

# Iowa LiDAR Project

## Information Sheet

### LiDAR Definition

- “Light Detection and Ranging”
- Process of scanning the earth with lasers from an aircraft to obtain accurate elevations

### Project Objective

- To obtain LiDAR coverage and accompanying aerial photography for the entire state of Iowa over a 4 year period and to make this available to all Iowans via the internet

### Project Accuracy

- Proposed project will generate elevation data which is within 8 inches of actual elevations (currently available statewide data has an accuracy of +/- 5 feet)
- Data points used to generate elevation data will be spaced less than 5 feet apart

### Project Cost

- \$6 million – Total proposed project cost

### Project Timeline

- Proposing to cover 1/4<sup>th</sup> of the state every year for four years (2007-2010)
- Goal is to have data available on the internet within one year of collection

### LiDAR Applications

Distributed freely over the internet, LiDAR will allow planners to greatly reduce and supplement field survey requirements for many Iowa businesses and agencies. Examples include:

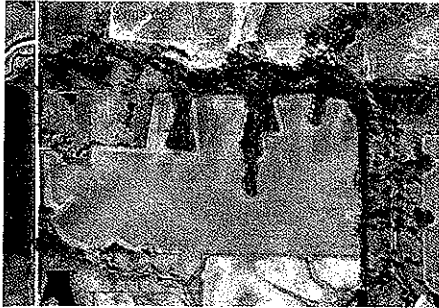
- Reduction of many infrastructure planning costs
  - Roadway siting, planning, and estimating
  - Utility line siting, planning, and estimating
  - Construction site planning and estimating
  - Soil conservation structure (terraces, sediment ponds, *etc*) planning and estimating
- Risk Assessment
  - Floodplain and flood insurance mapping
  - Erosion potential measurements and modeling
  - Emergency management and response planning
    - Dam breach inundation areas
    - Levee analysis
    - Spill Routing
- Evaluating Alternative Infrastructure Options
  - Utility lines
  - Roadways
  - Stormwater facilities
  - Pipelines
- Permit Process Improvement
  - Animal Feeding Operation w/ regards to floodplains and slope
  - Air emission permitting
  - Floodplain permitting for industrial/residential construction
- Education/Research
  - Environmental Science
    - Watershed modeling
    - Runoff modeling
    - Conservation practice performance
  - Engineering
    - Construction site planning
    - Development/use of automated planning tools
    - Development of New Technologies – potential for yet unimagined app’s

LiDAR data for the Lake Darling watershed  
can be seen on the  
DNR's Interactive Mapping Site at [www.iowadnr.com](http://www.iowadnr.com)

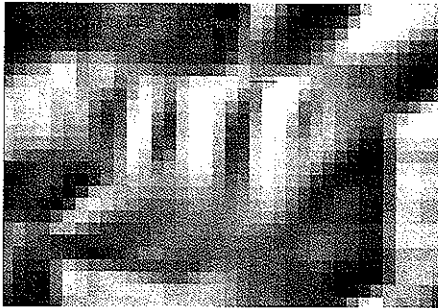
If you would like more information about LiDAR  
or the Iowa LiDAR Project please contact:

Chris Ensminger  
(515) 281-4216  
[Chris.Ensminger@dnr.state.ia.us](mailto:Chris.Ensminger@dnr.state.ia.us)

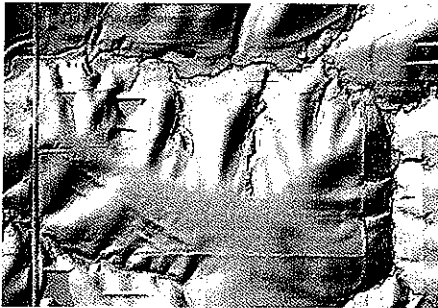
Below are a series of data samples for the same area in the Lake Darling watershed.



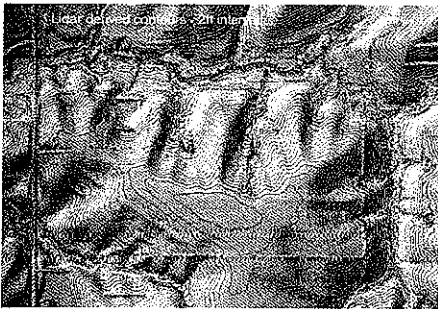
2002 Color Infrared Photography



Currently Available Elevation Data

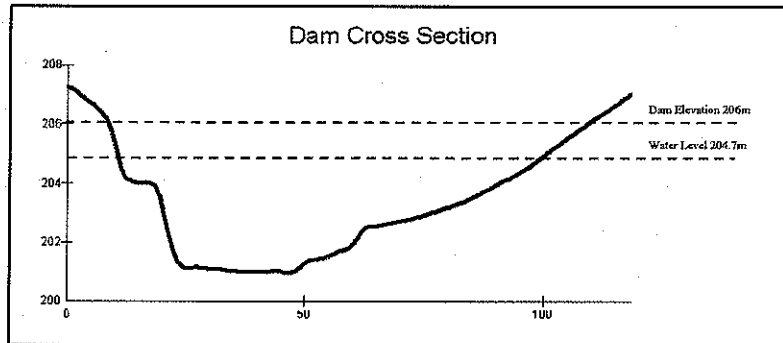


LiDAR Based Elevation Data



2-Foot Contours Derived from LiDAR

Below are digital aerial photographs draped over LiDAR elevation coverage of a gully in the Lake Darling watershed. A proposed dam, whose purpose is to stop sediment from moving to the lake, was incorporated into the second photo. The final diagram is a cross-section of the proposed impoundment.



## Iowa Department of Natural Resources Geographic Information Systems (GIS) Section

Light Detection and Ranging (LiDAR) can be viewed through an Interactive Map Service (IMS) known as the *Basic Map and Air Photography Viewer*. To directly link to LiDAR imagery go to: [www.iowadnr.gov](http://www.iowadnr.gov)

After this page loads, look to the lower right corner of the page for the “*Quick Links and Hot Topics*” section. In this section you will find the link:

### ***Mapping (GIS Interactive): Lake Darling LiDAR Sample***

Click on this and you will be directly taken to a sample of LiDAR captured in a 2005 pilot project from the Lake Darling watershed. At this view you can see details such as the use of agricultural terracing and dams for farming conservation practices.



zoom  
in



Use zoom in to draw a box around an area to get closer for more detail such as stream path.

pan



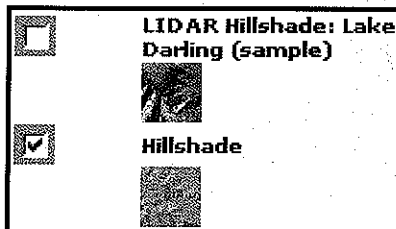
Or use pan to move around the map and look at other areas in this watershed.

zoom  
last



Zoom last will get you back to a previous view.

At the right of this page there is a scroll down area. This lists available layers for viewing through the IMS.



To see 30m Digital Elevation Model (DEM) data, currently being used for watershed modeling, scroll down to the *Hillshade* layer. Uncheck LIDAR and check Hillshade, then click *Redraw Map* at the bottom left corner.

- For help using the IMS look to the upper right, near the North arrow, for the link: ***for website help, [click here](#)***

