

# Orthoimagery, Central Black Hawk County Iowa (East - West) , March 2003

Metadata also available as

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  - [Entity and Attribute Information](#)
  - [Distribution Information](#)
  - [Metadata Reference Information](#)
- 

### *Identification Information:*

#### *Citation:*

#### *Citation Information:*

*Originator:* Black Hawk County, Iowa

*Publication Date:* Unpublished Material

*Title:*

Orthoimagery, Central Black Hawk County Iowa (East - West) , March 2003

*Geospatial Data Presentation Form:* remote-sensing image

*Publication Information:*

*Publication Place:* Black Hawk County Iowa

*Publisher:* Black Hawk County

*Online Linkage:* <http://www.co.black-hawk.ia.us/depts/bhentry.htm>

*Larger Work Citation:*

*Citation Information:*

*Publication Information:*

### *Description:*

#### *Abstract:*

Aerial photography for the central one third (east - west) of Black Hawk County (BHC) taken in March, 2003 was used to update BHC orthophotos. This group of orthophotos includes Waterloo, Cedar Falls, Hudson, Evansdale, Elk Run Heights, Raymond, Gilbertville, Washburn (unincorporated) and rural areas to the west of Cedar Falls and to the east of Waterloo. Flight height was 4800 feet above ground

surface. The 2003 digital orthophotos were subdivided, or tiled, into TIFF image files. In urban areas, the images have 0.5 ft pixel resolution, while TIFF images for rural areas have 2.0 ft pixel resolution. The image tiles are referenced to the Iowa State Plane Coordinate System NAD 1983 North Zone in feet. The images were radiometrically balanced and mosaicked prior to the tile creation. Original images were supplied in TIFF format with TIFF World (tfw) Files. The tfw files are available in feet. TIFF images were resampled to 2 ft pixels, merged and compressed to MrSid format. Metadata here refers to entire set of images. Metadata has not been compiled for individual image tiles in set of images resulting from the 2003 flight.

*Purpose:*

The orthophotos serve as a basemap for map production and internet map viewing.

*Supplemental\_Information:*

Aerial photos and orthophotos in TIFF format were developed by Aerial Services Inc., Cedar Falls Iowa as a contracted service. Conversion from TIFF format to MrSid format was done as a contracted service by the Sidwell Company, 675 Sidwell Court, St. Charles, IL. Reference to file size is a "per image" size.

*Time\_Period\_of\_Content:*

*Time\_Period\_Information:*

*Range\_of\_Dates/Times:*

*Beginning\_Date:* 20030320

*Ending\_Date:* 20030330

*Currentness\_Reference:* ground condition

*Status:*

*Progress:* Complete

*Maintenance\_and\_Update\_Frequency:* As needed

*Spatial\_Domain:*

*Bounding\_Coordinates:*

*West\_Bounding\_Coordinate:* -92.55937

*East\_Bounding\_Coordinate:* -92.06615

*North\_Bounding\_Coordinate:* 42.64849

*South\_Bounding\_Coordinate:* 42.29537

*Keywords:*

*Theme:*

*Theme\_Keyword\_Thesaurus:* ISO 19115 Topic Category

*Theme\_Keyword:* imageryBaseMapsEarthCover

*Theme\_Keyword:* digital orthophotos

*Place:*

*Place\_Keyword:* Black Hawk County

*Place\_Keyword:* Iowa

*Temporal:*

*Temporal\_Keyword:* March 2003

*Access\_Constraints:*

The recipient may not assert any proprietary rights thereto nor credit imagery to anyone other than Black Hawk County or Aerial Services Inc.

*Use\_Constraints:*

This data set is provided "as-is" without warranty of any kind, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose. The user assumes all responsibility for the accuracy and suitability of this data for a specific application. In no event will the creators or Black Hawk County be liable for any damages, including lost profits, lost savings, or other incidental or consequential damages arising from the use of or inability to use this data set. 2003 orthoimages for Black Hawk County should not be used at scales greater than 1:1200.

