Northern Piedmont and Mountains Orthoimagery 2014

Center for Geographic Information and Analysis

Darrin Smith

Ben Shelton

Winston-Salem, NC

January 21, 2015

Today

1. Introductions
2. Program/Project overview
3. Portable drive contents
4. Technical Dialog
5. VOICE Recap
6. 60-Day Client Satisfaction Period
7. Expectations for data sharing
8. Online access: NC OneMap
9. Hand-off and next steps

Introduction

Acknowledgment

- NC 911 Board
- 127 Statewide Primary PSAPs

- Herb Swaim - Host

- Roundtable

Statement of Need: Ortho Business Plan

- Geographic Information Coordinating Council
- Coordinate acquisition of statewide orthoimagery at scheduled intervals
- Cap turnaround at maximum of 4 years
- Eliminate patchwork collection of county imagery sets of varying quality, resolution, and age
- Establish a sustainable and consistent, funded Program
- Make it accessible to 911 Centers and the Public

CGIA Background

- NC Center for Geographic Information and Analysis
- Lead state agency for GIS
- Services Program – solutions for state and local governments
- Coordination Program – data sharing, informed decision-making, and cost efficiencies

nc ONE map
Geographic Data Serving A Statewide Community

Center for Geographic
North Carolina
CGIA
Information and Analysis

Statewide Ortho Program Approach

- Engage end-user quality review early
- Common platform for concurrent review

- Visual consistency of imagery across study areas and Program phases

- Administer a Proactive approach to project delivery rather than engage in Reactive measures to quality issues

Organizational Structure

NC 911 Board

Oversight and Advisory

GICC

NC Department of the Secretary of State

Working group for Ortho Planning:

NC Geodetic Survey, NC DENR
NC Land Records Management
NC Floodplain Mapping Program
NC DOT, NC Agriculture
NC Commerce
Guilford and Henderson Counties
US Geological Survey
US Fish & Wildlife Service
National Oceanic and Atmospheric Administration
US Department of Agriculture

CGIA
Project Manager, Contract Administration
QBS Quality Assurance, Product Distribution and NC OneMap Geospatial Portal

NC DOT
Technical Advisory Services
Photogrammetric QA
Level 2 QC

NC Geodetic Survey
Global Positioning System
CORS Upgrade, Camera Validation and Horizontal Quality

