ISSUE REVIEW

Iowa Legislative Services Agency
Fiscal Services

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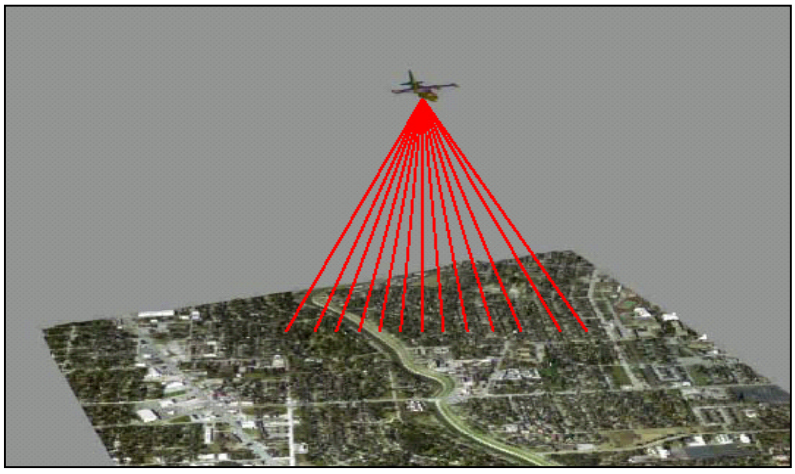
LiDAR Interactive Mapping Technology

ISSUE

This ***Issue Review*** provides information on Light Detection and Ranging (LiDAR), which is technology that scans the earth with lasers from an aircraft to obtain elevation information. It is similar to sonar as it measures distance by the time it takes for the laser to reach the ground and bounce back to the aircraft.



Source: Department of Natural Resources

AFFECTED AGENCIES

Department of Agriculture and Land Stewardship (DALS)
Department of Natural Resources (DNR)
Department of Transportation (DOT)

CODE AUTHORITY

Section 456.6, Code of Iowa

BACKGROUND

Light Detection and Ranging (LiDAR) is a new technology that creates an interactive topographic map with elevation data that is accurate within eight inches. Current data has an accuracy of within five feet. In addition to an airplane, LiDAR uses a laser rangefinder, an inertial measurement unit, a global positioning system, and an on-board computer. The LiDAR topographic maps are used for a number of applications, including:

- **Agriculture** - precision farming, soils mapping, and erosion control structure design.
- **Infrastructure Planning** - siting for roadways, utility lines, construction projects, and conservation projects.
- **Risk Assessment** - Floodplain management, flood insurance mapping, soil erosion control, soil conservation modeling, and emergency response planning and management.
- **Permit Processing** - review of animal feeding operations with regard to floodplains, review of air emission permitting, and floodplain permitting for residential and commercial developments.
- **Education and Research:**
  - Geological - sinkhole identification and geological mapping.
  - Environmental - watershed planning and development, water runoff evaluations, shoreline erosion, and conservation performance measure development.
  - Engineering - construction site planning and development of automated planning tools.

CURRENT SITUATION

The DNR has been working with the United States Geological Survey (USGS) to obtain a contract for LiDAR information gathering. The original estimated cost for LiDAR submitted to the DNR by the USGS was $0.50 per acre and the cost to fly over the 36.0 million acres in Iowa was $18.0 million. During 2006, the USGS negotiated a contract with a sole source that would provide LiDAR data collection for $0.11 per acre or for $4.1 million.

During the 2006 Legislative Session, the DNR requested a $1.5 million appropriation from the Rebuild Iowa Infrastructure Fund for the LiDAR project for FY 2007. The DNR would have used the funding for the first year of a four-year contract with the USGS. The breakdown of the original contract is provided in the table below:

Contract Item	4-Year Cost
LiDAR Data Collection	$ 4,100,000
High Resolution Photography	1,500,000
Information Distribution on Internet	200,000
Data Processing and Quality Control	520,000
Project Administration	140,000
Delineation of Floodplains	400,000
Total Contract Cost	$ 6,860,000

The Legislature did not appropriate funds for LiDAR for FY 2007. The DNR met with other State and federal agencies to obtain agreements to assist in payment for LiDAR data. The Environmental Protection Commission approved a LiDAR contract at the June 19, 2006, meeting for a cost of $2.0 million, with the DNR committed to $1.0 million of funding and the federal Natural Resources Conservation Service (NRCS) committed to $1.0 million. The DNR funding includes $195,000 from the Environment First Fund, and the remaining $805,000 from the State Revolving Loan Fund. This contract only includes the collection of data and no other services.

The collection of Iowa data will be completed in three sessions. The first session will cover the western third of Iowa and will be completed in fall 2006, the second will cover the central third of Iowa and will be completed in spring 2007, and the third will cover the eastern third of Iowa and will be completed in the fall of 2007. Each session will include one-third of the State. The plan is to have data available on the Internet two or three months after it is collected.

BUDGET IMPACT

Since the June 19 meeting, the DNR has obtained contract commitments from the DALS and the DOT that will fund data collection for the entire State of Iowa. The following table summarizes the $4.1 million data collection contract.

Agency	Funding
Natural Resources Conservation Service	$ 1,000,000
Department of Natural Resources	1,000,000
Department of Agriculture and Land Stewardship	570,000
Department of Transporation	1,500,000
Total Contract Cost	$ 4,070,000

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