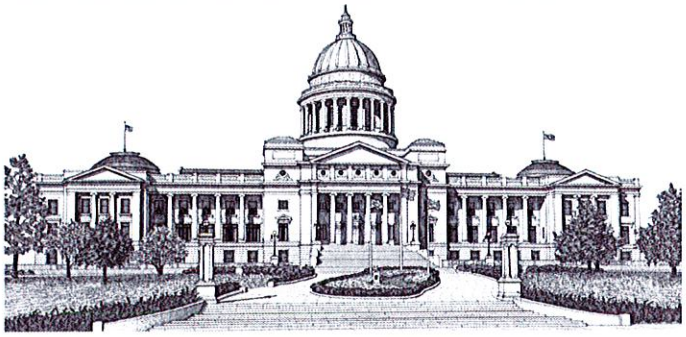
ARKANSAS REGISTER



Transmittal Sheet

Use only for **FINAL** and **EMERGENCY RULES**

Secretary of State
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For Office Use Only:

Effective Date _____ Code Number _____

Name of Agency Transformation and Shared Services

Department Arkansas Geographic Information Systems Office

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Statutory Authority for Promulgating Rules A.C.A 15-21-504

Rule Title: Arkansas Digital Cadastral Mapping Standard

Intended Effective Date (Check One)

- ☐ Emergency (ACA 25-15-204)
- ☑ 10 Days After Filing (ACA 25-15-204)
- ☐ Other _____ (Must be more than 10 days after filing date.)

	Date
Legal Notice Published	July 29, 2019
Final Date for Public Comment	August 30, 2019
Reviewed by Legislative Council	October 18, 2019
Adopted by State Agency	March 13, 2019

Electronic Copy of Rule e-mailed from: (Required under ACA 25-15-218)

Jonathan Duran | jonathan.duran@arkansas.gov | 11/22/2019

Contact Person | E-mail Address | Date

CERTIFICATION OF AUTHORIZED OFFICER

I Hereby Certify That The Attached Rules Were Adopted
In Compliance with the Arkansas Administrative Act. (ACA 25-15-201 et. seq.)

Signature

501-682-4432 | jonathan.duran@arkansas.gov

Phone Number | E-mail Address

Deputy Director

Title

11/2/2019

Date

Revised 7/2015 to reflect new legislation passed in the 2015 Regular Session (Act 1258). This act changed the effective date from 30 days to 10 days after filing the rule.

Arkansas Digital Cadastral Mapping Standard

Arkansas GIS Board

Prepared By: Arkansas GIS Office

Presented to the Arkansas State Land Information Board –
Adopted by the Arkansas State Land Information Board –
Presented for Public Review –
Submitted to the Bureau of Legislative Research –
Reviewed by the Legislative Rules and Regulations Subcommittee –
Became an official state rule / regulation – July 2, 2004
Presented to Arkansas GIS Board for proposed revision – December 5, 2018
Proposed Revision Adopted by Arkansas GIS Board – December 5, 2018
Submitted to the Bureau of Legislative Research – July 19, 2019
Presented for Public Review – August 1, 2019
Final Rule Revision Adopted by GIS Board – March 13, 2019
Reviewed and Approved by the ALC - Administrative Rules Subcommittee – October 16, 2019
Approved by the Arkansas Legislative Council – October 18, 2019

Table of Contents

Introduction

The State Land Information Board, now the Arkansas Geographic Information Systems Board, first developed this standard in 2004 order to support the legislative initiatives to establish the Arkansas Spatial Data Infrastructure (ASDI) (A.C.A. § 15-21-504). Spatial data layers are often stored digitally and accessed through a relational database management system (RDBMS). Although digital cadastral data is a component of the Arkansas Spatial Data Infrastructure (ASDI), the ways in which users format and maintain it can differ, and they may often disagree on the way a particular spatial data layer structure should be organized. This can pose problems in terms of sharing, locating, and extracting spatial data information. It is intended that geospatial data standards will benefit Geographic Information Systems (GIS) user communities through consistency and efficiency of sharing the data.

Background and Purpose

As articulated in A.C.A. § 15-21-504(f)(1), the Arkansas Geographic Information Systems (GIS) Board, *"…shall define technical specifications and standards to use in the collection, distribution, and reporting of spatial information as required by the State of Arkansas Enterprise Architecture.*" A.C.A. § 15-21-501 further describes the purpose of the Arkansas GIS board in detail.