Sanborn Map Company

Atlas Geographic Data

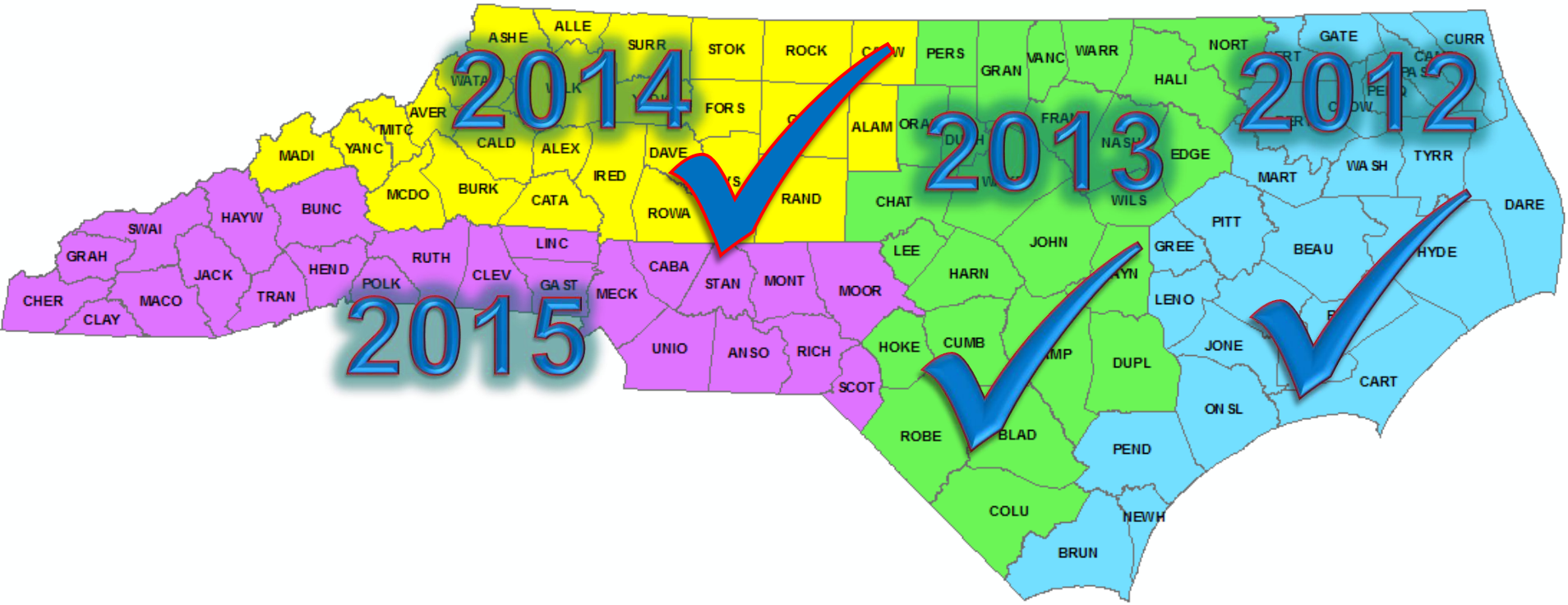
Surdex Corporation

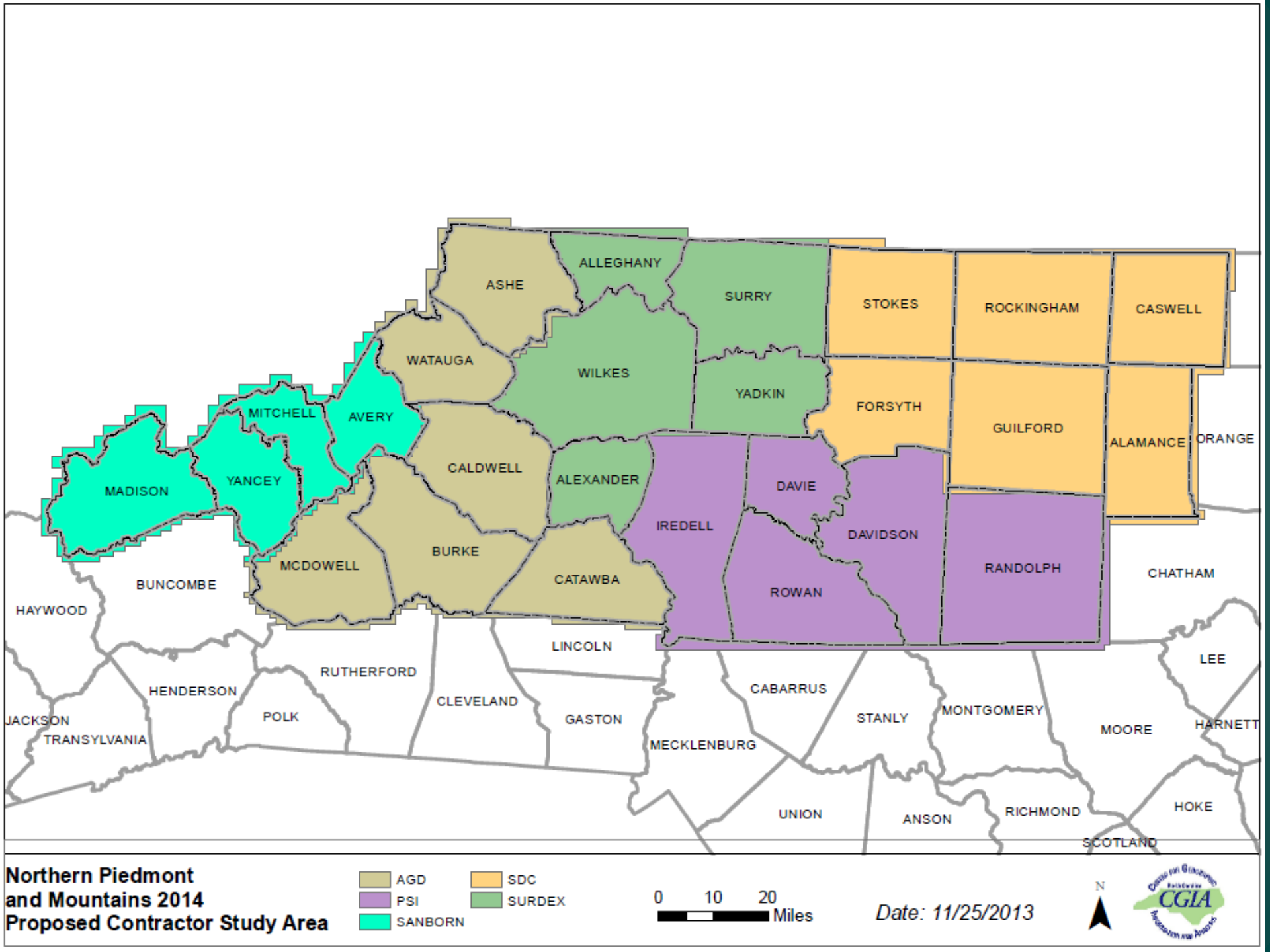
Photo Science

Spatial Data Consultants

The Program

Statewide Orthoimagery Acquisition Cycle




ASHE
ALLEGHANY
SURRY
STOKES
ROCKINGHAM
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WATAUGA
WILKES
YADKIN
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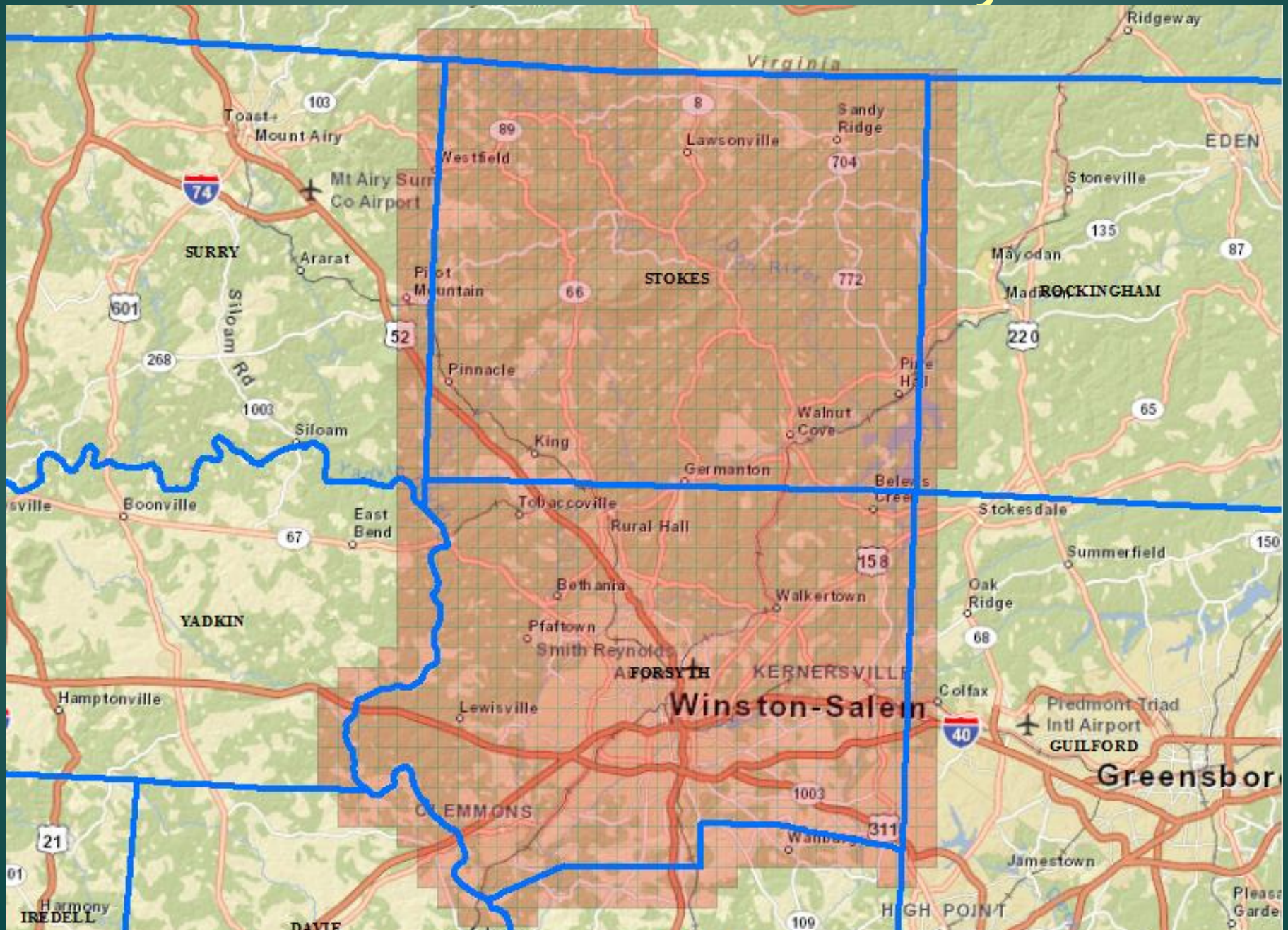
GUILFORD
ALAMANCE
ORANGE
MITCHELL
AVERY
MADISON
YANCEY
CALDWELL
ALEXANDER
DAVIE
IREDELL
DAVIDSON
RANDOLPH
CHATHAM
MCDOWELL
BURKE
CATAWBA
ROWAN
BUNCOMBE
HAYWOOD
LINCOLN
LEE
RUTHERFORD
HENDERSON
CLEVELAND
CABARRUS
STANLY
MONTGOMERY
MOORE
HARNETT
JACKSON
TRANSYLVANIA
POLK
GASTON
MECKLENBURG
UNION
ANSON
RICHMOND
HOKE
SCOTLAND
Northern Piedmont
and Mountains 2014
Proposed Contractor Study Area
AGD
PSI
SANBORN
SDC
SURDEX
0 10 20
Miles
Date: 11/25/2013
N
CGIA

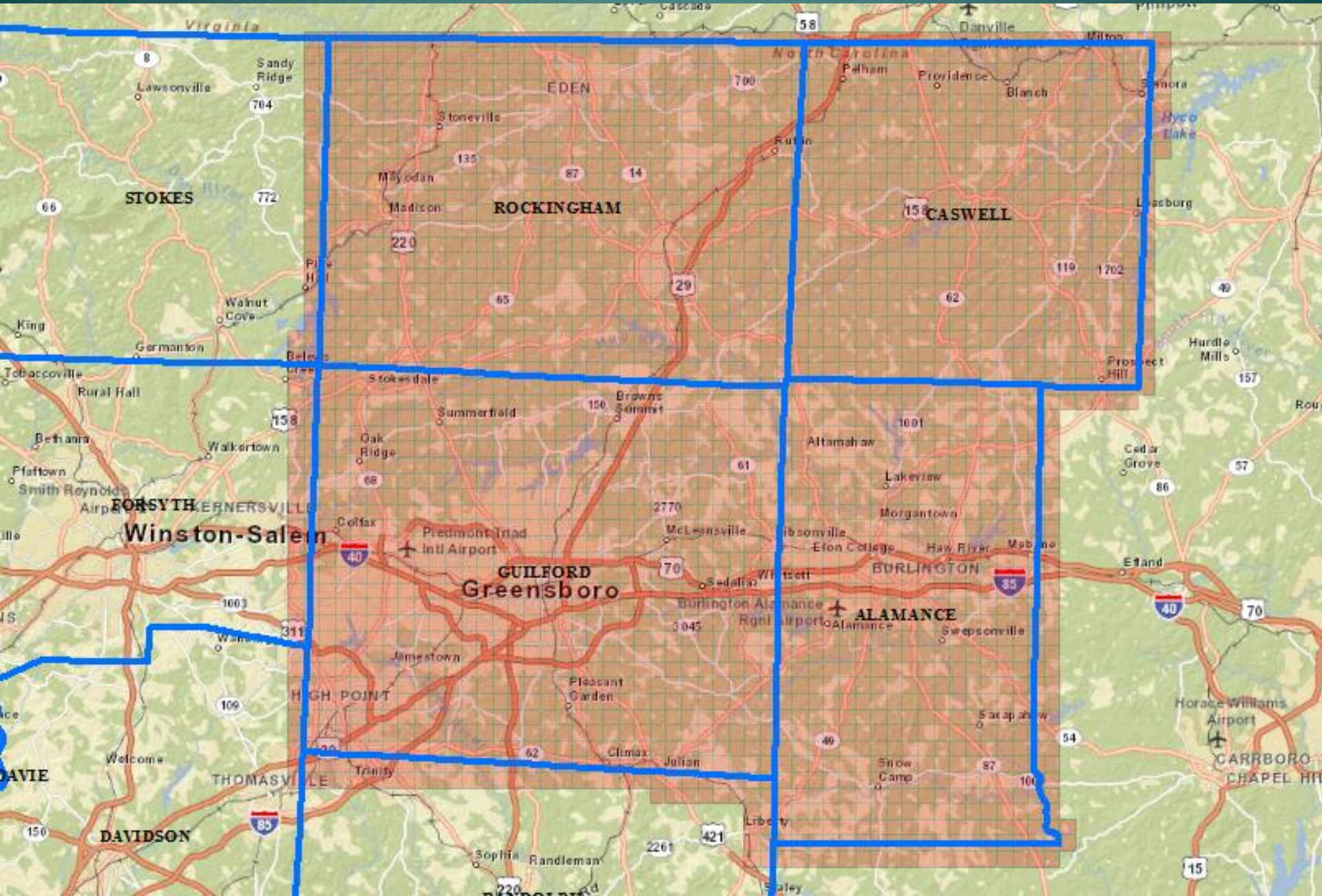
2014 Project Overview

- 26 counties in northern piedmont and mountains North Carolina
- 12,350 square miles
- 13,771 + tiles
- 6 inch pixel resolution
- NC State Plane Coordinate System, NAD83 2011
- Comply with NC Secretary of State Technical Specifications for Digital Orthophoto Base Mapping

