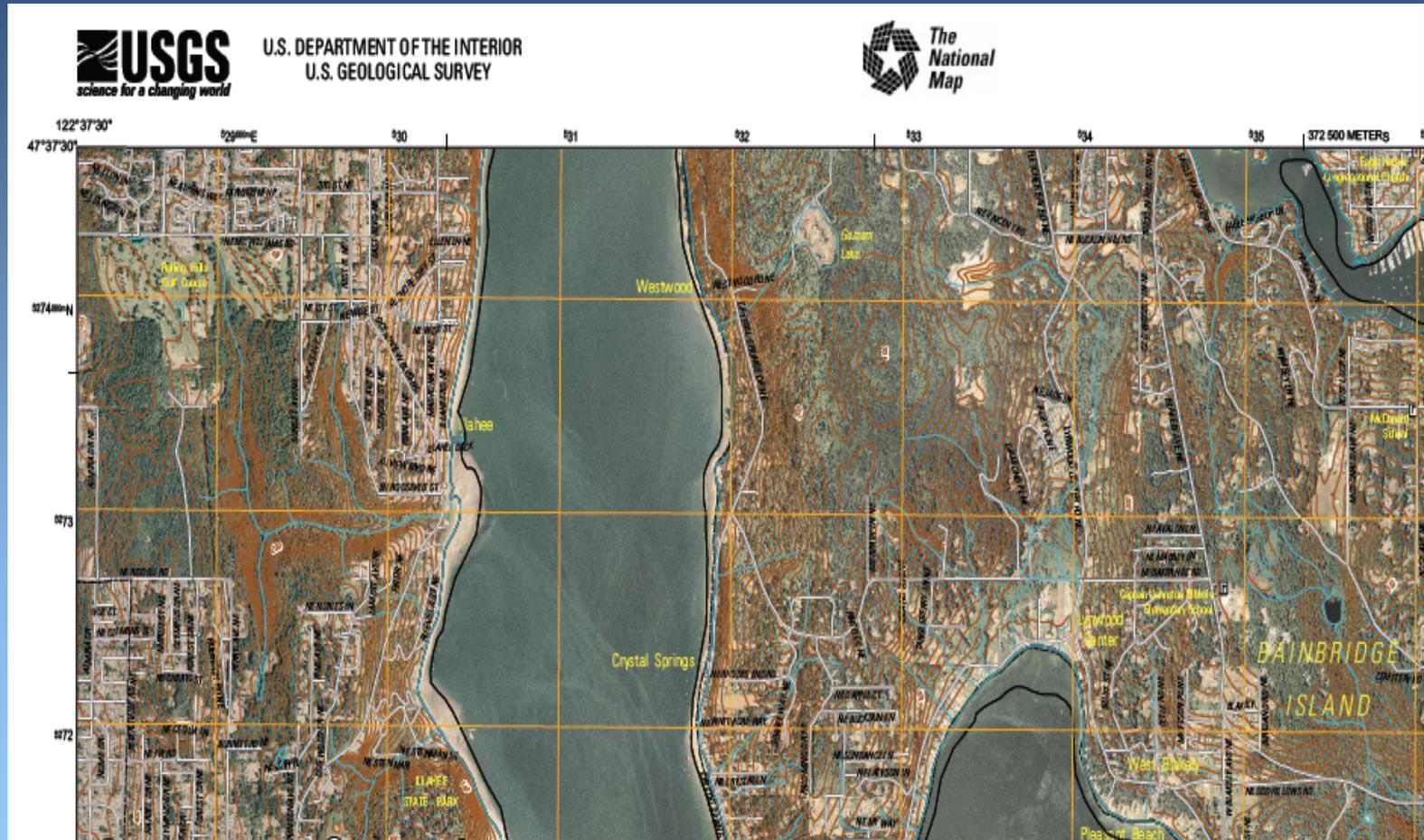
# Sample Image Map



# Sample Image Map



# Sample Topographic Quadrangle



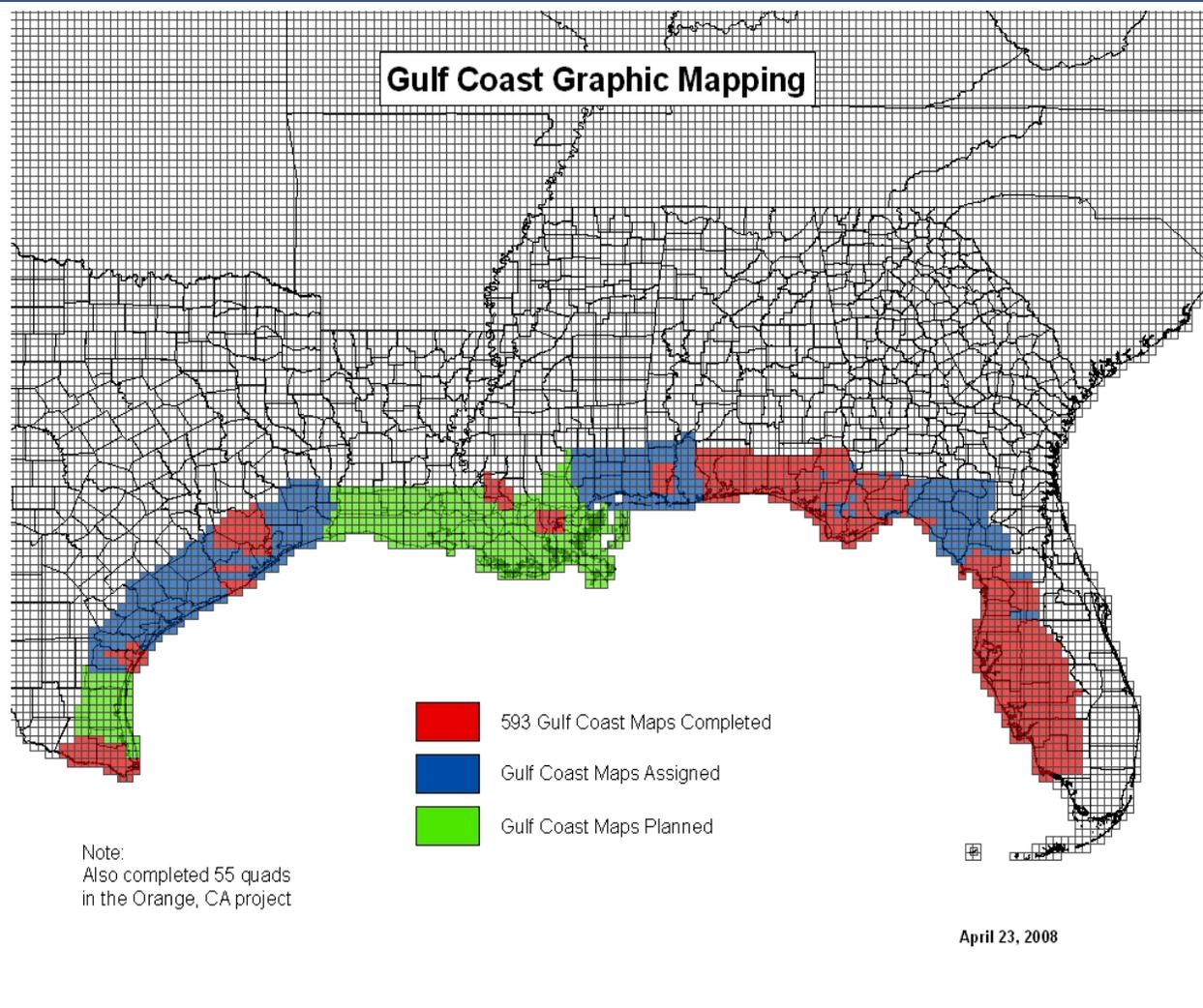
# Topographic Map Content and Quality

- Made only using suitable data
  - Defined in the Product Specification
  - Produce Prototype Products for Review and Comment
  - Critical Need – National Coverage of Data for Mapping
- Differences will be apparent between published and *new Digital Quads*
- Enhanced, layered & georeferenced PDF file format

