

McLeod County LIDAR and Orthophotography Meeting

August 24, 2006

1:00 – 3:00 p.m.

McLeod County Boardroom

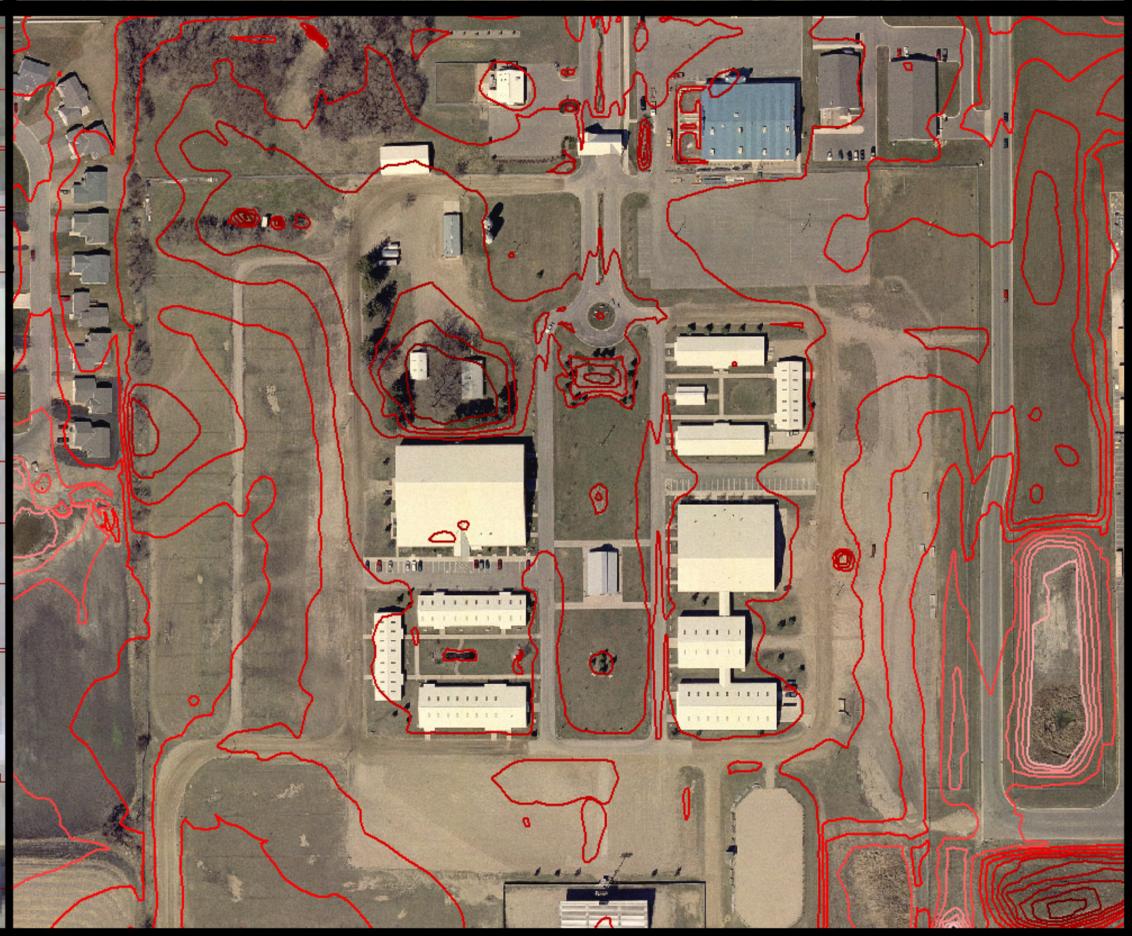
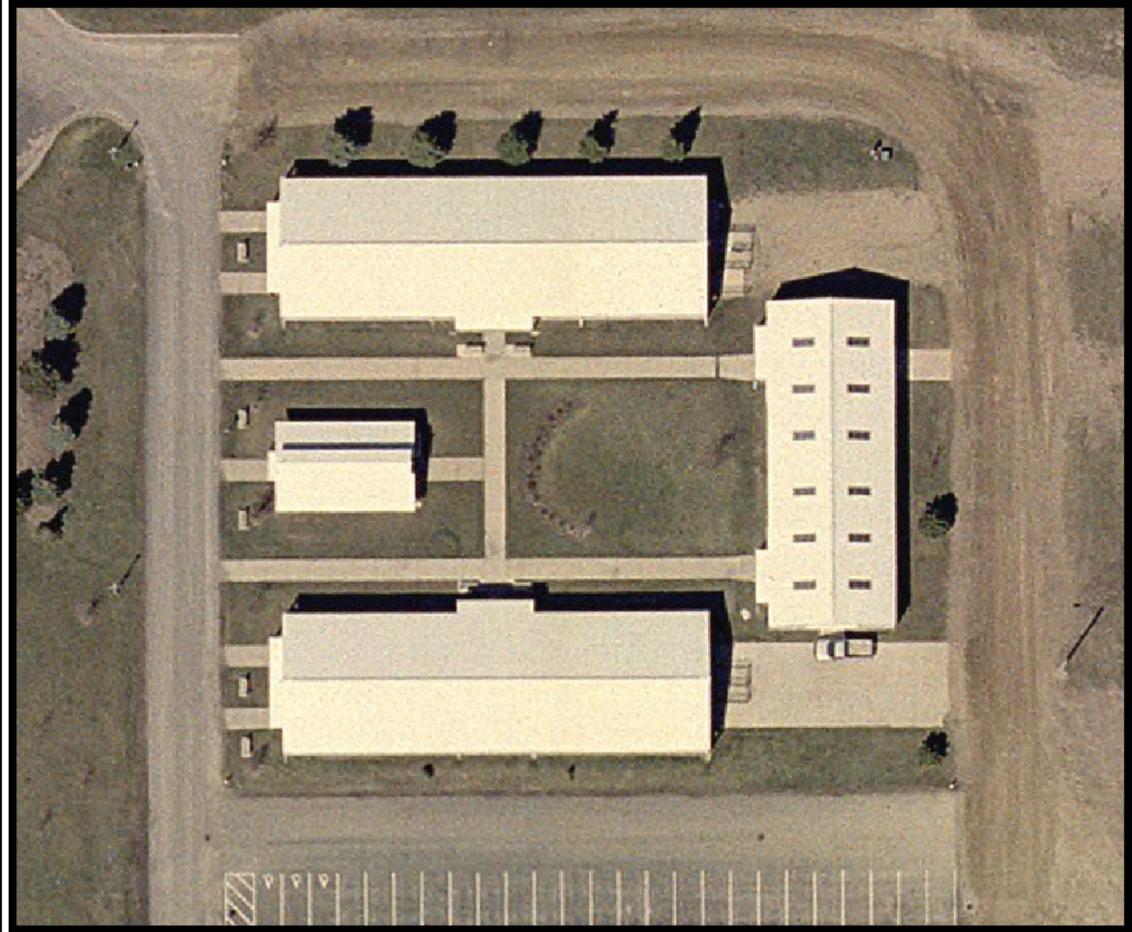
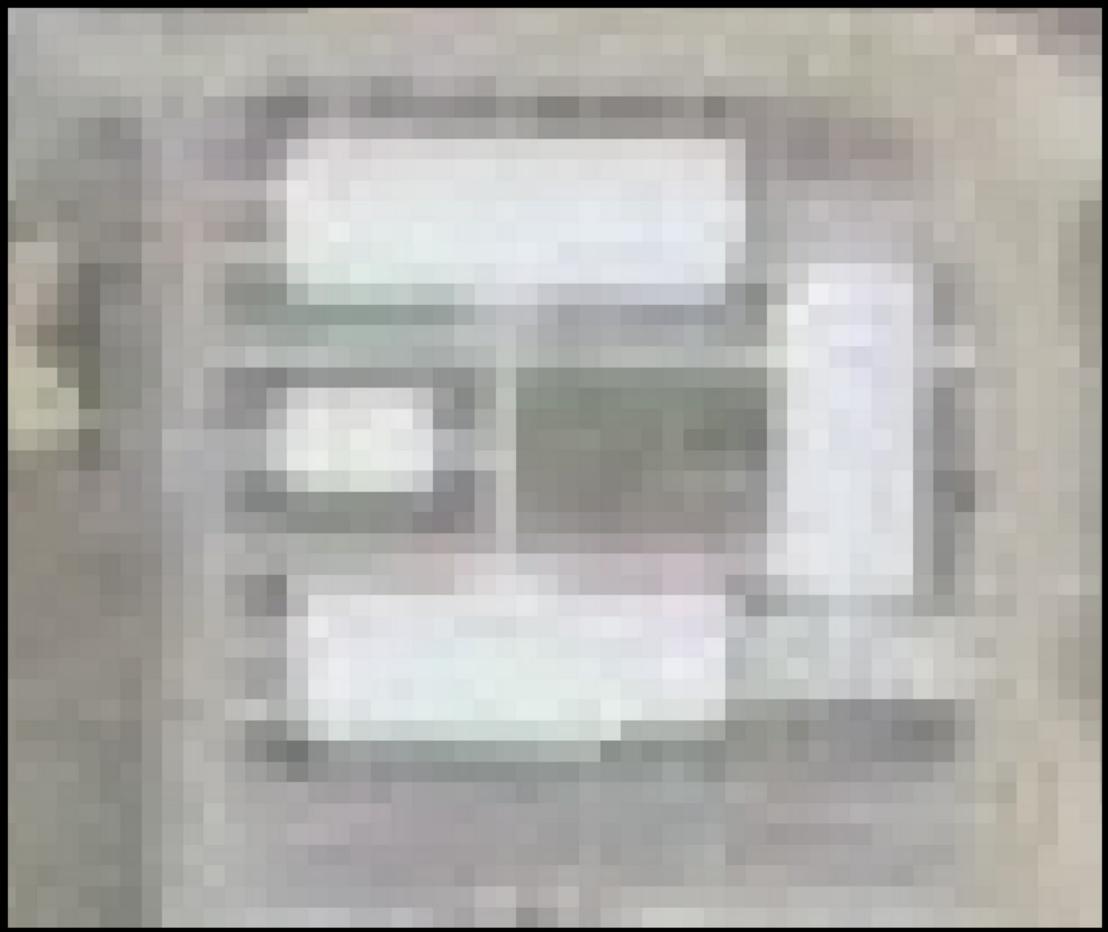
Facilitator: Christy Christensen, McLeod County GIS Director, (320) 864-1276
Daren Mielke, Sibley County Engineer, (507) 237-4092
Peter Jenkins, P.L.S., MnDOT Land Management, (651) 296-1079
David Claypool, P.L.S., Ramsey County Surveyor, (651) 266-7170