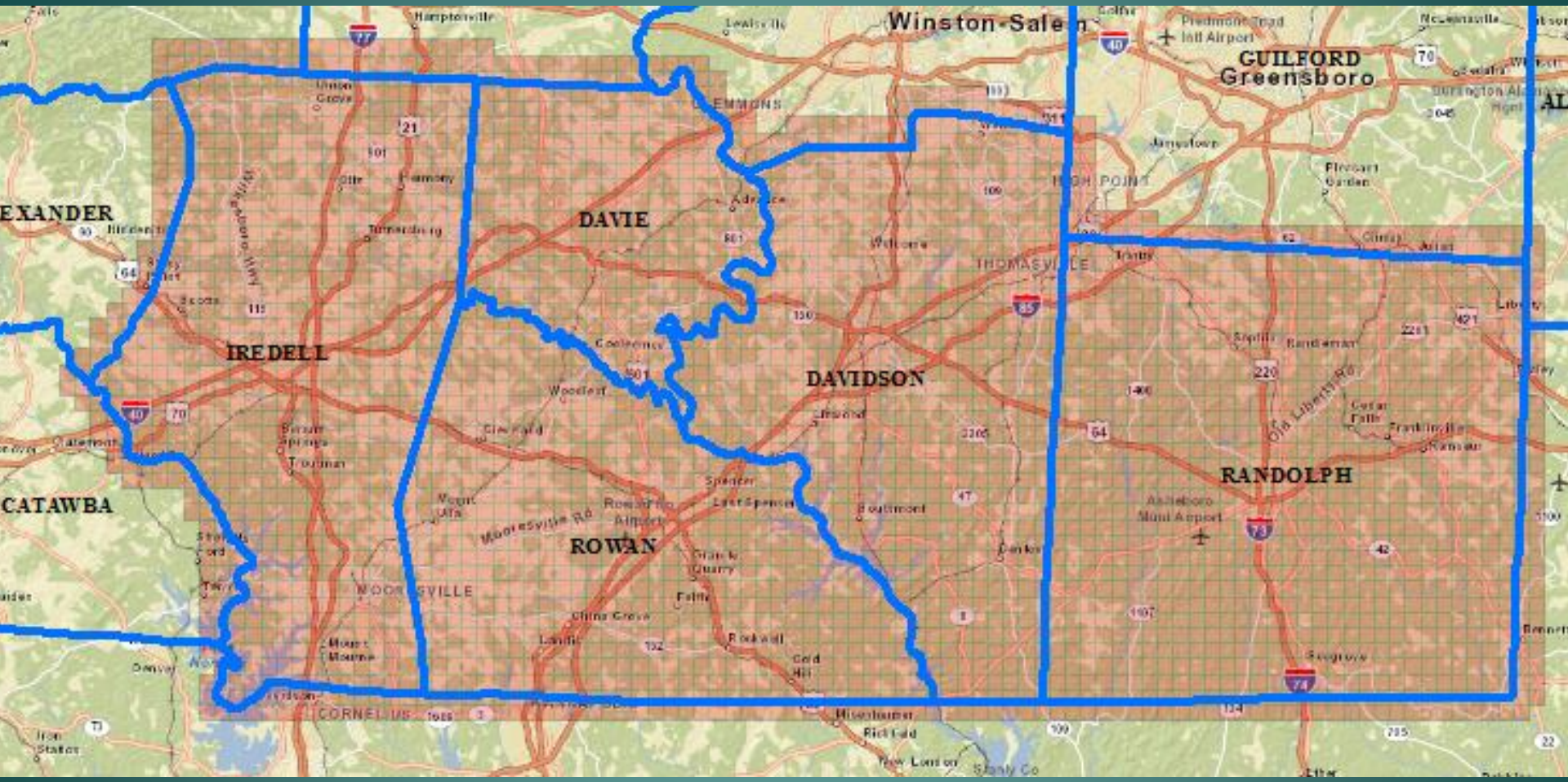
Winston-Salem – January 21



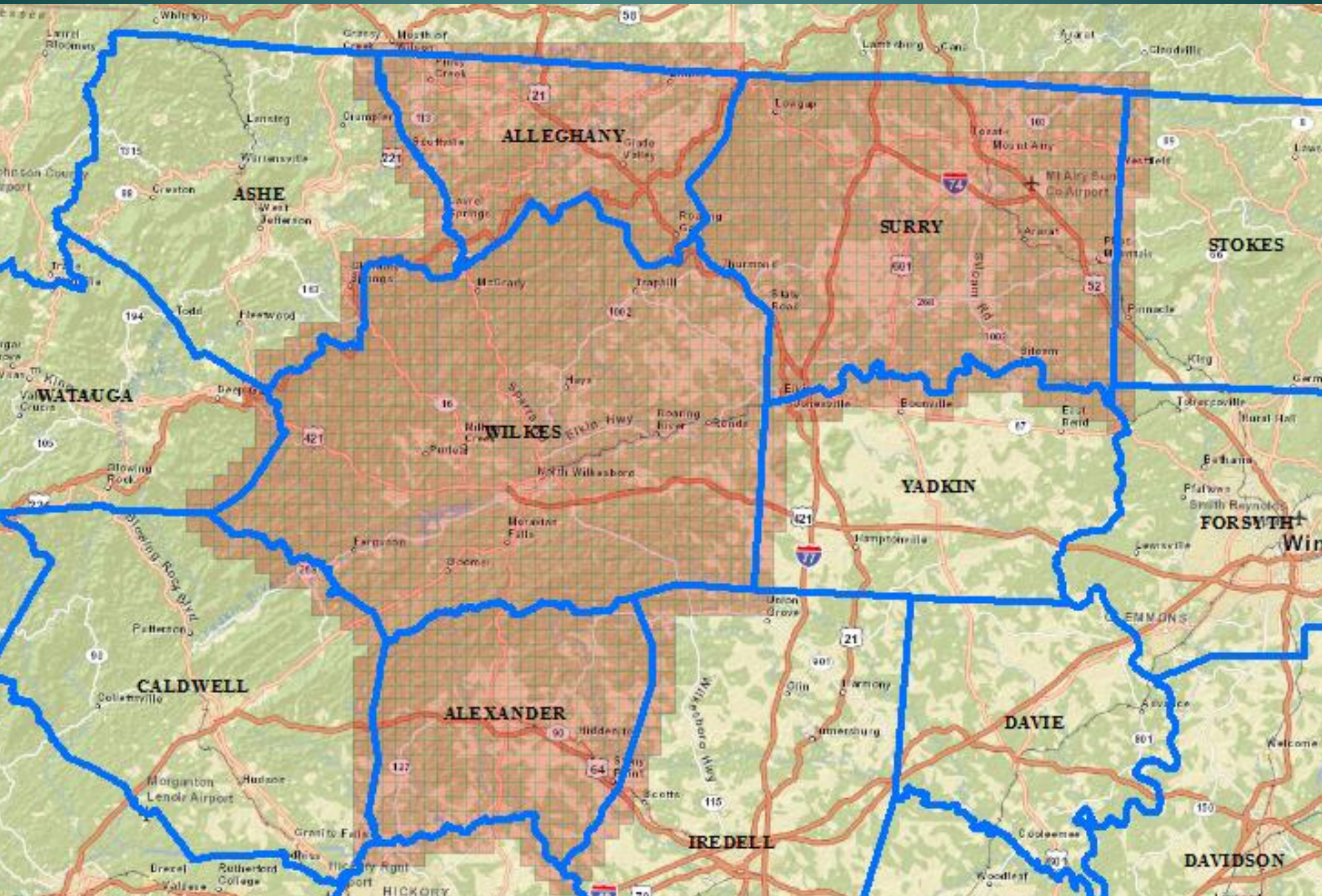
Greensboro January 22



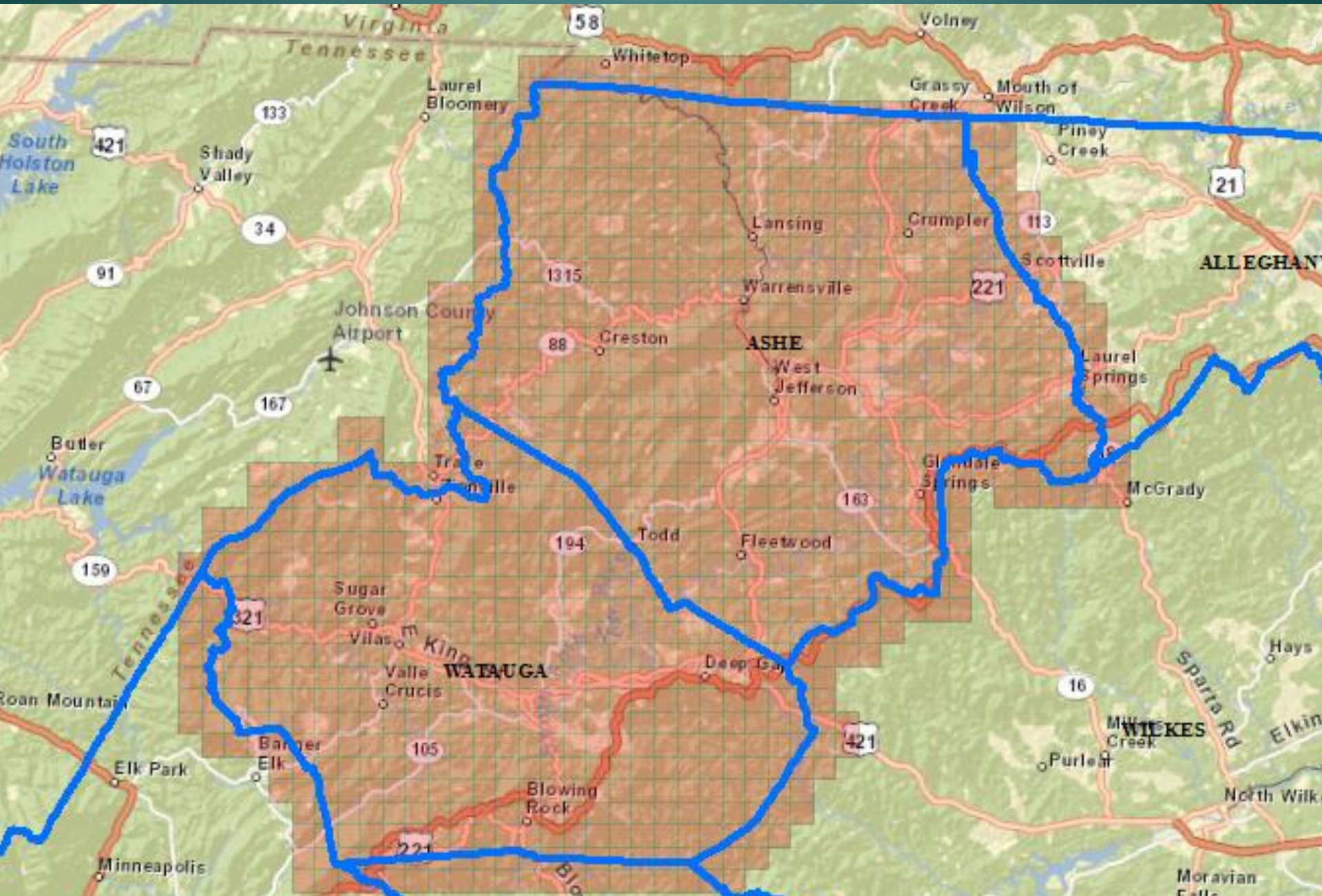
Salisbury – January 22



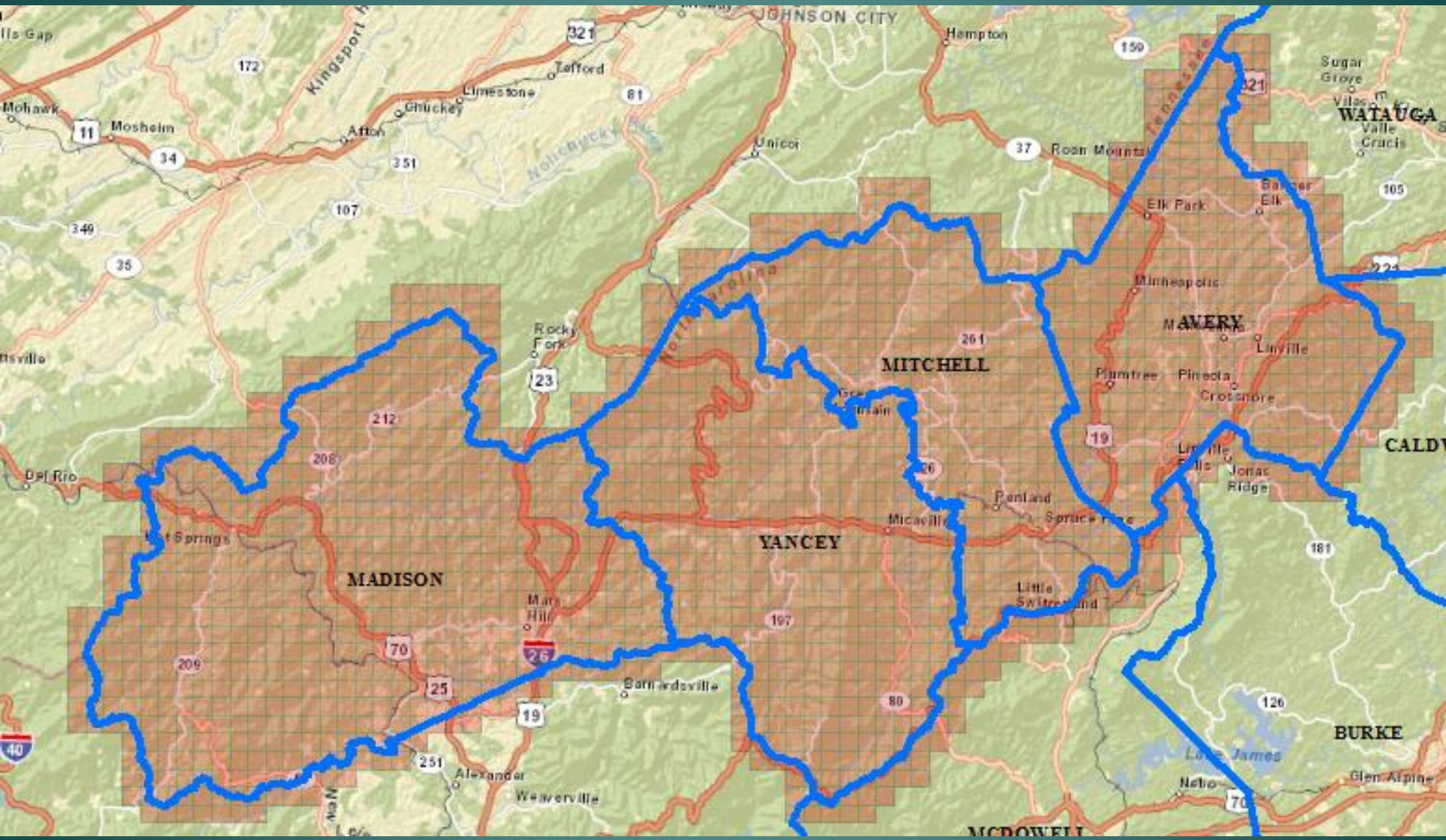
Wilkesboro – January 26



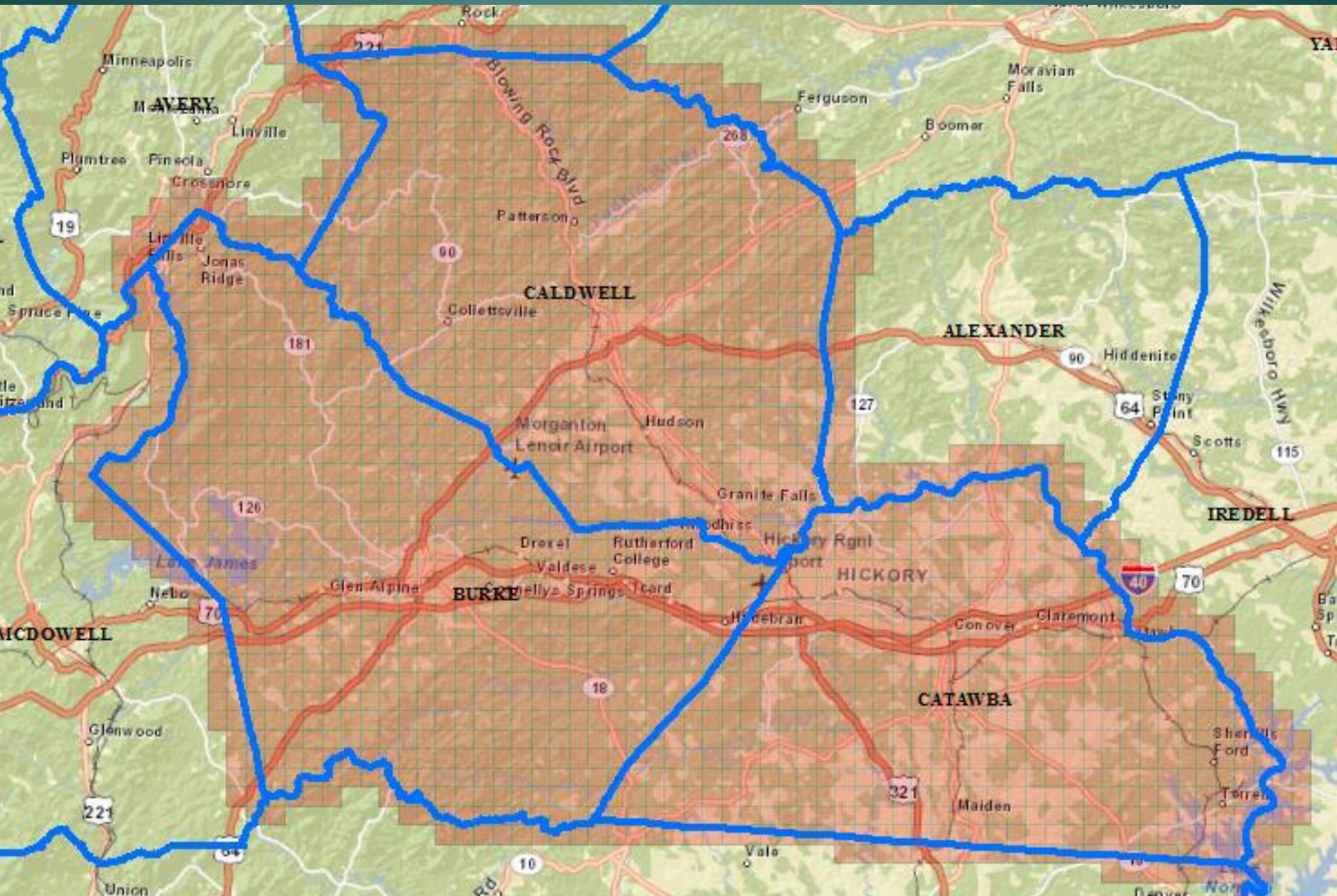
Boone – January 27



Marshall – January 28



Morganton – January 29



Portable Drive Contents

- README
- Full resolution TIFF imagery tiles
- Compressed MRSID imagery tiles
- Compressed MRSID for all adjacent (neighbor) counties (20:1 compression)
- County mosaics for county and adjacent (neighbor) counties (50:1 compression)
- Metadata
- Geospatial reference data (including state/county index and exposure footprints – seamline polygons)
- Elevation modifications
- Compliance and QC documentation

Distributing Imagery Products

Contractors)

