GIS NEWS

Geographic Information Systems (GIS) Technology at Dakota County

HIGHLIGHTS

This issue:
GIS 101 : **What is GIS?**

Department Spotlight: **GIS and the Dakota County Assessor's Department**

Desktop GIS: **Property Information in GIS**

Tech Talk: **ArcView's Field Calculator**

MEETINGS & EVENTS

October 4 - 6
GIS/LIS, St. Cloud, MN. For more information please visit the GIS/LIS website: www.mngislis.org

October 17
Dakota County GIS Users Group meeting. For more information check the GIS website at www.co.dakota.mn.us/survey.

November 12 - 18
Geography Awareness Week- This year's theme is "Spotlight on Conservation". For more information check out http://magma.nationalgeographic.com/education/gaw/

November 15
GIS Day 2000 - more information at: www.gisday.com

Produced by GIS Staff

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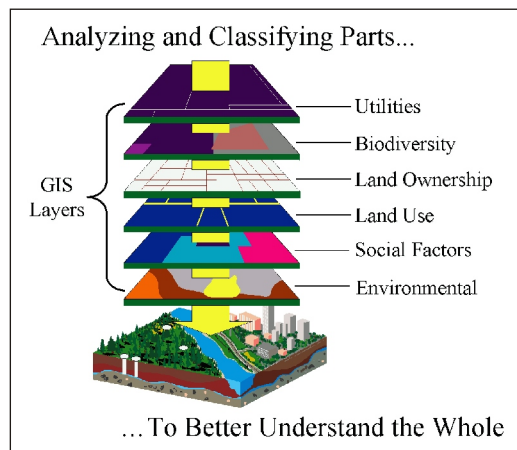Joe Sapletal
Kent Tupper

Dakota
C O U N T Y

G.I.S. 101

What is GIS?
By Julie Daugherty

GIS is an acronym for Geographic Information System. A GIS is composed of special programs for creating and analyzing information about places. This includes locations and characteristics which are classified into layers of information. You can combine these layers for a variety of purposes including: finding the best location for a new service center, analyzing environmental damage, viewing similar crimes in a city to detect a pattern, and so on.

A full GIS requires hardware, software, data, trained users, and sound analysis methods for interpreting the results generated by the GIS. GIS software is specialized and links information about where things are with information about what things are like. Features are kept in layers and may be turned off and on, unlike with a paper map where "what you see is what you get". A GIS map can combine many layers of information.

Analyzing and Classifying Parts...
GIS Layers — Utilities, Biodiversity, Land Ownership, Land Use, Social Factors, Environmental
...To Better Understand the Whole

As on a paper map, a digital map created by GIS will have symbols that represent features. The difference is that this information in GIS comes from a

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Database and is shown only if the user chooses to show it. The database stores the details about the features. Layers of information may be turned off and on depending on the information the user wants to display. The details of the features that are stored in the database may be " queried" and have calculations performed on them.

GIS can be applied to many disciplines including natural resource management, community planning, disease tracking and analysis, analyzing client distribution, and many others. Essentially, any information you work with which may be associated with a location or where a location would provide additional usefulness may be a good application for GIS.

Department Spotlight

Dakota County Partnerships
By Dakota County Assessing Services

EXPLORE! DAKOTA COUNTY MINNESOTA" located at www.co.dakota.mn.us provides extensive data on many topics, including 'Property Information'. Through a collaborative process with several County departments, (Assessing Services, Survey & Land Information, Treasurer-Auditor and Information Technology) this user friendly, on-line GIS mapping system contains specific appraisal data on each parcel of property, sales information, legal descriptions, taxes and comprehensive property information for the general public.

A joint effort of these various county departments developed the specifications and programs of the GIS Parcel Query System which was the precursor of the

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web page. Appraisal staff used the Parcel Query System for about one year (1997) prior to the web page becoming public. This technology has made it possible for staff appraisers to review appraisal data on specific properties, compare similar properties, review recent sales, determine building locations and many other related facts, and then share that data with the taxpayers as well as other County departments and local units of government.