*Point\_of\_Contact:*

*Contact\_Information:*

*Contact\_Organization\_Primary:*

*Contact\_Organization:* Black Hawk County Information Technology  
Department

*Contact\_Person:* Kim Veeder

*Contact\_Position:* Director

*Contact\_Address:*

*Address\_Type:* mailing and physical address

*Address:* 316 E 5th Street

*Address:* Black Hawk County Information Technology Department

*City:* Waterloo

*State\_or\_Province:* Iowa

*Postal\_Code:* 50703

*Contact\_Voice\_Telephone:* 319 833-3154

*Contact\_Electronic\_Mail\_Address:* kveeder@co.black-hawk.ia.us

*Hours\_of\_Service:* 8:30 AM - 5PM Monday - Friday

*Contact\_Instructions:* email or call

*Data\_Set\_Credit:*

Aerial Services, Inc., 2120 Center Street, Cedar Falls Iowa contracted service provider

*Native\_Data\_Set\_Environment:*

Microsoft Windows 2000 Version 5.0 (Build 2195) Service Pack 4; ESRI ArcCatalog  
9.1.0.722

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*Data\_Quality\_Information:*

## *Attribute\_Accuracy:*

### *Attribute\_Accuracy\_Report:*

Aerial mapping camera has state of the art electronics and is calibrated by the USGS every three years. Kodak Double-X Aerographic Film 2405 Black and White was used. Flight Height : 4800 ft above ground level . Negative scale =1:9,600 (1"= 800ft). Camera Type: LMK modified 1000 with FMC, Gyromoment and GPS, with calibrated focal length: 152.48. After scanning the negatives, ISAT (Intergraph Imagestation Automatic Triangulation) was used to compute frame positions and angles by using GPS and flight data. Autometric softcopy stations were utilized for digital orthophoto production. During digital image production, photographic reproduction of the source image was completed on an analog dodging printer to improve image quality and radiometric uniformity. The scanned images were orthorectified using Autometric softplotter software. The orthorectified images were balanced and mosaicked using OrthoVista and Autometric software. Large image blocks were mosaicked at one time to lessen the effects of variance due to sun angle and illumination. Even though images were acquired on different days and at different times, this process eliminated major image differences. Good radiometry and image content was maintained for the entire project with only minor variances between blocks.

### *Logical\_Consistency\_Report:*

Logical relationships between tfw files and corresponding orthophotos tested. Logical relationships between MrSid files and header tested.

### *Completeness\_Report:*

Image development was completed over several years, with final delivery Spring 2006.

### *Positional\_Accuracy:*

#### *Horizontal\_Positional\_Accuracy:*

##### *Horizontal\_Positional\_Accuracy\_Report:*

The positional accuracy is dependent, in part, upon the individual accuracies of each process used to produce the final data. The individual processes or data sources used are the ground control, aerotriangulation process, source camera calibration, DTM process, and the mosaic process. The digital orthophotos were developed based on measured ground control points. These measured points fall within +/- 0.05 meters in horizontal position, using a 95% confidence factor. The horizontal ground control was completed to First Order (1:100,000) or better survey standards. The vertical control was completed to third order standards. The testing of the control yielded accuracies well beyond those needed to meet National Map Accuracy Standards (NMAS). The aerotriangulation process was tested by using strip, block and bundle tests, along with targeted control that was withheld for validation purposes. The aerotriangulation was found to exceed 1:10,000 of the flight height of the photography used. The aerial cameras used have current calibrations from USGS that exceed the needed standards. These calibrations were utilized in all photogrammetry processes. The scanner is calibrated or checked in three ways. At the time of scanning, the data is checked against a calibrated reseau grid. The scans are checked a second time at the point of import of the aerotriangulation solutions and a test against the camera fiducials and their calibrated positions. The final test of scans occurs when stereo models are created on the softcopy photogrammetric systems and control point comparisons