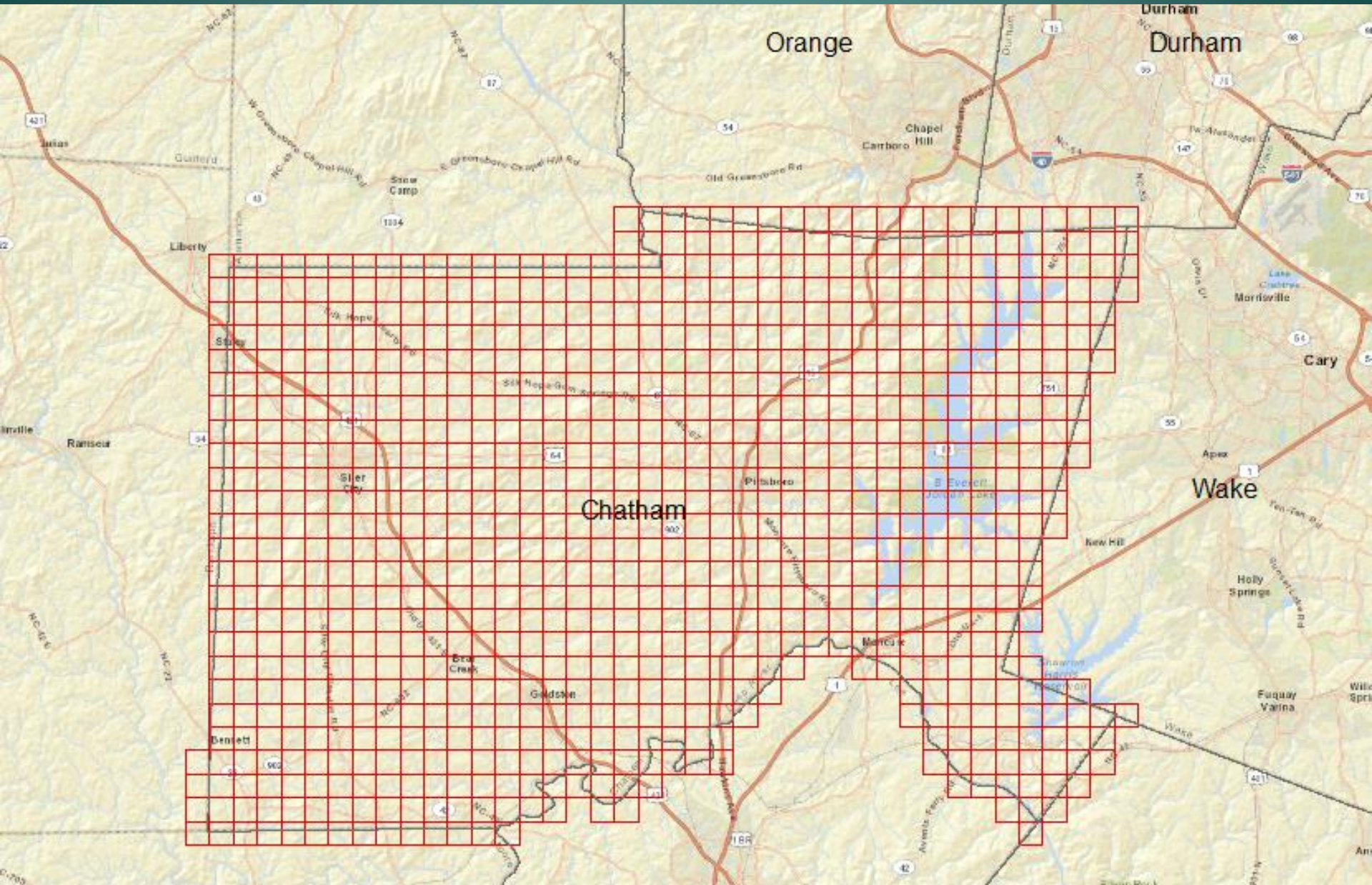
CGIA
Project Manager

NC OneMap
Imagery server
(map services)
Storage
Data download

State and Federal
Data Sharing Partners

26 Counties
911 Operations
GIS

Data – County Index

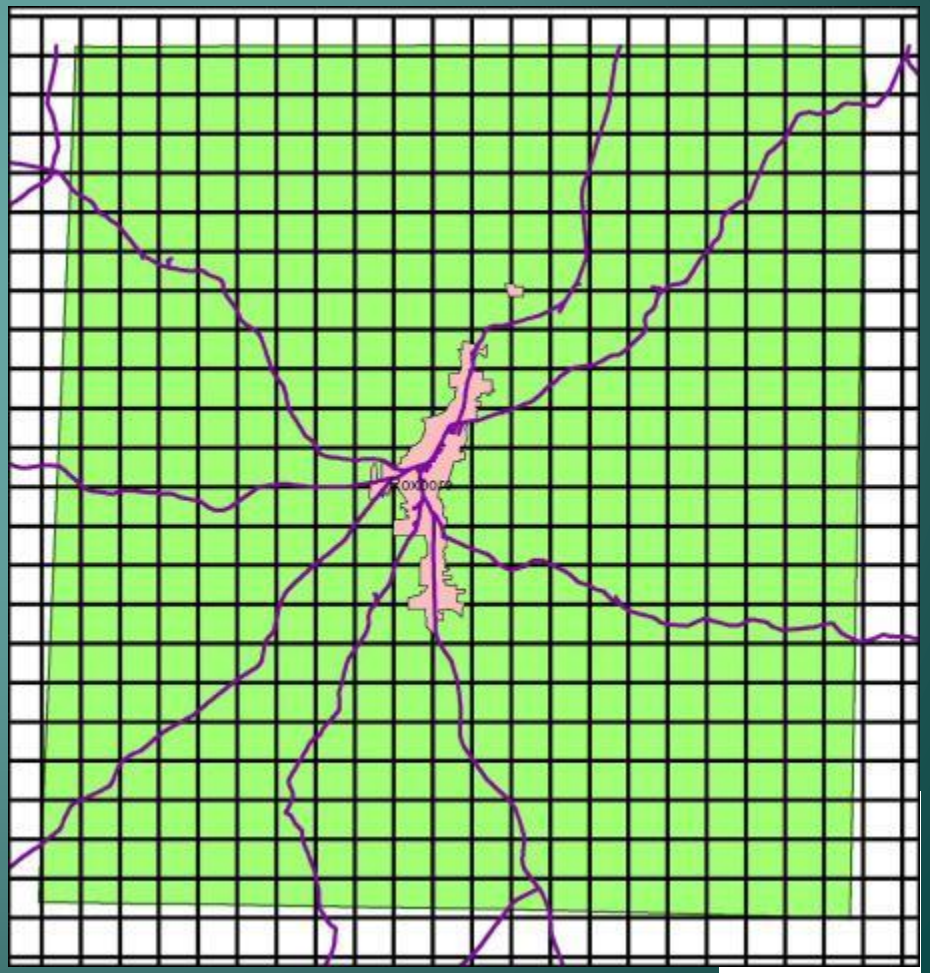


Technical Notes

- Tile Definitions
- NC Technical Specifications
- Projections and GIS
- Mosaics
- Tile Naming
- Documentation

Grid

- Statewide grid 5,000’ by 5,000’



nc ONE map
Geographic Data Serving A Statewide Community

NC Specifications

"NC Technical Specifications for Digital Orthophoto Base Mapping" from Land Records Management Program in the Secretary of State's Office (2014*):

- Program Specifications Driver

*Adopted December 11, 2014

Projections and GIS

- NC State Plane Coordinate System, NAD83 (2011 epoch) feet
- ESRI/NGS projection supported format
- GeoTIFF headers and world files

Mosaics

- Specifications
  - All tiles combined (MrSID) 50:1
  - County
  - Adjacent counties
- Discussion
  - 2012 feedback
  - Mobile apps
  - Efficiency
  - Filesize vs. resolution
  - Requesting exceptions