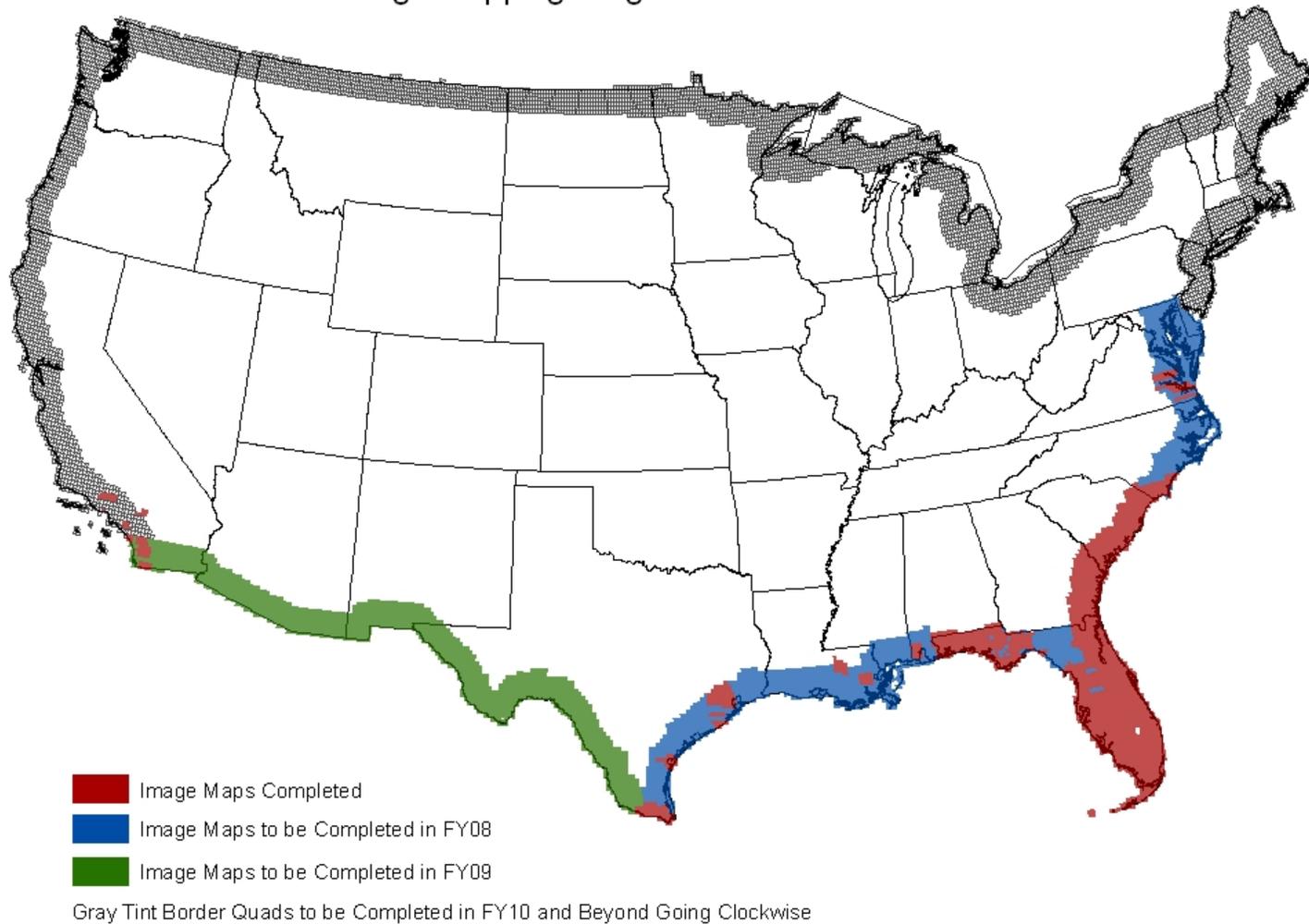
# New Topographic Quadadrangles

- 1:24,000 scale
- Customary 7.5-Minute Quadrangle Format
- Portrays
  - Contours
  - Hydrography
  - Transportation
  - Boundaries
  - Geographic Names
  - Boundaries
  - Structures
  - Transportation
  - Vegetation
- Full-Line National Grid with UTM Labels
- Georeferenced Layered GeoPDF