The Arkansas Digital Cadastral Mapping Standard is intended to make digital cadastral data more uniform and interoperable. This will facilitate the sharing of a statewide, seamless digital cadastral spatial data layer. Adherence to this standard will enhance the "usability" of the spatial data theme and its attributes by multiple entities, ensure a consistent manner in which the cadastral parcel spatial data and attribute data are collected or stored, and enable the data to be merged seamlessly and become transferable regardless of creator or jurisdictional boundaries. Digital cadastral maps enable the assessor to more efficiently access parcel location and information, reveal geographic relationships that affect property value, and provide a platform for the visualization of data layers and analytical results. (2015. *Standard on Digital Cadastral Maps and Parcel Identifiers*. IAAO)

Statutory References

Specific portions of Arkansas code pertain directly to and govern certain aspects and uses of digital cadastre. Listed herein are those applicable instances (excerpted).

A.C.A. § 15-21-306. Technical definition of system -- Marking of coordinates on ground.

(a) For purposes of more precisely defining the Arkansas Coordinate System 1983, the following definition by the National Geodetic Survey is adopted:

(1)

(A) The Arkansas Coordinate System 1983, North Zone, is a Lambert conformal projection of the North American Datum of 1983 (NAD83), having standard parallels at north latitudes of thirty-four degrees fifty-six minutes (34 degrees 56' north) and thirty-six degrees fourteen minutes (36 degrees 14' north), along which parallels the scale shall be exact.

(B) The origin of coordinates is at the intersection of the meridian ninety-two degrees zero minutes west of Greenwich (92 degrees 00' west) and the parallel thirty-four degrees twenty minutes north latitude (34 degrees 20' north). This origin is given the coordinates: East equals four hundred thousand meters (400,000 m.) and north equals zero meters (0.0 m.); and

(2)

(A) The Arkansas Coordinate System 1983, South Zone, is a Lambert conformal projection of the North American Datum of 1983 (NAD83), having standard parallels at north latitudes of thirty-three degrees eighteen minutes (33 degrees 18' north) and thirty-four degrees forty minutes (34 degrees 40' north), along which parallels the scale shall be exact.

(B) The origin of coordinates is at the intersection of the meridian ninety-two degrees zero minutes west of Greenwich (92 degrees 0' west) and the parallel thirty-two degrees forty minutes north latitude (32 degrees 40' north). This origin is given the coordinates: East equals four hundred thousand meters (400,000 m.) and north equals four hundred thousand meters (400,000 m).

A.C.A. § 15-21-502. Definitions.

(5) "Digital cadastre" means the storage and manipulation of computerized representations of parcel maps and linked parcel databases;

(6) "Framework data" means commonly needed data themes developed, maintained, and integrated by public and private organizations within a geographic area. These data themes include, but are not limited to, digital cadastre, public land survey system, elevation, geodetic control, governmental units, hydrography, orthoimagery, transportation, soils, and geology;

A.C.A. § 15-21-504. Duties, responsibilities, and authority.

(c) The Board shall coordinate completion and maintenance of shareable statewide framework data, applications of geographic information system technologies, spatial project methodologies, and methods of funding.

(d)

(1) The Board will develop and implement a program to further the process of land records modernization.

(2)

(A) The Board, using the technical support provided by the office, shall coordinate

the development and maintenance of a statewide digital cadastre system.

(B) The digital cadastre manages and provides access to cadastral information. Digital cadastre does not represent legal property boundary descriptions, nor is it suitable for boundary determination of the individual parcels included in the digital cadastre.

Technical Practices

Creating a Cadastral Vector Layer

Procedures

Heads-Up Digitizing:

Parcel boundaries intended to meet the standard may be produced utilizing heads-up digitizing techniques. Within the Cadastral Standard, heads-up digitizing methodologies refers to georeferencing scanned paper maps and tracing the relevant parcel boundaries to create the parcel features. Heads-up digitizing methodologies used may include but are not limited to stream mode and arc/node mode. Heads-up digitizing shall be performed utilizing the following recommendations:

- Capture scale shall not fall outside the range of 1:1200 to 1:3600
- Projection shall be Arkansas State Plane North or Arkansas State Plane South (See Definitions for Projection for each county)
- Datum shall be as specified for the State of Arkansas in A.C.A. § 15-21-306
- Units shall be US Survey Feet
- Source shall be Digital Ortho-imagery not more than five years in age, meeting industry-recognized standards for radiometry, a minimum of 1 foot resolution, and having a minimum positional accuracy plus or minus 3.9 feet. The Arkansas Digital Orthophotography Program (ADOP) imagery is recommended.
- Heads-up digitizing method should only be used where clear visual ground evidence of ownership is present on the Ortho-imagery (i.e., fence line, tree line, grass line, etc.)

