2010 – 2011 Mid-MO "Structures" Project – Status…

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Mid-MO Structures Database

- Creation of structure database for all visible structures in the Mid-MO RPC area
  - The area consists of 6 counties and 44 incorporated communities and polygons using RPC data and other state/federal sources
- Existing data was collected from local and state partners and used in conjunction with the most up to date aerial imagery to identify structures
- Polygons were created for those structures estimated to have 50,000 square feet or more
- Data made available to local participants, SEMA, and USGS

Value

Emergency Response Value

- Emergency events
  - Powerful in the hands of local responders but will almost certainly be the best data available to state and federal first responders…
- Response planning
- Decision support
- Evacuations
- Search & recovery
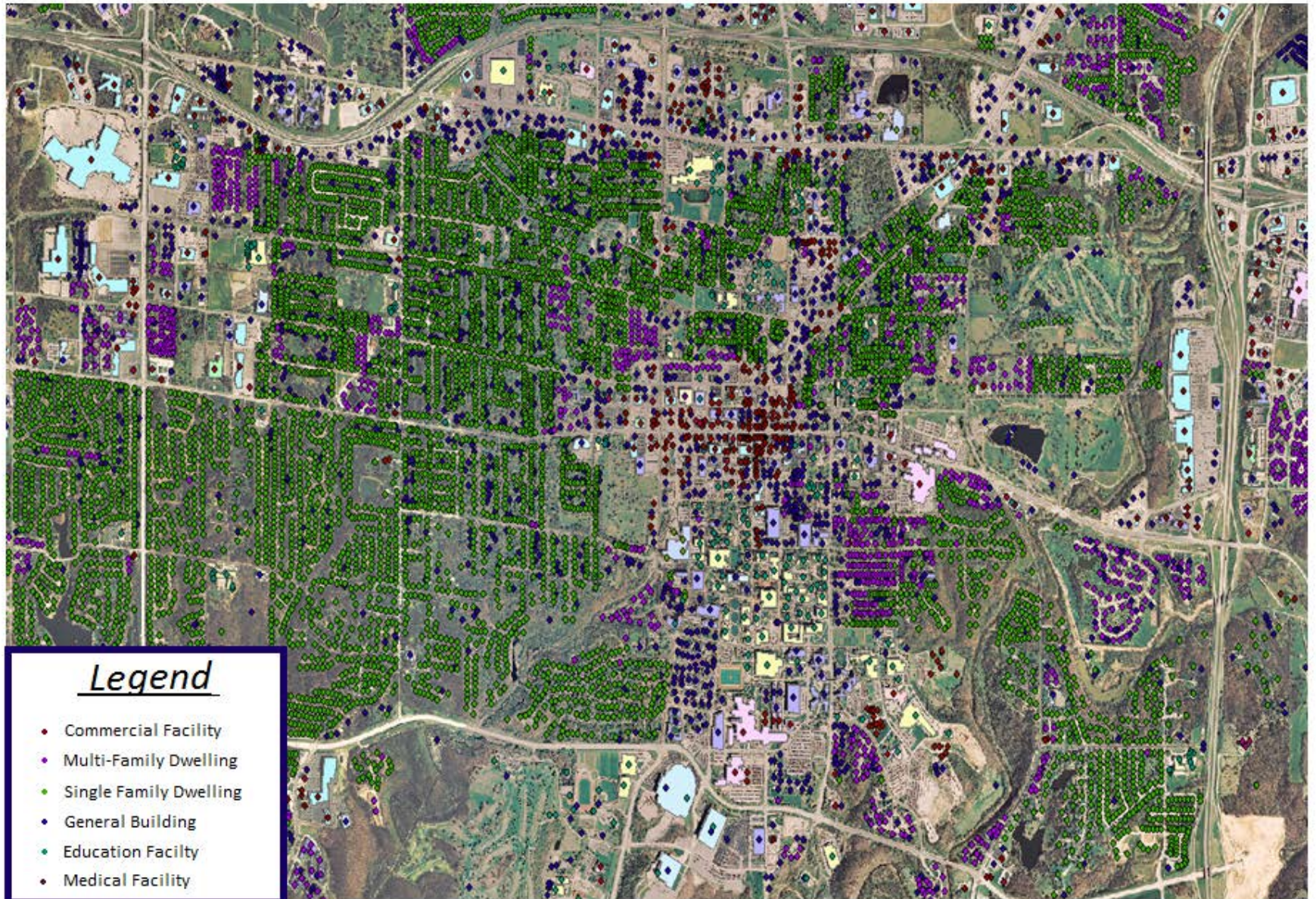- Damage assessment and remediation