## Gulf Coast Graphic Mapping



## Image Mapping Program of Work - DRAFT



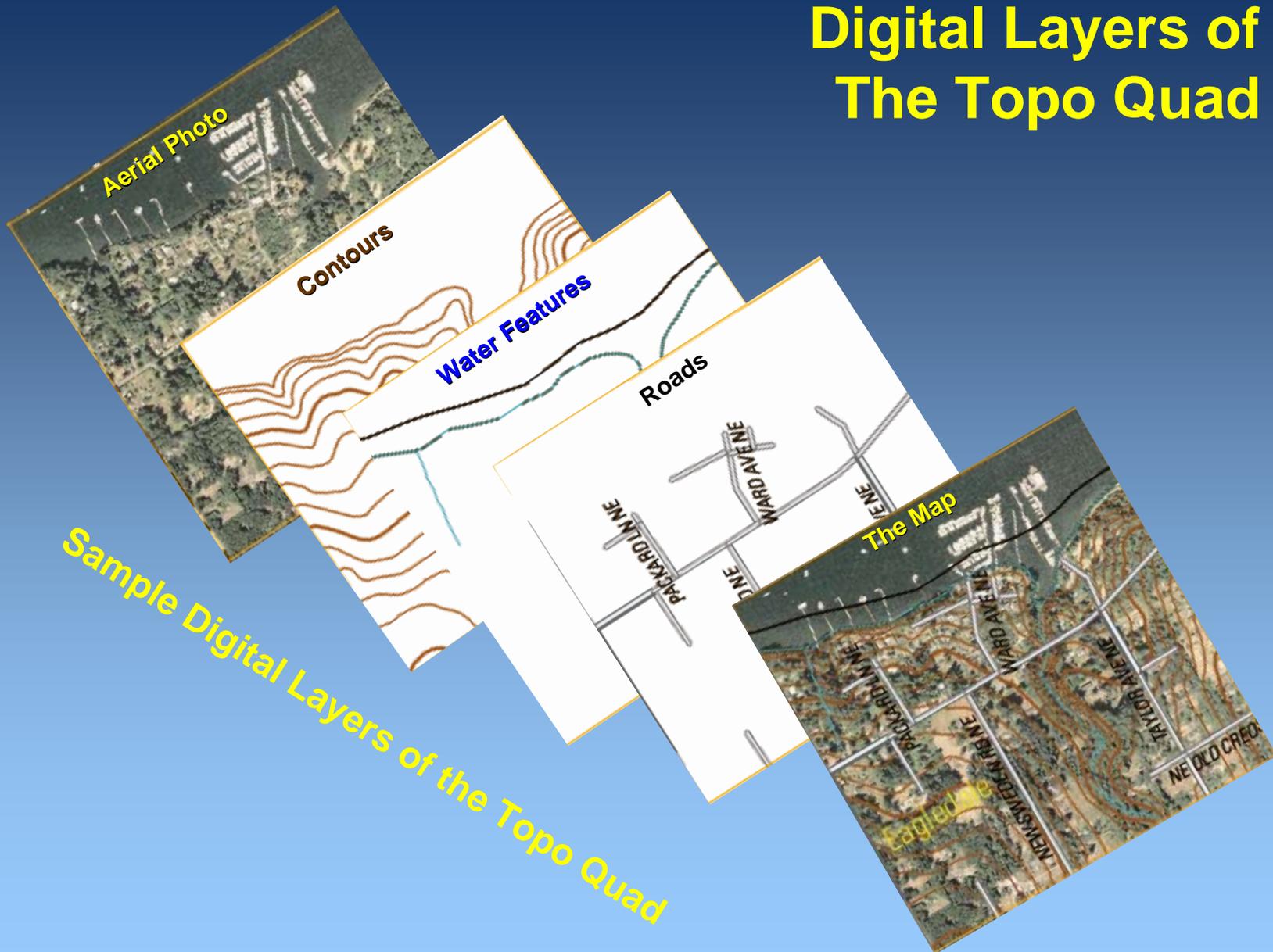
May 7, 2008

# Map on Demand (MOD)

## Development Assumptions and Vision

- A Graphics system that meets the needs of the public, government, and scientific communities
- A fully-automated, customizable, web-based system
- Use nationally consistent data, built from partner data
- A set of nationally consistent and trusted cartographic products (maps)
- Web-based access
  - Easy
  - Friendly
  - Service Oriented - Download, Save, and Print / Plot Maps

# Digital Layers of The Topo Quad



Sample Digital Layers of the Topo Quad

# Maps On Demand

The screenshot displays the USGS Map On Demand web application. At the top left is the USGS logo with the tagline "science for a changing world". The main title "Map On Demand" is centered at the top. A navigation bar contains buttons for "PREVIOUS", "ZOOM IN", "ZOOM OUT", "FULL VIEW", "PAN", "CENTER AT", and "SELECT QUAD". The main map area shows a topographic map of North America with a red crosshair in the central United States. An inset map in the top right corner shows a detailed view of a river area with labels for "Mile 106", "GURLEY JACK", and "RIVER". On the left side, there is a search and navigation panel with tabs for "Search", "Make Map", and "Legend". Under the "Search" tab, there are sections for "Quad Center" and "Coordinate Center". The "Quad Center" section includes dropdown menus for "Zoom to State", "Zoom to County", and "Select Quad Center". The "Coordinate Center" section has radio buttons for "Degrees Minutes Seconds" and "Decimal Degrees", with input fields for "Latitude" and "Longitude". A "Go" button is located at the bottom of the coordinate section, and a "Clear" button is at the bottom of the search panel.