Dakota County Assessing Services has maintained an 'open door policy' for taxpayer questions and appeals for many years. The Property Information link on the County web page is easy to use, comprehensive, and open to public scrutiny. Our credibility, taxpayer respect, and customer satisfaction has increased - while our telephone calls have decreased.
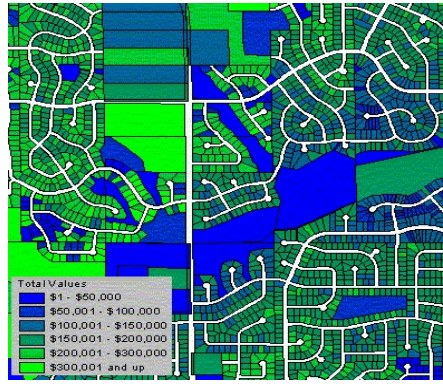
We rely on the GIS system for our daily operations and encourage other County departments and the public to 'check it out'! We think you'll find it interesting and helpful. We would also appreciate your feedback as we continue to develop enhancements to this system.

Desktop G.I.S.

Dakota County Property Information
By Randy Knippel

Property information is one of the most commonly used data layers in the County GIS. Property lines form the foundation on which other forms of analysis are based including property values, urban growth, and land use. A large portion of public funding is paid through property taxes. Property owners need to know where their property lines are for building fences or making other improvements to the property. Those people buying and selling property are interested in property values and taxes and comparing that information between similar property.

Total Values
$1 - $50,000
$50,001 - $100,000
$100,001 - $150,000
$150,001 - $200,000
$200,001 - $300,000
$300,001 and up

Who creates and maintains this data?

The property information GIS data is the result of the combined efforts of several departments at the County.

The Survey and Land Information Department is responsible for verifying and maintaining property lines in the database. This is accomplished by verifying all property line geometry for new plats to ensure that property descriptions will be valid. As new plats are approved, they are added to the property database in the GIS.

The Office of Property Records is responsible for recording and processing legal documents related to real estate.

The Treasurer/Auditor Department is responsible for assigning property identification numbers (PIN) which are used for tracking property ownership and taxes.

The Assessor's Department performs property valuation and ensures that tax laws are applied consistently. This is done by visiting property on a regular basis and recording characteristics of homes and other structures.

The results of all these efforts are combined into a GIS data set that is made available on the County web server, local area network (LAN) servers, and written to CD for distribution to the cities.

How is this data used?

The data is available through several mechanisms for a variety of uses. Traditionally, property lines are available in the form of maps, available from the Survey and Land Information Department. The GIS unit in that

department can also produce special maps as needed for other specialized uses.

The data is available on the Internet through the Internet Real Estate Inquiry found on the County web site under the 'Property Information' link. This is a valuable tool for realtors and appraisers as well as property owners and those intending to buy and sell property. Using this application, it is easy to compare property values with other similar properties and determine other characteristics of neighborhoods. A variation of this application is available on DakotaNet under the 'County Applications' link. This variation also allows searching by owner's name and displays owners' names for selected property.

The Assessor's office uses this combined data set to help verify and validate property valuation and taxes across the County. It allows them to create graphic representations of the work they perform on a continuing basis.

The Office of Planning in the Physical Development Division uses this data on a regular basis for modeling urban growth and assisting other departments and the cities in preparing for that growth in an organized and logical fashion.

The Community Services Division has a variety of uses for this data in both the Public Health and Social Services departments by using this as a base for mapping clients and service providers as well as determining and resolving issues, which affect people in their communities.

These are only examples of uses for this data. Other departments and agencies are using it as well.

ArcView GIS users access this data through the 'Dakota County Property' extension. This extension contains property lines, dimensions, and plat, block, and lot designations. It also includes several themes representing parcel areas using a variety of associated

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Property information including value, taxes, sales, and school district. These can be used directly or modified to meet more specific needs. The user also has the ability to define his/her own themes and even related additional information they may have.