Invitees: McLeod County Commissioners and Staff
McLeod County City Representatives
Sibley County Commissioners and Staff
Sibley County City Representatives
Buffalo Creek Watershed
Soil and Water Conservation District
Board of Water and Soil Resources

Purpose: To discuss the need for LIDAR and High Accuracy Aerial
Photography. To explore partnerships and the continuation of the
development of the RFP.

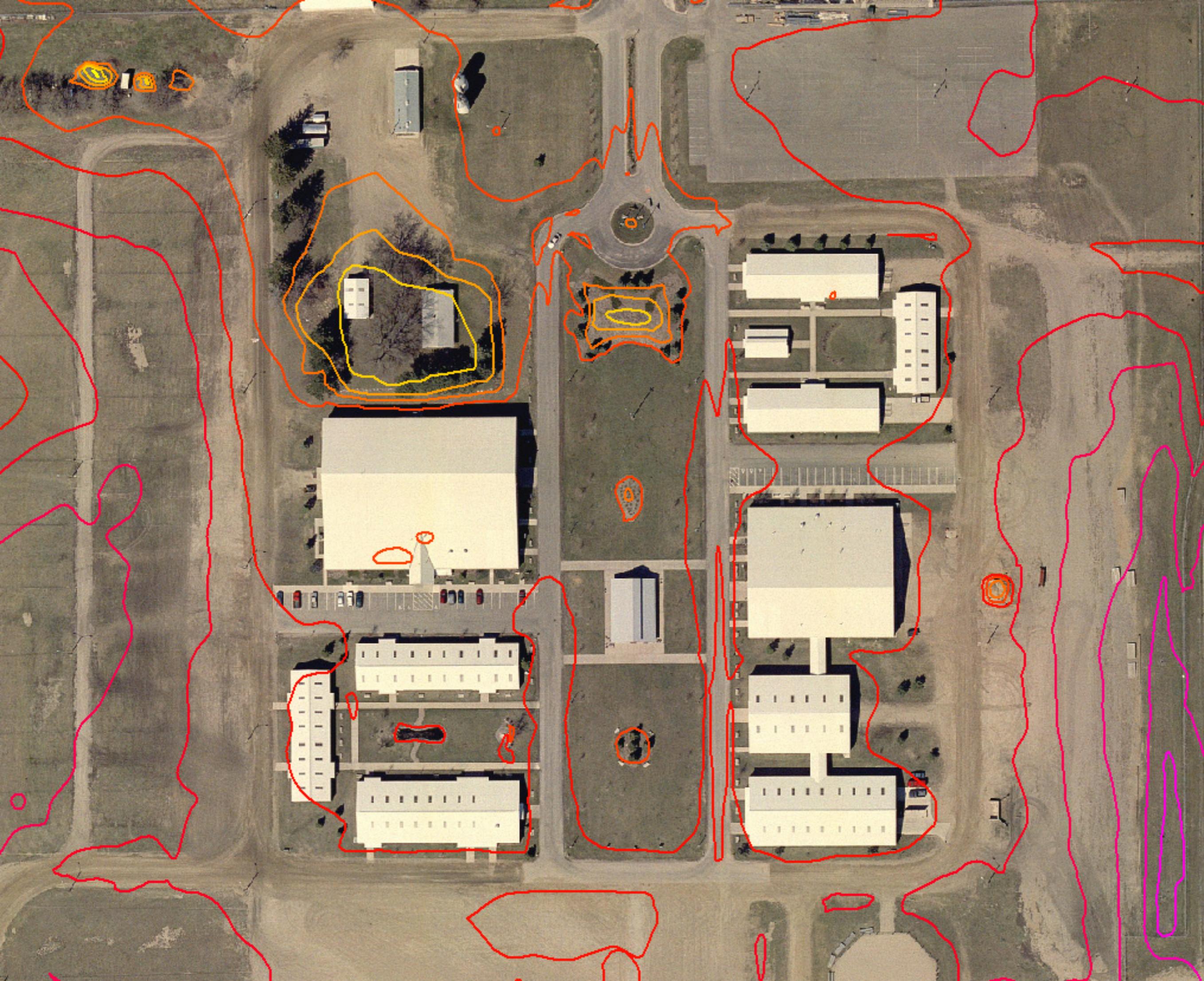
Meeting Agenda

1. Welcome
2. Introductions
3. Orthophotography
 - a. Examples of Current Photography vs. High Resolution
 - b. Examples of City of Fargo usage.
 - c. Comments from McLeod County Departments
 - d. Comments from Website users.
4. LIDAR
 - a. Examples of the accuracy of the contours created
 - b. Use in McLeod County
 - c. Discussion from Peter Jenkins and David Claypool
5. Costs and Revenue
 - a. Preliminary Estimates of \$250,000
 - b. Fee schedule would recover some of those costs
 - c. Partnerships would lower the costs











How Aerial Photography is Being Used

Use by local government

Clay County uses aerial photography for flood mitigation, emergency preparedness, and law enforcement.

The Goodhue County Assessor's office uses aerial photos for many aspects of their job valuing properties fairly, equitably, and at market value. The aerial photos are a great tool to verify that structures are on the correct parcels; classify properties by their use; measure buildings, woods, fields, etc; confirm building description and use; and create site plans showing vegetation, soil types, and topography.

Olmsted County recently helped their Homeland Security staff map the locations of the existing warning sirens throughout the county. Overlaying those locations and their coverage area on top of the orthophotos will provide a visual image to decision makers on the density of the populated areas not included in the effective range of current sirens, resulting in improved planning strategies for the installation of additional warning sirens.

Olmsted County goes on to list other uses of the orthophotos. These include:

- 1) information source for updating their land use map;
- 2) historical reference for zoning enforcement related to vegetation management, land disturbance, and non-conforming parking; and
- 3) foundation for inventorying and creating landscape plans for county parks

Winona County uses the orthophotos for zoning determinations and for measuring setbacks from feedlots, roads, streams, and natural features.

New York Mills is beginning to use aerial photography to deal with a variety of federal regulatory issues. For example, under GASB34/35, it is required to compute the current value of its public infrastructure; photography will help ensure the inventory is complete. The city will soon start using aerial photography for managing its sewer system (in compliance with EPA rules), locating utilities, and managing E911.

Local watershed boards and districts use aerial photography for planning, technical evaluation, public meetings, etc. One of the most important issues is current photography for detecting land use changes. Recently requesting such data from the Fergus Falls NRCS office are the following boards and districts: Buffalo Red (Clay County area), Twelve Mile Creek (Traverse County area) and the Nokasippi Watershed (Crow Wing County area). These groups work in conjunction with local county Soil and Water Conservation Districts (SWCD's) for local water planning efforts.

The Dodge County Soil and Water District uses orthophotos in their county ditch inspections, marking needed repairs on photos to send to contractors. They keep track of all repairs and make presentations to the county commissioners on the status of the county drainage systems.

Use by local government assisting individuals and businesses

Winona County uses orthophotos in floodplain mapping for lending institutions and to aid in building permit determinations.

Many state and local government agencies bring aerial photography to public meetings with new proposals identified on the photo. They have come to learn that people need to see the "what and where" before they understand the issue and feel confident about stating an opinion. Photos have been provided recently by the Northwest Regional Development Commission for land use planning work in Ada, Greenbush, Hallock, Thief River Falls, Badger, Warren, and Lengby.

The *Firewise* program is helping individuals and communities to assess their fire risk – most often based on current aerial photography assessing defensible space around homes. In many instances, school classes do the community work. School projects are about to begin in two District 7 schools: Grygla and Warroad.