Tile Naming

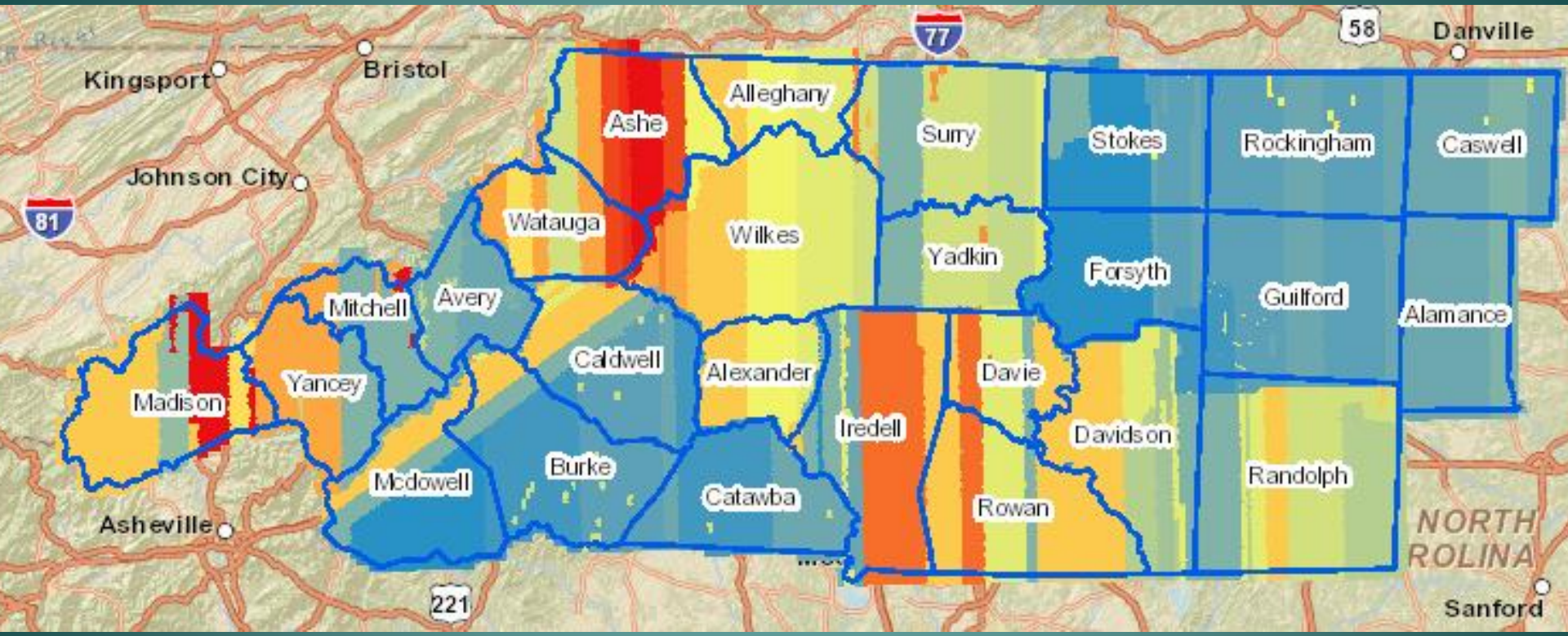
OC6i0_37_000_12345678_20120215_0305R0

- OC -2 digit product code: O= orthoimagery, C = color.
- **6i0** – 3 digit pixel size: Use the unit indicator code (i = Inch, f = Foot, m = Meter, c = Centimeter) as the decimal point. 6 Inch = 6i0, 1.5 feet = 1f5, 1.5 meter = 1m5, 15 centimeters = 15c.
- **37** – 2 digit NC ANSI (FIPS) Code
- **000** – 3 digit alphanumeric custodian code. For county maintained data this would be county ANSI (FIPS) code, 000 for statewide
- **20765400** – Map Index Number (IMAGENAME in Tile Index).
- **20120215_0305 -** 13 digit code where the earliest and latest date of acquisition **per county** is included in the filename where the most recent date is appended to the earliest date (8 Digit start date YYYYMMDD_4 Digit finish month and date MMDD Revision Number). In this example, February 15 is date of first acquisition and March 5 is the latest

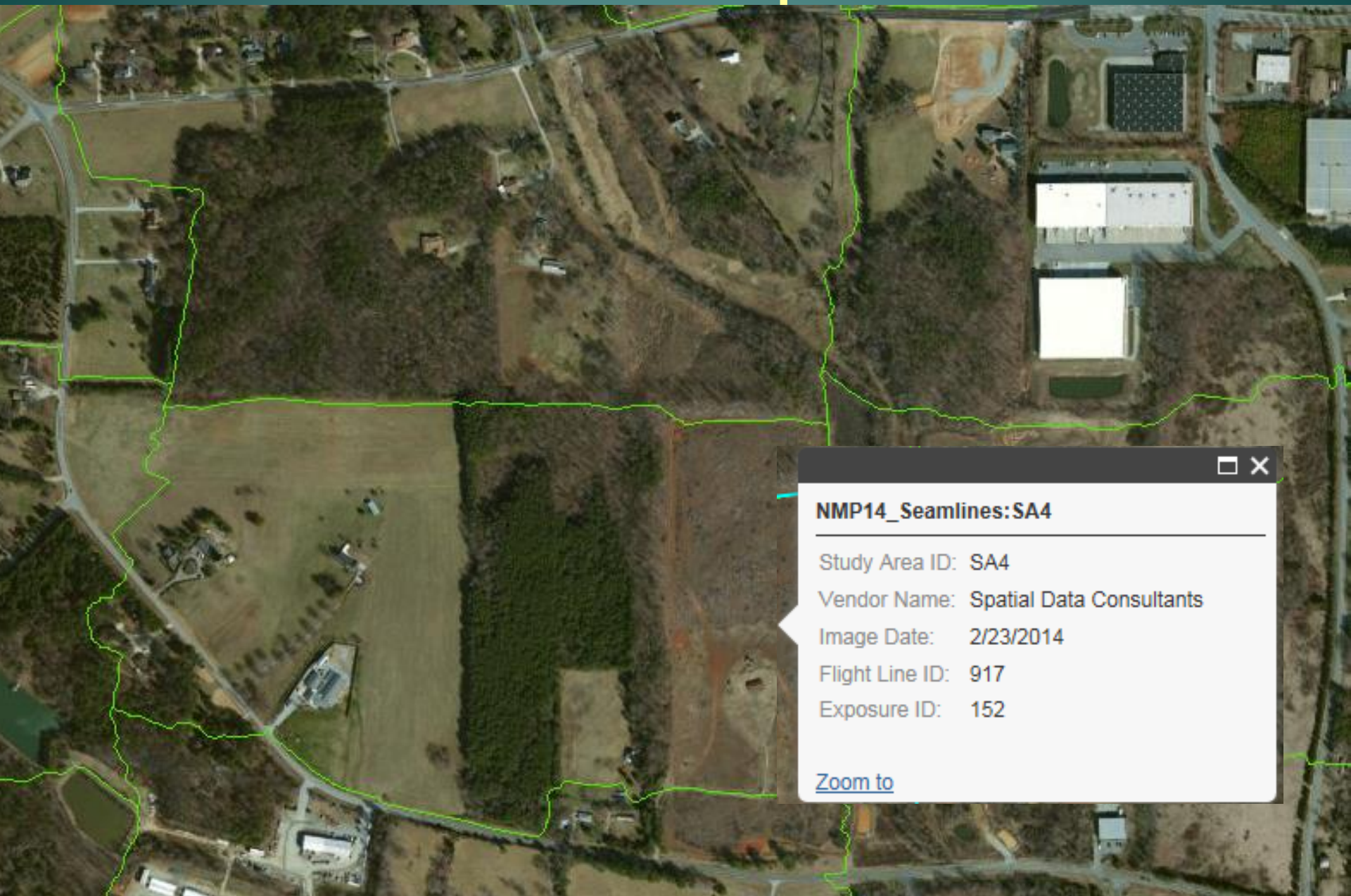
Documentation

- **Compliance**
  - Attachment C: Flight and Control Plan
  - Attachment C-1: Control Surveys Report
  - Attachment D: Imagery Acquisition Compliance Report
  - Attachment E: Airborne GPS-IMU Post Processing & AT Report
- **Quality Review Outcome (Product Review Summary)**
  - Local Government Participation
  - Results

Documentation – Acquisition Details



Documentation – Acquisition Details



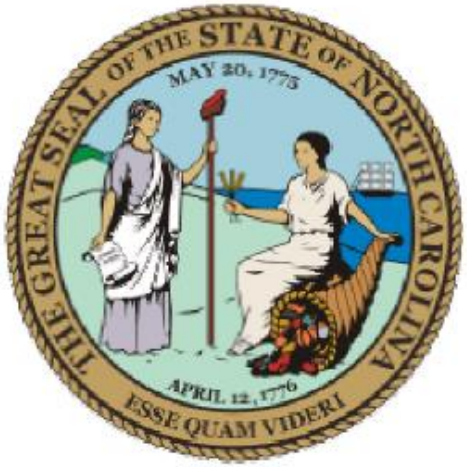
Documentation – Acquisition Details

North Carolina Coastal Orthoimagery 2012

Attachment D: Imagery Acquisition Compliance Report

CO12 SA4 AT_BLOCK-01

April 24, 2012



Prepared By:

Spatial Data Consultants, Inc.
1008 Hutton Lane, Suite 109
High Point, NC 27262
Phone: (888) 772-8425 Fax: (336) 841-1248
www.spatialdc.com

Quality Review Evolvement

- Statewide 2010
  - 911 Board – Post delivery QC
  - 90-Day
  - Data shuffling, Updates, DVDs, Hard Drives, Communication, etc.
  - Vision – Centralization, real-time imagery

- Coastal 2012
  - 911 Board – Early concurrent review
  - Challenge – Risk, Cost, Benefit
  - VOICE

Workflow – Quality Control

Contractor QBS Pre-Planning Acquisition Landcover Level 1

Client Review (Levels 2-4)