# Maps On Demand: Select a State

The screenshot displays the USGS Map On Demand web application. At the top left is the USGS logo with the tagline "science for a changing world". The main title "Map On Demand" is centered at the top. Below the title is a navigation bar with buttons for "PREVIOUS", "ZOOM IN", "ZOOM OUT", "FULL VIEW", "PAN", "CENTER AT", and "SELECT QUAD".

On the left side, there is a search and navigation panel. It includes a "Search" button, a "Make Map" button, and a "Legend" button. Below these are two sections: "Quad Center" and "Coordinate Center".

The "Quad Center" section has three dropdown menus: "Zoom to State" (currently set to "Rhode Island"), "Zoom to County" (with a "Select a US County" dropdown), and "Select Quad Center" (with a "Select a Quad" dropdown).

The "Coordinate Center" section has two radio buttons: "Degrees Minutes Seconds" (selected) and "Decimal Degrees". It includes input fields for "Latitude" and "Longitude" for both systems, a "Clear" button, and a "Go" button.

The main map area shows a grid of map quads over a geographic region including parts of Rhode Island, Massachusetts, and Connecticut. Major cities like Providence, Pawtucket, and Worcester are labeled. The map also shows major roads, including Interstate 95 and Interstate 495. A small inset map in the top right corner shows a detailed view of a specific area with a red triangle marker and labels like "Mile 106" and "CUSHLEY LACK".

# Maps On Demand: Select a County

**USGS**  
science for a changing world

## Map On Demand

PREVIOUS ZOOM IN ZOOM OUT FULL VIEW PAN CENTER AT SELECT QUAD

Search Make Map Legend

**Quad Center :**

Zoom to State :  
Missouri

Zoom to County :  
Phelps

Select Quad Center :  
Select a Quad

**Coordinate Center :**

Degrees Minutes Seconds  
Latitude  
Longitude

Decimal Degrees  
Latitude  
Longitude

Clear Go

Waynesville  
Pulaski  
Devils Elbow  
Kaintuck Hollow  
Yancy Mills  
Lecoma  
Seaton  
Cook Station  
Cherryville

Van Cleve Brinktown Vienna Paydown High Gate Gasconade Redbird Oak Hill Argo  
Miller Brays Big Bend Nagogami Lodge Vichy Safe Rosati Cuba Leasburg  
Hancock Dixon Newburg Rolla Dillon Maramec Spring Indian Springs Steelville  
Waynesville Pulaski Devils Elbow Kaintuck Hollow Yancy Mills Lecoma Seaton Cook Station Cherryville  
Bloodland Big Piney Flat Edgar Springs Anult Salem Dent Short Bend  
Roby Slabtown Spring Beulah Maples Rhyse Darien Doss Stone Hill

Mile 100  
CUPPEY LACK  
RIVER  
1400

# Maps On Demand: Select a Quadrangle

**USGS**  
science for a changing world

## Map On Demand

PREVIOUS ZOOM IN ZOOM OUT FULL VIEW PAN CENTER AT SELECT QUAD

Nagogami Lodge Vichy Safe

Northwya

Rolla

Rolla Phelps

Dillon

Newburg

Newburg

Kaintuck Hollow Yancy Mills Lecoma

Search Make Map Legend

**Quad Center :**

Zoom to State :  
Missouri

Zoom to County :  
Phelps

Select Quad Center :  
Rolla

**Coordinate Center :**

Degrees Minutes Seconds

Latitude [ ] [ ] [ ]

Longitude - [ ] [ ] [ ]