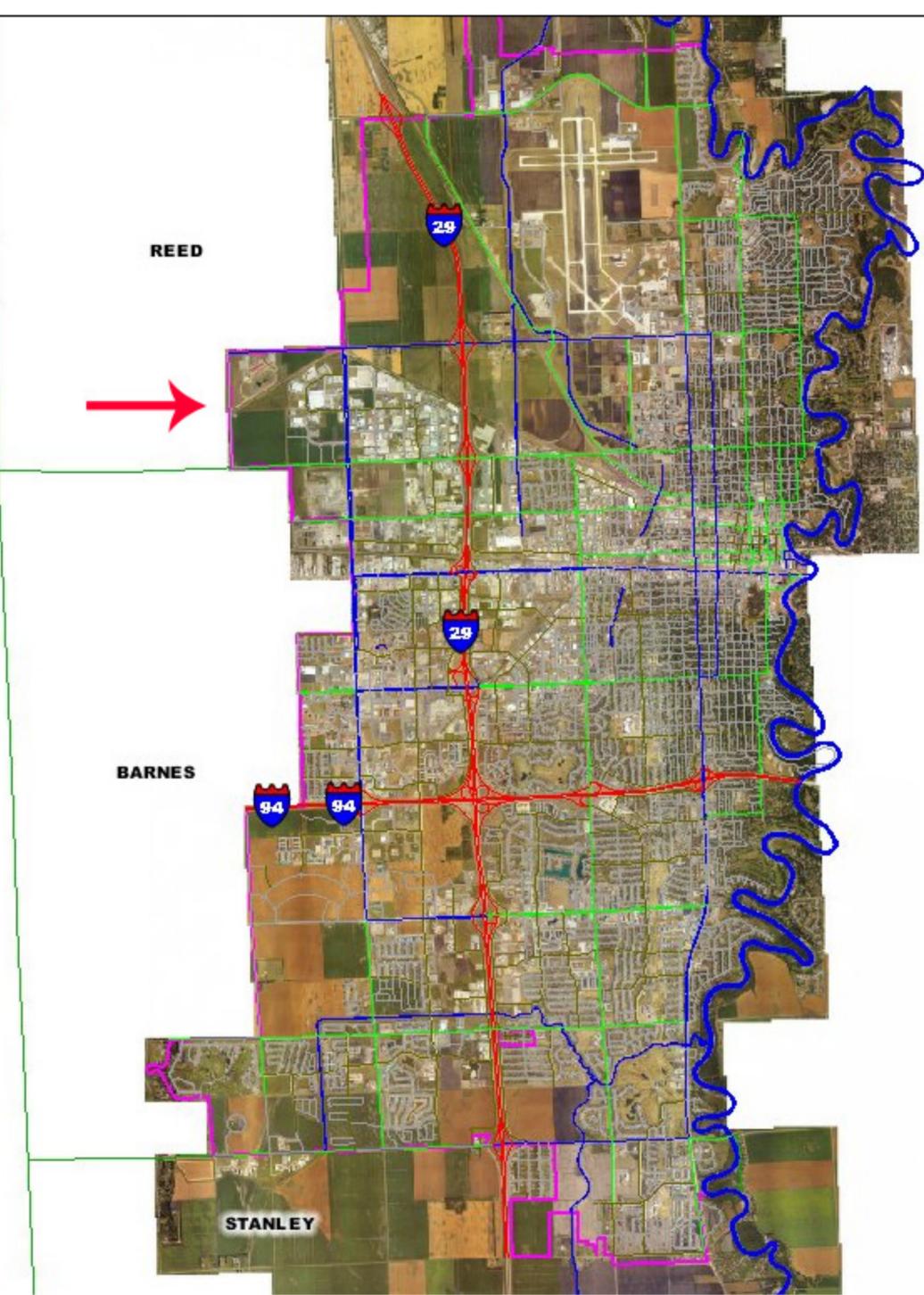
The Northwest Regional Development Commission used the aerial photography to create maps for the JOBZ program for several businesses throughout the RDC's seven-county service region. Cities