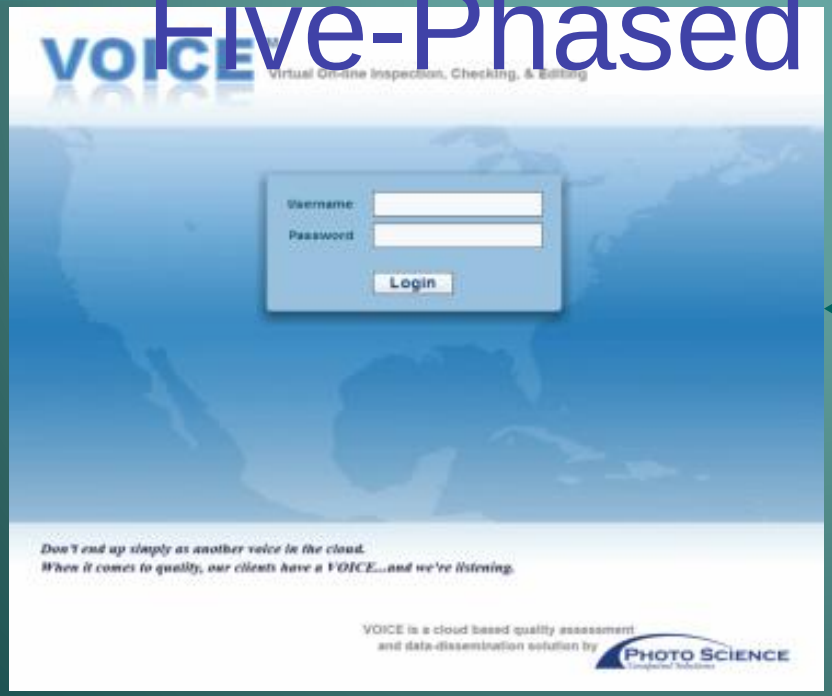
NCGS Horizontal

Image Correction

Image Delivery

60-Day Client Satisfaction

Five-Phased Approach



- Level 2 (30%) NCDOT
- Level 3 (5%) CGIA
- Level 4 (25%) (30 day) Counties

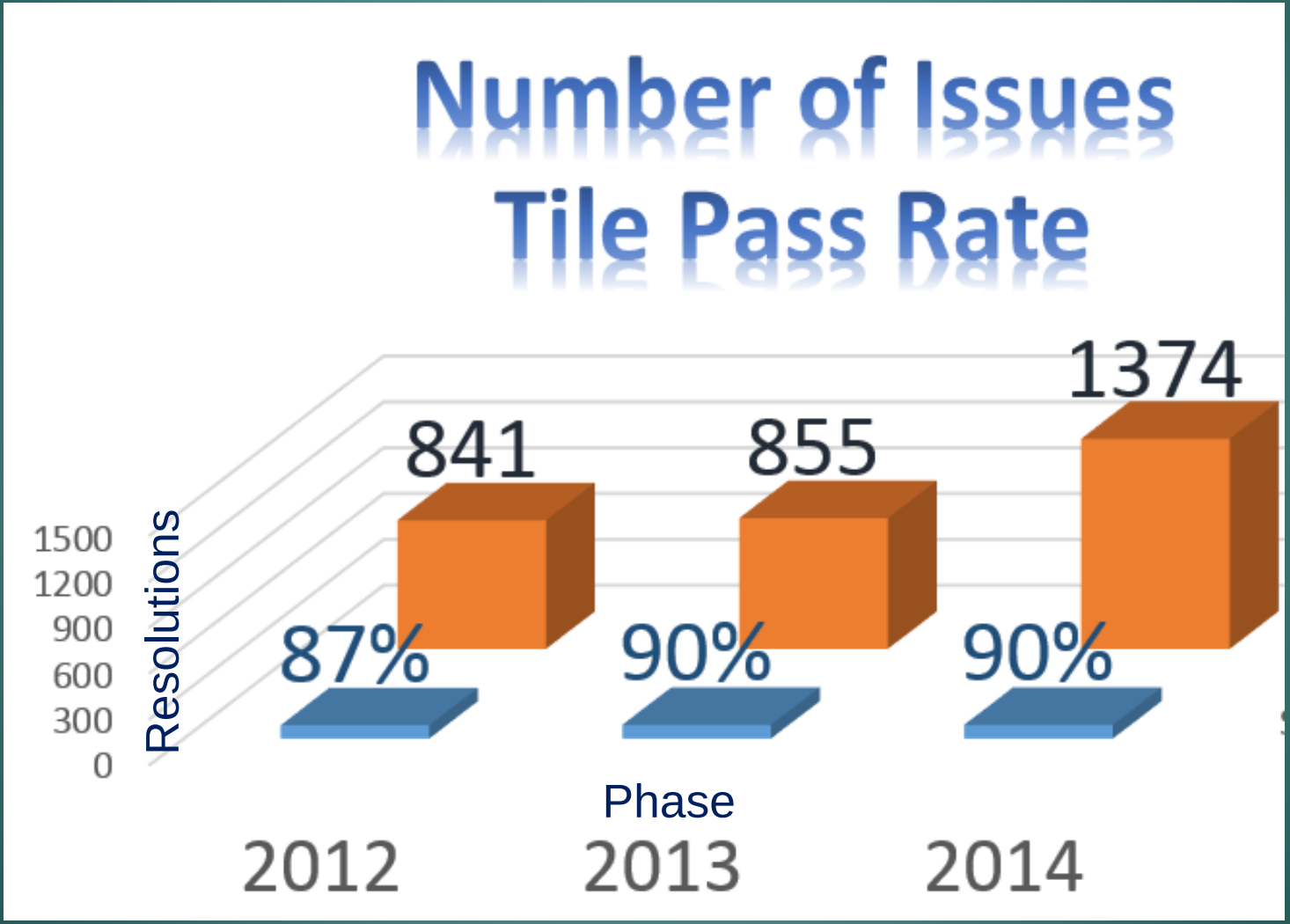
VOICE Recap

- ✓ User Accounts
- ✓ Central
- ✓ Basemap
- ✓ Relevant data
- ✓ Pick tiles – Strategic
- ✓ Speed
- ✓ Tools
- ✓ Documentation

  Help, Reference

  Output – What became of a CALL?

Northern Piedmont 2014 VOICE and Historical



Expectations for Project

Areas of great importance

- Transportation
- Major bridges
- Urban areas
- No seam lines cutting buildings or large structures
- Areas of state importance
- Color and contrast well balanced at seam edges between contractors

Areas of least importance

- Highly vegetated areas
- Water bodies (color and seam lines)
- Utility lines above the ground

Documentation – Product Review Summary

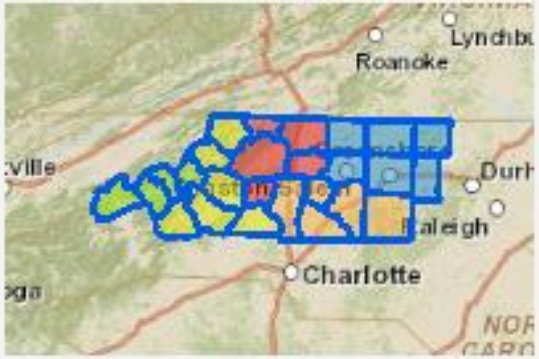
State of North Carolina Office of Information Technology Services
Center for Geographic Information and Analysis
Northern Piedmont and Mountains Orthoimagery 2014
Product Review Summary
Issues reported by CGIA, NCDOT, and County PSAP and GIS

County	Guilford
Primary PSAP:	Guilford Metro
Name:	Wesley Reid
Phone:	336-373-2122
Email:	Wesley.Reid@greensboro-nc.gov
Primary PSAP:	High Point Communications
Name:	Steve Lingerfelt
Phone:	336-883-3286
Email:	steve.lingerfelt@highpointnc.gov
CGIA Contact:	Darrin Smith (919-754-6589 darrin.smith@nc.gov)

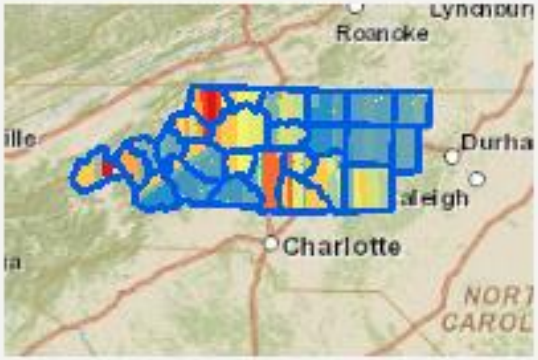
Documentation – Product Review Summary

Documentation – Web Enabled Content

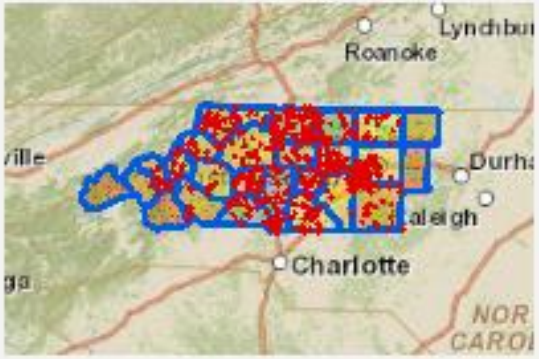
Map 1 Statewide Acquisition...