Regional Value

- Urban/Rural planning
  - Zoning
  - Ordinances
  - Floodplain Management
- Economic Development
  - State/Federal Grants
  - Parks and Recreation
- Public Safety
  - Shelters
  - Evaluating Access
  - Emergency Preparedness

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Value cont…

- Continuation of New Madrid Seismic Zone Structures Project
  - Earthquake
  - Liquefaction
  - Flood

Close-up of Columbia structure points

Legend

- Commercial Facility
- Multi-Family Dwelling
- Single Family Dwelling
- General Building
- Education Facilty
- Medical Facility

Regional Planning Commissions

- *What is an RPC?*

- *19 RPC's or Councils of Government in Missouri*
  - deliver a variety of federal, state, and local programs, while continuing its function as a planning organization, technical assistance provider and resource to its member local governments
  - voluntary association of local governments. The organization's guiding principles are to serve as an advocate for the region, to provide a professional staff to serve as a resource for member governments, to provide a forum for local officials to discuss regional issues and concerns, and to promote community and economic development.
  - Board of Directors representing all counties in the region is responsible for organizational oversight.
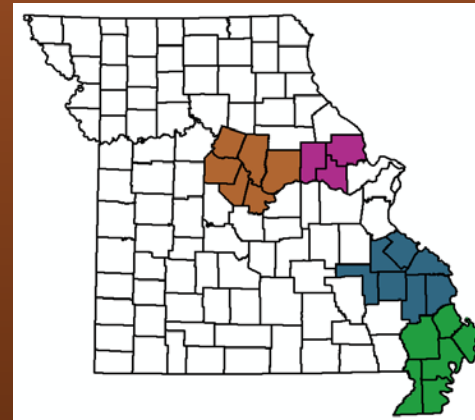
- *Four RPC's have been involved in this project*

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What is MSDIS?

Missouri Spatial Data Information Service

- Missouri's GIS Data Clearinghouse
- Store, Manage, Maintain, Create spatial data
- Offer Missouri GIS data downloads free of charge
    - Msdis.missouri.edu
    - Geoportal
    - Data referral
    - Numerous resources and information
- Data Sharing + Partnerships

Project Background…

- Project is sponsored by Partnership Funding through FGDC/USGS…
- FGDC Federal share = $48,733
- MSDIS (University) cost share = $ 15,670
- Mid-MO RPC cost share = $10,000
- Total funding = $74,443
- Two previous project iterations funded by FGDC/USGS Cooperative Agreement Program (CAP) funding…
  - SEMO/Bootheel 2007-2008
  - Boonslick RPC 2008-2009

What we're trying to accomplish…

- **Data sharing partnerships** – designed to be maintained and current across Missouri's landscape…

- **Enhanced regional working relationships** – promoting geospatial decision support for emergency events and plan

- To prove the premise to state and federal entities that local government data is not only usually the most accurate but the most timely and can best be maintained locally…

Some of the Data Layers Reviewed...

CIKR (Critical Infrastructure and Key Resources)

Commercial/Retail
- o Local staff
- o Google

Educational
- o Public Schools – Health / DESE
- o Private Schools – Health / DESE
- o Higher Education Institutions – Health / DESE
- o Handicap Public Schools – Health / DESE

Emergency Response / Law Enforcement
- o Correctional Facilities – Adult – HSIP Freedom
- o Correctional Facilities – Youth – HSIP Freedom
- o EMS separate from Fire Stations – TechniGraphics (TGS)
- o Fire Stations – TechniGraphics (TGS)
- o Law Enforcement Agencies – TechniGraphics (TGS)