participating include Ada, Angus, Badger, Crookston, Erskine, Fertile, Greenbush, Hallock, Fosston, Lake Bronson, and Gary.

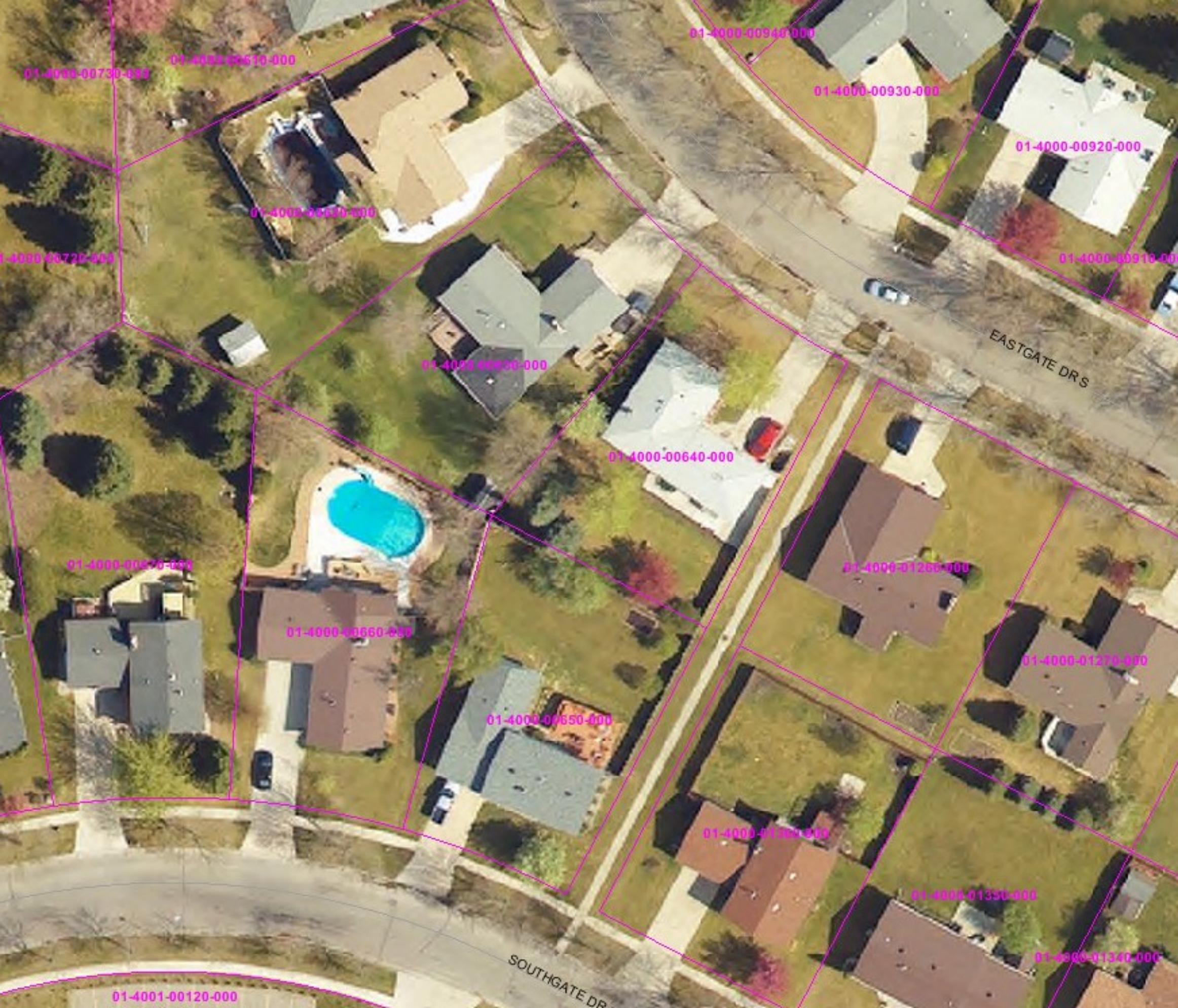
Use by local engineering firms doing work for local government