Automatically Create Mailing Labels
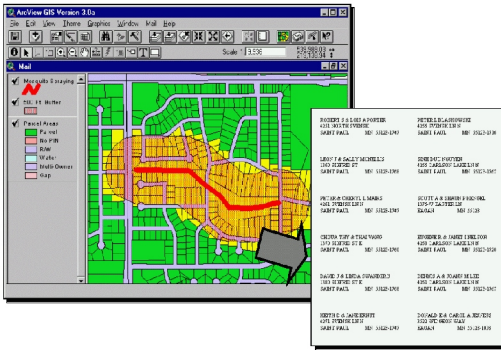
Along with viewing options are some custom analysis tools for buffering parcels and creating mailing labels. Also available are tools, which assist in searching for parcels by PIN and owner's name.

Further information on this data set can be found on DakotaNet and the County web site under Physical Development > Survey and Land Information Department > GIS > Data Documentation. If you have further questions on how this data might be applied for your specific use contact any GIS Specialist, Randy Knippel (GIS Manager) or Gary Stevenson (Department Director).

Tech Talk

Working with the ArcView Field Calculator

By Mary Hagerman

The ArcView field calculator is a powerful tool that allows you to perform a number of operations on tabular data. Working with the field calculator is relatively simple. The dialog allows for point and click construction of expressions. Fields appear in a list box on the left-hand side of the dialog. Strings and numbers can be used as well. Functions, or requests, are listed in the list box on the right-hand side of the dialog. Standard operators appear at the top, scroll down to see more advanced requests. The expression operates on all records in the table for the calculation field. Only a sampling of what can be done with the field calculator will be presented here. A complete list of requests can be found in the ArcView Help.

To remove decimal places from numbers use **Round** or **Truncate**. **Round** rounds to the nearest integer, where **Truncate** drops all digits after the decimal point (e.g. 3.7 would be 4 if rounded, and 3 if truncated). You can use **Round** or **Truncate** on all the values in an entire column at once.

Example:
'Rounded' is the result of
[HOURS].**Round**;
'Truncated' is the result of
[HOURS].**Truncate**.

	A	B	C
1	HOURS	Rounded	Truncated
2	3.7	4	3
3	5.1	5	5
4	2.8	3	2
5	4.2	4	4

To compare two numbers and return the larger or smaller of the two, use aNumber.**Max**(anotherNumber) and aNumber.**Min**(anotherNumber) respectively.

Example:
304.**Max**(329) = 329
304.**Min**(329) = 304

You can change the case of a text string with aString.**Proper** (the first letter of each word is capitalized), aString.**UCase** (all capital letters), and aString.**LCase** (all lowercase).

Example:
"dakota county".**Proper** = "Dakota County"
"Dakota County".**UCase** = "DAKOTA COUNTY"
"Dakota County".**LCase** = "dakota county"

Left, **Middle**, and **Right** return a specified character or series of characters, or substring. For instance, aString.**Left**(4) returns the first four letters of the string, aString.**Right**(4) returns the last four letters, and aString.**Middle**(3,4) returns four letters Starting with the third letter.

Example:
To get the city code, plat, lot, and block from the taxpin, use:
City code = [TAXPIN].**Left**(2)
Plat = [TAXPIN].**Middle**(3,5)
Lot = [TAXPIN].**Middle**(8,3)
Block = [TAXPIN].**Right**(2)

Data can be converted from one type to another through the field calculator as well. Use aNumber.**AsString** to convert a number to a string, and aString.**AsNumber** to convert a string to a number (e.g. 55124.**AsString** = "55124", or "55124".**AsNumber** = 55124). It is important to be sure that the type of the value returned by the expression matches the type of the field. Failure to do this will result in a syntax error or type mismatch error.

For more information, syntax, and a complete list of requests, see the ArcView Help, click the "Contents" tab: Working with tabular data>Creating and editing a table>Calculating a field's values. Links to listings of requests for each data type are at the bottom of the page.

CONTACTS

If you would like to write an article for the Spotlight section of the GIS News newsletter and share how you use GIS in your department, call or email Randy or Julie.

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