are completed. The DTM production is done on softcopy and hardcopy stereoplotter equipment using standard compilation techniques. Breaklines and mass points were compiled to ensure positional accuracies needed for the project. The mosaic process was part of the final quality control check. During this process, overlapping images were mosaicked together using a tolerance of 2 pixels. Estimated positional accuracy is +2 pixels. Users should be aware that even though the scale of digital data may be increased to overlay large scale digital maps, the accuracy of the digital source is not improved by scale enlargement. For a complete report regarding the establishment of geodetic control points for Black Hawk County, please contact either Geoff Tinker or Lynn Kloberdanz, Black Hawk County Engineer's Office.

*Vertical\_Positional\_Accuracy:*

*Vertical\_Positional\_Accuracy\_Report:*

All measured points fall within +/- 0.1 ft. vertically for bench mark use utilizing a 95% confidence factor. For a complete report regarding the establishment of geodetic control points for Black Hawk County, please contact either Geoff Tinker or Lynn Kloberdanz, Black Hawk County Engineer's Office or the Information Technology Department.

*Lineage:*

*Process\_Step:*

*Process\_Description:*

The following production procedures, equipment and software were utilized by Aerial Services Inc. on all or a portion of the project: 1. See Attribute accuracy for Film and Flight information. 2. Source images flown at 4800' were scanned at 15 microns. 3. Ground control points were acquired from GPS ground surveys with First Order accuracy for horizontal and third order accuracy for vertical. 4. The aerotriangulation results yielded ground positions with horizontal and vertical residuals of 0.35 meters. 5. The scanned images were processed by Aerial Services Inc. The aerotriangulation results were applied to each image and stereo models were created for softcopy viewing and DTM production. Breakline and mass point data was compiled for each stereo model for DTMs. The DTM was compiled to yield image overlap for mosaic purposes. 6. The images were mosaicked by Aerial Services, Inc. into seamless coverages for the areas requested. Images overlap by one to two pixels to ensure that there are no gaps between images. These image areas are at 0.16 meter resolution with the areas cut into TIFF image tiles 500 meters by 500 meters in size. 7. All image tiles were visually inspected by Aerial Services, Inc. for positional anomalies and radiometric variances prior to delivery to Black Hawk County. 8. The TIFF image tiles were delivered on CD, along with a tfw files. The coordinate system utilized was NAD 1983 in feet. Production of world files (tfw) was done in feet. Data created in 1999 and 2003 was completed in feet verses meters. Therefore a 100 scale tile is at 0.16 meter pixel or 0.524933 foot pixel resolution (US Survey Feet). A 400 scale tile has a .64 meter pixel or a 2.099732 foot pixel resolution (US Survey Feet). 9. Production and delivery of TIFF images was done over several fiscal years as per contracts with the Black Hawk County Assessor. 10. The images with 0.5 ft pixel were resampled to 2 ft

pixels and merged with images with 2 ft pixels of corresponding geographic space and compressed with MrSid software.

*Process\_Date*: 2003-2005

*Process\_Contact*:

*Contact\_Information*:

*Contact\_Organization\_Primary*:

*Contact\_Organization*: Aerial Services Inc

*Contact\_Address*:

*Address\_Type*: mailing and physical address

*Address*: 2120 Center St

*City*: Cedar Falls

*State\_or\_Province*: Iowa

*Postal\_Code*: 50613

*Contact\_Voice\_Telephone*: 319 277-0436

*Contact\_Electronic\_Mail\_Address*: cschne@asi-gis.com

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*Spatial\_Data\_Organization\_Information*:

*Direct\_Spatial\_Reference\_Method*: Raster

*Raster\_Object\_Information*:

*Raster\_Object\_Type*: Pixel

*Row\_Count*: 12500

*Column\_Count*: 12500

*Vertical\_Count*: 1

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*Spatial\_Reference\_Information*:

*Horizontal\_Coordinate\_System\_Definition*:

*Planar*:

*Grid\_Coordinate\_System*:

*Grid\_Coordinate\_System\_Name*: State Plane Coordinate System

*State\_Plane\_Coordinate\_System*:

*SPCS\_Zone\_Identifier*: 1401

*Planar\_Coordinate\_Information*:

*Planar\_Coordinate\_Encoding\_Method*: row and column

*Coordinate\_Representation*:

*Abscissa\_Resolution*: 0.524933

*Ordinate\_Resolution*: 0.524933

*Planar\_Distance\_Units*: survey feet

*Geodetic\_Model*:

*Horizontal\_Datum\_Name*: North American Datum of 1983

*Ellipsoid\_Name*: Geodetic Reference System 80

*Semi-major\_Axis*: 6378137.00

*Denominator\_of\_Flattening\_Ratio*: 298.257222

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*Entity\_and\_Attribute\_Information*:

*Detailed\_Description*:

*Entity\_Type*:

*Entity\_Type\_Label*: Band\_1

*Attribute*:

*Attribute\_Label*: Value

*Attribute*:

*Attribute\_Label*: Count

*Attribute*:

*Attribute\_Label*: ObjectID

*Attribute\_Definition*: Internal feature number.

*Attribute\_Definition\_Source*: ESRI

*Attribute\_Domain\_Values*:

*Unrepresentable\_Domain*:

Sequential unique whole numbers that are automatically generated.

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*Distribution\_Information*:

*Distributor*:

*Contact\_Information*:

*Contact\_Organization\_Primary*:

*Contact\_Organization*: Black Hawk County Information Technology  
Department

*Contact\_Address*:

*Address\_Type*: mailing and physical address  
*Address*: 316 E 5th Street  
*Address*: Information Technology Department  
*City*: Waterloo  
*State\_or\_Province*: Iowa  
*Postal\_Code*: 50703

*Contact\_Voice\_Telephone*: 319 833-3154  
*Contact\_Electronic\_Mail\_Address*: kveeder@co.black-hawk.ia.us  
*Hours\_of\_Service*: 8:30 AM - 5 PM Monday - Friday  
*Contact\_Instructions*: call or email

*Resource\_Description*: Offline data  
*Standard\_Order\_Process*:

*Digital\_Form*:

*Digital\_Transfer\_Information*:

*Transfer\_Size*: 11.757

*Fees*: \$50 per CD, with approximately 60 MrSid images per CD  
*Ordering\_Instructions*: email or call contact person  
*Turnaround*: within 3 working days

*Available\_Time\_Period*:

*Time\_Period\_Information*:

*Range\_of\_Dates/Times*:

*Beginning\_Date*: March 2006  
*Ending\_Date*: current

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*Metadata\_Reference\_Information*:

*Metadata\_Date*: 20060905  
*Metadata\_Contact*:

*Contact\_Information*:

*Contact\_Organization\_Primary*:

*Contact\_Organization*: Black Hawk County Information Technology  
Department

*Contact\_Address*:

*Address\_Type*: mailing and physical address  
*Address*: 316 E 5th Street  
*Address*: Black Hawk County Information Technology Department



*City:* Waterloo  
*State\_or\_Province:* Iowa  
*Postal\_Code:* 50703

*Contact\_Voice\_Telephone:* 319 833-3154  
*Contact\_Electronic\_Mail\_Address:* kveeder@co.black-hawk.ia.us  
*Hours\_of\_Service:* 8:30 AM - 5PM

*Metadata\_Standard\_Name:* FGDC Content Standard for Digital Geospatial Metadata  
*Metadata\_Standard\_Version:* FGDC-STD-001-1998  
*Metadata\_Time\_Convention:* local time  
*Metadata\_Extensions:*

*Online\_Linkage:* <<http://www.esri.com/metadata/esriprof80.html>>  
*Profile\_Name:* ESRI Metadata Profile