Ayres Associates is working with the newly formed Crow Wing County Sanitary Management District to help manage on-site wastewater. Ayres' customized GIS database will help the district and homeowners track the performance and maintenance of their septic systems, leading to increased system longevity. This management is critical in sustaining lake and ground water quality. Having the GIS database with current aerial photography provides the district with an effective tool for comprehensive planning and management of the rural decentralized wastewater infrastructure.

Wenck Associates, Inc. is an engineering consulting firm working on water and ecological issues. Some specific examples include identifying wetland areas, drainage systems, impervious areas, residential developments, industrial facilities, and roadway systems; documenting land use and water body change with images from different dates; and assessing non-degradation to meet state mandates. One of their professional staff members says, "We work extensively with public sector clients. High-quality aerial photos allow us to do a significant part of that work from the office, helping us to organize our work more efficiently and reducing the time spent on field work, site visits, and travel. Less of our time means a lower cost to the taxpayers supporting those public agencies."







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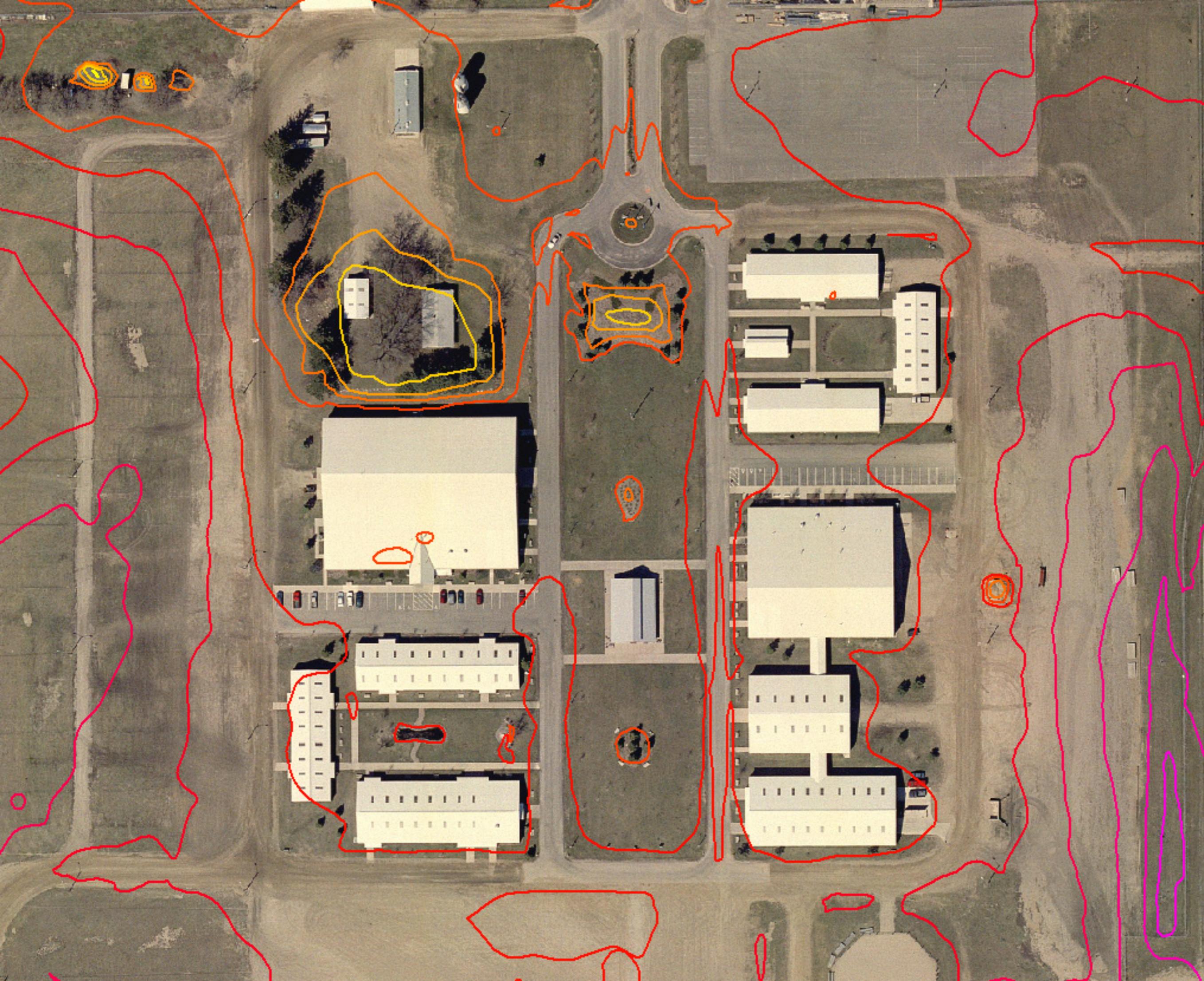
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DEM and Contours