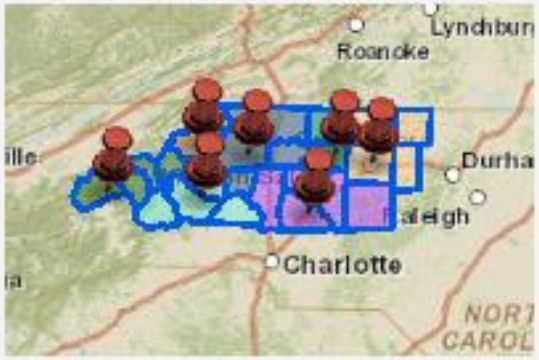
Map 2 Base Map



Map 3 Acquisition Summary

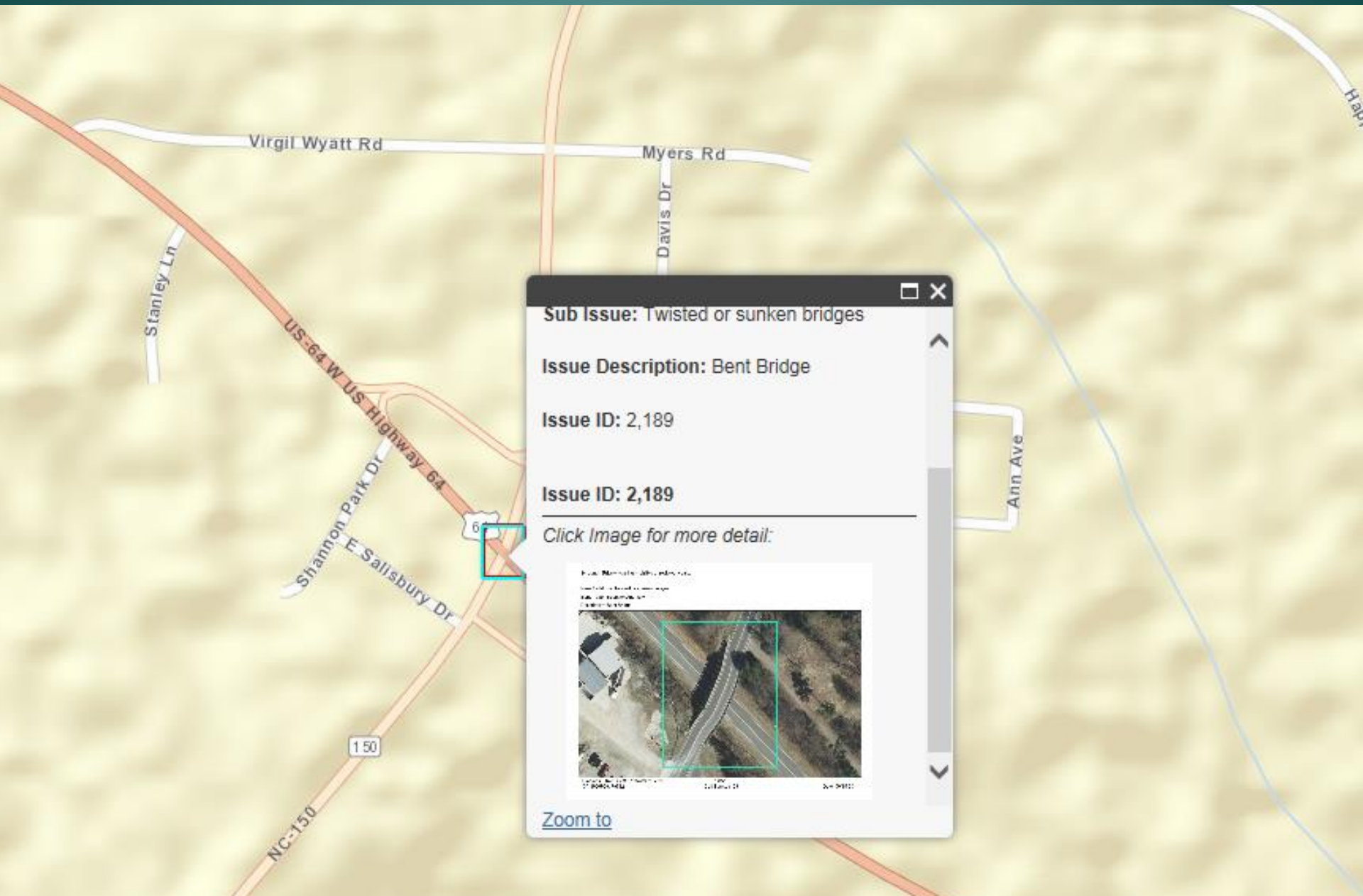


Map 4 Quality Review Sched...



Map 5 Final Delivery Sites

Documentation – Product Review Summary



What's Next (60-Day Client Satisfaction)

- Timing – 60 Days from today

- QC Period vs. Warranty Period
  - Physical review of drive contents
  - Satisfaction
  - Delivery expectations

What if you find a flaw?

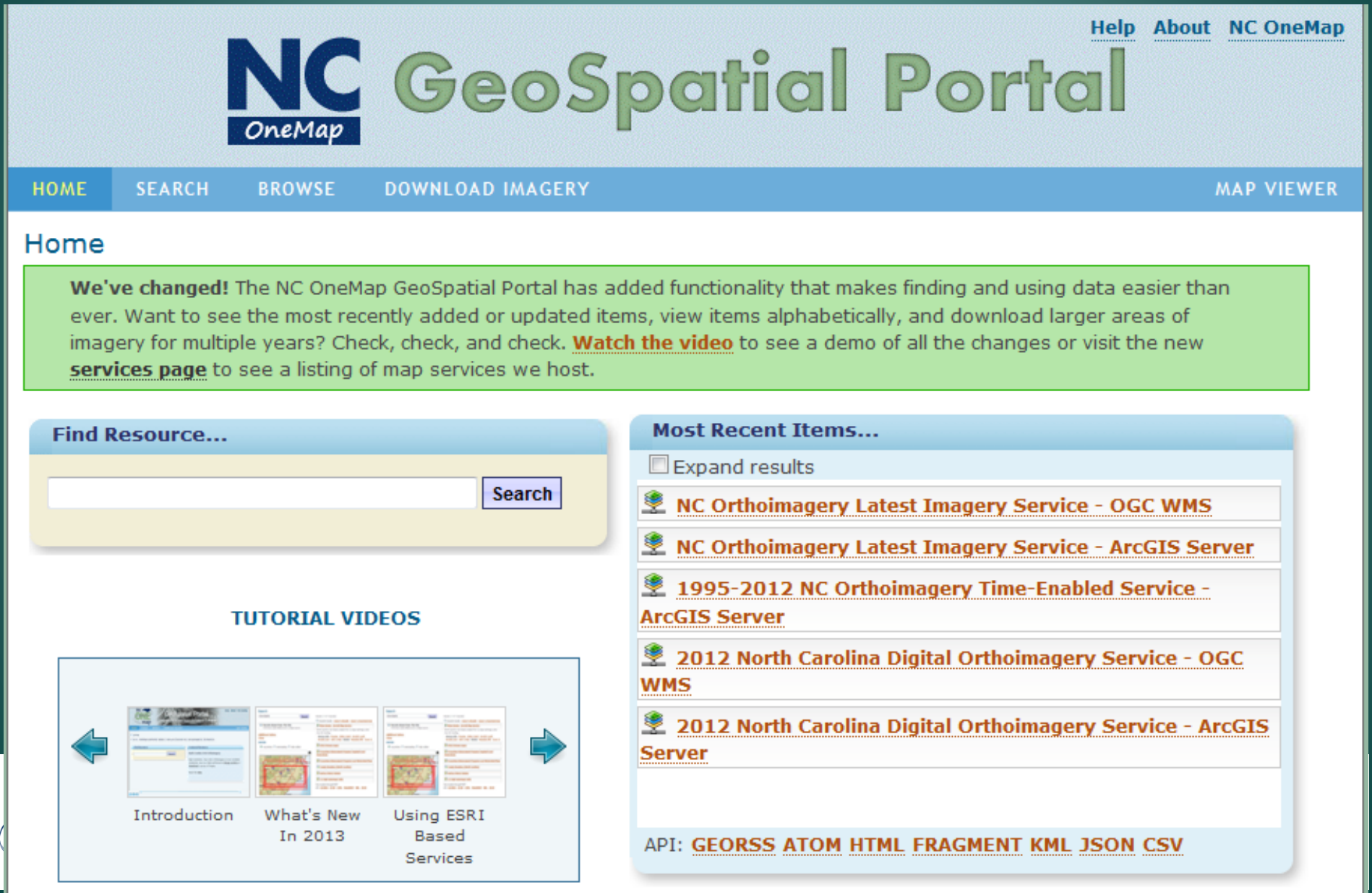
- What is a flaw that should be fixed?
  - Corrupt or missing files
  - Misplaced tiles (spatially)
  - Significant quality issues
    - Regional scope in nature
    - Significant impact to man-made structures (excluding tree lean)
- Contact CGIA
  - Email
  - VOICE
- 60-day period before final repairs

Share the Data

- Expected sharing:
  - PSAPs within your county
  - GIS operations in municipalities

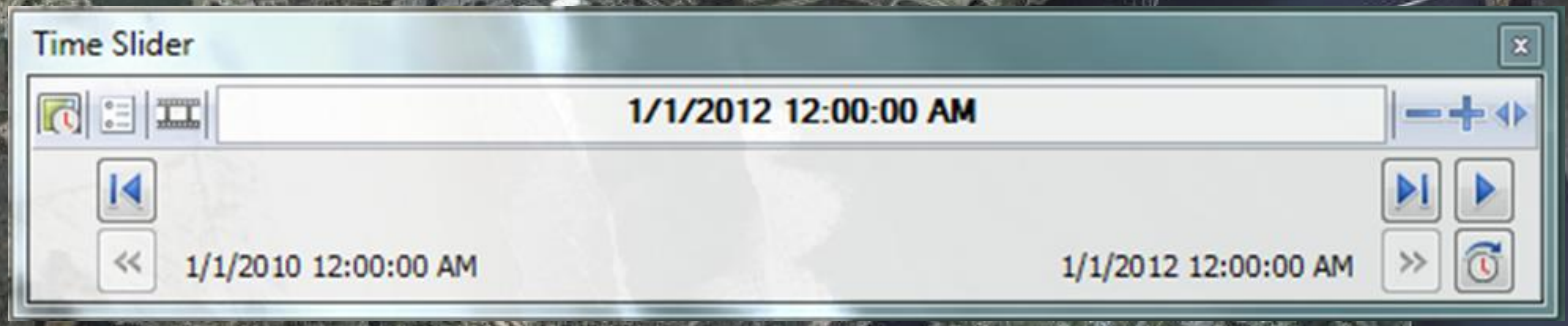
- NC OneMap for online access (**www.nconemap.gov**)
  - Download
  - Imagery services

NC OneMap Geospatial Portal



Vector and Imagery Services

- Imagery
  - Orthoimagery Standalone – Per Year
  - Orthoimagery All - 1995-2014
  - Orthoimagery Most Recent



- http://services.nconemap.com/arcgis/rest/

Next Steps

- CGIA continues with distribution
- CGIA will follow up to assure quality and usefulness in 911 and GIS
- 60-Day Client Satisfaction
- Southern Piedmont and Mountains 2015

911 Board Feedback

- The Board needs *your* feedback
- 4-Year Statewide Orthoimagery Program
- Southern Piedmont and Mountains 2015

Acknowledgements

- NC 911 Board
- NC Center for Geographic Information and Analysis (CGIA)
- NC Department of Transportation, Photogrammetry Unit
- NC Department of Public Safety, NC Geodetic Survey
- Land Records Management, Secretary of State
- Geographic Information Coordinating Council
  - Statewide Mapping Advisory Committee
  - Working Group for Orthophotography Planning
  - State Government GIS Users Committee
  - Local Government Committee
- Private contractors
- ESRI
- Lizardtech
- NC OITS Hosting Services
- State Chief Information Officer

Client Satisfaction

nc ONE map

Center for Geographic Information and Analysis
North Carolina
CGIA

Contact

darrin.smith@nc.gov

tim.johnson@nc.gov

richard.taylor@nc.gov

www.ncgicc.org

www.nconemap.com

Questions?