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Cont...Data Layers Reviewed

Health / Medical
- Daycare – Adult – Health
- Daycare – Child – Health
- Dialysis Clinics – Health
- Hospitals – Health / TechniGraphics (TGS)
- Nursing Homes – Health
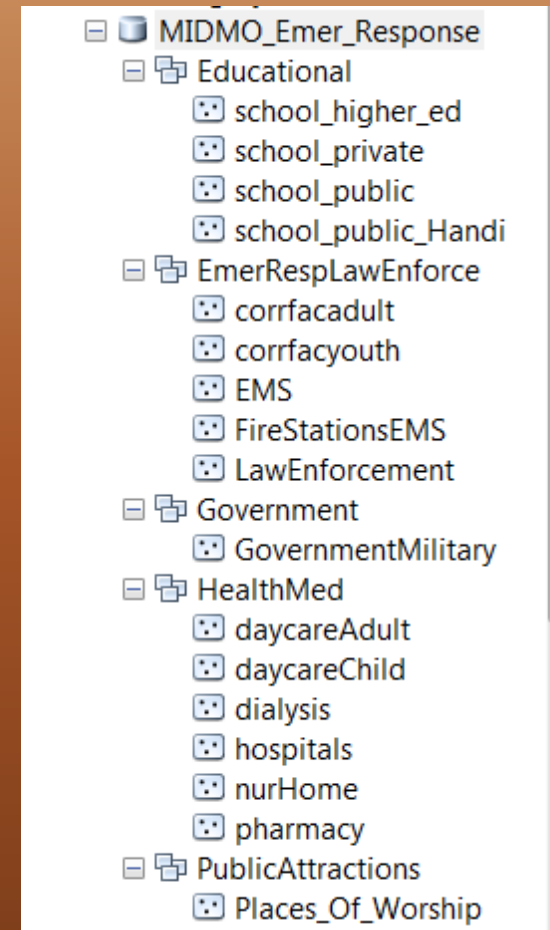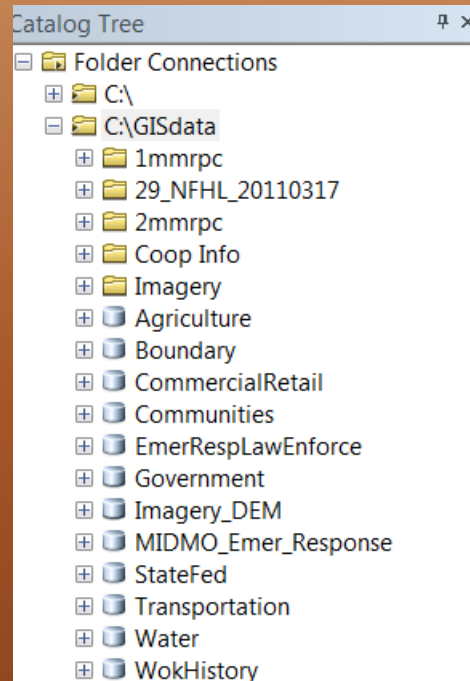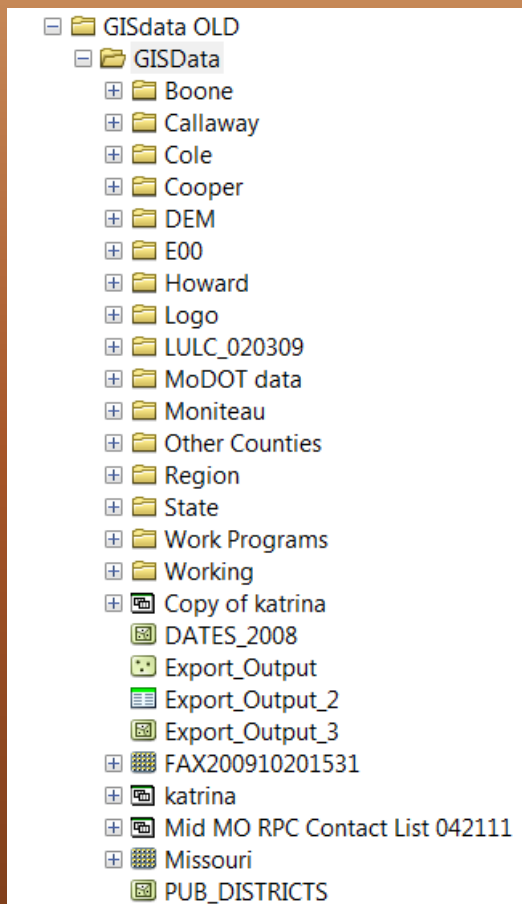- Pharmacies – Health