Through Light Detection and Ranging (LIDAR)

Accurate Floodplain Maps.

Accurate mapping of flood hazard areas would improve the planning and siting of flood protection measures and administration of the NFIP and the state Floodplain Management Act. In addition, homeowners would not be required to buy costly flood insurance if they are not in a floodplain. High-resolution DEMs will reduce a homeowner's expense in providing more accurate survey data required in the letter of map revision (LOMR) and letter of map amendment (LOMA) applications. In new flood insurance studies (FISs), the updated flood insurance rate maps (FIRMs) will benefit from more accurate mapping and will reduce costs in administering revisions or amendments to the effective floodplain mapping.

Transportation Infrastructure.

Planning, design, construction and maintenance of transportation infrastructure benefits greatly by the availability of accurate and comprehensive high-resolution terrain data. This data would lead to increased efficiency and quality in hydrologic and hydraulic analysis and design work important for dealing with water flowing off or under roadways. DEM data would support transportation project streamlining because preliminary drainage design could begin without waiting for drainage area mapping to be completed. The DEM data will also support better communication about drainage issues, both within Mn/DOT, other government units and the public, because of the ability to create clearly understood graphics.

Land Use Management.

Availability and use of a DEM would expedite planning and development of land use for precision agriculture, drainage systems, land subdivision, utilities, commercial and industrial districts, etc., and improve the quality of soils mapping. Washington County, for example, uses DEMs to help make a wide variety of land-use decisions.

Surface and Groundwater Models.

Availability of a DEM would make it possible to build and run mathematical models representing rivers, lakes, and groundwater flow systems on a regional basis. Regional models are essential tools in timely response and coordination between government agencies and the communities in the state.

Natural Resources Management.

Minnesota's quality of life and sustainability of its water and land resources (forestry, fish and wildlife, minerals, etc.) depend on wise management of these resources. One of the data inputs in planning and implementing sound management ideas is high-resolution elevation data. A DEM would significantly enhance the ability to manage natural resources efficiently and effectively.

Conflict Reduction.

Availability and use of a DEM would significantly reduce conflicts that occur between regulators and developers, and between competing interest groups. A DEM would help to provide more credible and defensible decisions

How Washington County Minnesota Uses Their Elevation Data

- Reviewing subdivisions plats
- Reviewing mining operations
- Bluff line delineations
- Cell phone tower siting
- Wetland delineations
- Flood management control (spring flooding)
- Modernizing FEMA flood insurance rate maps (FIRM)
- Issuing conditional use permits
- Landlocked basin studies
- Zoning violations
- Public Hearings:
 - Board of Adjustment and Appeals
 - Planning and Advisory Commission
 - Plat Commission
 - County Board Meetings

ESTIMATED COSTS

McLeod County 504 Square Miles

Verbal Estimate in 2005

\$150,000 for LIDAR Raw Data with 2' Contours

\$100,000 for 6" Orthophotography

2006 Pricing for 3663 Square Miles by Sanborn for the Red River of the North Basin came in at \$159 per square mile for LIDAR.

2006 Pricing for 1650 Square Miles by Merrick for the Stearns County Area came in at \$209 per square mile for Raw and Processed LIDAR, 2 foot contours, and a DEM.

Given the area of McLeod County of 504 Square Miles and Sibley of 600 Square Miles for a total of 1104 square miles, Merrick's pricing may be more applicable than Sanborn's.