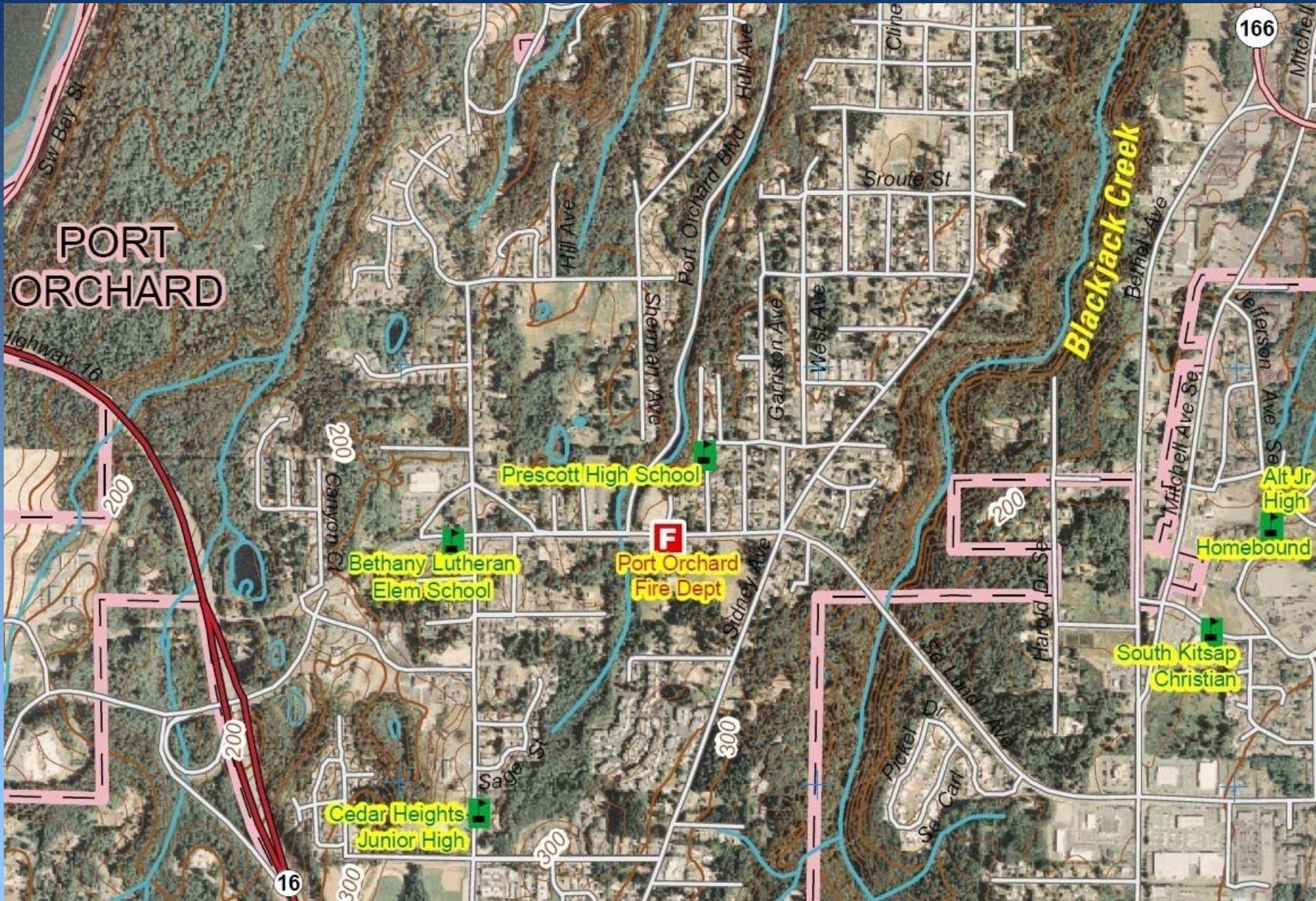
Decimal Degrees

Latitude [ ] [ ]

Longitude - [ ] [ ]

Go

Clear



# Partner Support Needed

## ■ Data

- Partners Register their Data into RAMONA
- Partners Load their Data into TNM
  - Work with Product and Service Leads
  - Centralized National Databases
- Provide Data Types that are Missing for Topographic Mapping to TNM
  - Provide Data Required for Topographic Mapping over their State or Portions of their State
    - Maintain Currency and Accuracy of Geospatial Data they Submit to TNM
    - Data Stewardship as in NHD
      - Sign Agreements for Stewardship

# Partner Support Needed

## ■ Data Integration

- Integrate their Data with others' Data
  - Vertically
  - Horizontally
- Integrate Their Data with the National Data
- Build Commitment within the State to Integrate State-Level Data from Cities, Counties, and other Agencies
- Work with Adjoining States to Maintain Seamlessness of Geospatial Data Across State Boundaries

# Contact Information

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**Thank You for Your Participation!**