Public Attractions and Landmarks
- Google
- **Local Staff Knowledge**

Water
- Wastewater Facilities – DNR

Database Development
Original database – new geodatabase – response database…

Project Methods

- Imagery
  - State 2007 2ft Imagery from MSDIS
    - 1:2000 scale, previous was 1:3000
  - Google Maps
    - More current images
    - Businesses, Schools, etc labeled
    - More detailed data added

- Digitizing
  - Place points on man made structures
  - Polygons around large buildings (50,000 sqft)
  - Determine classification of building

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Project Methods

- Schema
  - From 'New Madrid Seismic Zone Structures' Project

  - USGS Classification System

  - 1 Point per building (center)

  - Building Footprints; polygons around larger structures

  - USNG coordinates, Lat + Long

USGS Classification

- 16 main categories numbered 710 – 880
  - Building general / Housing structures

- 279 sub-categories numbered 71000 – 88016

  - Individual interpretation of classifying certain unknown buildings
  - Most not used
  - Distinguish between housing units/building general
  - Miscellaneous structures; towers, bridges, etc

- Code translation in Metadata

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USGS Classification

☑ structure_points

    FType

- ◆ Agriculture, Food, and Livestock
- ◆ Banking and Finance
- ◆ Building General
- ◆ Commercial and Retail
- ◆ Education
- ◆ Emergency Response and Law Enforcement
- ◆ Energy
- ◆ Government and Military
- ◆ Health and Medical
- ◆ Industry
- ◆ Information and Communication
- ◆ Mail and Shipping
- ◆ Public Attractions and Landmark Buildings
- ◆ Transportation Facilities
- ◆ Water Supply and Treatment
- ◆ Weather

☑ structure_footprints

    FType

- ☐ Agriculture, Food, and Livestock
- ☐ Banking and Finance
- ☐ Building General
- ☐ Commercial and Retail
- ☐ Education
- ☐ Emergency Response and Law Enforcement
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- ☐ Transportation Facilities
- ☐ Water Supply and Treatment
- ☐ Weather

Classifications

- "Building General" divided into Single/Multi Family dwellings + Mobile Home
- Many "Building General" changed to Commercial/Retail, Agriculture, Industry
- Fields added to Commercial/Retail: Gas Station, Hotel
- Cell Towers added to Information/Communication
- Banks + Post Offices
- Bridges labeled Transportation
- Water Towers

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Review Process

- Checked against SEMA data

- Assessor data, Google, and local staff/community knowledge

- Added some building names

- Added some points in a couple counties

- Returned to MSDIS for final packaging

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Current Status

- Data is now publicly available on MSDIS
- www.msdis.missouri.edu

- Data has been delivered to four counties (Boone, Callaway, Cole, and Moniteau) and meetings have been held with GIS staff

- Two counties (Cooper and Howard) use private GIS services and meetings have not occurred yet, although data has been discussed with them.