Metes and Bounds:

Parcel boundaries may also be produced utilizing metes and bounds techniques. Metes and bounds techniques pertain to the use of coordinate geometry with bearings and distances to accurately map the parcel boundary. Bearing and distance source data used may include but are not limited to legal descriptions, subdivision plats, and plats of survey. Metes and bounds should be used when clear visual ground evidence of ownership is not present. Coordinate geometry (COGO) should be implemented as much as possible to ensure consistency between recorded instruments, other available digital maps, and the base map. Although coordinate geometry is usually regarded as the most accurate method of base map construction, it is sound

practice to integrate the COGO work with existing reliable digital sources to ensure accuracy and consistency and minimize the expense and effort of the duplication of existing digital work. When inconsistencies between the property records and other mapping sources (i.e., photo evidence) appear, a thorough investigation should be initiated to discover all the relevant evidence to make the judgment for locating the element on the map accurately. The recorded instrument remains the authoritative record upon which all property valuations must rely. If the record conflicts with the evidence of the map, the recourse for the cadastral mapping specialist is to identify the discrepancy for reconciliation by the proper authorized parties.

The purpose of the cadastral map is to help locate tax parcels, not to identify property boundaries.

Relative Dimension Accuracy:

Relative dimension accuracy refers to the accuracy of the 'digital representation' of the parcel boundary on the Ortho-imagery, in comparison with the legal description from the recorded deed or plat. The relative accuracy is checked by measuring the difference in the calculated acreage versus the acreage recorded from the deed or plat that is stored in the Computer Assisted Mass Appraisal (CAMA) system.

As compared to the parcel acreage recorded in the CAMA system, it is strongly recommended that the calculated acreage for each parcel polygon be within acceptable suggested tolerances as defined in Table 1. However, due to inherent variability in the various types of cadastral records, e.g. CAMA record, deed, plats, etc., strict adherence to these tolerances may not be practical.

Table 1: Acreage tolerances

Acreage Range Value in CAMA	Percentage of Error Allowed in GIS Calculated Acreage
5.00 – 8.00	15% +/-
8.01 -10.00	10%+/-
10.01-20.00	8%+/-
20.01-30.00	6%+/-
30.01-40.00	5%+/-
40.01 and greater	4%+/-

Cadastral Data Characteristics

The following standards apply to the collection and maintenance of the parcel characteristics that are intended to meet the standard. The characteristics for the parcel shall contain but are not limited to the following:

Geometry:

Parcel Outline (Polygon): This is the geographic extent of the parcel, the parcel boundaries forming a closed polygon. The collection of parcel outlines forms the parcel map.

Parcel Centroid (Point): This is a point within the parcel that can be used to attach related information. The parcel centroid is the mathematical center of the parcel polygon generated by GIS Software based on the parcel polygon provided.

Attributes:

Table 2: Cadastral Data Attribute Table

Field Name	***Length***	***Type***	***Description***
CountyFips	*5*	*Text*	*County FIPS Code, e.g. 05001*
CountyId	*25*	*Text*	*County Identification Number*
ParcelId	*25*	*Text*	*Parcel Identification Number*
ParcelLgl	*255*	*Text*	*Legal Description*
SourceRef	*50*	*Text*	*Geometry Source Reference*
SourceDate	*10*	*Date*	*Geometry Source Reference Date*
OwnerName	*50*	*Text*	*Owner Name*
AdrNum	*10*	*Long integer*	*Physical Address Number, aka House Number*
PreDir	*2*	*Text*	*Primary Directional Prefix*
PstrNam	*72*	*Text*	*Primary Street Name*
PstrType	*4*	*Text*	*Primary Street Type*

PsufDir	*2*	*Text*	*Primary Directional Suffix*
AdrCity	*50*	*Text*	*Physical City Name*
AdrZip5	*5*	*Long integer*	*5-Digit Physical Zip Code*
AdrLabel	*255*	*Text*	*Full Physical Address*
ParcelType	*2*	*Text*	*Property Type Code*
AssessValue	*20*	*Double*	*Assessed Value*
ImpValue	*20*	*Double*	*Improved Value*
LandValue	*20*	*Double*	*Land Value*
TotalValue	*20*	*Double*	*Total Value*
Subdivision	*255*	*Text*	*Subdivision Name*
NBHD	*6*	*Text*	*Neighborhood*
Section	*2*	*Integer*	*Section number, e.g. 1-36*
Township	*3*	*Text*	*Township, e.g. 5N*
Range	*3*	*Text*	*Range, e.g. 4W*
STR	*20*	*Text*	*Concatenated Section, Township, & Range*
TaxCode	*6*	*Text*	*Tax Code*
TaxArea	*10*	*Double*	*Area Used for Taxation/Assessment Purposes*