Sanborn's pricing when applied to McLeod is \$80,000 for LIDAR and for the 600 square miles of Sibley is \$95,000.

Merrick's pricing when applied to McLeod is \$105,000 and for Sibley is \$125,000 for LIDAR, 2 foot contours, and a DEM. The Orthophotography is a separate \$80,000 to \$100,000 item.

http://www.mngislis.org/newsletter/issue45/MN_DEM_Red_River.htm

Merrick & Company Awarded LIDAR Contract for Stearns County, Minnesota

July 5, 2006

Aurora, CO USA – Merrick & Company, a world leader in LIDAR, digital ortho imaging, photogrammetry and GIS mapping was awarded a \$345,000 contract to deliver raw and processed LIDAR data, 2-foot contours, and a DEM for 1650 square miles of Stearns County, Minnesota and a small portion of two neighboring counties, Sherburne and Benton. The project is funded by Stearns County, seven local municipalities, a watershed district, and a soil and water conservation district.

Merrick was awarded the project based on our competitive scoring system which included high marks for their technology, methodology, delivery options, and their attention to details that are important to the County," explains Denny Kron, Director of Land Management/County Surveyor for Stearns County.

Gary Outlaw, GISP, Merrick's Vice President of Business Development, GeoSpatial Solutions states, "Merrick is pleased to support this topographic mapping program. We are using the County's existing imagery in order to reduce the overall project cost."

Stearns County is located in central Minnesota and is home to over 140,000 residents. The county has experienced steady annual growth of approximately three-percent in the recent past, and presently has approximately 72,000 parcels. The new LIDAR and derived data will be used throughout the county by various public and private entities for flood insurance analysis, planning and zoning studies for new subdivisions, watershed management, assessing land value based on production potential in agricultural zones, and supporting geographic information system applications.



WELCOME



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GIS Fee Schedule	
<p><u>Mapping Projects</u></p> <p>Internet Map Printout Custom Mapping</p> <p>8.5x11 11x17 --Plotter</p> <p><= 36" x 24" > 36" x 24" and <= 36" x 50" > 36" x 50" and <= 36" x 72" <= 40" x 72" - special size paper</p> <p>**Extra Charge for Aerial Photography 6" Pixels ***Extra Charge for Aerial Photography 2' Pixels</p> <p>--Laminating</p> <p><= 24" x 36" > 24" x 36"</p>	<p><u>Cost</u></p> <p>\$15 - 8.5x11 (Additional Copy \$5) \$75/hr Labor (1/2 hour minimum) - 15 minute increments \$5/ map \$7/ map</p> <p>\$15/ map **\$10 ***\$5 \$20/ map **\$15 ***\$10 \$30/ map **\$15 ***\$10 \$50/ map **\$20 ***\$15</p> <p>\$15/ map \$25/ map</p>
<p><u>Automated Internet Parcel Buffer Request</u></p> <p>Parcel Tax Records Returned Emailed Results - Excel, Text File, List - Free Printed List Printed Mailing Label Sheet</p>	<p>\$75/hr (15 minute charge)</p> <p>\$0.05/record</p> <p>\$0.10/page \$2/ sheet</p>
<p><u>Carver County GIS Data Prices</u> **All datasets are UTM Zone 15N Nad83 - Shapefile format</p> <p>Parcel dataset requires a License Agreement</p> <p>Parcels - All Tax Info. is in the MetroGIS Standard Format</p> <p>1 to 2000 2000 to 5,000 5,000 to 50,000 County Wide Pre-Built dataset</p> <p>Street Centerlines City/Township Boundaries Contours</p> <p>2 ft contours - Also available in DWG/Carver County Coordinates 10 ft contours - Also available in DWG/Carver County Coordinates</p> <p>2005 Aerial Photography 6" Resolution -Available in Carver County Coordinates & UTM -Other image formats and projections maybe available on request</p> <p>Other GIS Datasets</p> <p>3rd Party Data Requests - Non-Carver County Subscription Login to Network</p> <p>Carver County GIS Dataset Subscription **Dataset must be purchased County wide before subscription Only the startup fee is paid the first year All subscriptions run through December 31st Parcels (County Wide) Street Centerline (County Wide)</p>	<p>\$75 setup fee for all databases</p> <p>\$0.05/parcel \$0.03/parcel \$0.02/parcel \$0.01/parcel \$750/ County Wide \$50/ County Wide</p> <p>\$10/Acre \$50/ Section \$150/ Section</p> <p>Prices will vary based upon time to process</p> <p>\$75/hr (1 hr minimum) 15 minute increments</p> <p>\$75/hr (1/2 hr minimum) 15 minute increments \$50/yr</p> <p>\$50 Startup Fee</p> <p>\$250/Yr \$250/Yr</p>
<p><u>GIS Consulting or Programming/Application Development Fee</u></p>	<p>\$100/hr</p>
<p><u>All other miscellaneous GIS requests</u></p>	<p>\$75/hr (15 minute increments)</p>