Community Feedback

- Mixed Reviews

- Main issues :
    - Integration into existing databases
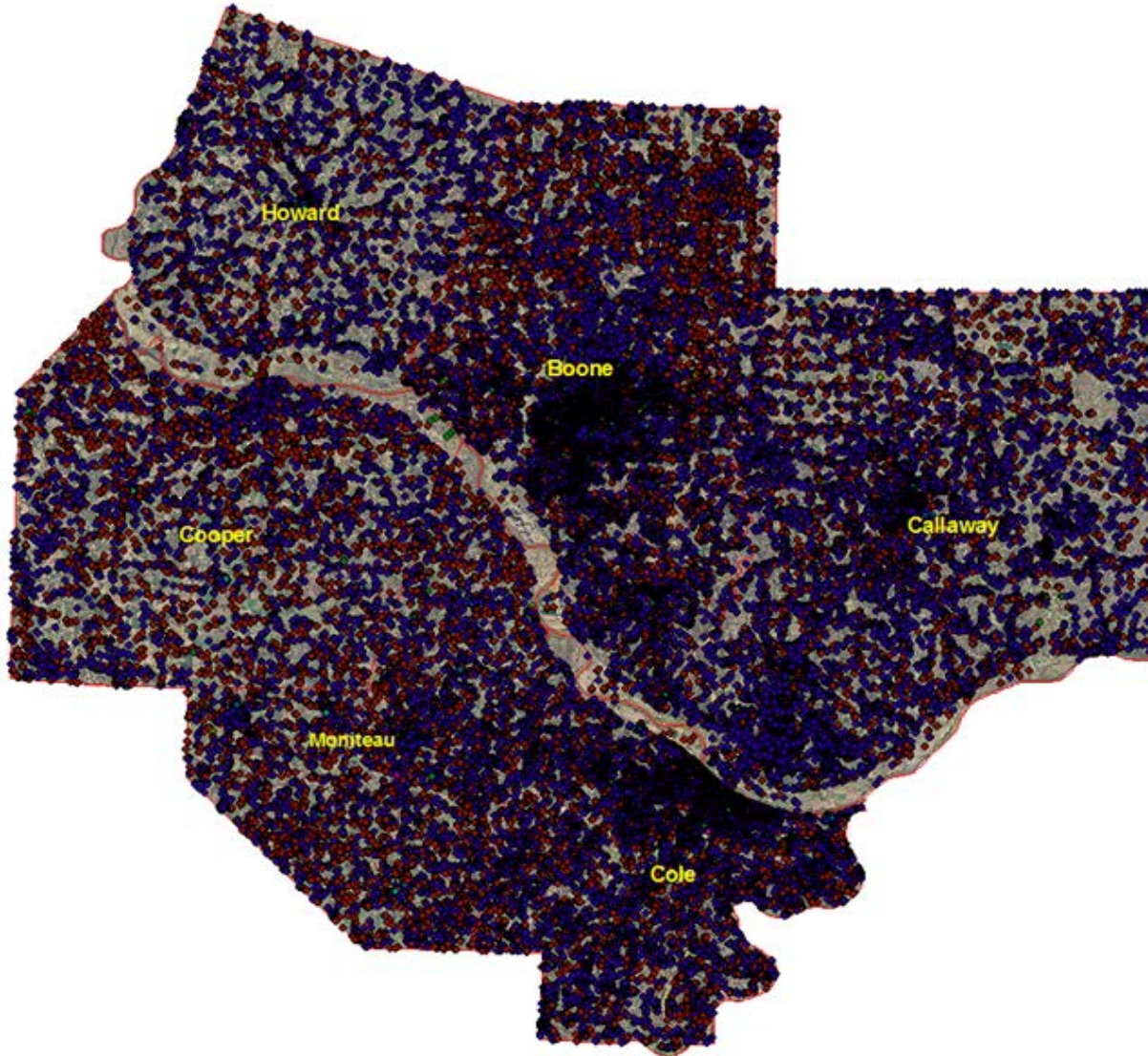   - Maintenance due to lack of time and staff

Success Stories

- Moniteau County Polygons

- Latham School

- Use in Hazard Mitigation Planning
  - Floodplain analysis
  - Dam Failure analysis

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Structure Footprints

198,792 Structure Points for Mid-MO RPC

Progress

- MidMO RPC and Boonslick RPC complete
    - In hands of local governments
    - Published to MSDIS

- SEMO RPC and Bootheel RPC revision in progress
    - Review in process for Bootheel
    - SEMO initial revision process began in March

Issues

- Individual Interpretation of classification
- Buildings may fit multiple categories
- Recent additions
  - Visible in Google maps, not 2007 imagery
  - Add basemap in Arc10, draw polygon

Imagery Comparisons

Boonville High School   Google Maps

Imagery Comparisons

Boonville Walmart

Google Maps