CAMAKey	*15*	*Double*	*Unique Key used in CAMA*
CAMAProv	*25*	*Text*	*A County's CAMA System Provider*
County	*25*	*Text*	*Responsible County*
DataProv	*25*	*Text*	*Entity who provided parcel data to the Arkansas GIS Office*
CAMADate	*10*	*Date*	*Date of CAMA database extract*
PubDate	*10*	*Date*	*Date of Publication to the ASDI*
NatCoordSys	*25*	*Text*	*Native Coordinate System*

Definitions

Acreage: Refers to the common square measure of land described in the land tenure system. One acre equals 43,560 square feet.

AdrCity: City associated with the physical address of the property.

AdrLabel: Concatenated physical address of property. This can be composed of variable elements depending on road names. Examples could be: 123 Main St, 211 S Mountain Dr, 2307 Highway 35 S, among others.

AdrNum: Physical address road number of the property as seen in the address point recommendations.

AdrZip5: Physical address Zip Code of property as seen in the address point recommendations.

Assessed Value: This attribute is the monetary amount at which a property is put on the Assessment roll.

Assessment Date: This is the date in which the most recent assessment has been completed.

Attribute(s): Properties and characteristics of spatial data entities.

Cadastral: Showing or recording property boundaries, subdivision lines, buildings, and related details.

Cadastre: An official register of the quantity, value, and ownership of real estate used in apportioning taxes.

CAMA: An acronym meaning "Computer Assisted Mass Appraisal".

CAMADate: The effective date of the CAMA database. Typically, this would be the date the database was extracted from a county's CAMA system.

CAMAKey: Unique key used by the county's Computer Assisted Mass Appraisal Company.

CAMAProv: A county's CAMA system provider. This is the vendor from which a county procures its CAMA system.

County: This attribute contains the name of the county responsible for the parcel polygons.

County FIPS Code: The FIPS county code is a five-digit Federal Information Processing Standard (FIPS) code (FIPS 6-4) which uniquely identifies counties and county equivalents in the United States, certain U.S. possessions, and certain freely associated states.

County Identification Number: A unique identifier for the parcel, using a combination of the County FIPS code and the Parcel Identification Number.

DataProv: This attribute contains the name of the entity who provided parcel data to the Arkansas GIS Office.

Digital Cadastre: The storage and manipulation of computerized representations of parcel map and linked parcel databases (as defined by A.C.A. § 15-21-502(5)).

Entity: Any object about which an organization chooses to collect data.

Geometry Source Reference: This is a pointer to or an attribute describing the source reference for the parcel. This can be a document number, book/page, or a map of survey. The geometry source reference should describe the source of the parcel geometry, either the centroid or the parcel outline. This should represent the latest and most accurate document available.

Geometry Source Reference Date: The effective date of the Geometry Source Reference. This date is a general indication of the currency of the source. This is the date entered into the CAMA system as the date the deed was filed. It is the date as of which the source documentation was valid.

Georeferencing: Software procedure that consists in positioning, through points with known coordinates (check points), scanned paper images in the respective area of the real territory

according to a given reference system.

Improved Value: This attribute is the monetary amount of any improvements that have been made to the land.

Land Value: This attribute is the monetary amount of the land without improvement.

NatCoord: This attribute indicates whether the native coordinate system for the county is Arkansas State Plane North or South.

Neighborhood: This attribute is used to represent geographical or market areas.

Owner Name: Name of the property owner.

Parcel Identification Number: A unique identifier for the parcel as defined by the Computer Aided Mass Appraisal system (CAMA).

Parcel Legal Description: This is the deeded legal boundary for the parcel contained in the CAMA system.

Property Type Code: A code indicating the property's use or classification at the time of reappraisal. Commonly used codes would represent uses such as residential, commercial, or agricultural, among others, and typically indicate the presence of an improvement on the property. A list of approved property type codes is available from the Arkansas Assessment Coordination Department (AACD). Information on codes used by specific counties should be obtained directly from the county assessor's office.

PreDir: Primary Directional Prefix as defined in the State Addressing standard.

PstrNam: Primary Street Name as defined in the State Addressing standard.

PstrType: Primary Street Type as defined in the State Addressing standard.

PsufDir: Primary Directional Suffix as defined in the State Addressing standard.

Projection: State Plane Arkansas North and South Zone

> **North** – Baxter, Benton, Boone, Carroll, Clay, Cleburne, Conway, Craighead, Crawford, Crittenden, Cross, Faulkner, Franklin, Fulton, Greene, Independence, Izard, Jackson, Johnson, Lawrence, Logan, Madison, Marion, Mississippi, Newton, Perry, Poinsett, Pope, Pulaski, Randolph, Scott, Searcy, Sebastian, Sharp, St. Francis, Stone, Van Buren, Washington, White, Woodruff, and Yell.
>
> **South** – Arkansas, Ashley, Bradley, Calhoun, Chicot, Clark, Cleveland, Columbia, Dallas, Desha, Drew, Garland, Grant, Hempstead, Hot Spring, Howard, Jefferson, Lafayette, Lee, Lincoln, Little River, Lonoke, Miller, Monroe, Montgomery, Nevada,

Ouachita, Phillips, Pike, Polk, Prairie, Saline, Sevier, and Union.

Relative Accuracy: A measure of the accuracy of individual features on a map when compared to other features on the same map.

Section, Township, & Range: This attribute indicates the parcel location by Section, Township, and Range. The format for this field should be SXX_TXXDirection_RXXDirection, Direction for Townships being N or S and Direction for Ranges being E or W.

Subdivision: The name of any subdivision the parcel is located in. Examples are: Jones Addition, Original City of Little Rock, Smith Subdivision Etc.

Tax Area: This is the attribute containing the area being taxed. This is the value that should be used on all cartographic displays of the data.

Tax Code: This attribute represents the tax district.

Topology: Spatial relationships and connectivity among graphic GIS features, such as points, lines, and polygons. These relationships allow display and analysis of "intelligent" data in GIS. Many topological structures incorporate begin and end relationships, direction and right/left identification. Accurate Topology will ensure that there are no gaps or sliver between adjacent parcels, as well as no overlapping parcels.

Total Value: This attribute is the monetary amount of the Improved Value plus the Land Value.

Additional Considerations

Update/Maintenance: The county assessor's office is the responsible entity tasked with creating, maintaining and updating the parcel data. The data shall be maintained in the native coordinate system defined for the county and be delivered to the State in the same coordinate system. Following spatial or attribute updates or modifications performed to the parcel boundary data, it shall be submitted to the entity responsible for performing quality control practices.

Quality Control: Rigorous quality control techniques shall be implemented to ensure the parcel data has acceptable horizontal accuracy and attribute integrity, such as building and maintaining topology, visual and measurement accuracy checks.

Metadata: Cadastral data intended to meet the standard shall have Federal Geographic Data Committee (FGDC) compliant metadata created for each spatial data file. Compliant metadata shall be provided with Digital Cadastre that are created, updated, or distributed by any parties intended to meet the standard. The metadata shall be supplied anytime it is distributed or transferred among participants or other entities responsible for creating, performing quality control, maintaining, updating, and/or distributing the data. The metadata shall be transferred in a FGDC standard format (i.e., –Z39.5, text, HTML file, etc.) and must have successfully passed through a FGDC compliant metadata parser.

Distribution: The 'Digital Cadastre' data shall be distributed digitally via http://gis.arkansas.gov/, Arkansas' Spatial Data Warehouse, at no fee to private or public users.

Revision History

Date	Description of Change
05/30/2002	Original standard statement published
07/02/2004	Standard became effective
10/18/2019	Revision became effective

Related Resources

National Spatial Data Infrastructure (NSDI) – Cadastral Data Content Standard
http://nationalcad.org/CadStandards/CadStand.html

International Association of Assessment Officers (IAAO) - Standard on Digital Cadastral Maps and Parcel Identifiers : https://www.iaao.org

Arkansas Centerline File Standard:
http://gis.arkansas.gov/docs/law/20180420_ACF_Standard_Final.pdf

Inquiries

Direct inquiries about this standard to:

Arkansas Geographic Information Systems Office
1 Capitol Mall, Suite 6D
Little Rock, AR 72201
http://gis.arkansas.gov/
501-682-2767

All inquiries regarding property taxes and associated assessments or approved property type codes within the State of Arkansas should be directed to:

Arkansas Assessment Coordination Department
900 W. Capitol Ave, Suite 320
Little Rock, AR 72201
(501) 324-9240
https://www.arkansasassessment.com/

For inquiries regarding specific properties, please contact the appropriate county assessor.